NOVARTIS AG
Form 6-K
February 09, 2009
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SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 6-K

REPORT OF FOREIGN PRIVATE ISSUER
PURSUANT TO RULE 13a-16 or 15d-16 OF
THE SECURITIES EXCHANGE ACT OF 1934

Report on Form 6-K dated February 9, 2009

(Commission File No. 1-15024)

Novartis AG

(Name of Registrant)

Lichtstrasse 35
4056 Basel
Switzerland

(Address of Principal Executive Offices)

Indicate by check mark whether the registrant files or will file annual reports under cover of Form 20-F or Form 40-F:

Form 20-F: x Form 40-F: o

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(1):

Yes: o **No**: x

Indicate by check mark if the registrant is submitting the Form 6-K in paper as permitted by Regulation S-T Rule 101(b)(7):

Yes: o **No**: x

Indicate by check mark whether the registrant by furnishing the information contained in this form is also thereby furnishing the information to the Commission pursuant to Rule 12g3-2(b) under the Securities Exchange Act of 1934.

Yes: o **No**: x

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GROUP REVIEW

OUR MISSION

We want to discover, develop and successfully market innovative products to prevent and cure diseases, to ease suffering and to enhance the quality of life.

We also want to provide a shareholder return that reflects outstanding performance and to adequately reward those who invest ideas and work in our company.

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GROUP OVERVIEW

Novartis provides healthcare solutions that address the evolving needs of patients and societies worldwide.

We offer a diversified portfolio to best meet these needs: innovative medicines, cost-saving generic pharmaceuticals, preventive vaccines and diagnostic tools, and consumer health products.

FINANCIAL HIGHLIGHTS

KEY FIGURES CONTINUING OPERATIONS(1) (In USD millions, unless indicated otherwise)	**2008**	**2007**
Net sales	**41 459**	38 072
Operating income(2)	**8 964**	6 781
Return on net sales (%)	**21.6**	17.8
Net income(2)	**8 163**	6 540
Basic earnings per share (USD)(2),(3)	**3.59**	2.81
Research & Development	**7 217**	6 430
As a % of net sales	**17.4**	16.9
Number of associates (FTE)(4)	**96 717**	98 200
Return on average equity (%)	**16.5**	26.4
Free cash flow	**4 301**	3 761

SHARE INFORMATION	**2008**	**2007**
Operating cash flow per share(1),(2),(3) (USD)	**4.31**	3.97
Share price at year-end (CHF)	**52.70**	62.10
ADS price at year-end (USD)	**49.76**	54.31
Dividend(5) (CHF)	**2.00**	1.60
Payout ratio of net income from continuing operations (%)	**53**	51

NET SALES, OPERATING INCOME AND NET INCOME

FROM CONTINUING OPERATIONS(2)

(Index: 2003 = 100%)

2008 NET SALES BY REGION

(% and in USD millions)

(1) Excluding discontinued Consumer Health operations divested during 2007

(2) 2007 results include exceptional pre-tax charges totaling USD 1 034 million (USD 788 million after tax) of USD 590 million for a Corporate environmental provision increase and USD 444 million in restructuring charges for the Forward productivity initiative

(3) 2008 average number of shares outstanding: 2 265.5 million (2007:2 3 17.5 million)

(4) Full-time equivalent positions at year-end

(5) Dividend payment proposed to shareholders for approval at Annual General Meeting in February 2009

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NEWS IN 2008

GROUP	Another year of record results in 2008 from continuing operations, confirming benefits of the strategic healthcare portfolio and led by strong performance of the Pharmaceuticals Division. Novartis positioning itself for continued success and growth in a challenging environment.
	Net sales from continuing operations rise 9% (+5% in local currencies) to USD 41.5 billion. Operating income advances 32% thanks to business expansion and benefits of the Forward productivity initiative launched in 2007 to improve speed, flexibility and productivity. Operating margin improves to 21.6% of net sales from 17.8% in 2007.
PIPELINE	One of the industry s strongest pharmaceutical pipelines providing novel medicines with 152 projects in clinical development (Phase I trials to registration). Many have potential best-in-class status, aiming to advance or create new standards of care. Three 2008 submissions receive accelerated US regulatory review status due to urgent health needs. Meningococcal meningitis vaccines progressing, offering potential for global health benefits.
RESEARCH	Novartis Institutes for BioMedical Research focuses on discovery projects at the intersection of powerful scientific mechanisms and greatest medical needs. Exploratory pipeline advances with 93 new molecular entities. Novartis ranks as having one of the industry s largest biologics pipelines.
PORTFOLIO	Agreement with Nestlé offers rights to acquire majority ownership of Alcon Inc., the world leader in eye care with pharmaceutical, surgical and consumer products. First step completed in July 2008 by purchasing 25% Alcon stake for USD 10.4 billion from Nestlé. Second step provides future rights for Novartis to acquire, and Nestlé to sell, remaining 52% Alcon stake held by Nestlé between January 1, 2010, and July 31, 2011, for up to USD 28 billion.
CORPORATE CITIZENSHIP	Novartis access-to-medicine programs for those in need reach 74 million patients in 2008. Value of contributions: USD 1.26 billion, or 3% of net sales. Dispersable tablet form of antimalaria medicine *Coartem* developed specifically for children. Novartis Vaccines Institute for Global Health opens in Siena, Italy, to develop vaccines for neglected infectious diseases.
DIVIDEND	Proposal for 25% increase in 2008 dividend to CHF 2.00 per share from CHF 1.60 in 2007. Dividend yield rises to 3.8%. Payout ratio represents 53% of net income.
LEADERSHIP	New Group structure as of December 2008 strengthens leadership team. Joerg Reinhardt, Ph.D., takes new role as Chief Operating Officer, reporting to Daniel Vasella, M.D. New division leaders named for Sandoz, Vaccines and Diagnostics, and Consumer Health. Group Head of Quality Assurance and Technical Operations position created. Board of Directors and Dr. Vasella agreed on the terms of a new contract extending his current roles as Chairman and CEO.

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DANIEL VASELLA, M.D.

DEAR SHAREHOLDER

I am pleased that despite the global financial crisis and the early signs of a worldwide recession that marked 2008, Novartis achieved record results both in sales and operating income of its continuing business.

Our diversified healthcare portfolio strategy underpinned our success in a difficult environment. Especially gratifying are the accelerated sales and improved efficiency of our Pharmaceuticals Division. Our newly launched medicines are transforming our portfolio and more than made up for the loss of a number of products in the previous year. Vaccines and Diagnostics continued to show dynamic growth, whereas growth slowed in our generics Division Sandoz. Consumer Health achieved its targets.

On a comparable basis, excluding the sales and operating income of the nutrition businesses we divested in 2007, the Group results were:

- Net sales from continuing operations rose 9% (+5% in local currencies) to USD 41.5 billion.

- Operating income grew 32% to USD 9.0 billion.

- Net income rose 25% to USD 8.2 billion and basic earnings per share increased 28% to USD 3.59.

The performance of the **Pharmaceuticals** Division exceeded the expectations of the market and increased net sales by 5% in local currencies to USD 26.3 billion. This growth was realized not only in new markets, but also in Europe, where key products most notably in Oncology posted double-digit growth rates.

The successful market launches of more than 11 products in the United States, European Union, and around the world contributed USD 2.9 billion to net sales in 2008. In addition to sustained growth of our antihypertensives and cancer medicines, the most successful innovative new products include *Aclasta/ Reclast* (USD 254 million), the only osteoporosis treatment given in a once-yearly dose, and *Lucentis* (USD 886 million), the only treatment proven to preserve and, in some cases, improve the eyesight of patients with age-related macular degeneration.

The **Vaccines and Diagnostics** Division achieved dynamic growth in net sales and continued to make significant investments in the development of the new meningitis vaccines *Menveo* (serogroups A, C, W-135 and Y) and MenB (serogroup B), as well as other innovative vaccines. Millions of infants and young people could benefit from both *Menveo* and MenB, as tens of thousands currently die of meningitis every year, while many survivors suffer from severe long-term consequences.

In the generic pharmaceuticals Division **Sandoz**, net sales grew by 1% in local currencies to USD 7.6 billion. Sandoz presents a mixed picture. Growth was slower than in previous years. Outstanding sales increases in important growth markets such as Russia, Brazil, and Central and Eastern Europe, are in sharp contrast to declining sales in the United States and some West European countries. Delays in new launches and price erosion are the main reasons for stagnation in these markets. In Germany, Sandoz is the leading generics company and is gaining further market share. As a result of price cuts, however, the market has contracted and competition has become tougher. On the positive side, Sandoz is in a pole position in biosimilars. In the future, it will be crucial

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that we are the first to launch new products and that Sandoz further extends its leading position in biosimilars.

With increased net sales of 4% in local currencies to USD 5.8 billion, the **Consumer Health Division** met its targets and also gained market share in several segments. The most important driver of growth was CIBA Vision, which under new leadership launched a number of new products and resolved its prior supply and delivery challenges. Animal Health also achieved good results, especially in the companion-animal business, but its farm-animal business was negatively affected by the recession. OTC is expanding rapidly in the emerging markets and in Japan. But, like other manufacturers of OTC brands, the business struggled with the economic downturn in the United States.

We achieved our strong overall performance in 2008 against a background that remains difficult, despite fundamentally robust prospects for growth. Compared to many competitors, however, our strategy of focused diversification in healthcare puts us in a better position to capitalize on growth opportunities in a number of markets and, at the same time, to spread our risks. It is interesting to note that our portfolio strategy now enjoys broad support and that a growing number of major pharmaceutical companies are also investing in generic pharmaceuticals.

It is gradually becoming clear that, like all entrenched dogmas, the usual comparison of companies that are pure plays with so-called conglomerates fails to present the real strengths and weaknesses. It is obvious that a strategy of unfocused diversification is bad, because you are in unfamiliar territory up against competitors with a much stronger concentration on core competencies. However, I believe that Novartis has pursued a different path, one of focused diversification that also allows us to develop our core business, which both differentiates us and adds value.

Thanks to our strategy, in 2008, Novartis stayed on course and completed several targeted acquisitions and strategic investments that both strengthened the portfolio and enhanced our internal growth drivers. For example, Novartis acquired a 25% stake in Alcon, the world leader in eye care. This transaction is part of an agreement that offers Novartis the opportunity to acquire a majority holding in Alcon.

With the purchase of Protez Pharmaceuticals, a privately owned US biotechnology company, Novartis acquired the rights to PTZ601 in Europe and the United States. This very promising antibiotic in Phase II development has the potential to treat life-threatening nosocomial infections.

Novartis also acquired Speedel Holding AG, a company in which we already had a minority stake. This essentially allowed us to acquire all the rights to *Tekturna/Rasilez*.

Despite cost pressures, the demand for medicines and treatments will nevertheless continue to rise. This demand will be driven by the following factors:

• **An aging world population with an increased need for medical care.** This continuing trend is important because, after age 55, there is an exponential rise in chronic disorders such as degenerative diseases of the joints, the cardiovascular system, and the central nervous system. The risk of cancer also increases with age. The impact of disease also heightens with advancing age due to co-morbidity. For example, over 80% of 80-year-olds suffer from at least one disease, and more than 60% suffer from two or more diseases.

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- **Unhealthy lifestyles and environmental pollution increase the frequency of chronic diseases.** Changes in eating habits and lifestyles that include very little exercise, as well as pollution especially air pollution are taking their toll in obesity, chronic cardiovascular diseases, diabetes, cancer and lung diseases.

- **Economic growth in emerging markets with improved access to medicines.** Economic growth that despite the financial crisis remains relatively robust in countries with large populations such as China, creates disproportionately high growth in demand for better healthcare in these countries.

- **Scientific and technological advances** allow new approaches in drug research that create the foundation for innovative medicines for hitherto untreatable diseases.

The cost increases associated with the growing demand for healthcare services, diagnostics and medicines lead to political activities aimed at reducing expenditures on medicines, via price reductions and generic substitution. Unfortunately, these efforts go even further and also encompass attempts to weaken patents and intellectual property. This increases the risk that long-term investment in research and development will decline. Effective medicines ultimately offer the most cost-efficient treatment for a patient and for lowering costs for the healthcare system. The weakening of protection for innovation with potential curtailment of research and development, will not lower costs in the long run, but will instead lead to massive increases in costs not to mention the human suffering. In short, the best way of reducing the long-term costs of healthcare is to provide incentives for sustainable investment in successful research and development. Without better prevention and innovative medicines, the costs of treating patients with cardiovascular diseases, cancer, diabetes or dementia not to mention other diseases will skyrocket.

The past year was marked by a severe financial crisis and recession. The recession will likely intensify over the current year and leave deep scars on the economy and the sociopolitical climate. The healthcare sector will not be spared, although it is considered a defensive sector and generally much less affected by economic factors than other industries. The pressure on prices will continue to increase because public funding (and in many countries also private budgets) will be constrained by dramatic levels of debt. This year we expect new policies from the incoming US administration, which wants not only to provide all its citizens access to medical care, but also to stem the rising costs of its healthcare system.

To provide cost-effective healthcare, all systems around the world must achieve three goals: quality assurance in diagnosis and treatment, access to all essential medical services and medicines, and financial sustainability. This requires greater transparency and comparability of treatment results with standardized treatment methods, measurement, databases and information technology systems. There has been little meaningful progress to date in these areas not only because systemic analysis and planning have been lacking, but also because politicians have been focused on short-term success. Moreover, there are many groups who are resistant to any fundamental change in healthcare.

Criticism of markets and corporations will likely increase over the next few years, extending among some, to a questioning of the principles of a free-market economy and capitalism. One thing is certain: The state has positioned itself as the only actor capable of engendering trust amidst the current financial crisis. There is a risk of a growing belief in state intervention, and the temptation to extend the capacity and scope of state responsibility in naive and dangerous ways. This is also true in the field of corporate governance. We have witnessed a shift in power from management to the board of directors, and then from the board of directors to shareholder activists. Lawmakers are increasingly influenced by activists who seek to restrict the actions of corporations, their owners and their representatives. I question whether these pressures reduce risks. They do, however, curtail the freedom of companies a disturbing development even if it stems from the best of intentions.

Optimism for the future and faith in progress will erode if freedom and risk are increasingly associated with chaos and failure. In a fast-moving modern world, some believe that restrictions promise order and therefore engender a feeling of security and protection. This is a fallacy. The erection of walls either intellectual or economic ones only further heightens the crisis. It is more important than ever before, that we endorse open markets, multilateralism and embrace a point of view that sees the opportunities of globalization and not only the threats. In a society in which control and order are valued most highly, a mentality of entitlement, coupled with hostility to reform and innovation will triumph.

Society has every reason to believe in the power of innovation. Over the last 40 years, we have witnessed a significant reduction in mortality due to numerous diseases. Deaths resulting from rheumatic fever and rheumatic heart disease have fallen by more than 60%, while deaths from hypertensive and ischemic heart disease have fallen by more than 40%. There has been impressive progress in reducing the number of patients who die from cancer. The results

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are especially striking in children, as over the last 25 years, mortality has more than halved. Moreover, medicines are responsible for 40% of the increased life expectancy and have helped to reduce chronic disability in seniors by 25% over the last 25 years.

Our **pipeline** continues to make encouraging progress, and this success not only gives me cause for optimism, but is also in line with our corporate social mission. In research, Mark Fishman and his team have discovered many new biologic targets and 93 highly promising new molecular entities. For the first time, promising new compounds for the treatment of motor disturbances associated with brain disease, cancers and bone metastases that are difficult to treat, metabolic disorders, and juvenile rheumatoid arthritis have entered clinical trials. Our scientists are currently engaged in 152 projects in various stages of clinical development. These include our new cancer medicine *Afinitor* (everolimus, formerly RAD001). In patients with advanced kidney cancer who did not respond to any of the standard treatments, this product has shown a 70% decrease in the risk of progression. Further indications are under investigation. Also highly promising are the clinical results reported with FTY720, a tablet for the treatment of multiple sclerosis, as well as the results of QAB149 for the treatment of chronic obstructive pulmonary disease.

In 2008, Novartis was the only pharmaceutical company with three medicines under priority review by the US Food and Drug Administration. In addition to *Afinitor*, these included *Gleevec/Glivec* as adjuvant therapy in gastrointestinal stromal tumors (GIST) and *Coartem* for malaria. In December 2008, the FDA approved *Gleevec/Glivec* for this additional indication. In this context, it is important to note that, for some time, US authorities have followed much more rigorous safety requirements, and it is impossible to predict timing or chances for regulatory approvals of new medicines.

Payor influence over medical decisions in Europe and in the United States has been growing. These customers place greater emphasis on evidence that new treatments offer better results and improved cost/ benefit ratios.

As investments in research and development increase and pressure on drug prices becomes more intense, efficient cost management becomes even more important. To achieve our objectives, we need to further streamline our organization and processes so that decisions can be made more quickly and be more systematically implemented.

In the context of the economic uncertainty and volatility of the global market, it is increasingly clear that we took the right step in launching the Forward initative. We exceeded our own savings targets and, in some cases, we also fostered renewed growth. Our aim is to save USD 1.6 billion by 2010. The initiative also enabled us to simplify our organizational structure and accelerate decision-making processes.

Our business success allows us to continue our **corporate social responsibility** activities. With our unique malaria and leprosy programs, we have provided more than 200 million treatments since 2001 and helped to save the lives of more than 500 000 people.

Last year, we also launched the Novartis Vaccines Institute for Global Health (NVGH), a nonprofit research institute in Siena, Italy, dedicated to the development of vaccines for patients in developing countries.

Our commitment to patients is an integral part of our strategy. The same is true of the ethical principles anchored in the Novartis corporate culture. I am most pleased that The Dow Jones Sustainability Index recognized Novartis as healthcare super sector leader in 2008. The indispensibility of these principles has become even more clear over the last few months as we are all burdened by the irresponsibility of certain actors in the financial sector which has deeply harmed the global economy.

The promotion of talented leaders to key management positions is critical to the **future success of the company.** In November, Joerg Reinhardt assumed the new position of Group Chief Operating Officer reporting to me. Joerg Reinhardt is succeeded as Head of Vaccines and Diagnostics by Andrin Oswald, previously CEO of Speedel and Global Head of Pharmaceutical Development Franchises in Pharmaceutical Development. The Board also appointed George Gunn Head of the Consumer Health Division, in addition to his role as Head of Animal Health. He replaces Thomas Ebeling, who decided to pursue his career outside Novartis. During his tenure with Novartis, Thomas Ebeling made outstanding contributions, and I would like to take this opportunity to express my sincere thanks to him. Andreas Rummelt assumed the newly created position of Group Head of Quality Assurance and Technical Operations and remains a member of the Novartis Executive Committee. Jeff George, formerly Head of Emerging Markets in the Pharmaceuticals Division, is the new Head of Sandoz. David Epstein now heads a new unit focused on the development of innovative molecular diagnostics in addition to his responsibility as Head of Oncology.

William George, member of the Board of Directors, has decided not to stand for reelection at the next Annual General Meeting. At this meeting, the Board of Directors will propose that Dr. William Brody be elected to the Board of Directors. Dr. Brody served until recently as president of Johns Hopkins University and is now president of the Salk Institute.

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As a shareholder, you are naturally interested in the further development of our company. Our ten-year total shareholder return, including dividends, which we have continuously increased, and business spin offs, surpasses that of the global market, the pharmaceutical industry index, and the performance of key competitors. The tumultuous stock market of 2008 also made it clear that we are seen as a defensive stock delivering strong performance. This view has been supported by the fact that we managed to weather the financial crisis and remain intact both operationally and in our investment activities thanks to our conservative strategy focused on sustainability.

In 2009 we anticipate another year of record results in net sales and earnings. All the elements for success are in place: products, resources, creative thinking, a determination to succeed through an even greater focus on our customers, as well as a competent management team that is distinguished by ambition and integrity.

I expect Joe Jimenez and the management team of the Pharmaceuticals Division to take advantage of the strong performance in the years ahead by investing in research and development, growth products and strategic markets. This will help to ensure that the Pharmaceuticals Division is prepared for the challenging period after 2012, when we can expect generic competition for our top-selling product *Diovan*. Our focused diversification strategy will also provide us with further growth opportunities beyond pharmaceuticals.

There are many changes taking place at the moment, but one thing remains constant: Patients need the best and most cost-effective medicines. I am certain that if we never lose sight of this fundamental imperative, we will succeed in meeting the major challenges of the future.

I would like to thank all our associates for their excellent work, their entrepreneurial mindset and their contributions to the achievement of our objectives. I am especially gratified that our associates understand the need to reorient our organization to a difficult and challenging environment.

Finally I would like to thank you, our shareholders, for the trust you place in our company. I am pleased to be able to propose an increase in the dividend to CHF 2.00 (+25%) at the next Annual General Meeting.

Sincerely,

/s/ Daniel Vasella
Daniel Vasella, M.D.
Chairman and Chief Executive Officer

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HEALTHCARE PORTFOLIO

Innovation is flourishing, bringing new effective treatments to patients. There are significant challenges, however, and the healthcare environment is undergoing unprecedented change.

The world s population is aging. Better healthcare treatments are needed, also prompting payors to manage costs aggressively. Advancing science and technology are enabling new drug discovery while increasing the cost of innovation. Economic growth in emerging countries is providing better healthcare access, but the poorest still lack basic medicines. Changing lifestyles are leading to higher prevalence of chronic and degenerative diseases.

Our strategy is to provide healthcare solutions that address the evolving needs of patients and societies worldwide.

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HEALTHCARE PORTFOLIO OVERVIEW

We believe our portfolio best meets the varied and often complex needs of patients and societies. Novartis is positioned to lead in innovation, partner with others and offer solutions to patients across a broad healthcare spectrum. In addition, a diverse portfolio reduces financial risk, bringing greater value to those who invest in our company.

Novartis has been transformed since its creation in 1996 when only 45% of net sales came from healthcare into a leader focused on fast-growing areas of healthcare.

Novartis is currently organized into four divisions:

- Pharmaceuticals: Innovative patent-protected medicines
- Vaccines and Diagnostics: Human vaccines and diagnostic tools to protect against life-threatening diseases
- Sandoz: Generic pharmaceuticals that replace branded medicines after patent expiry and free up funds for innovative medicines
- Consumer Health: Readily available products that enable healthy lifestyle choices: OTC (Over-the-Counter), Animal Health and CIBA Vision.

NOVARTIS IS NOW A LEADING HEALTHCARE COMPANY

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NET SALES BY DIVISION (1)
(Index: 2003 = 100%, Vaccines and Diagnostics since 2006 acquisition)

OPERATING INCOME BY DIVISION (1)
(Index: 2003 = 100%, Vaccines and Diagnostics since 2006 acquisition)

2008 NET SALES BY DIVISION
(% and in USD millions)

2008 OPERATING INCOME BY DIVISION
(% and in USD millions)

2008 NET SALES BY REGION

(% and in USD millions)

(1) Excluding discontinued Consumer Health operations divested during 2007

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EMERGING MARKETS: BUILDING FROM STRENGTH TO CAPTURE GROWTH

Emerging markets represent a major growth opportunity for Novartis. Growth in healthcare expenditure, fueled by enormous unmet medical need, is outpacing economic expansion in China, India, Russia and Brazil. The dynamic performance of Novartis in emerging countries during 2008 reflects solid positions built over decades as well as increased investments targeting a wide range of scientific and commercial activities. Acknowledging the diversity among emerging countries, Novartis is assessing a number of strategic models tailored to local conditions and the Group s position in each country.

In 2008, emerging countries delivered robust double-digit net sales growth for Novartis. The strategic importance of these markets will increase further in coming years amid slowing growth in the United States and Western Europe.

Though performance of these emerging markets may fluctuate, their potential for Novartis reflects solid positions built over decades, as well as increased investments targeting a wide range of scientific and commercial activities.

One example is the biomedical research and development center under construction in Shanghai, China, a significant investment focusing on infectious causes of cancer that are endemic in Asia. We re looking for great scientists, and China has an incredible pool of talent. We would ignore it at our peril, says Mark Fishman, M.D., President of the Novartis Institutes for BioMedical Research and member of the Executive Committee of Novartis.

Another example is Brazil, where Novartis is the only global pharmaceutical company with local production of active pharmaceutical ingredients. Stimulating chemical production is a key policy goal of the Brazilian government. During the past three years, Novartis has invested to expand capacity at a manufacturing site in Resende, Brazil, creating 200 new jobs. Resende exports an important chemical precursor used in the manufacture of *Diovan*, the world s best-selling branded antihypertensive medicine. Expansion of the Resende site reinforces the position of Novartis as Brazil s largest international pharmaceutical company.

Sandoz, the generic pharmaceuticals Division of Novartis, is also the leading generics company in Central and Eastern Europe and continues to outgrow competitors in the region. You see burgeoning economic growth in these countries and expenditure on healthcare is rising even faster, says Andreas Rummelt, Ph.D., Group Head of Quality Assurance and Technical Operations, member of the Executive Committee of Novartis and Head of Sandoz until December 1, 2008. And when people spend on medicines, they go for generics first.

In Turkey, Novartis is also the largest international pharmaceutical company and number two overall. Novartis has been active in Turkey for more than 50 years, and today four local manufacturing sites supply Novartis medicines to patients in more than 80 other countries around the world.

Turkey is a young country, with more than half the population under age 25, but the demographics will shift rapidly in coming years. Our aging population, the increasing incidence of chronic diseases, and low per- capita drug consumption will be the most important trends in the Turkish market over the next five years, says Guldem Berkman, Country President and Head of the Country Pharmaceuticals Organization. She adds:

You see a clear growth path for the future.

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Emerging markets vary widely. Recognizing that diversity, Novartis is assessing a number of strategic models tailored to local conditions and requirements to accelerate growth.

These large emerging growth markets are where the US was 20 years ago, and it s a huge opportunity for us over the next decade, says Joseph Jimenez, Head of the Pharmaceuticals Division and member of the Executive Committee of Novartis. The division has created an Emerging Growth Markets (EGM) organization focusing on the biggest emerging countries. You are going to see us shift our center of gravity toward some of the faster-growing markets, significantly expand the size of our sales forces and step up clinical development activities in an effort to take businesses already growing rapidly to even higher levels.

At the same time, a unique cross- divisional model is being tested in a number of pilot markets. And in India, Novartis is attempting to build a business catering to the needs of millions of low-income people living in rural villages.

PHARMACEUTICALS: A HEAD START

In major emerging markets the Pharmaceuticals Division is stepping up investments in anticipation of sustained double-digit growth during the next decade. These markets represent the biggest opportunity that currently exists in the global pharmaceutical market, says Jesus Acebillo, M.D., Head of Region Emerging Growth Markets at Novartis. Projected growth for the EGM markets is about 12% per annum, more than double the anticipated growth in the rest of the world. By 2020, sales of prescription medicines in EGM markets are expected to reach USD 400 billion, or 20% of global prescription drug sales, up from an 8% share today.

Growth of healthcare investments has outpaced the rapid economic expansion in China, India, Russia and Brazil in recent years. That momentum is likely to be sustained, despite the current global economic downturn, because of the yet-uncovered medical need of the population in these countries.

Large and growing middle classes are driving healthcare spending. Because health insurance coverage remains inadequate in most major emerging markets, patients pay an important share of healthcare costs out of their own pockets.

For all the recent improvement in economic conditions, emerging countries still face enormous unmet medical need. According to Dr. Acebillo, the frequency of cancer is expected to climb 50% in EGM markets in the next decade due to increased life expectancy. Moreover, about half of all smokers and 75% of people with high blood pressure worldwide live in EGM countries. Obesity and diabetes are growing public health challenges.

Virtually all major pharmaceutical companies today are racing to expand in the biggest emerging markets. Novartis got a head start by establishing the EGM regional organization in 2004. We accumulated a lot of valuable experience during those four years, Dr. Acebillo says.

Growth prospects are galvanized by the large portfolio of new medicines from Novartis being rolled out worldwide. We have doubled sales in the EGM countries since 2004, and we hope to double sales yet again by 2012, Dr. Acebillo says.

Because emerging markets are prone to volatility and instability, Novartis is stressing risk-management skills in development of senior executives across the EGM region. The ability to minimize risk in management of working capital and investments will be key to success, Dr. Acebillo says, together with flexible strategies that can be modified in response to abrupt changes in the operating environment.

Perhaps the biggest hurdle will be recruiting and retaining the thousands of new associates needed to meet the challenges of continued growth in these markets.

Dr. Acebillo expects a fierce battle for talent, which already is in short supply in priority EGM countries. There is a limited number of people with international experience plus language and other skills needed to work in global companies, he says.

Turkey offers a success story in talent management in an era of declining employee loyalty and active recruiting by rival companies. According to Ms. Berkman, Novartis Turkey s country president, employee turnover is about 7% per year, but only 1% among associates rated high-potential. It is essential for Novartis to remain competitive in terms of compensation and benefits, but surveys at the Turkish unit also give management high marks for empowerment and fostering a sense of responsibility for their work among associates.

As a woman heading a large company in Turkey, Ms. Berkman personifies the increasing diversity among senior Novartis managers. After graduating with a degree in chemical engineering from a prestigious Turkish university, she spent the early years of her career with international companies in the fast-moving consumer goods industry, then joined Novartis in 2001 and held positions of increasing responsibility in Marketing and Sales. She was appointed Head of Novartis operations in Turkey at the beginning of 2008.

When I started at Novartis, it was a bit challenging because most people had spent their entire careers in the pharmaceutical industry, Ms. Berkman says. But that has changed, and today it s recognized that people from different industries bring new skills that are a positive contribution to the company.

OTC: NUMBER ONE IN RUSSIA

Over the past decade, Novartis has assembled Russia s leading over-the-counter (OTC) or self-medication business, driven

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largely by growth of the OTC Business Unit but also complemented by sales of OTC products by Sandoz. It is a success story Novartis aims to emulate in other emerging markets.

Back in 1999, prospects seemed bleak. We had a very small business, 10 employees and a few brands nothing to speak of, really, recalls Dionysios Bouzos, longtime general manager of the Russian OTC unit and today Region Head Russia/India/China for the business. It was a very difficult time, following a massive banking and economic crisis in Russia the previous year. No one really knew what the future of Russia would be.

Today Russia is the fourth-largest OTC market for Novartis, measured by sales. Success factors include a tenacious local management team, strong brands and an agile response to rapidly changing market conditions. In addition, a comprehensive information system tracks sales and consumption for more than 25 000 pharmacies across Russia, untangling the underlying trends in this highly complex market.

So armed, Mr. Bouzos was able to increase geographic coverage across the huge, fragmented country while keeping costs under tight control. You marry people, the information system and analytical tools to understand the business and make the right decisions, he says.

Some of the early recruits who started as sales representatives calling on pharmacies have advanced to positions as regional managers, responsible for several territories and multi-million-dollar budgets. I don t think anyone would have imagined back then that we would come so far so fast, Mr. Bouzos says.

Novartis global brands have leading positions in the Russian market across most of OTC s strategic categories: antifungals with *Lamisil*, cough and cold with *Theraflu,* decongestants with *Otrivin* and skin irritation with *Fenistil.* In addition, *Voltaren* is Russia s number two brand in topical pain.

Russia has significance beyond its number four rank in our OTC portfolio. It provides a model for what we can and must do in other high-potential emerging markets, for example China and India, says Larry Allgaier, Global Head of the OTC Business Unit. It is a place where innovation, sales and marketing have come together to bring our goal of being the fastest-growing and most innovative OTC company to life.

The estimated 40 products poised for launch in Russia within the next three years include premium products from the global OTC pipeline as well as rebranding opportunities. A lot of secondary and tertiary Novartis brands are being given new life under global brand umbrellas, and Russia is one of the leaders in that process, Mr. Bouzos says. Sore-throat products, previously missing from the Novartis portfolio in Russia, are being piloted under the *Theraflu* brand. Other examples include *Sinecod* cough syrup, *Pulmex* chest rub and *Vibrocil*, a topical nasal decongestant available in multiple formulations.

In addition, affordable mid-tier brands are a key tool to improve access to high- quality OTC products for a wider number of consumers in Russia. The power of Novartis brands reflects a higher expectation of quality in markets in which substandard copies and counterfeits are widespread.

Another fundamental change during the past decade is the rapid emergence of sophisticated, knowledgeable and discerning Russian consumers, very engaged with their health, he adds. We have to ensure that we continue to provide the kind of innovative products such demanding customers are looking for. In Russia, innovation is an imperative, not a luxury.

For all of the success so far, Mr. Bouzos cautions that Novartis must remain enormously agile to respond to emerging market trends. Changes in Russia are happening so quickly that you don t have the luxury of waiting to see the final result. There is a

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lot of scramble, he sighs. But at the same time it creates enormous opportunities to win if you are quick, resourceful and know the market.

GEM: THE BROAD HEALTHCARE MESSAGE

Group Emerging Markets (GEM), a cross- divisional organization that aims to achieve critical mass and accelerate growth in smaller emerging markets, is operating in nine pilot countries.

In these markets, the country head oversees local Novartis business as a whole, drawing on the uniquely broad portfolio of healthcare businesses to address the needs of patients, physicians, pharmacists and governments. The aim is to boost sales by capturing synergies between divisions and business units, and ensuring a joint approach to key stakeholders and customers all while pooling shared services in infrastructure and back-office areas such as finance and human resources.

Criteria used to select GEM countries included long-term potential of a market and fragmented local operations that prevented Novartis from taking full advantage of opportunities for growth. There was also a desire to test the GEM concept in multiple geographical regions.

We observed that we have markets so small that they fall below the radar screen of some divisions, says Daniel Vasella, M.D., Chairman and Chief Executive Officer of Novartis. So as a pilot, we have established multi-divisional management teams to run an integrated local business. Our customers in these countries are often structured the same way, and we believe we can hire better talent if we have a larger, more complex business to manage than separate local divisional units.

Several emerging geographies do not de facto distinguish between originator, generic and OTC drugs. With our broad Novartis product portfolio we are well-positioned to address the needs of patients for innovative medicines, prevention and affordable self- care options in the GEM countries says Andre Wyss, Head of Region Rest of World at the Pharmaceuticals Division but Head of GEM until December 1, 2008. Aligning promotional and commercial activities with synchronized initiatives for the total Novartis portfolio leads to increased presence and share-of-voice with key stakeholders, which ultimately improves awareness of our medicines.

This new model already has driven performance in various markets and allows for optimization of initial investments in countries where Novartis previously had a minimal presence. In 2008, aggregate year-on-year growth in GEM countries accelerated to 26%, compared to 11% the previous year.

In Malaysia, Novartis Pharmaceuticals was the strongest division, well supported by its line functions. But the creation of GEM opened an opportunity to use those resources to support and drive growth of other divisions and business units, for example, by drawing on relationships built through key account managers in the Pharmaceuticals Division. In other countries, GEM was able to benefit from the strong platform and contacts of Sandoz to expand the Oncology business faster and more efficiently than would have been possible from the outside.

We go out and can deliver a broad healthcare message, Mr. Wyss says. When the GEM country head meets the general manager of a hospital and explains that Novartis has innovative medicines, generics, vaccines and OTC self-medication products, we become a much more attractive partner.

In Jordan, the Pharmaceuticals Division and Sandoz were selling separately to the same key accounts. Today, GEM is approaching each institution with a single voice and positioning Novartis as a healthcare leader.

For example, oncology is the main focus at King Hussein Cancer Center in Amman, Jordan. But our needs extend far beyond oncology products to anti-infectives, painkillers and even simple OTC products, says Mahmoud Serhan, M.D., Chief Executive Officer of King Hussein Medical Center. In our decision-making process we prefer to deal with one face at a supplier. By combining the forces of all its divisions, Novartis has become an ideal partner, providing us with a wide range of healthcare solutions.

HEALTHY FAMILIES IN RURAL INDIA

Yet another cross-divisional experiment is under way in India, where a small Novartis team is attempting to build a self-sustaining business model catering to the health needs of low-income people living in rural villages. The initiative, called Arogya Parivar, or healthy family in Sanskrit, combines healthcare education with the sale of affordable Novartis products through local pharmacies.

An estimated 65% of the population of India has no access to medicine despite prices that are among the lowest in the world. Novartis has recognized the commercial potential of the fast-growing rural market that represents 70% of India s population and almost 60% of national disposable income.

Arogya Parivar set out to fill that vacuum. The mainstay of the initiative is a team of 200 health advisors who fan out to villages in four states. Each health advisor completes a training program for three to four diseases and we also train them in public speaking, says Olivier Jarry, Global Head Project Arogya from mid-2006 to mid-2008.

These health advisors are not Novartis employees. Some are experienced pharmaceutical sales representatives who moved from a city back to a village; some have backgrounds in fast-moving consumer goods; and some belong to local non-governmental organizations. The mix works very well, Mr. Jarry says.

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Training emphasizes ethical standards, particularly adherence to the Novartis Parma Promotional Practices Policy. We insist that our health advisors fulfill all Novartis standards and conduct themselves as if they were Novartis employees, Mr. Jarry says.

The initial focus of the initiative has been patient education: raising awareness about healthcare, hygiene and nutrition. The first step is having people become aware of diseases and how to treat or prevent them, Mr. Jarry says. That s what s most lacking in India: qualified doctors are rare and no one talks to people in the villages about diseases.

Arogya Parivar health advisors speak to villagers about diseases from tuberculosis and skin infections to asthma, allergies or diabetes. They help people in the village to recognize symptoms, Mr. Jarry says. Periodically we hold health camps and bring in doctors who do examinations on the spot and refer people diagnosed with a disease to a doctor for treatment. Attendance at one of our health camps can range from 200 to 2 000 people. If we skip the education part, we would miss 99% of potential patients.

The basic product portfolio promoted by Arogya Parivar health advisors includes prescription medicines and OTC self-medication products selected on the basis of both medical requirements of the rural poor and affordability. Weekly treatment costs are held below USD 1.25.

To enhance affordability, Novartis modified standard package sizes of products such as calcium tablets for pregnant women. We revived an old design of a tube holding 15 pills, half the number and half the price of our smallest standard pack. It s been a phenomenal success, Mr. Jarry says.

About 120 priority districts out of more than 600 districts across India have been selected for the initial phase of the Arogya Parivar program, based on criteria ranging from population and purchasing power to transportation infrastructure and density of private doctors. Operations currently span four Indian states, Mr. Jarry says. And by applying similar criteria, it would be possible to launch initiatives similar to Arogya Parivar in other countries, he adds.

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PHARMACEUTICALS OVERVIEW

KEY FIGURES **(In USD millions, unless indicated otherwise)**	**2008**	**2007**
Net sales	**26 331**	24 025
Operating income (1)	**7 579**	6 086
Return on net sales (%)	**28.8**	25.3
Research & Development	**5 716**	5 088
As % of net sales	**21.7**	21.2
Free cash flow	**7 679**	6 292
Net operating assets	**14 812**	13 984
Additions to property, plant & equipment (2)	**1 115**	1 436
Number of associates (FTE) (3) at year-end	**53 632**	54 613

(1) 2007 results include an exceptional USD 307 million restructuring charge for the Forward productivity initiative

(2) Excluding impact of business combinations

(3) Full-time equivalent positions at year-end

PORTFOLIO REJUVENATION

(% and total net sales in USD millions)

NEWS IN 2008

Accelerating momentum in Pharmaceuticals thanks to dynamic growth in Oncology, the portfolio of high blood pressure medicines and USD 2.9 billion of contributions from recently launched products.

Net sales rise 10% (+5% in local currencies) to USD 26.3 billion, led by solid performances in Europe, Latin America, Japan and priority emerging markets. In the United States, net sales fall 2%, but returns to solid growth in second half of 2008 while overcoming 2007 challenges from the start of generic competition for four medicines and *Zelnorm* suspension.

Operating income advances 25% on the business expansion and productivity gains as well as lower exceptional charges. Research and Development investments rise 12% to advance robust pipeline, while productivity gains support new product launches and expansion in emerging markets. Operating margin rises to 28.8% of net sales from 25.3% in 2007.

Oncology (USD 8.2 billion, +14% lc) provides four of the five top-selling medicines, led by *Gleevec/Glivec* at USD 3.7 billion. Cardiovascular strategic products (USD 6.7 billion, +10% lc) advance on gains from the new high blood pressure medicines *Exforge* and *Tekturna*, while *Diovan* reaches net sales of USD 5.7 billion.

Recently launched products provide increasing growth contributions in 2008, led by *Aclasta/Reclast*, *Tekturna/Rasilez*, *Exforge*, *Lucentis*, *Exelon* Patch, *Tasigna* and *Xolair* that together accounted for more than 10% of net sales in 2008.

Promising development pipeline with 152 projects: *Afinitor* (advanced kidney cancer), QAB149 (chronic obstructive pulmonary disease, or COPD) and ACZ885 (Muckle-Wells syndrome) submitted for regulatory approvals.

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Novartis is consistently rated as having one of the industry s most respected pipelines with 152 projects in clinical development. Several of these projects, which include potential uses of new molecular entities as well as additional indications or new formulations for marketed products, are for potentially best-in-class medicines that would advance treatment standards.

The following table provides an overview of selected projects.

GLOSSARY

Project/Compound Novartis brand name for marketed products *(in italics)* or project reference code (combination of three letters and three numbers) for compounds, which are individual molecular entities.

Generic name The official International Non-proprietary Name (INN) for an individual molecular entity as designated by the World Health Organization (WHO).

Indication A disease or condition for which a compound or marketed product is in development and studied as a potential therapy.

Mechanism of action Specific biochemical interaction through which a drug substance produces its pharmacological effect.

Formulation The way in which a medicine is administered, such as via a tablet, injection, skin patch, infusion or device.

Phase I First stage of testing in humans. At Novartis, proof-of-concept clinical trials are conducted in a homogeneous group of patients, defined either as a genetic disease or by biomarkers, to assess molecular understanding.

Phase II Following successful proof-of-concept results, confirmatory trials are performed in larger patient groups to further assess the efficacy and safety of how well a compound works, including at various doses and in various indications.

Phase III Final clinical trials before regulatory submissions to test a compound against a placebo or another medicine to determine definitive efficacy and safety in patients.

Submitted Comprehensive data provided to government regulators for marketing approval.

Therapeutic area	Project/compound	Generic name	Indication
Cardiovascular and Metabolism	*Tekturna* SPC (1)	aliskiren, valsartan most	Hypertension
	Galvus	vildagliptin	Type 2 diabetes
	Diovan/Starlix NAVIGATOR	valsartan, nateglinide	Prevention of new-onset type 2 diabetes, cardiovascular morbidity and mortality
	Tekturna SPC (1)	aliskiren, amlodipine, hydrochlorothiazide	Hypertension
	Tekturna ASPIRE HIGHER trials	aliskiren	Renal and cardiovascular events
	LCZ696		Heart failure
	LCI699		Heart failure
Oncology	*Afinitor* (RAD001)	everolimus	Renal cell cancer (lead indication), neuroendocrine tumors, solid tumors
	Tasigna	nilotinib	Gastrointestinal stromal tumor (lead indication), newly diagnosed chronic myeloid leukemia
	LBH589	panobinostat	Cutaneous T-cell lymphoma (lead indication), Hodgkin s lymphoma, hematologic tumors
	EPO906	patupilone	Ovarian cancer (lead indication) and other solid tumors
	SOM230	pasireotide	Cushing s disease (lead indication) acromegaly, neuroendocrine tumors
	Zometa	zoledronic acid	Adjuvant breast cancer
	PKC412	midostaurin	Aggressive systemic mastocytosis (lead indication), acute myeloid leukemia
	ASA404		Non-small cell lung cancer
Neuroscience and Ophthalmics	FTY720	fingolimod	Multiple sclerosis
	AGO178	agomelatine	Major depressive disorder
	Lucentis	ranibizumab	Diabetic macular edema
	AFQ056		L-dopa induced dyskinesia in Parkinson s disease
Respiratory	QAB149	indacaterol	Chronic obstructive pulmonary disease
	Xolair	omalizumab	Allergic asthma
	MFF258	formoterol, mometasone furoate	Asthma, chronic obstructive pulmonary disease
	NVA237	glycopyrronium bromide	Chronic obstructive pulmonary disease
	QVA149	indacaterol, glycopyrronium bromide	Chronic obstructive pulmonary disease
	Glivec	imatinib	Pulmonary arterial hypertension
	QMF149	indacaterol, mometasone furoate	Asthma, chronic obstructive pulmonary disease
	NIC002		Smoking cessation
Immunology and Infectious Diseases	ACZ885	canakinumab	Cryopirin-associated periodic syndrome (CAPS, lead indication), rheumatoid arthritis, systemic onset juvenile idiopathic arthritis
	Certican	everolimus	Prevention of organ rejection
	ABF656	albinterferon alpha 2-b	Chronic hepatitis C

SBR759		Hyperphosphatemia
SMC021	salmon calcitonin	Osteoarthritis (lead indication), osteoporosis
PTZ601		Hospital bacterial infections
Mycograb	efungumab	Invasive candida
AIN457		Psoriasis
AEB071	sotrastaurin	Prevention of organ rejection

(1) Single pill combination
(2) Breakpoint cluster region-Abelson fusion protein
(3) Important receptor tyrosine kinase protein
(4) Platelet-derived growth factor receptor protein

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Mechanism of action	Formulation	Planned submission dates	Phase I	Phase II	Phase III	Submitted
Direct renin inhibitor and angiotensin II receptor antagonist	Oral	Submitted US, 2009 EU	XXXXX	XXXXX	XXXXX	XXXXX
Dipeptidyl peptidase 4 inhibitor	Oral	Submitted US (approved EU)	XXXXX	XXXXX	XXXXX	XXXXX
Angiotensin II receptor antagonist and insulin secretagogue	Oral	2010	XXXXX	XXXXX	XXXXX	
Direct renin inhibitor, calcium channel blocker (CCB) and diuretic	Oral	2010	XXXXX	XXXXX	XXXXX	
Direct renin inhibitor	Oral	2010	XXXXX	XXXXX	XXXXX	
Dual angiotensin II receptor antagonist and neutral endopeptidase inhibitor	Oral	≥2012	XXXXX	XXXXX		
Aldosterone synthase inhibitor	Infusion	≥2012	XXXXX	XXXXX		
mTOR (5) inhibitor	Oral	Submitted US, EU	XXXXX	XXXXX	XXXXX	XXXXX
Bcr-Abl (2), c-Kit (3) and PDGFR (4) inhibitor	Oral	2009	XXXXX	XXXXX	XXXXX	
Deacetylase inhibitor	Oral	2009	XXXXX	XXXXX		
Microtubule depolymerization inhibitor	Infusion	2010	XXXXX	XXXXX	XXXXX	
Somatostatin analogue	Injection	2010	XXXXX	XXXXX	XXXXX	
Osteoclast inhibitor	Infusion	2010	XXXXX	XXXXX	XXXXX	
Signal transduction inhibitor	Oral	2011	XXXXX	XXXXX	XXXXX	
Tumor vascular disrupting agent	Infusion	2011	XXXXX	XXXXX	XXXXX	
Sphingosine-1-phosphate receptor modulator	Oral	2009	XXXXX	XXXXX	XXXXX	
MT1/MT2 (6) agonist and 5-HT2c (7) antagonist	Oral	2009	XXXXX	XXXXX	XXXXX	
Anti-VEGF (8) monoclonal antibody fragment	Intravitreal injection	2010	XXXXX	XXXXX	XXXXX	
Metabotropic glutamate receptor 5 antagonist	Oral	≥2012	XXXXX	XXXXX	XXXXX	XXXXX
Long-acting beta-2 agonist	Inhalation	Submitted US, EU	XXXXX	XXXXX	XXXXX	XXXXX
Anti-IgE monoclonal antibody	Liquid formulation for injection	Submitted EU, 2009 US	XXXXX	XXXXX		
Long-acting beta-2 agonist and corticosteroid	Inhalation	2009	XXXXX	XXXXX	XXXXX	
Long-acting muscarinic antagonist	Inhalation	2011	XXXXX	XXXXX		
Long-acting beta-2 agonist and long-acting muscarinic antagonist	Inhalation	2011	XXXXX	XXXXX		
Signal transduction inhibitor	Oral	2011	XXXXX	XXXXX		
Long-acting beta-2 agonist and corticosteroid	Inhalation	≥2012	XXXXX	XXXXX		
Nicotine Qbeta therapeutic vaccine	Injection	≥2012	XXXXX	XXXXX		
Anti-interleukin-1b monoclonal antibody	Injection	Submitted EU, US	XXXXX	XXXXX	XXXXX	XXXXX
Growth-factor-induced cell proliferation inhibitor	Oral	Submitted US, (approved EU, Japan)	XXXXX	XXXXX	XXXXX	XXXXX
Interferon alpha-type activity	Injection	2009	XXXXX	XXXXX	XXXXX	
Selective binding of phosphate (Fe(III) containing polymer)	Oral	2010	XXXXX	XXXXX		
Regulator of calcium homeostasis, inhibition of osteoclast activity	Oral	2011	XXXXX	XXXXX	XXXXX	
Carbapenem antibiotic	Infusion	2011	XXXXX	XXXXX		
Antibody fragment vs. fungal HSP90 (9)	Infusion	≥2012	XXXXX	XXXXX	XXXXX	

Anti-interleukin-17 monoclonal antibody	Lyophilisate in ampule	≥2012	XXXXX	XXXXX
Protein kinase C inhibitor	Oral	≥2012	XXXXX	XXXXX

(5) Mammalian target of rapamycin protein
(6) Melatonin receptor subtypes 1 and 2
(7) Serotonin receptor subtype 2c
(8) Vascular endothelial growth factor
(9) Heat shock protein 90

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MODELING THE FUTURE OF DRUG DEVELOPMENT

Novartis scientists are accelerating development of innovative medicines with cutting-edge tools and close cooperation among multi-disciplinary teams to translate fundamental science into treatments. Novartis leads the pharmaceutical industry in completing proof-of-concept studies to confirm a medicine s mechanism of action as well as exploring multiple disease indications before full development begins. A team of Modeling and Simulation specialists is adding competitive advantage by modeling the activity of medicines and vaccines to make better decisions and reduce the painfully high failure rate for new products in clinical trials.

The pipeline of new anticancer medicines at Novartis has expanded rapidly in recent years and during 2008 six innovative drugs reached the pivotal phase of clinical testing a period of intense productivity virtually unprecedented in the field of oncology.

A key milestone came in September when the US Food and Drug Administration (FDA) granted a priority review to *Afinitor* for treatment of patients with advanced kidney cancer who have failed standard treatment. Priority reviews are expedited timelines for FDA evaluation, reserved for therapies with potential to fill significant unmet medical need.

After *Afinitor* was accepted for priority review, the FDA requested clarification of certain data as well as additional data from an ongoing trial in pancreatic neuroendocrine tumors. As a result, *Afinitor* is expected to receive a regulatory decision from the FDA within the first quarter of 2009 for patients with advanced kidney cancer.

Following a separate priority review, the FDA approved *Gleevec/Glivec* as the first therapy to reduce recurrence of gastrointestinal stromal tumors (GIST) after surgery. *Gleevec/Glivec*, a pioneering targeted anticancer medicine from Novartis, already is approved to treat chronic myeloid leukemia, primary GIST and other types of rare tumors.

Regulatory applications for *Afinitor* and *Gleevec/Glivec* also have been filed in the European Union, Switzerland and other countries, and currently are under review.

In addition to late-stage projects, we have a number of exciting early compounds in the oncology pipeline, says David Epstein, Head of the Oncology Business Unit and the new Molecular Diagnostics business at the Novartis Pharmaceuticals Division. Some of those new compounds such as our PI3 kinase inhibitors are first-in-class and have a chance to redefine cancer care across multiple tumor types.

Research and Development teams at Novartis cooperate closely to translate fundamental science into new medicines. The Translational Science group serves as the vital bridge for this teamwork, leading multidisciplinary teams in initial proof-of-concept studies of new medicines in patients. These proof-of-concept studies are designed to confirm the medicine s mechanism of action and explore multiple disease indications before full development begins.

Novartis scientists are accelerating the development of innovative new medicines with cutting-edge tools. Novartis Oncology has built a powerful team to identify and develop biomarkers substances or functions in the body that can be measured to demonstrate safety and efficacy of a medicine, or to identify patients most likely to respond positively to treatment. Biomarkers are a cornerstone of efforts by Novartis to deliver superior treatment. We believe that this is the future of Oncology, and Novartis is addressing that future today, Mr. Epstein says.

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Translational Science also underpins drug development outside the Oncology business, in therapeutic areas known collectively as General Medicines. Trevor Mundel, M.D., Global Head of Development at the Novartis Pharmaceuticals Division, has realigned management, streamlined decision-making and introduced new technologies since taking the helm in early 2008.

Benchmarking studies show that Novartis is the fastest company in the industry by a substantial margin in reaching proof-of-concept, Dr. Mundel says. Yet even if Translational Science has brought us a long way beyond where we were previously, the full impact cannot be realized without addressing the other pieces of the puzzle.

Lean and nimble biotech-style teams that drive early development at Novartis are remarkably effective in confirming whether a new drug works in somebody, somewhere, he adds. But you can t have a highly flexible entity like that tagged onto an entirely rigid, massively bureaucratic end pipe. We have to become leaner and more flexible in our approaches to late stages of development.

Dr. Mundel has delegated a pivotal role to the Modeling and Simulation team at Novartis, one of the largest of its kind in the pharmaceutical industry. The concept is simple: If Boeing and Ferrari can test their engineering feats on the computer before actually building planes and cars, Novartis can model diseases and the activity of medicines and vaccines to make better decisions and lower the painfully high failure rate for new medicines in clinical trials.

The Modeling and Simulation team already is contributing to high-priority development programs in the General Medicines pipeline such as ACZ885, a monoclonal antibody being developed as a treatment for multiple inflammatory disorders. Modeling and Simulation has become the key link between what we do in early exploratory development and the later stages of confirmatory testing, Dr. Mundel says.

For many diseases you can come up with quite nice models of what typically might happen. And because you can do that across some of the most interesting diseases we work in, sparse data that come out of Translational Science can be integrated into the model, he adds. It can give much better utility than the traditional, empirical trial-and-error approach.

AFINITOR: IN THE *GLEEVEC/GLIVEC* MOLD

Afinitor, under investigation for several cancer indications including advanced kidney cancer, epitomizes the new generation of targeted anticancer agents from Novartis modeled on the success of *Gleevec/Glivec*. *Afinitor* works by blocking the function of a protein called mTOR, a master switch in cells that serves as a hub for multiple signaling and metabolic pathways.

The mTOR pathway is mission control for proliferation in virtually every cell in the body, says Jeff Porter, Ph.D., Head of the Development and Molecular Pathways Platform at the Novartis Institutes for BioMedical Research (NIBR). Normally, mTOR is kept under tight control in the cell. But mutations in genes or other biological defects can jam the pathway in the on position, triggering the uncontrolled cell growth and proliferation characteristic of cancer.

It has taken decades to unravel the complex connections between mTOR and cancer-related pathways. *Afinitor* was developed initially as an immunosuppressant to prevent rejection of organ transplants and has been approved for that indication under the brand name *Certican* in more than 40 countries. Novartis began parallel development of *Afinitor* in cancer in 2002. The clinical program focused on patients with advanced kidney cancer who had failed standard

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therapy with treatments targeting the vascular endothelial growth factor (VEGF) pathway.

VEGF pathway inhibitors suppress angiogenesis growth of new blood vessels that tumors need to grow. *Afinitor* hits the VEGF pathway as well, but in a different way and further upstream in the tumor cell, says David Lebwohl, M.D., Head of the *Afinitor* clinical program at Novartis Oncology.

The growing numbers of patients who have failed standard therapy for advanced kidney cancer represent a pressing, unmet medical need. These are patients who have no treatment option, says Alessandro Riva, M.D., Head of Oncology Global Development.

In a study called RECORD-1, the pivotal Phase III trial on which regulatory submissions for *Afinitor* are based, patients whose cancer had worsened despite prior treatment were randomized to receive either *Afinitor* or placebo, an inactive substance made to appear like a medicine. Treatment in both groups continued until cancer once again began to progress. Initial results of RECORD-1 showed treatment with *Afinitor* more than doubled time without tumor growth and reduced the risk of disease progression by 70%. Due to the strength of these initial results, patients in the placebo group were allowed to cross over and begin treatment with *Afinitor*.

Updated results from RECORD-1 presented at the European Society for Medical Oncology Congress in September showed patients receiving *Afinitor* had no tumor growth for nearly five months versus 1.9 months for patients in the placebo group. Importantly, 25% of patients who received *Afinitor* still had no tumor growth after 10 months of treatment.

In a commentary accompanying publication of RECORD-1 results in the UK medical journal Lancet, Jennifer Knox, M.D., assistant professor of medicine at the University of Toronto, observed: A 70% reduction in the risk of disease progression or death is impressive among studies for any advanced cancer and was better than expected [for RECORD-1]. Although some questions remain unanswered, Dr. Knox added: This is strong evidence to support the anti-tumor activity of [*Afinitor*] in this population.

FROM SEQUENTIAL TO PARALLEL

The studies in renal cancer are just the beginning. The program is spearheading an initiative by Novartis Oncology for *Afinitor* to accelerate development of promising new medicines. We re taking a program that used to be fairly sequential and moving up studies in parallel to maximize the opportunity for patients, Mr. Epstein says.

During the past 18 months, Dr. Riva and Novartis medical directors around the world have coordinated studies of *Afinitor* in multiple additional indications. We now have positive results in about a half-dozen indications and we are initiating clinical trials across almost all of them, Mr. Epstein says. It s an example of the urgency we want to instill in our global Development organization. Those new indications range from breast cancer and pancreatic neuroendocrine tumors to gastric cancer and tuberous sclerosis complex, a rare genetic disorder that causes tumors to form in the brain and kidneys, and in severe cases can lead to mental retardation.

At the same time, the success of *Afinitor* in renal cancer offers a key proof-of-concept for another major development program at Novartis targeting PI3 kinase, a large family of enzymes that are important regulators of growth, proliferation and survival in virtually all cells. The PI3 kinase program at Novartis began in the late 1990s and initially focused on respiratory and autoimmune diseases. Those early programs were soon overshadowed by mounting evidence of a link between the PI3 kinase pathway and cancer. The pathway is activated when growth factors bind to receptors on the cell surface. A biological chain reaction carries the signal to the nucleus of the cell, where it stimulates synthesis of proteins needed for growth or nudges the cell-cycle machinery to initiate cell division.

Importantly, mTOR appears to be a node in the downstream branch of the PI3 kinase pathway. Novartis is the only major pharmaceutical company developing medicines targeting both the upstream (PI3 kinase) and downstream (mTOR) branches of the pathway.

The programs reflect a central tenet of NIBR research strategy: attacking multiple targets within a pathway believed to play a major role in a disease like cancer. Two PI3 kinase inhibitors discovered by Novartis have entered early development. Both target PI3 kinase as well as mTOR, while a later generation of more selective PI3 kinase inhibitors is still in preclinical development. There have been lots of debates about whether you want specificity or a dual PI3 kinase/mTOR inhibitor, says William Sellers, M.D., Head of Oncology Research at NIBR. Suffice to say that there are good reasons to have both.

COMBINATIONS AND BIOMARKERS

Combinations incorporating multiple anticancer agents have been the mainstay of oncology for decades, and combinations play a significant role in development programs at Novartis Oncology. Patients need combinations because there are multiple pathways helping their cancers grow, Mr. Epstein says. If you can knock out multiple pathways, there is more chance patients will respond better and live longer.

The broad mechanism of action for *Afinitor* makes it a potential component in many combinations. We are testing multiple opportunities in combination with current standards of care across different tumor types and different phases of the disease, Dr. Riva says. Our priority is to

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make every effort to improve the treatment of patients, and if we can achieve this through a combination of a Novartis drug with one from another company, we are happy to do that.

Novartis and Swiss rival Roche Holding AG have exchanged supplies of medicines for testing as possible combinations, including *Afinitor* with Avastin®, a blockbuster VEGF inhibitor jointly developed by Roche and Genentech Inc. I think we ll see more of this, Mr. Epstein says. As combinations become increasingly important in the treatment of cancer, companies somehow need to work together so that clinical trials of combinations can start as early as possible.

The aggressive biomarker development program at Novartis also is expected to help make new medicines available to patients faster. In late 2008, Mr. Epstein was tapped to lead a new unit focusing on development of innovative molecular diagnostics based on biomarkers.

Changes in biomarkers can be detected earlier or more readily than traditional clinical endpoints, though results based on surrogate markers normally need to be confirmed by long-term outcomes studies.

Another potential application is predicting patient response to drug treatment. Among patients sharing a common diagnosis, some may respond to a medicine while others fail to respond and a third group develops side effects. Unraveling the reason for differences in individual response would enable companies to develop diagnostic tests to help identify those patients more likely to respond to treatment, as well as those more likely to develop side effects.

The need to find surrogate endpoints and biomarkers has been clear in oncology for a long time, Mr. Epstein says. We ve been able to take a big step forward and we have biomarker programs in place for almost every drug that we have in the clinic.

GLEEVEC/GLIVEC AND *TASIGNA*: AN ALLIANCE WITH PATIENTS

The potential new indications for *Gleevec/Glivec*, including adjuvant treatment of GIST, underscore a continued commitment by Novartis to cancer patients with limited treatment options. Another example of that commitment is the development of *Tasigna*, a treatment for patients with chronic myeloid leukemia (CML) who are resistant or intolerant to existing therapies, including *Gleevec/Glivec*.

Tasigna was approved by the United States, the European Union and other countries in 2007. Approval of *Tasigna* provides more comprehensive treatment options for physicians and patients, Mr. Epstein says.

Development was exceptionally rapid: *Tasigna* went from first human trials to regulatory submissions in slightly more than two years. We were able to build on our *Gleevec/Glivec* experience, Dr. Riva says. And just as *Gleevec/Glivec* expanded from initial approval in CML to an

unprecedented number of additional indications, clinical trials have been launched to compare *Tasigna* with *Gleevec/Glivec* in patients with various forms of CML, as well as GIST.

Meanwhile, Novartis Oncology has introduced the CML Alliance, a package of diagnostic tests, programs and materials to enhance patient adherence, help improve outcomes and potentially extend the lives of leukemia patients. These tests, in turn, help physicians reach better outcomes for patients, Mr. Epstein says. Physicians would not normally have access to these tools. By putting them into the hands of doctors who actually use them, we make a real difference and distinguish Novartis from other companies.

The CML Alliance package includes tests for blood-level monitoring of patients treated with *Gleevec/Glivec*, enabling physicians to individualize dosage. Metabolism varies among individuals, and we realized that patients receiving identical doses of *Gleevec/Glivec* had different levels of the drug in their blood, Mr. Epstein adds. That s important because blood levels correlate with outcomes: Most patients with high drug levels do much better than patients with low levels.

In addition, Novartis has worked with the European Leukemia Net, a network of academic institutions and researchers, to develop standard guidelines for treatment of CML patients through the entire cycle of the disease. The guidelines have been widely adopted around the world. In 2009, Novartis plans to launch similar packages for GIST and neuroendocrine tumors, based on the initial CML Alliance model.

GENERAL MEDICINES: A NIMBLE ALTERNATIVE

In both Oncology and General Medicines, Novartis has eluded the declining productivity that has afflicted many rivals in recent years. Between 2000 and 2008, Novartis received the most FDA approvals for new molecular entities of any major pharmaceutical company.

The contribution of Translational Science has enabled Novartis to halve the average time required to reach proof-of-concept in clinical programs. Dr. Mundel is convinced that further improvement can be achieved during Phase II studies in which companies traditionally test a range of doses of a new medicine in search of initial indications of efficacy that can be confirmed in the pivotal Phase III trials.

Phase II is choking the industry, Dr. Mundel says. Often Phase II trials are actually bigger and take longer than Phase III studies, he says. And the failure rate for Phase II across the industry is extraordinarily high

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approaching 80%, according to the latest benchmarking numbers.

Novartis fares better than the industry average because drugs that do not work are filtered out earlier. But the early proof-of-concept strategy also poses challenges. Typically, our early proof-of-concept studies are done in relatively small groups of patients, so the data are sparse. How do we project that into big programs? Dr. Mundel adds.

The traditional answer for pharmaceutical companies would be a huge Phase IIB study. At Novartis, however, Modeling and Simulation provides a more nimble alternative.

Modeling and simulation begins with the creation of a mathematical and statistical model of a medicine acting in parts of the body where the disease occurs. Modelers use data from actual patients, literature data and preclinical animal data to build models, then statistically predict responses to the medicine over time.

In some programs, modeling and simulation can be a springboard directly from the proof-of-concept to Phase III. Our goal is to omit Phase IIB in up to 50% of our programs. In the remaining programs, modeling and simulation will help usto reduce the size, duration and cost, Dr. Mundel says. This is the extension of what people have always hoped to do: rational drug development, or Model-Based Drug Development, to use a term coined by the FDA.

As a Rhodes Scholar, Dr. Mundel studied mathematics at the University of Oxford and later completed graduate studies in mathematics at the University of Chicago. He is rigorous about distinguishing useful applications of modeling and simulation from exaggerated claims made by some proponents.

Models have to be infused with data and a lot of common sense and judgment. They really are dependent on how much you know about the disease and about the precedent for the drug and its mechanism of action, he cautions.

There also are elements of modeling and simulation that approximate guesswork. In particular, modeling and simulation has gotten wrapped up with the hype around systems biology. We aren t trying to model the complete, complex pathway dynamics of systems, which remain highly speculative. We re talking about modeling select components of drug pathways and the more familiar models of pharmacokinetics and pharmacodynamics.

FROM HIGH SCIENCE TO MARKET RESEARCH

The Modeling and Simulation organization at Novartis is headed by Donald R. Stanski, M.D., who, following an academic career in anesthesiology/clinical pharmacology at Stanford University, served as a scientific advisor to the director of the FDA s Center for Drug

Evaluation and Research before joining Novartis in 2005.

Basically we integrate pieces of information in a way that uses mathematics and statistics as a thread to bind, Dr. Stanski says. We want to integrate every piece of knowledge and data to make smarter decisions about whether a molecule is worth developing, and decrease the clinical-trial failure rate in Phase III.

Applications of modeling and simulation at Novartis range from esoteric high science to market research and health economics. To support development of a novel medicine for spinal cord injury, Dr. Stanski s team simulated circulation of spinal fluid, incorporating pulsations generated by heartbeat and respiration, and adjusting the model for the effect of spinal nerve roots on the flow path. The model resolved key questions about administration of the treatment into the spinal space.

Modeling and Simulation also is beginning to work closely with Strategic Marketing on development compounds, assisting in

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preparation of outcomes and health economic analysis, and integrating with portfolio analysis. Still, some of the clearest examples yet of the potential impact of modeling and simulation have come in priority development programs, including the promising monoclonal antibody ACZ885.

ROAD TO REMISSION

ACZ885 targets IL-1 beta, a key weapon in the body s immune system defenses. Excessive production of IL-1 beta is believed to play a role in diseases ranging from rheumatoid arthritis and chronic obstructive pulmonary disease to asthma and certain rare genetic diseases.

Novartis scientists chose to conduct the initial proof-of-concept study in patients with Muckle-Wells syndrome, a rare inherited disease in which a genetic mutation stimulates excess production of IL-1 beta and causes itching skin rashes, daily fever and swollen joints. (Muckle-Wells syndrome and two related disorders are known collectively today as cryopyrin-associated periodic syndromes, or CAPS.)

Muckle-Wells syndrome seemed an ideal candidate for the proof-of-concept because its pathology was uncomplicated, driven by a single, well-defined molecular defect. According to the scientific hypothesis, ACZ885 should bind exclusively with IL-1 beta circulating in the blood, halting excessive production and alleviating symptoms.

In late 2004, Timothy Wright, M.D., and Thomas Jung, M.D., from the Novartis Translational Science Group contacted Professor Philip Hawkins at London s Royal Free and University College Medical School, a world authority on rare diseases such as MuckleWells syndrome. A proof-of-concept study was jointly designed and the first patient received ACZ885 in early 2005. Three more patients were given injections of ACZ885, and all had immediate positive responses lasting, on average, about six months.

Subsequent trials have provided even more evidence of the safety and efficacy of ACZ885 in this rare disease. To date, 69 patients have received the drug, and treatment of the very first patient has continued for more than 3.5 years.

Behind the scenes, the Novartis Modeling and Simulation team, led by Philip Lowe, Ph.D., has played a crucial role in the ACZ885 program. It is the clearest example yet of how modelers can extrapolate sparse data from initial proof-of-concept studies to predictions about larger patient populations or different diseases.

Following the initial study in Muckle Wells syndrome in 2005, the Modeling and Simulation group analyzed data about the action and effects of the treatment in the body; how it is absorbed, metabolized and eliminated; and other measures of patient response.

One key question was whether ACZ885 would merely neutralize IL-1 beta or actually achieve a disease-modifying effect on patients with Muckle-Wells syndrome. Surprisingly, the resulting model indicated ACZ885 was able to decrease the IL-1 beta pathway to near normal for

about six weeks after a single treatment. Modelers then calculated that a single injection every eight weeks would hold the IL-1 beta pathway in check and keep patients with Muckle-Wells syndrome in full remission.

Applying these predictions based on data from only four patients ACZ885 advanced to a confirmatory trial. After achieving clinical remission following a single dose of ACZ885, a total of 31 patients were randomized to receive either three additional injections of ACZ885, eight weeks apart, over the following six months or the identical schedule of placebo injections.

The Modeling and Simulation group predicted none of the patients receiving ACZ885 would suffer flares, or recurrence of active disease, while more than 90% of the control group would have flares. In fact, all patients treated with ACZ885 did remain flare-free during the trial; 81% of the control group suffered recurrences.

This is our Phase III study and the outcome is an example of how powerful modeling and simulation can be for the design of clinical trials, Dr. Jung says. The data provided the foundation of regulatory applications for ACZ885 submitted to authorities in Europe and the US in 2008.

Meanwhile, in line with research strategy at Novartis, the ACZ885 program has expanded to parallel disease indications following the initial successful proof-ofconcept trial. Currently, ACZ885 is being tested or explored as a potential treatment for rheumatoid arthritis, systemic onset juvenile idiopathic arthritis and several other indications.

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AFQ056: PROBING FUNDAMENTAL MECHANISMS IN THE BRAIN

Diseases affecting the brain or central nervous system pose formidable hurdles in drug discovery. In the 1990s Novartis was one of the first major pharmaceutical companies to show an interest in a new family of brain receptors, known as mGluRs. AFQ056, a compound generated by Novartis chemists directed at the receptor target mGluR5, is in clinical trials for treatment of a complication related to therapy for Parkinson s disease. The AFQ056 program is an example of how use of drug candidates can be rapidly re-directed as more is learned about the mechanisms of disease.

Drug discovery rarely is an overnight success.

In 1990, a team of Japanese researchers identified a new class of receptors in the human brain, setting off a scientific race to translate the discovery into new medicines for disorders ranging from drug addiction and anxietyto schizophrenia and Parkinson s disease.

Novartis was one of the first major pharmaceutical companies to show an interest in the new family of metabotropic glutamate receptors, known by the acronym mGluRs. Novartis scientists generated a series of compounds directed at this target. One of these compounds, AFQ056, is directed to a specific subset of the mGluR family, termed mGluR5. An inhibitor of mGluR5, AFQ056 currently is in clinical trials for a complication of therapy for Parkinson s disease.

The story of AFQ056 reflects the innovative research strategy at Novartis. Scientists at the Novartis Institutes for BioMedical Research (NIBR) focus on both where the scientific knowledge leads, and where there is an unmet patient need. As science evolves and more is learned about the mechanisms of disease, the use of drug candidates may be rapidly redirected. The original hope for mGluR5 inhibitors was to treat anxiety. Because anxiety is a very heterogeneous disease in terms of mechanism, however, diseases with a more specific linkage to mGluR5 were sought.

Our approach is to go after diseases where there is unmet need, and we believe we understand enough about the fundamental mechanism to make an impact, says Mark Fishman, M.D., President of NIBR and member of the Executive Committee of Novartis. Once we show a medicine is safe and effective in a homogeneous population, we extrapolate that to subsets of more common diseases.

AFQ056 exemplifies that approach. Scientists from NIBR and the Translational Medicine team that directs early development tested AFQ056 in a series of proof-of-concept studies in humans and steadily narrowed the focus of the program. Based on rodent models and human post-mortem data, the team focused on Parkinson s disease levodopa-induced dyskinesia (PD-LID) as a target indication.

DISORDER OF MOVEMENT

Parkinson s disease is a disorder that usually strikes between the ages of 50 and 60. The hallmarks of Parkinson s disease are disorders of movement. Patients have a hard time initiating movement, steps become short and shuffling, and balance is impaired. Muscle stiffness limits movements and problems with speech are common. Tremor is also common, especially of the hand.

Symptoms of Parkinson s disease appear when brain cells that produce the neurotransmitter dopamine die or become impaired. Standard treatment today is dopamine-replacement therapy with levodopa,

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a natural substance that is converted to dopamine once inside the body. The introduction of levodopa in the 1960s was a revolutionary step in overcoming the symptoms of Parkinson s disease. Novartis has established expertise in the field of Parkinson s disease and markets *Stalevo*, an innovative treatment that combines levodopa with inhibitors of critical metabolizing enzymes.

Unfortunately, the majority of patients treated chronically with levodopa develop dyskinesias, rapid, irregular involuntary movements such as flinging and flailing arms which can be as crippling as the underlying disease. According to the Michael J. Fox Foundation, founded by the Canadian actor who has emerged as a leading spokesman for Parkinson s disease, approximately 80% of patients develop dyskinesias after five to 10 years of treatment with levodopa.

These dyskinesias are particularly prominent among younger Parkinson s disease patients. No effective treatment for levodopa-induced dyskinesias is yet available, and severe cases are treated with surgical methods such as deep brain stimulation. Gaining insight into ways to control or prevent dyskinesia would make a dramatic impact on the daily lives of Parkinson s patients, according to Deborah W. Brooks, a co-founder of the foundation.

PD-LID illustrates the triad of qualities we look for in a proof-of-concept study: a high unmet medical need, compelling scientific rationale and a sound medical hypothesis that can be rigorously tested in patients, says neurologist Donald R. Johns, M.D., Head of Neuroscience Translational Medicine at NIBR.

The AFQ056 project really took off after colleagues from Translational Medicine identified PD-LID as a potential indication, adds Fabrizio Gasparini, Ph.D., the chemist who led the team that discovered AFQ056 and recipient of a 2006 Novartis leading scientist award for his contributions to the program.

Diseases affecting the brain or central nervous system pose exceptional hurdles in drug discovery. We don t understand the physiology of the brain as well as we do other organs. And most major neurological diseases are chronic, debilitating disorders that progress slowly over decades. The triggers are still unknown and we lack effective diagnostic tools, Dr. Gasparini says.

It s also a challenge to deliver medicines into the brain. A barricade of densely packed cells known as the blood-brain barrier protects the brain from common bacterial infections, but it also prevents passage of potentially beneficial treatments. Even when a medicine is able to penetrate the blood-brain barrier, it is difficult to monitor the effects in the brain following treatment, Dr. Gasparini adds. An imaging technique developed by NIBR colleagues showed that AFQ056 penetrates into the brain and binds with mGluR5, and permitted better dosing decisions. That tool has been crucial to the success of the program so far. Still, formidable hurdles remain.

FINE-TUNING GLUTAMATE SIGNALS

Every idea, memory and emotion produced by the human brain is created as a series of electrical and chemical signals transmitted through connected networks of neurons. Neurons transmit these signals to one another at specialized sites of contact called synapses, junctions between two nerve cells. A synapse relays information by releasing chemical messengers, called neurotransmitters, from the sending neuron to the

receiving one where the neurotransmitter binds to related receptors, fitting snugly like a key in a lock. One of the most important neurotransmitters is glutamate, which acts by binding to the glutamate receptors, including the mGluR family.

Proper function of the brain depends on a delicate balance of signaling between excitatory and inhibitory neurotransmitters. Glutamate is one of the principal excitatory neurotransmitters. Too much glutamate signaling leads to imbalances believed to play a role in diverse brain disorders.

mGluR5 is present at key nodes in brain circuitry and under normal conditions and circumstances, mGluR5 functions to fine- tune glutamate transmission, says Graeme Bilbe, Ph.D., Global Head for the Neuroscience Disease Area at NIBR. Inhibition by AFQ056 offers an effective way to modulate the excessive glutamate transmission occurring in the brain regions involved in Parkinson s disease.

As development of AFQ056 progressed, discoveries in fundamental science added support to the hypothesis that levodopainduced dyskinesias were due to excessive mGluR5 signaling. Preparations for the proof-of-concept study of AFQ056 in the treatment of PD-LID were reinforced by the arrival of Baltazar Gomez-Mancilla, M.D., as the Translational Medicine representative on the AFQ056 team. Dr. Gomez-Mancilla brought a unique set of skills in the basic science, clinical expertise and drug development of Parkinson s disease to our interdisciplinary scientific and clinical team, Dr. Johns says.

The successful proof-of-concept study of AFQ056 was completed in May 2008. The dyskinesias were diminished in most patients. While early observations are quite encouraging, this short-term study needs verification in full development. In addition, the proof-of-concept in dyskinesias suggests potential benefit of AFQ056 in treatment of a broader spectrum of disorders linked anatomically with the basal ganglia, the region of the brain that controls movement.

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VACCINES AND DIAGNOSTICS OVERVIEW

KEY FIGURES **(In USD millions, unless indicated otherwise)**	**2008**	**2007**
Net sales	**1 759**	1 452
Operating income	**78**	72
Return on net sales (%)	**4.4**	5.0
Research & Development	**360**	295
As a % of net sales	**20.5**	20.3
Free cash flow	**-226**	-91
Net operating assets	**4 984**	4 801
Additions to property, plant & equipment(1)	**435**	287
Number of associates (FTE)(2) at year-end	**4 774**	4 810

(1) Excluding impact of business combinations

(2) Full-time equivalent positions at year-end

VACCINES DEVELOPMENT PIPELINE

(1) Japanese encephalitis vaccine

(2) H5N1 vaccine intended for use before a pandemic outbreak

(3) Neisseria meningitidis bacteria serogroups A, C, W-135 andY

(4) Flu cell-culture vaccine

(5) Neisseria meningitidis bacteria serogroup B

(6) Collaboration with Intercell (7)Group B Streptococcus

(8) Cytome galovirus, collaboration with AlphaVax

(9) Hepatitis C virus; therapeutic and prophylactic vaccine

(10) Human immunodeficiency virus

NEWS IN 2008

Solid expansion in 2008 supports major investments to advance novel meningitis vaccines as well as to improve manufacturing quality and capacity following 2006 acquisition of Chiron.

Net sales advance 21% (+20% in local currencies) to USD 1.8 billion. Key growth drivers are H5N1 pandemic influenza vaccine deliveries to the US government, pediatric vaccines and steady growth in the diagnostics business.

Operating income advance on higher vaccines volumes and a better product mix that support major Research and Development investments and manufacturing improvement initiatives.

US and EU submissions completed in 2008 for *Menveo* vaccine targeting deadly meningococcal meningitis serogroups A, C, W-135 and Y in patients from age 11 to 55. Trials are underway in children from age two months to ten years. New data in 2008 suggest MenB vaccine, now in Phase III trials, has potential to be first to protect infants as young as six months from B serogroup.

Diagnostics refocuses in 2008 on success in preventing spread of infectious diseases through blood-testing tools. Novartis Molecular Diagnostics, a new business created in 2008 in the Pharmaceuticals Division, to lead Group initiatives in medicine- related diagnostics.

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VACCINES AND DIAGNOSTICS

During 2008, regulatory applications were submitted in Europe, the United States and other countries for *Menveo*, the first of two meningococcal disease vaccines from Novartis in advanced stages of clinical testing. With the broadest portfolio of meningococcal vaccines, Novartis is dedicated to preventing infection from this deadly disease in infants, children and adults worldwide.

The transformation of the Novartis Vaccines and Diagnostics Division advanced in strategic areas during 2008, from regulatory applications for *Menveo*, a promising investigational vaccine against meningococcal disease, to the expansion of production capacity for existing vaccines and in preparation for new launches.

We are building a world-class platform for further growth, says Joerg Reinhardt, Ph.D., Chief Operating Officer of Novartis and member of the Executive Committee of Novartis, who headed the Vaccines and Diagnostics Division until December 1,2008. The vaccine market is set to expand for many reasons: new disease targets, new scientific tools to develop vaccines against those targets, and vaccination of broader age groups adolescents, adults and the elderly.

With its focus on prevention, Vaccines and Diagnostics fits neatly within the diversified healthcare portfolio of Novartis. Along with fields of scientific research that overlap with the Pharmaceuticals Division, Vaccines and Diagnostics benefits from the long experience in biotechnology production at Sandoz, our generic pharmaceuticals Division.

Healthcare is shifting to prevention, and vaccines are an excellent complement to therapeutic medicines, Dr. Reinhardt says. In addition, vaccines have strong support from payors because prevention of disease is almost always more cost-effective than treatment.

MEN VEO: FILLING UNMET NEED

Key milestones in 2008 included the submission of regulatory applications in Europe, the United States and other countries for the investigational vaccine *Menveo*, for vaccination of people from 11 to 55 years of age. *Menveo* is the first of two meningococcal disease vaccines from Novartis at advanced stages of development. The successful launch of *Menveo* and our pioneering meningococcal type B vaccine could potentially save thousands of lives and may provide a steady source of revenue, allowing us to continue investing in our pipeline to discover and develop even more life-saving vaccines in the years to come, Dr. Reinhardt says.

In clinical trials, the *Menveo* investigational vaccine has been shown to elicit a protective immune response against four of the most common serogroups A, C, W-135 and Y of Neisseria meningitidis, also known as meningococcus. These serogroups can cause potentially deadly bacterial infections and account for most cases of meningococcal disease worldwide. Most of the remaining cases are caused by an elusive B serogroup (MenB) of N. meningitidis. The prevalence of N. meningitidis serogroups varies from country to country. In North America, there is a mix of B, C and Y strains, while in the so-called Meningitis Belt across central Africa, 80% of cases are caused by serogroup A. In Argentina,

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serogroup B accounts for 65% of infections; in Brazil, 70% of cases are caused by serogroup C; and recently in Saudi Arabia, serogroup W-135 has accounted for up to 80% of cases.

More than 14 000 people have been vaccinated with *Menveo* during the clinical development program to date. The vaccine also has been shown to elicit a protective immune response in infants, the group most susceptible to meningococcal infections. No currently available quadrivalent vaccine containing four components that stimulate immune responses against different serogroups has demonstrated a strong and lasting immune response for this age group.

Data published in 2008 in the Journal of the American Medical Association (JAMA) showed that *Menveo* generated protection against the four serogroups of N. meningitidis using a vaccination schedule beginning at two months of age. As the first meningococcal vaccine to elicit a strong immune response in infants, *Menveo* could potentially fill a large unmet medical need. Regulatory applications for vaccination of infants with *Menveo* are expected to be submitted to authorities in the European Union in 2009 and in the United States in 2010.

In an editorial accompanying the JAMA publication, Lee Harrison, M.D., Professor of Medicine at the University of Pittsburgh, said the *Menveo* study represents a substantial advance in the vaccine prevention of meningococcal disease because it provides evidence for a well-tolerated and immunogenic conjugate vaccine for infants.

Separately, Novartis presented results of a head-to-head trial of *Menveo* and Menactra®, a quadrivalent vaccine available only in the United States. Menactra® was developed by the Sanofi Pasteur unit of French pharmaceutical group Sanofi-aventis SA.

In the study, adolescents immunized with *Menveo* generated higher levels of antibodies than Menactra® against the A, C, W-135 and Y serogroups; however these higher levels do not necessarily imply that *Menveo* is more protective than Menactra®. In a notable result for serogroup Y among adolescents with low levels of immunity at the time of vaccination, 81% of subjects receiving *Menveo* generated a protective immune response versus 54% of subjects receiving Menactra®.

The US Centers for Disease Control and Prevention recommend routine immunization with a quadrivalent meningococcal vaccine for all adolescents between the ages of 11 and 18 as well as college students living in dormitories and people in other high-risk groups.

PIONEERING SCIENCE

In his JAMA editorial, Dr. Harrison cautioned that despite progress toward comprehensive worldwide prevention of meningococcal disease, much work remains to be done because there still is no broadly protective vaccine against Men B. Novartis is racing to fill that gap with a pioneering MenB vaccine that is a prototype for the use of genomics in vaccine discovery.

Starting with the genome sequence of N. meningitidis, Novartis researchers used computers to search for similarities to known genes and uncovered dozens of potential targets either secreted by the pathogen or located on the bacterial cell surface where they can stimulate an immune response. The list of candidate antigens, or proteins that stimulate immune reactions, was narrowed to three major antigens. These were combined into the multi-component MenB vaccine that has now reached Phase III clinical trials in the European Union, the pivotal round of clinical testing required for regulatory licensure.

More than 20 000 infants will receive the MenB vaccine during the clinical development program. In 2008, Novartis presented results from two studies that supported the vaccine s potential to provide broad coverage to both younger and older infants. MenB causes about 70% of meningococcal disease in Europe and about a third of cases in the United States; infants and toddlers comprise the age group most at risk.

With the broadest development portfolio of meningococcal vaccines in the industry, Novartis is dedicated to preventing infection from the five major causes of this deadly disease in infants, children and adults around the world, Dr. Reinhardt says.

PRODUCTION OVERHAUL

Production quality has been a priority for Dr. Reinhardt and his management team since the acquisition of Chiron Corp. by Novartis in April 2006. Quality lapses at facilities in Liverpool, England, producing flu vaccine had triggered an enforcement action by regulatory authorities and crippled production in the two years preceding the takeover. The division s USD 1 billion investment program over five years spans production sites for flu as well other vaccines.

Construction of a completely new production plant is under way and is the final step in the remediation program at the Liverpool site. We will focus our egg-based flu vaccine production in Liverpool once the new facility is online, probably in time for the 2010-2011 flu season, Dr. Reinhardt says. The new Liverpool facility will have higher capacity than the division s three existing flu vaccine plants put together.

Meanwhile, the plant in Rosia, Italy, has been upgraded in preparation for the launch of *Menveo*, a EUR 40 million investment program. Vaccines and Diagnostics owns the world s first production plant for influenza vaccines based on a revolutionary new cell- culture technology. The plant located in

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Marburg, Germany, and representing a EUR 80 million investment will use modern biotechnology rather than the chicken eggs traditionally used for primary production of influenza vaccines.

Egg-based production requires a lead time of several months for ordering and receiving eggs, which can hinder response to unanticipated demands such as a pandemic, or worldwide outbreak of influenza, caused by the emergence of a new viral strain that is easily transmitted among humans. A second flu cell-culture plant is under construction in the United States, in Holly Springs, North Carolina. The Novartis investment there is expected to exceed at least USD 600 million partly supported by grants from the United States government.

In 2008, a new cycle of expansion began at the Marburg site as Novartis broke ground for a new production facility for rabies and tick-borne encephalitis vaccines in response to increased demand in recent years, as well as for a new building for quality control. The EUR 145 million project is scheduled for completion by the end of 2010 with regulatory approvals and commissioning expected the following year.

INFLUENZA: CORE FRANCHISE

Influenza vaccines are a core franchise at Vaccines and Diagnostics and production for the 2008-2009 season reached almost 70 million doses, unchanged from the previous year but 30% above the level of deliveries in the 2006-2007 flu season. The current flu season has been mild, however, and oversupply of flu vaccine in the United States as well as some European countries sharpened competition and intensified pressure on prices.

In addition to output of seasonal flu vaccine, Novartis is working closely with government and regulatory officials worldwide to support pandemic preparedness efforts. In 2007, Novartis received European Union approval for a mock-up application for *Focetria*, a new vaccine designed for use after the declaration of an influenza pandemic.

Focetria will be manufactured to contain the influenza strain declared at the time of a pandemic by the World Health Organization (WHO). The vaccine will include *MF59*, a proprietary adjuvant, or substance that boosts the immune response to a vaccine. Use of *MF59* could extend the vaccine supply by allowing for smaller amounts of active ingredients, known as antigens, to be used in each dose of the pandemic vaccine compared to vaccines without this additive.

In 2008 Novartis delivered supplies of a prepandemic vaccine to the US government, adding to the strategic stockpile being built in accordance with the US Pandemic Preparedness Plan. The vaccine is based on the H5N1 influenza strain, a potential pandemic virus that has circulated in birds across Asia since the original outbreak of avian flu in Hong Kong in 1999. Since 2003, there have been more than 350 confirmed cases of avian flu in humans but, according to the WHO, there is no evidence yet of sustained human-to-human transmission, a precondition for a pandemic outbreak.

Novartis withdrew its application for a centralized marketing authorization application (MAA) for *Aflunov*, another prepandemic vaccine, when the request by the European Medicines Agency for additional data could not be met within the applicable regulatory timeframe. Further clinical trials are under way after which the MAA will be re-submitted.

Clinical studies have shown that *Aflunov* is protective against the H5N1 strain and offers a degree of protection against other related influenza substrains. *Aflunov* also contains the *MF59* adjuvant that helps strengthen the immune response to the disease. A clinical study published in 2008 underscored the potential benefit of a pre-pandemic vaccine by showing that people immunized six years earlier with a vaccine based on an H5N3 influenza strain and containing *MF59* mounted a protective immune response after a single injection with *Aflunov*. The immune response was broadly cross-protective, covering all variants of H5N1 known to date.

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SANDOZ OVERVIEW

KEY FIGURES **(In USD millions, unless indicated otherwise)**	**2008**	**2007**
Net sales	**7 557**	7 169
Operating income	**1 084**	1 039
Return on net sales (%)	**14.3**	14.5
Research & Development	**667**	563
As a % of net sales	**8.8**	7.9
Free cash flow	**1 066**	1 112
Net operating assets	**13 948**	14 664
Additions to property, plant & equipment(1)	**422**	627
Number of associates (FTE)(2) at year-end	**23 146**	23 087

(1)Excluding impact of business combinations

(2)Full-time equivalent positions at year-end

2008 NET SALES ESTABLISHED VS. EMERGING/UNTAPPED MARKETS (in %)

(1)2008 Sandoz retail business net sales growth in US dollars vs. 2007

NEWS IN 2008

Overall improving performance as Sandoz, a world leader in generic pharmaceuticals, builds up global product portfolio and expertise in difficult-to-make generics. Active in 130 countries covering 90% of world s population. Strong presence in many established countries, while growing rapidly in emerging markets.

Net sales up 5% (+1% in local currencies) to USD 7.6 billion. Improving performance in many markets led by 13% lc growth in Central and Eastern Europe and leading position in Russia largely offset by a 10% decline in the United States from lack of new product launches in 2008.

Operating income rises 4% to USD 1.1 billion thanks to overall business expansion and productivity gains despite reduced contributions from the United States. Investments made in difficult-to-make generics and expansion in emerging markets. Operating margin falls slightly to 14.3% of net sales from 14.5% in 2007.

Emerging and untapped generics markets account for 36% of Sandoz net sales, rising 16% in 2008. Russia ranks as the third- largest Sandoz market, while other markets with low generic utilization rates particularly Japan and some European countries are targeted for expansion.

Difficult-to-make generics provide competitive advantage as more than 25% of 2008 net sales come from these higher-value products. Sandoz pioneering the development of biosimilars (generic versions of approved biotechnology drugs). *Binocrit* (biosimilar epoetin alfa) gains market share in Germany and drives 35% lc growth in Biopharmaceuticals.

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SANDOZ

Sandoz, the generic pharmaceuticals Division of Novartis, is the pioneer in difficult-to-make products that require specialized technologies, complex formulations such as patches or implants, or complex active pharmaceutical ingredients. Vertical integration in-house production from active ingredient to final dosage form has made Sandoz a global leader in anti-infectives as well as biosimilars, follow-on versions of existing biologic medicines that have lost patent protection. Now Sandoz is expanding this vertical-integration strategy to other therapeutic areas to reinforce its leadership in difficult-to-make generics.

Sandoz, the generic pharmaceuticals Division of Novartis, launched the first generic version of the blockbuster antibiotic Augmentin® in the United States in 2003.

Six years later, amoxicillin clavulanate potassium,the generic nameforAugmentin®, remains one of the best-selling products in the Sandoz portfolio. It is a success story in which Sandoz used its specialized technical expertise to create a difficult-to-make product.

Generics are high-quality, cost-effective copies that compete with originator medicines after the patent expires. The availability of generics frees up money for payors to reinvest in new innovative breakthroughs, says Andreas Rummelt, Ph.D., Group Head of Quality Assurance and Technical Operations and member of the Executive Committee of Novartis, who headed Sandoz until December 1, 2008. It s a fundamental trend in healthcare systems around the world.

Sandoz is leading the way in difficult-to-make generics. These are products based on challenging active pharmaceutical ingredients (API) or that require specialized formulations and technologies, ranging from implants and transdermal patches to extended- release tablets or inhalation devices. It is the centerpiece of our strategy, Dr. Rummelt says. Difficult-to-make products already contribute more than 25% of our net sales.

API development and production is an essential platform underpinning the difficult-to-make strategy. Antibiotics are the prototype of this strategy: the Anti-Infectives Business Unit at Sandoz develops and produces APIs used to produce tablets, vials and other formulations known collectively as final-dosage forms.

A proprietary API can secure patent protection, eventually translating into a competitive advantage toward other generic manufacturers. Moreover, in-house API production anchors the supply chain, improving prospects of placing a Sandoz generic in the market on Day One following patent expiration of the originator medicine.

Just as in the case of amoxicillin clavulanate, in-house API played a crucial role in the success of cefdinir, one of the most widely prescribed cephalosporin antibiotics in the United States; Sandoz beat rivals to market and reaped a commercial windfall in 2007.

In turn, vertical integration has been a catalyst for the aggressive push by Sandoz into biosimilars, follow-on versions of existing biologic medicines whose patents have expired. Sandoz is a pioneer in biosimilars. It brought the world s first two biosimilar products to market in the European Union and marketed the first biosimilar in the United States as well. The biotechnology platform we have established in anti-infectives is the foundation for success in biosimilars, says Ernst Meijnders, Head of the Anti-Infectives Business Unit. Once biotechnology capabilities are in place, they can be leveraged in more novel areas.

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Apart from anti-infectives, however, Sandoz has developed proprietary APIs for only about 10% of its products. That clearly isn t sufficient and we are making major investments to build the development capabilities for active pharmaceutical ingredients in other therapeutic classes, Dr. Rummelt adds.

CONTINUOUS IMPROVEMENT

Augmentin® posted net sales of more than USD 2 billion in the year before its main US patents expired, making the medicine a lucrative target for generic companies. Yet daunting technical hurdles deterred many potential generic rivals from entering the market. Augmentin® is a combination of clavulanic acid and amoxicillin, a penicillin- like antibiotic. The addition of clavulanic acid enhances the effectiveness of the antibiotic against many bacteria ordinarily resistant to amoxicillin.

Production of clavulanic acid requires both fermentation and chemistry, Mr. Meijnders says. It was considered a difficult product, and no other companies were able to develop it on a large scale.

Sandoz and Lek Pharmaceuticals, the Slovenian group acquired by Sandoz in 2002, had developed parallel processes for amoxicill in clavulanate API, and optimization of production has continued since the launch of the Sandoz generic. Continuous improvement extends to downstream operations and development of additional formulations.

We have a range of formulations for adults and children, including tablets, extended release forms, capsules and vials, Mr. Meijnders adds.

The Sandoz site in Kundl, Austria, is the hub of anti-infective operations. Production of penicillin began here shortly after World War II and decades of experience have forged a powerful biotechnology platform. Biotechnology and antibiotics are one of those rare occasions where a technology platform and a therapeutic area are a perfect fit, says Mr. Meijnders, who also serves as Head of the Kundl site.

By the time of the amoxicillin clavunalate launch, however, competition in generic antibiotics had begun to thin out, reflecting the special requirements of antibiotics production. Today Sandoz is the only developer and producer of antibiotics in Western Europe or the United States; most competitors are based in low-cost countries in Asia. Very few pharmaceutical companies have continued in the antibiotics business, Mr. Meijnders says.

Complexity of operations is one challenge. Production volume for some APIs produced in custom-built manufacturing plants ranges from tons to thousands of tons per year. You need dedicated facilities and dedicated sites to ensure that no cross- contamination can occur, Mr. Meijnders concludes.

Major pharmaceutical companies aren t necessarily interested in the upkeep and reinvestment required to handle penicillins and cephalosporins as their patents run out. That provides us with supply opportunities.

CENTERS OF EXCELLENCE

In 2007, Mr. Meijnders was tapped to lead a task force reviewing possibilities to expand development of new APIs in therapeutic areas outside anti-infectives. The initiative led to the creation of a separate unit for selection, development and production of APIs used in conventional generic medicines. To lead this new API unit, Sandoz selected Hansjuerg Wetter, Ph.D., former Head of Chemical Operations at the Novartis Pharmaceuticals Division.

Traditionally, generic companies have purchased APIs from outside suppliers and focused their development efforts on final-dosage forms. Hexal AG and its US-based affiliate Eon Labs Inc. the generic high- fliers acquired by Sandoz in 2005 bypassed API development and put only final-dosage forms on the market. By contrast, Lek was a completely integrated company, with development and production of both API and final-dosage forms.

Development activities at the new API unit will focus on a selective portion of the early Sandoz pipeline for which internal development and production could be translated into a competitive advantage, especially for difficult-to-make generics.

We can find suppliers for commodity- type APIs, Dr. Wetter says. We want to focus our efforts on situations where it s doubtful a competitor would supply us; where we have identified a proprietary technology we prefer to keep to ourselves, or where doing so would lead to early market access.

The new unit has set ambitious targets. A project team has identified 40 promising API development candidates and Sandoz aims to have 50 new APIs in development by 2010.

We also are introducing production of starting products for the Pharmaceuticals Division that previously were purchased externally, Dr. Wetter adds. Activities at Sandoz and the Pharmaceuticals Division overlap in other areas as well. Sandoz is making a major push in respiratory medicines and, at the same time, the Pharmaceuticals Division has innovative treatments for asthma and chronic obstructive pulmonary disease in advanced stages of clinical development.

The purely technical issues regarding particle properties of APIs and delivery systems are the same on both sides, and we are all participating in discussions on the development of these inhalation products, Dr. Wetter says.

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BROADEST BIOSIMILAR PROGRAM

Biosimilars are the epitome of difficult-to-make, follow-on products, and Sandoz has more than 25 years of experience in development and production of biologics. Sandoz co-developed and manufactured interferon alpha in Kundl in the 1980s, and has remained one of the world s biggest development and production sites for biologics. Though Sandoz manufactures more than a dozen recombinant proteins on behalf of other companies, that pedigree is not well- known because of confidentiality agreements with customers.

Omnitrope, a biosimilar human-growth hormone, was approved in 2006 by the European Medicines Agency, the main regulatory agency of the European Union, and the US Food and Drug Administration for long-term treatment of pediatric patients who have growth failure, and long-term replacement therapy in adults with growth- hormone deficiency.

In 2008, Sandoz introduced the new *Omnitrope* Pen with a liquid cartridge, providing increased treatment flexibility for physicians and a more convenient dosage form for patients. *Omnitrope* products also offer significant savings compared to the reference product Genotropin® and other recombinant growth hormones.

Epoetin Alfa HEXAL/Binocrit, the first biosimilar epoetin alfa, was approved by the European Union in August 2007.

Additional refinements of the products are in the offing. We have initiated more than 20 clinical studies with *Omnitrope* and *Binocrit*, says Hannes Teissl, Head of the Sandoz Biopharmaceuticals Business Unit. The Sandoz development program for biosimilars includes more than 25 projects, one of the broadest programs in the industry. We have production and development capacity in place, and we have shown that we are able to launch biosimilars, Mr. Teissl says. We are not just talking. We ve proven it.

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CONSUMER HEALTH OVERVIEW

KEY FIGURES CONTINUING OPERATIONS(1) **(In USD millions, unless indicated otherwise)**	**2008**	**2007**
Net sales	**5 812**	5 426
Operating income(2)	**1 048**	812
Return on net sales (%)	**18.0**	15.0
Research & Development	**313**	301
As a % of net sales	**5.4**	5.5
Free cash flow	**995**	772
Net operating assets	**3 179**	3 154
Additions to property, plant & equipment(3)	**160**	209
Number of associates (FTE)(4) at year-end	**13 014**	13 956

(1)Excluding discontinued Consumer Health operations divested during 2007

(2)2007 results include an exceptional USD 97 million of restructuring charges for the Forward productivity initiative

(3)Excluding impact of business combinations

(4)Full-time equivalent positions at year-end

2008 CONSUMER HEALTH MARKET INFORMATION

	OTC	**Animal Health**	**CIBA Vision**
Novartis net sales in USD billions	3.0	1.1	1.7
Novartis sales growth (lc)(1)	3%	3%	7%
Market segment growth(2)	3%	2%	4%
Novartis market share(2)	3.5%	6.0%	20.9%
Global industry rank(3)	4	6	2

(1) 2008 local currency growth vs. prior year

(2) Sources (OTC: Nicholas Hall; Animal Health: Internal analysis; CIBA Vision: Nielsen, GfK)

(3) Sources: Nicholas Hall, Vetnosis, Internal analysis

NEWS IN 2008

Consumer-driven businesses OTC (Over-the-Counter), Animal Health and CIBA Vision provide trusted and differentiated products to enable healthy lifestyle choices. Sustained Research and Development investments and geographic expansion are strengthening globally competitive positions.

Net sales grow 7% (+4% in local currencies) to USD 5.8 billion, led by the turnaround in CIBA Vision. Sharp rise in operating income, up 29% to USD 1.0 billion, comes from the strong business expansion and productivity gains from the Forward initiative. Operating margin in 2008 improves 3.0 percentage points to 18.0% of net sales.

OTC delivers above-market growth in many markets particularly in high-priority emerging markets thanks to expanding presence of strategic brands. Decline in the United States reflects changes in consumer spending that have affected this industry.

Animal Health, ranked number six in its industry, expands companion-animal business through product innovation and focus on key countries. Global farming crisis hampers growth of products for farm animals.

CIBA Vision benefits from launches of new contact lens products in the United States and other key markets, overcoming supply challenges in 2007 and strengthening its number two industry ranking. New product launches include both daily disposable lenses as well as weekly/monthly disposable lenses.

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CONSUMER HEALTH

Development of parallel, over-the-counter (OTC) versions of prescription-only medicines has been a driving force in robust growth of the OTC Business Unit at Novartis. The blockbuster prescription painkiller *Voltaren* was the prototype of prescription-to-OTC switches. Dynamic growth of *Voltaren* as an OTC brand as well as a prescription medicine underscores the positive synergy that can help sustain product franchises past patent expiry.

During the late 1990s, as basic patents on the Novartis painkiller *Voltaren* began to expire in countries around the world, the blockbuster prescription medicine embarked on a new, parallel path as a self-medication brand.

The additional approval of *Voltaren* as an over-the-counter (OTC) product underscored the strong commitment of Novartis to one of the most dynamic segments of the healthcare industry. OTC products can be purchased without a doctor s prescription at pharmacies or other retail outlets, and that ready availability enhances access to a familiar medicine such as *Voltaren*.

Increasingly, knowledgeable consumers rely on OTC products to medicate common ailments and make healthy lifestyle choices. Moreover, because OTC products are not usually entitled to reimbursement, self-medication allows payors to conserve scarce funds for prevention and treatment of more serious diseases.

OTC products are familiar in North America and Western Europe, but self-medication is less well-established in parts of Asia, including Japan, and in many emerging markets. Therefore, the OTC Business Unit at Novartis is focusing on geographic expansion as well as innovation to accelerate growth.

Novartis currently ranks fourth globally by sales among OTC manufacturers, but has been the fastest-growing company among the top five, posting compound annual average growth of 12.5% since 2003. Seven Novartis OTC brands have worldwide sales of more than USD 100 million, but OTC-switch brands have been the driving force behind the strong growth of recent years. Along with *Voltaren*, Novartis has developed and introduced OTC versions of the anti-fungal medicine *Lamisil* and of the *Nicotinell* smoking-cessation patches.

The next major switch from prescription to OTC will involve a blockbuster medicine that originated outside Novartis laboratories. In 2005 Novartis acquired rights to switch and commercialize Prevacid®, a prescription-only (Rx) medicine in different dosage forms currently used to treat a number of gastric acid-related disorders, including heartburn. Limited to the United States, the agreement gives Novartis the rights for product development, design and conduct of clinical studies and regulatory submissions to the US Food and Drug Administration (FDA) for a prescription-to-OTC switch of the Prevacid® products.

Preparations in support of the biggest launch in recent years by the OTC Business Unit continue on schedule. Over-the-counter Prevacid® is expected to become the second-biggest OTC brand after *Voltaren* based on projected sales, says Larry Allgaier, Global Head of the OTC Business Unit. The total number of prescriptions written for prescription-only Prevacid® in the last decade has surpassed all other heartburn brands.

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IDEAL CANDIDATE

The most promising switch candidates are medicines with strong records of safety and efficacy in indications that can be self- diagnosed and treated effectively and safely by consumers. *Voltaren* qualified on all counts.

The Pharmaceuticals Division of Novartis already had developed *Voltaren Emulgel*, a convenient topical gel formulation. *Voltaren Emulgel* is effective and safe, says Barry Cohen, Vice President and General Manager, Global Pain Category, at the OTC Business Unit. It was an ideal product to make more accessible to patients to treat their backache, shoulder, neck and joint pain, and other muscle aches and pains. Consumers usually don t go to the doctor to treat these types of pains. Unless it s really bad, they typically go right to the pharmacy for an OTC remedy.

The OTC version of *Voltaren Emulgel* was first launched in Italy and Germany, and broader access made the product even more successful. It is now available over- the-counter in more than 40 countries and since 2000 the *Voltaren* OTC franchise has posted a compound annual growth rate of more than 15%.

Prescription *Voltaren Emulgel* has remained on the market in many countries and continues to grow, underscoring the positive synergy between prescription-only and OTC medicines. People expected that switching *Voltaren Emulgel* would cause sales of the prescription products to decline, but promotion of the OTC version to consumers has actually helped sustain the prescription franchise long past the point of patent expiry, says Carl Ward, Global Vice President of New Growth Opportunities and OTC Switches at the OTC Business Unit. Clearly, the brand and medical heritage of prescription *Voltaren* is a critical part of what makes pharmacists willing to recommend the OTC product.

BROADENING THE FRANCHISE

A steady stream of new formulations is another key reason for the success of OTC *Voltaren*. For all the success of the topical gel, a non-prescription tablet formulation was essential to make *Voltaren* a leading global brand. In the OTC analgesic category, the market for tablets is three times as large as topical analgesics, and the bulk of the prescription *Voltaren* business is tablets, Mr. Cohen says.

OTC products normally are less potent and approved for different indications than the original prescription versions. For example, as a prescription tablet the antifungal *Lamisil* is used to treat infections of fingernails or toenails. OTC *Lamisil*, however, is used at lower doses in a topical form to treat athlete s foot. *Nicotinell* smoking-cessation patches prescribed by physicians come in strengths matched to nicotine intake of heavy smokers; OTC versions of the patch are used by people who smoke fewer than 20 cigarettes per day.

The initial tablet formulation of OTC *Voltaren* was 12.5 milligrams (mg), half the lowest dose of prescription *Voltaren* tablets. The 12.5-mg tablet was a good way to enter the tablet segment and gave us some uplift, but it wasn t driving the type of results we were looking for, Mr. Cohen acknowledges. So we started working with the Pharmaceuticals Division to determine how we could best switch the 25-mg prescription dose to OTC status.

In 2006 regulatory authorities in Italy approved the 25-mg *Voltaren* tablet as an OTC product and regulators in Germany followed suit the next year. Sales of the new OTC 25-mg tablet have climbed rapidly in both markets. It s got the trusted *Voltaren* name and what pharmacists view to be a highly efficacious, but safe, dose, Mr. Cohen adds. We are aggressively pursuing regulatory submissions for the OTC 25-mg dose in other countries. And we have case studies showing that our continued support of the OTC tablets is helping sales of prescription- only *Voltaren* tablets, as well. It s really a win-win.

Voltaren now is the fourth-largest OTC analgesic worldwide and the fastest-growing among the top 10 global OTC analgesic brands. We ve achieved that despite the fact that we are mainly a topical franchise while the majority of consumers around the world use primarily systemics, Mr. Cohen says. And OTC *Voltaren* still isn t available in the world s two biggest self- medication markets for topical analgesics, the United States and Japan.

The OTC franchise has preserved the *Voltaren* brand heritage focusing on body pain and the ability of *Voltaren* to restore mobility as well as relieving pain. *Voltaren* is the body- pain medicine, Mr. Cohen says. That s how doctors and pharmacists know it.

A new product launched in 2008 perpetuated the *Voltaren* heritage while extending the OTC franchise in new directions. Novartis launched *Volta flex* in several countries, including Germany and Switzerland. *Voltaflex* includes the dietary supplement glucosamine, which helps provide relief from the pain caused by osteoarthritis and may help slow down the evolution of the disease. The message to consumers is that *Voltaflex* helps to restore flexibility and thus helps with mobility. That s the ultimate benefit to the consumer: Even if you have arthritis you can get out and be active walk and play golf or tennis, Mr. Cohen says.

JAPAN AND THE UNITED STATES

Markets in Asia use fewer OTC medications than developed countries in the West. Growth of Japan s OTC market has been anemic in recent years, but switches of three medicines since 2003 have enabled Novartis to outgrow the market and gain market share. Those successful switches

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have galvanized a radical shift in strategy in which Novartis is bucking conventional wisdom and establishing independent OTC sales and marketing, as well as research and development functions, in Japan. By comparison, the OTC operations of virtually all other international companies are joint ventures with local partners.

Japan is an extremely important market, and working at arm s length with local partners hasn t been as successful as we would have liked, says Charlie Hough, OTC Region Head Asia Middle East and Africa. We are committed to investing here and building our own business, gaining a foothold in the market and making things happen quickly.

Since ending the most recent partnership, Novartis has won approval for two prescription-to-OTC switches: *Nicotinell* nicotine replacement patches and *Zaditen*, an antiallergy and antiasthma drug widely used by patients and physicians in Japan.

Ultimately, pursuing the partnership approach would limit the potential of our brands, Mr. Allgaier says. With *Lamisil*, *Zaditen*, *Nicotinell* and now *Voltaren* coming, we have a responsibility to grow these Novartis assets and to optimize their potential, both for self-care of Japanese consumers and financially for Novartis.

For almost a decade, *Nicotinell* has been the only prescription patch approved by Japanese authorities for nicotine- replacement therapy. It was the only nicotine patch that consumers and pharmacists were even aware of, Mr. Hough says.

The proportion of smokers in Japan remains high: 53% of adult men and 13% of adult women smoke. The Japanese government raised tobacco taxes in 2006, and another increase is expected in 2009.

Along with the 2006 tobacco-tax hike, the government agreed to reimburse most of the cost of *Nicotinell* treatment in a move intended to encourage smokers to quit. It s very unusual in Japan for the government to proactively decide to reimburse a prescription product that hadn t been funded previously. Typically, decisions go in the reverse direction, Mr. Hough says.

Novartis had filed regulatory applications in 2005, seeking approval to launch lower-dose OTC versions of *Nicotinell* patches. Following a protracted review, the government approved that application in June 2008 along with similar applications from two other international pharmaceutical companies. Novartis launched OTC *Nicotinell* patches six weeks ahead of competitors and gained market leadership. We still have the prescription *Nicotinell* patches on the market as well. We re competing in both markets, Mr. Hough says.

OTC *Nicotinell* patches are differentiated from prescription patches by dosage. The strongest prescription patch targets people who need a doctor s intervention because they may be heavier smokers or have smoked for a very long time. By contrast, the OTC *Nicotinell* patch is suitable for people ready to quit smoking without a doctor s guidance.

To emphasize the role of pharmacists in correct use of the OTC *Nicotinell* patch, Novartis has held more than 100 educational sessions with pharmacists around Japan. We tell pharmacists that when someone walks in and wants to quit smoking, they should be cautious about recommending the OTC patch unless they are convinced that the person can quit without a doctor s intervention and guidance, Mr. Hough says. Someone smoking 30 to 40 cigarettes a day for the past 20 years should probably see a doctor and start with the prescription *Nicotinell* program. There would be too great a drop in nicotine intake with the OTC patch, and less likelihood to get the full benefit of nicotine-replacement therapy.

OTC *Zaditen* was launched in late 2007 as an allergy product, available as eye drops and a nasal-spray formulation as well as capsules. Strong sales during the peak 2008 allergy season catapulted *Zaditen* to Japan s third-largest OTC allergy product. It s not that easy to jump in with a new OTC brand against some pretty strong competitors, Mr. Hough says. A lot of the success of *Zaditen* is because of the prescription halo. With *Nicotinell* but particularly with *Zaditen* when our sales force visits a pharmacy and begins talking about our brands, there already is high awareness and a lot of credibility.

Voltaren also has a strong position as a prescription medicine in Japan and is an obvious candidate among the pipeline of potential switch products. With *Voltaren*, we would start with extremely high awareness in Japan, and a positive image with both physicians and consumers, Mr. Hough adds. That helps us jump right out of the gate.

In the United States, the OTC Business Unit submitted a regulatory application two years ago seeking FDA approval of OTC *Voltaren* gel. The application included results from clinical trials involving more than 900 patients with osteoarthritis in a hand or knee. In two efficacy studies and a 12-month safety study, *Voltaren* Gel significantly reduced pain from hand and knee osteoarthritis and that pain relief was sustained through the end of treatment.

During late 2007 the FDA approved *Voltaren* Gel 1%, though as a prescription- only treatment for pain associated with osteoarthritis. It was the first topical prescription treatment approved by the FDA for the indication and the first new medication approved in the United States for treatment of osteoarthritis since 2001.

In March of 2008 Novartis licensed US marketing and distribution rights to *Voltaren* Gel to Endo Pharmaceuticals Inc., a company specializing in prescription pain products. Under the agreement, Novartis received an upfront cash payment of USD 85 million, retains the OTC-switch rights and will receive royalties on net sales of *Voltaren* Gel in the United States. As experts in prescription pain medication, Endo will help us build the *Voltaren* brand in the US, Mr. Ward says.

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CORPORATE CITIZENSHIP

Corporate Citizenship at Novartis is an integral part of how we operate and a key to our success.

Our Corporate Citizenship commitment rests on four pillars:

Patients

Novartis seeks to ease suffering and enhance the quality of life for patients, including those who cannot afford treatment.

People and Communities

We strive to provide our associates with the safest possible workplaces, and to promote their health and well-being. We are an integral part of the communities that host our operations.

Environment

Careful stewardship of natural resources, particularly tight control of waste, greenhouse-gas emissions, and energy efficiency is important to Novartis.

Business conduct

We strive for high performance with integrity.

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CORPORATE CITIZENSHIP KEY PERFORMANCE INDICATORS

Indicator(1)	2008	2007	2006	2005	2004
Economic(2)					
Net sales in USD billions	**41.5**	38.1	34.4	29.4	25.7
Net income in USD billions (% of net sales)	**8.2 (20)**	6.5 (17)	6.8 (20)	5.8 (20)	5.4 (21)
Research & Development in USD billions (% of net sales)	**7.2 (17)**	6.4 (17)	5.3 (15)	4.8 (16)	4 (16)
Purchased goods and services(3) in USD billions (% of net sales)	**20.3 (49)**	19.4 (51)	15.8 (46)	13.3 (45)	11.2 (44)
Personnel costs in USD billions (% of net sales)	**10.6 (25)**	9.9 (26)	8.7 (25)	7.5 (25)	6.5 (25)
Taxes in USD billions (% of income before taxes)	**1.3 (14)**	0.9 (13)	1.2 (15)	1.0 (14)	1.0 (16)
Dividends in USD billions (% of net income)	**4.3 (53)**	3.3 (51)	2.6 (38)	2.0 (35)	2.1 (39)
Cash returned to shareholders via share repurchases in USD billions (% of Group total net income)	**0.3 (0)**	4.7 (39)	0 (0)	0.5 (8)	1.7 (32)
Share price at year-end (CHF)	**52.70**	62.10	70.25	69.05	57.30
Patients					
Access to medicine(4): value in USD millions	**1 259**	937	755	696	570
Access to medicine(4): number of patients reached [million]	**74**	65.7	33.6	6.5	4.25
People and Communities					
Number of full-time equivalent positions	**96 717**	98 200	100 735	90 924	81 392
Resignations (incl. retirements), separations, hiring (% of associates)	**-10, -5, 14**	9, 4, 17	8, 4, 19	8, 4, 16	7, 3, 15
Women in management(5)(% of management)	**37**	35	31	28	
Lost-time injury and illness rate (LTIR)(7) [per 200 000 hours worked](2)	**0.34**	0.42	0.45	0.51	0.47
Total recordable case rate (TRCR)(6) [per 200 000 hours worked](2)	**1.08**	1.41	1.43	1.34	0.99
Transportation-related injuries leading to lost time	**77**	92			
ISO/OHSAS or EMAS certification (as % of production)	**59**	63	63		
Environment(2),(8)					
Water use (excludes cooling water) [million m(3)]	**15.0**	15.4	15.2	15.0	14.4
Energy [million GJ]	**16.9**	16.7	16.4	15.3	13.8
Emission CO2/GHG, Scope 1: Combustion and processes [1000 t]	**404**	408	408	383	372
Emission into air: halogenated and nonhalogenated VOCs [t]	**1 818**	1 892	2 021	1 979	1 316
Total operational waste not recycled [1000 t], hazardous and non-hazardous	**154**	177	156	115	97
Ethical Business Conduct					
Number of associates trained in 2008 on Code of Conduct (e-learning courses)(9)	**15 990**	16 697	14 574	33 000	
Managers completing certification on Code of Conduct	**26 750**	27 000	23 000	20 000	
Cases of misconduct reported/substantiated(10)	**884/231**	906/390	651/320	442(11)/240(11)	7(12)/7(12)
Dismissals/resignations (related to misconduct)(10)	**162**	221	153	131(11)	7(12)
Number of suppliers	**228 769**	228 558			
Number of suppliers informed of Novartis Third-Party Guidelines (Annual sales of more than USD 10 000)	**28 792**	61 715	42 200	39 000	30 000
Number of suppliers to confirm key standards(13) (self-declaration)	**1 157**	1 377	8 600	5500	4600

(1) Data reported in the Ethical Business Conduct (except Number of suppliers items) and Health, Safety & Environment sections (except Lost-time injury and illness rate) include the entire Group; Data reported in Number of suppliers items excludes the Vaccines and Diagnostics Division
(2) All items relate to continuing operations, unless stated otherwise
(3) As included in the Group s Value Added Statement
(4) See table on page 72 (Access-to-medicine table)
(5) Management defined locally; the actual reporting relationship of these executives is to executives and/or the boards of directors within the companies that employ them
(6) Includes all work-related injury and illness, whether leading to lost time or not
(7) Excludes data for contractors
(8) Details see: www.novartis.com/hse
(9) 2008 figure includes new associates and other associates not previously trained
(10) Figures of previous years have been updated to reflect completion of outstanding investigation
(11) From April to December 2005
(12) From October 2003 to September 2004
(13) In 2007 Novartis modified financial requirements for self-declarations by suppliers, focusing on suppliers with the highest business volumes and resulting in a significant decline in the number confirming key standards

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NEWS IN 2008

OVERVIEW	Corporate Citizenship at Novartis rests on four pillars: Commitments to Patients, to People and Communities, to the Environment and to Ethical Business Conduct.
PATIENTS	Treatments worth USD 1.26 billion are contributed through access-to-medicine programs in 2008, reaching 74 million patients in need.
	In April 2008, Novartis announces a 20% average reduction in the price of *Coartem* tablets made possible through efficiency gains in production at state-of-the-art facilities in China and the United States.
	In December 2008, Swiss health authorities approve a new pediatric formulation of *Coartem* that will enhance taste and convenience for young children who are especially vulnerable to malaria. The dispersible formulation is a joint development by Novartis and Medicines for Malaria Venture, a nonprofit foundation dedicated to the development of affordable new antimalarials.
PEOPLE AND COMMUNITIES	In Brazil, the local Novartis organization adds more than 80 disabled people to its payroll, in line with national legislation to step up recruitment of people with disabilities; more than 20% of the new disabled employees at Novartis are sales representatives, calling on healthcare professionals.
ENVIRONMENT	Novartis issues Energy Excellence guidelines for buildings and equipment worldwide, aiming to ensure efficient, cost-effective and climate-conscious use of energy.
BUSINESS CONDUCT	The Novartis Pharmaceuticals Division updates and broadens its Business Practices Policy to set additional global standards for both promotional and non-promotional activities, such as interactions with healthcare professionals, patients and the donation of grants.
	Novartis again achieves top-level positions in influential rankings and is named healthcare super sector leader in the 2008 update of the Dow Jones Sustainability World Index; moves up five positions, to number 20, in the Barron s magazine list of the world s most respected companies; ranks number two among pharmaceutical companies in Fortune magazine s list of World s Most Admired Companies and is again included in the 2008 World s Most Ethical Companies list from Ethisphere Institute.
	Novartis also receives the China Charity Award, the country s highest honor, ranking number one in the category Most Caring Foreign-Invested Enterprise. The award, established by the Chinese Ministry of Civil Affairs, recognizes social responsibility programs at Novartis, especially immediate and sustained support of relief efforts in the wake of the earthquake that struck western China in May 2008.

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CORPORATE CITIZENSHIP

Corporate Citizenship at Novartis begins with our ability to innovate. The more successful we are at discovering, developing and marketing new medicines and vaccines, the greater benefit we can offer patients, healthcare professionals, associates, shareholders and other stakeholders. During 2008, medicines and vaccines from Novartis were used to treat and protect more than 850 million people around the world, according to internal estimates.

Innovation is the essence of our mission at Novartis: to discover and develop innovative products to prevent and cure diseases, to ease suffering and to enhance the quality of life.

Novartis has a proud legacy of pioneering discoveries to treat major diseases, from cancer and mental disorders to organ transplantation and cardiovascular disease. In 2008, Groupwide research and development expenditures climbed 12% to USD 7.2 billion, representing 17% of net sales. Novartis research labs rank among the most prolific in the healthcare industry: Between 2000 and 2008, the US Food and Drug Administration (FDA) approved more new medicines from Novartis than any other major pharmaceutical company.

During 2008, medicines and vaccines from Novartis were used to treat and protect more than 850 million people around the world, according to internal estimates. If all the patients reached by Novartis in 2008 stood shoulder-to-shoulder, the line would circle the earth 11 times.

The pharmaceutical industry has made major contributions toward improving both quality and length of life. According to estimates, more than 70 million people in the United States have high blood pressure and more than 300 000 Americans die each year from stroke, heart attack and heart failure associated with high blood pressure. More than 4 million Americans with high blood pressure were treated with *Diovan* in 2008. An external study showed that treament with *Diovan* is estimated to have prevented more than 60 000 strokes, heart attacks and cases of heart failure, avoiding more than USD 400 million in hospitalization costs that year.

While such gains are impressive, society faces enormous challenges due to aging populations, sedentary modern lifestyles and the explosive spread of chronic diseases, not only in developed nations of North America and Western Europe, but also in emerging countries on other continents.

A study of the economic burden of chronic disease from the Milken Institute, an independent economic think tank based in the United States, acknowledges that dramatic improvements in therapies and treatment have led to higher quality of life, less disability and lower rates of mortality.

The study s authors caution that, even as treatment outcomes and mortality have been improving, rates of chronic disease are steadily increasing and, if left to grow unchecked, threaten to cancel out gains. They add: Reducing the avoidable costs associated with these [chronic] conditions is central to meeting the twin challenges of promoting affordable healthcare and fostering continued economic growth.

Our purpose is to change the trajectory of some of these chronic diseases and their impact on individuals and society,

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says Daniel Vasella, M.D., Chairman and Chief Executive Officer of Novartis. The Milken Institute report underscores the enormous economic impact that innovation can have on society in addition to benefits for individual patients, Dr. Vasella adds.

INNOVATION: SCIENTIFIC MARATHON

Corporate Citizenship at Novartis begins with our ability to innovate. The more successful we are at discovering, developing and marketing new medicines and vaccines, the greater benefit we can offer patients, healthcare professionals, associates, shareholders and other stakeholders around the world.

Our commitment to innovation is not without risk. Only one out of 10 000 compounds synthesized in Novartis Group labs ever reaches the market. It can take years even decades to identify biological targets, unravel the roles they are believed to play in diseases and then synthesize a chemical compound or design a biologic therapy that inhibits or activates the target. That achievement is just the beginning. On average, another five years of preclinical testing is required before regulatory authorities allow the new medicine to be tested in humans, and subsequent clinical trials and registration eat up an additional seven years. The cost of that scientific marathon, on average, exceeds a billion dollars for each novel treatment that reaches the market.

At the Novartis Institutes for BioMedical Research (NIBR), scientific opportunity and unmet medical need are the prime criteria by which potential programs are judged. One measure of that strategy is that nine Novartis medicines have been designated as orphan products in Europe during the past five years. The orphan designation is a status reserved for medicines used to treat rare diseases, and entitles the manufacturer to a period of market exclusivity if development and testing are successful.

We do work on rare diseases, first and foremost to improve the lives of patients and their families, says Mark Fishman, M.D., President of NIBR and member of the Executive Committee of Novartis. But by no means do we study only rare diseases, he adds.

The observations we make in rare diseases often can be extrapolated to more common diseases. So we anticipate that almost all of these medicines will find a place in broader markets. (For other examples of NIBR s research strategy, see pages 35-36.)

Along with rare diseases, some of the world s biggest killers such as malaria, tuberculosis and dengue fever have often been overlooked because they afflict predominantly poor countries that lack funds to pay for modern medicines. To address the dilemma of these neglected diseases, Novartis in 2003 founded a pro bono research institute in Singapore in partnership with the city-state s Economic Development Board. The Novartis Institute for Tropical Diseases (NITD) is applying the most advanced techniques and tools of biomedical research to dengue fever, drug- resistant tuberculosis and malaria. Any therapies discovered at the institute will be made available to poor patients without profit.

In 2007, Novartis extended the NITD model to vaccines, creating the Novartis Vaccines Institute for Global Health (NVGH), based in Siena, Italy. NVGH is the first such institute with a nonprofit mission established by a major vaccine manufacturer. All vaccines developed by the institute will be provided at an affordable and accessible price to populations of developing countries. (For more about NVGH, see page 71.)

PATENTS SAVE LIVES

Patents are rights granted to anyone who invents a new product, a new process or a new use, such as a novel indication for a

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known medicine. Patent protection lasts at least 20 years from the date the patent application is filed, which is usually right after the molecule is discovered, at the beginning of the research process. That is the reason why patent life in the pharmaceutical industry is only 11 years, on average, because of the years of testing required to bring a new medicine from the laboratory to the pharmacy shelf.

For research-based organizations such as Novartis, patents and intellectual property systems are vital to our ability to continue developing innovative medicines in the future. Robust patent systems help patients by stimulating the long-term research and development efforts needed to create groundbreaking therapies.

Strong patent and other intellectual property rights are critical in the pharmaceutical industry, where developing medicines is a very high-risk endeavor. Indeed, weakening intellectual property protection in some countries represents a vexing dilemma to Novartis given our strategic focus on innovation.

Patents are the foundation for sustained investment in research and development, says Thomas Wellauer, Ph.D., Head of Corporate Affairs and member of the Executive Committee of Novartis. Novartis and other companies are spending billions of dollars every year but that money will dry up very quickly without any prospect of an economic return.

Some claim patents are in direct conflict with access to medicines. *Coartem*, the pioneering malaria treatment from Novartis, demonstrates that patents and access are not mutually exclusive. In partnership with the World Health Organization and other international organizations, Novartis provides *Coartem* for public-sector use in developing countries at no profit.

The *Coartem* program is an example of how public health emergencies can be effectively addressed through a collaborative approach among industry, governments and nongovernmental organizations. (For an update on the malaria program see page 73.)

HUMAN RIGHTS: LIVING UP TO COMMITMENTS

In December 2008, the United Nations marked the 60th anniversary of the Universal Declaration on Human Rights, the cornerstone of international human rights law. Novartis was one of the first companies to adopt a formal policy statement committing to support the protection of human rights, and our company has been publicly acknowledged by important stakeholders in this field as a leader in best practice.

Raising ethical business standards throughout our sphere of influence is a key principle of our commitment to the United Nations Global Compact, which asks companies to embrace, support and enact a set of core values in the areas of human rights, labor standards, the environment and efforts to combat corruption.

Human rights are essential elements of Corporate Citizenship, and responsibilities related to human rights have been integrated into corporate practices to ensure we live up to our commitments. Novartis has remained at the forefront of initiatives with special relevance to the pharmaceutical industry, ranging from access to medicine in the developing world to corporate activities that contribute to adequate standards of living and other economic, social and cultural rights.

Novartis was one of the first global enterprises to use the Human Rights Compliance Assessment, a tool for internal due diligence, in cooperation with the Danish Institute for Human Rights. The first pilot assessments examined Novartis operations in Turkey and Taiwan; a third assessment was conducted in South Africa in 2008 and the next assessment is scheduled for China in 2009. Testing the tool in various operational and cultural settings helped to adapt it to pharmaceutical-specific issues. It also increased awareness about human rights and triggered concrete measures, including more explicit policies regarding religious practices, improved infrastructure for associates with physical disabilities, and increased training about appropriate job interviews.

Novartis interacts with an increasingly complex map of stakeholders with diverse sometimes conflicting expectations. To navigate amid such contradictory demands, Corporate Citizenship is managed actively across countries and businesses and is ingrained in our commitments to patients, to people and communities, to the environment and to ethical business conduct.

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CORPORATE CITIZENSHIP: TARGETS AND RESULTS FOR 2008 AND TARGETS FOR 2009

UN Global Compact		
Targets 2008	**Results 2008**	**Targets 2009**
Publish a case study about Corporate Citizenship at Novartis. Continue to look for opportunities to support the United Nations Global Compact in shaping projects and opportunities for maximum impact.	Delivered a case study on developing new markets in rural India from a human rights perspective that will be included in a Harvard Business School publication. Supported the first UN Global Compact Leading Companies Retreat in Boston (US).	Participate in the Human Rights Working Group of the UN Global Compact to advance thinking on compliance assessments for human rights as well as concepts for access to medicine.
Respect for Human Rights		
Targets 2008	**Results 2008**	**Targets 2009**
Pilot a Human Rights Compliance Assessment in an additional country and develop a pharma specific version of the assessment. Support the Business Leadership Initiative on Human Rights (BLIHR) in development of an online tool to help companies assess and address challenges related to human rights. Contribute to the new round of discussions about business and the right to health.	Conducted the third full application of the tool at Novartis South Africa and supported the Danish Institute for Human Rights to test proposed elements of a pharma-specific version. Built part of the steering group to develop the prototype of the online BLIHR matrix, presented at the 60th anniversary of the Universal Declaration of Human Rights. Published article on corporate responsibilities for access to medicine in the Journal of Business Ethics.	Test the tool for assessing human rights compliance in a fourth country and continue to facilitate the development of a pharma-specific version by sharing the pioneering experience. Test the BLIHR Matrix tool for a cross-check of the company s main policies regarding the completeness in terms of human rights.
Transparent Reporting		
Targets 2008	**Results 2008**	**Targets 2009**
Release 2007 Communication on Progress. Continuously update the Citizenship@Novartis website.	Released the 2007 Communication on Progress reporting on the commitment of Novartis to the 10 principles of the UN Global Compact (UNGC). The Citizenship@Novartis website was regularly updated.	Release the 2008 Communication on Progress on the 10 principles of the UNGC. Continuously update Citizenship@Novartis.
Government Relations/Lobbying		
Targets 2008	**Results 2008**	**Targets 2009**
Publish additional position papers about healthcare topics to maintain transparency with topics of interest to external stakeholders.	Published new position papers on human rights and updates for Disclosure of Clinical Research Information. Expanded Public Affairs training in emerging markets. In 2008, Novartis spent USD 24 million in support of major international, US and pan-European trade associations.	Publish additional position papers about healthcare topics of interest to external stakeholders. Continue improving Public Affairs skills in all markets.
Financial Community		
Targets 2008	**Results 2008**	**Targets 2009**
Transition to the third generation guidelines (G3) for the 2007 Global Reporting Initiative (GRI) report.	Released Novartis GRI 2007 report using the enhanced G3 Sustainability Reporting Guidelines. GRI confirmed an A+ application level.	Release 2008 GRI report using G3 Guidelines and maintain ranking. Strive to maintain a top industry rating for corporate citizenship engagement.

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COMMITMENT TO PATIENTS

To make new medicines broadly available to patients as early as possible, Novartis is exploring a number of new pricing approaches, including money-back guarantees and other types of performance-based pricing. Novartis also emerged as an industry leader in early engagement with health authorities on health-economic evaluations that are becoming increasingly important in certain countries for patients access to new medicines.

Anna Cranz is a student majoring in psychology at a major European university.

For many years, higher education seemed an impossible dream for Ms. Cranz who suffers from severe asthma. Diagnosed after her first life-threatening attack at the age of only 18 months, her childhood was a series of dashes to hospitals for emergency treatment.

Asthma is a chronic disease in which inflammation causes bronchial tubes in the lungs to swell, narrowing airways and leading to wheezing and breathlessness. The inflammation results from diverse environmental triggers, called antigens. Growing up in the idyllic English countryside, Ms. Cranz battled antigens such as grass pollen and dust mites, while the damp climate further aggravated her condition.

Pets were taboo. I wasn t allowed to have any cuddly toys because of the risk of dust mites, she adds. My teddy bear had to spend the night in the freezer before I could play with it.

Ms. Cranz praises the care she received in Britain s National Health Service (NHS), but physicians were not able to stabilize her condition. She missed so much school that her grades suffered. I was the person who would come and visit the class rather than being part of it, she sighs. Teachers and doctors warned that the stress of an academic career would be dangerous. They told me not to think about going to university to just take it easy and try to breathe, she adds. I was devastated.

Then something changed in her life. I had turned 18 and was allowed to enroll in a clinical trial for *Xolair*, a new treatment for asthma from Novartis, Ms. Cranz recalls. The improvement was dramatic. I didn t really notice from the very first *Xolair* injection because I was on such high doses of existing medication. Then, slowly, over a period of about six months, I started reducing my medication.

The frequency of severe attacks declined from three to four per month to one or two per year. And I ve been attack-free for a full year, she adds. I can live a normal life. Obviously my asthma has to be controlled, but that s possible with *Xolair*. My life doesn t revolve completely around the disease anymore. It s no longer the dark star of my cosmos.

EXPLORING PRICING OPTIONS

Innovation is a precondition for a breakthrough medicine like *Xolair*. Bureaucratic obstacles, however, can delay or even prevent broad access for patients such as Ms. Cranz, as Novartis and other pharmaceutical companies negotiate pricing and reimbursement agreements. Governments, health authorities and other payors have to balance the desire to provide the best possible care to all citizens against limited funds.

To support payors in this dilemma and to make new medicines broadly available to patients and physicians as early as possible,

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Novartis is exploring a number of new arrangements, including money-back guarantees and other types of performance-based pricing. Moreover, Novartis has emerged as an industry leader in working with health authorities to ensure clinical trials are designed to generate data required for rapid health-economic evaluations.

Novartis is ready to try new things, says Jens Grueger, Ph.D., Head Pricing and Reimbursement at the Novartis Pharmaceuticals Division. We want to work together with payors and we welcome their best ideas as a starting point for discussions.

Because Novartis launched so many new products in recent years, it has had greater exposure to trends affecting market access than rival pharmaceutical companies. On one hand, we faced more varied issues than any other company, but we also have seen opportunities that no one else was able to see, Dr. Grueger adds.

To ensure access to *Xolair* for patients in the United Kingdom, Novartis offered Britain s Ministry of Health a pricing model that incorporates a money-back guarantee. In the approved-patient population people older than 12 with severe asthmatic asthma and presence of IgE antibodies confirmed by a diagnostic test *Xolair* has been shown to be cost-effective across several measures, in part by reducing other healthcare-associated costs such as fewer emergency-room visits and hospital admissions.

Not all severe asthma patients respond to treatment with *Xolair*, however, and it is difficult to predict responders on the basis of pretreatment demographic or clinical characteristics. After a hospital has entered in the agreement, it registers each patient initiated on *Xolair* treatment and, after 16 weeks, the outcome of that initial phase of treatment is assessed, Dr. Grueger says. If defined goals are not achieved, Novartis refunds the cost of the drug.

Another innovative medicine, *Lucentis*, is the only approved therapy that has demonstrated improvement in vision and vision-related function in patients with the wet form of age-related macular degeneration (AMD), the leading cause of blindness in people over 50. Loss of central vision severely affects quality of life for people with AMD due to increasing difficulty in performing normal daily activities such as reading, telling the time, recognizing faces or driving.

Lucentis has been approved in more than 70 countries. It also has received positive health-economic assessments from a number of countries, including the United Kingdom, Australia, Canada, the Netherlands and Sweden.

Britain s National Institute for Clinical Excellence (NICE), a government agency established to evaluate the cost-effectiveness of new medical treatments, also recommended *Lucentis* as a cost-effective therapy for people with wet AMD on the basis of a new reimbursement plan with Novartis. Under the agreement, the NHS will fund the first 14 injections in each affected eye, and Novartis will reimburse drug costs for any subsequent *Lucentis* injections. Additional dose-capping agreements have been introduced for *Lucentis* in Australia and Canada.

This is an important collaboration that will ensure patients living with wet AMD in England and Wales receive the best possible care, says Trevor Mundel, M.D., Head of Global Development at the Novartis Pharmaceuticals Division.

Efforts by Novartis to test new approaches to pricing reflect the rising influence of payors in decisions about use of medicines. In many countries, traditional prescribing autonomy of physicians is changing due to cost-containment measures, including use of formularies, or lists of preferred drugs. Similarly, decisions on reimbursement of new drugs are increasingly based on economic analysis in addition to the clinical performance of a new medicine.

Novartis believes the interests of patients, physicians, payors and providers can be aligned through pricing arrangements for which payment is directly related to the value created by our products. Where we have unique, often life-saving medicines, Novartis is committed to providing access for those most in need through access-to-medicines programs. These programs provide assistance to patients experiencing financial hardship or to those in the developing world who would not otherwise be able to receive treatment.

DELIVERING SUPERIOR OUTCOMES

The increasing focus by payors on treatment outcomes has drawn attention to the vexing issue of compliance: understanding why up to half of patients being treated for chronic conditions fail to take their medicines as directed. In cases where we can t prevent the disease, we need new approaches to drive compliance and reduce the significant number of patients who stop taking their medicines, says Joseph Jimenez, Head of the Pharmaceuticals Division and member of the Executive Committee of Novartis.

Reclast/Aclasta, a once-yearly medicine for osteoporosis developed by Novartis, improves compliance for all patients treated. By contrast, in some studies, less than a third of women prescribed daily tablets in the same class of medicines, known as bisphosphonates, still were taking their medication after 12 months. Novartis is so confident that better compliance will translate into superior patient outcomes that it has offered a money-back guarantee to health authorities in Germany. Novartis will refund the costs of *Reclast/Aclasta* to health insurers if a patient experiences an osteoporotic fracture within a year of an *Reclast/Aclasta* infusion.

Under a new risk-sharing model, Novartis is supporting an initiative by

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Britain s NHS to achieve superior outcomes in treatment of hypertension. The NHS has introduced a Quality-Outcomes Framework, offering financial incentives to physicians to achieve preset targets in treatment of patients. These targets sometimes are based on processes for example, the percentage of diabetic patients receiving annual eye and foot examinations. Incentives also reward a physician if a certain proportion of patients under treatment reach a preset blood pressure target.

Through the *Diovan* Guaranteed Target Initiative, Novartis is sharing the risk of achieving this blood pressure outcome with physicians. If patients treated by a physician fail to reach the blood pressure target with a treatment based on *Diovan*, Novartis will refund a portion of the medication cost.

EARLY ENGAGEMENT WITH PAYORS

In another step to improve patient access, Novartis is pioneering early engagement with health-technology assessment (HTA) agencies.

In 2008, when NICE indicated an interest in dialogue with companies prior to the formal assessment process for a new drug, Novartis followed up the overture and established a pilot project with the agency. The question we asked was, what kind of information and data are needed to enable NICE to come to an opinion about reimbursement of a new medicine as soon as possible? says Martin Backhouse, Ph.D., Head of Health Technology Assessment at Novartis. By having these discussions at a stage when we are still planning the pivotal phase of clinical testing, we would have flexibility to modify trial design to provide the data that the agency needs.

Early interaction with NICE and other health-technology assessment agencies is modeled on regular discussions pharmaceutical companies traditionally have had with regulatory agencies about design of clinical trials. Novartis developed a clear process for supplying the relevant information to the HTA agencies that, in turn, can provide advice about which aspects of the evidence are required to support a fast review of submissions when the product is approved by regulators.

These are not early price negotiations, Dr. Backhouse adds. Our discussions might involve showing that a new treatment from Novartis is better than existing therapies; which patient population would be most suitable for treatment; the duration of treatment that should be used in clinical trials; and whether we need to conduct a direct head-to-head comparison against the current standard of care.

Media coverage of the pilot project with NICE in 2008 prompted overtures to Novartis from other agencies interested in similar discussions. So far we have worked with seven pricing and reimbursement agencies in five countries, Dr. Grueger says. More such interactions are planned.

CLINICAL STUDIES IN EMERGING COUNTRIES

As it expands in many emerging markets, Novartis plans to increase the number of clinical trials conducted in those countries to forge even closer links with patients and physicians and enhance access to new Novartis medicines.

Local trials contribute to enhanced access for patients because authorities sometimes require studies in local populations as a precondition for regulatory approval. We conduct clinical studies only in countries where we intend to bring the product under investigation to the market if it proves to be effective and safe, says Detlef Niese, M.D., Head External Affairs, Global Development at the Novartis Pharmaceuticals Division. That s an important element of patient access.

Clinical trials may also contribute to further development of local healthcare

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systems. By participating in international clinical trials, local physicians become familiar with different kinds of healthcare practices, diagnostic procedures and the fundamentals of good clinical practice. In that way, expanding clinical research in emerging countries can help develop local healthcare systems over time, Dr. Niese adds.

But expanding clinical trials in emerging countries also can pose vexing ethical questions for Novartis. Poor education, poverty and lack of healthcare access can make it difficult for patients to provide the free, informed consent to trial participation that is a fundamental ethical principle of clinical research. There is a likelihood, for example, that if people have no health insurance, they see participation in a clinical trial as an opportunity to obtain treatment otherwise not available, rather than as a way to answer important scientific or medical questions, Dr. Niese says. In that case, their consent might not be a valid, free decision.

For Novartis, he adds, The key issue is that we have policies and practices in place in these countries to ensure that our clinical trials enroll only people who are able to give valid informed consent.

Novartis designs and conducts all clinical trials worldwide in accordance with the principles embodied in the Declaration of Helsinki, an internationally recognized statement of ethical guidelines for participants in medical research. All clinical trials at Novartis are conducted in agreement with other applicable national and international laws and guidelines. Novartis also pledges to respect the independence of researchers and their freedom to participate in and approve all aspects of a clinical trial, including the results.

Novartis ensures that its own medical and technical staff around the world, as well as external partners such as clinical investigators or medical sites, are capable of conducting clinical trials according to in-house and international standards. Local Development organizations at the country level also work closely with global Development functions at Novartis headquarters to provide support for clinical trial logistics, compliance with regulatory requirements and quality assurance.

Dr. Niese acknowledges that the cost of conducting clinical trials in emerging countries usually is significantly lower than in the United States or Western Europe. Novartis, however, takes great care that the same ethical principles are applied worldwide. It s important that a trial not be conducted in an emerging country because regulations are less developed or research participants less protected, he adds. Indeed, clinical studies by Novartis in emerging countries usually allay such ethical concerns by being part of broader international clinical programs, and by ensuring that all patients in all countries are treated the same.

Moreover, Novartis is taking additional steps to ensure that key decisions on clinical trials are taken in consultation with local communities. In 2007, Novartis established an Ethics Council in China, in collaboration with the Health Science Center at Peking University. The council is a group of independent ethicists, lawyers and specialists in clinical research who review Novartis policies, practices and protocols from a local perspective.

It s a way to avoid making decisions about clinical studies in an ethical or cultural vacuum, Dr. Niese says. The more transparent we are, the better it will be. And if this project is successful, it may serve as a model for other countries.

NOVARTIS VACCINES INSTITUTE FOR GLOBAL HEALTH

Vaccines against infectious diseases save the lives of an estimated 2 million children every year, but an additional 2.5 million still die from diseases preventable by vaccines. According to the World Health Organization, vaccination is one of the most cost-effective health investments, and there is an urgent need for vaccines against many neglected diseases that take a heavy toll in the developing world.

In 2007, Novartis opened the Novartis Vaccines Institute for Global Health (NVGH), a new research institute with a nonprofit mission of focusing exclusively on vaccines against diseases of the developing world. The institute, based in Siena, Italy, is the first of its kind to be established by a major vaccine manufacturer.

It is the goal of NVGH to discover vaccines specifically tailored for the needs of developing countries and to license development to third parties. All vaccines discovered by the institute that receive regulator approval will be introduced first in developing countries, and provided at an affordable and accessible price to populations of the developing world.

The mission of NVGH mirrors the Singapore-based Novartis Institute for Tropical Diseases (NITD), established in 2003. Both institutes focus on research and early stages of development, to the point of proof-of-concept in humans. And medicines discovered at NITD will be made available to countries in which the diseases are endemic at no profit to Novartis.

Research activities at NVGH center around conjugate vaccines for enteric, or intestinal, diseases. Initial priorities for NVGH are major causes of infection and disease in children, including Salmonella enterica serovar Typhi, Salmonella paratyphi A and nontyphoidal salmonellae (NTS). In Africa, resistant NTS is a major killer of children younger than 5 years old, second only to pneumococcal disease.

NVGH will have dedicated management, scientists and resources and access to expertise and innovative technology platforms at the Novartis Vaccines and Diagnostics Division s global research center, also in Siena.

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NOVARTIS ACCESS-TO-MEDICINE PROJECTS 2008

Project	Objective	Target region	Value (USD millions)	Patients
Malaria/WHO(1)	Provide *Coartem* at cost for public sector use	Africa, Asia, Latin America	263	70 000 000
Leprosy/WHO(2)	Eliminate leprosy by providing free medications to all patients worldwide with WHO, through 2010	Global	7	340 000
Tuberculosis(2)	Donation of fixed-dose combinations	Tanzania, Sri Lanka	1	44 000
Fasciolasis(3)	Providing free of charge *Egaten* to treat patients that are infected with Fascioliasis	Peru, Yemen	0.3	212 000
Novartis Foundation for Sustainable Development (N FSD)(4)	Improve health and quality of life of poor people in developing countries through think tank, policy and project work	Developing countries	9	3 002 000
Novartis Institute for Tropical Diseases (NITD)(4)	Discover novel treatments and prevention methods for major tropical diseases; NITD discoveries to be available in poor endemic countries without profit	Developing countries	14	
Novartis Vaccines Institute for Global Health (NVGH)(4)	To develop effective and affordable vaccines for neglected infec−tious diseases of developing countries	Developing countries	4	
US patient assistance program (PAP)(2) *(excl. Gleevec)*	Assistance to patients experiencing financial hardship, without third-party insurance coverage for their medicines	United States	107	81 000
Gleevec US PAP(2)	Within capability of Novartis, continue to ensure access for patients in the US who cannot afford the drug	United States	77	4 000
Glivec Global PAP(2),(5)	Within capability of Novartis, continue to ensure access for patients outside the US who cannot afford the drug	Global (excluding US)	751	23 000
Together Rx Access	Discount program for the uninsured	United States	0.4	7 000
Emergency relief & other product donations	Support to humanitarian organizations	Global	25	
Total			**1 259**	**73.7 million**

(1) During 2008, 70 million *Coartem* treatments reached patients based on a preliminary analysis of local distribution; Of these, 30.2 million treatments came from shipments completed in 2007, and 39.8 million from the total shipment of 73.8 million treatments completed in 2008. The value of the *Coartem* program in 2008 was calculated using the number of treatments shipped in 2008 and the ex-factory price of *Coartem* to private-sector purchasers in malaria-endemic developing countries, minus payments to Novartis to cover costs under terms of the public-private partnership with WHO. These payments were received through WHO, UNICEF and other procurement agencies, acting on behalf of governments and other public-sector institutions in developing countries eligible to receive *Coartem* at the not-for-profit price.

(2) Ex-factory price to private market

(3) At manufacturing costs

(4) Novartis operating costs

(5) Value includes donations under shared contribution and co-pay models, whereas patients in shared contribution and co-pay models are not included in the number of patients reached

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COARTEM

Malaria is a devastating disease that affects between 300 million and 500 million people and causes a million deaths annually. Its toll is heaviest among young children and adolescents in Africa. In addition to being Africa s worst childhood killer, malaria also causes the deaths of up to 10 000 mothers every year.

Under a unique public-private collaboration with international organizations, Novartis provides *Coartem* to the public sector without profit. To date, Novartis has provided 216 million treatments of *Coartem*, helping to save the lives of an estimated 550 000 people suffering from malaria.

In April 2008, Novartis announced a 20% average reduction in the price of *Coartem* tablets, our state-of-the-art artemisinin-based combination treatment (ACT) for malaria. To ensure a dependable supply and meet rising demand for *Coartem*, Novartis has invested heavily to expand production in China and the United States. Increased efficiency at these production sites made the price reduction possible.

The price reduction to USD 0.37 for children s doses will increase access to *Coartem* for millions of malaria patients, especially children in low-income regions of Africa. *Coartem* is well-tolerated and highly effective, providing cure rates of up to 95% even in areas of multi-drug resistance. Combining two or more malaria drugs has the potential to prevent or delay development of resistance to the disease.

Focusing on children in Africa, the group most vulnerable to malaria, Novartis has developed a more convenient formulation of *Coartem* as a powder that can be dissolved in milk, water or other liquids. The new dispersible formulation promises to make dosing more reliable than the current practice of crushing tablets for use by children. And a cherry flavor developed for the dispersible formulation helps mask the bitter taste *Coartem* shares with most other ACTs.

In December 2008, Swiss health authorities approved the new pediatric formulation of *Coartem*. The dispersible formulation is a joint development by Novartis and Medicines for Malaria Venture, a nonprofit foundation dedicated to the development of affordable new antimalarials.

GLEEVEC/GLIVEC PATIENT ASSISTANCE PROGRAMS

Ensuring access to treatment is particularly important in life-threatening diseases such as cancer, and Novartis is deeply committed to helping patients gain long-term access to our life-extending cancer therapies. We actively facilitate and support collaboration among the public and private sectors, to help patients get the medicines they need.

Providing access to cancer treatments is complex, demanding collaboration and compromise among industry, government, insurers and other payors as well as physicians and patient groups. Our experience shows that the most sustainable and efficient access is achieved through existing

local healthcare systems. Our access initiatives are customized to address local needs and leverage local infrastructure.

Globally, almost 200 000 patients have been treated with *Gleevec/Glivec* since its initial approval in 2001. In 2002, Novartis introduced the *Gleevec/Glivec* International Patient Assistance Program (GIPAP) that provides *Gleevec/Glivec* by full donation to properly diagnosed patients who have chronic myeloid leukemia or gastrointestinal stromal tumors, live in countries without government or private reimbursement or are unable to pay for the medication. To date, GIPAP has helped almost 35 000 patients obtain treatment without cost.

As the economic, healthcare and social dynamics of emerging countries evolve, Novartis Oncology continually explores new ways to maximize affordable and sustainable access to *Gleevec/Glivec* for a broader group of patients by pursuing innovative public-private partnerships. Today, the Global Patient Access Programs for *Gleevec/ Glivec* comprise a range of flexible models through which Novartis partners with national and local governments, charitable organizations or other payors.

Novartis also seeks ways to work with nongovernmental organizations, foundations, physicians and other health providers to achieve a common goal: the best cancer care possible for the greatest number of patients.

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COMMITMENT TO PATIENTS: TARGETS AND RESULTS FOR 2008 AND TARGETS FOR 2009

Stakeholder Engagement

Targets 2008	Results 2008	Targets 2009
Embed concept of consulting with key patient groups in the development and marketing cycles of major brands and therapy areas. Increase involvement of Novartis in civil-society debate on access to medicines.	Collaboration with major international patient groups was established for all therapy areas. More patient advocates are included on advisory boards, used to help develop clinical program and launch strategies. Increasingly, patient-group leaders and representatives are invited to Novartis management meetings, providing deeper insights into patient needs. Participated in the SustainAbility Pharmafutures project on improved health outcomes in emerging markets. Actively engaged in the Intergovernmental Working Group debate on access to medicines.	Continue to embed patient advocates as partners in advising on drug development and launch plans. Further collaborate on projects with major international patient groups to help raise awareness on burden of disease and patient needs. Continue involvement of Novartis in civil-society debate on critical topics with relevant stakeholders.

Access to Medicines

Targets 2008	Results 2008	Targets 2009
Launch pediatric dispersible formulation of *Coartem*. Facilitate data collection and publication of studies showing health impact of *Coartem* use.	In December, Swiss health authorities approved the new pediatric formulation of *Coartem*. The launch will occur during 2009. Published and presented data on the health impact of *Coartem* at international symposia. Continued and increased supply of *Coartem* without interruption. Reduced production cost of *Coartem* to further reduce price significantly.	Launch pediatric dispersible formulation of *Coartem*. Pursue efficient production of *Coartem* with uninterrupted supply. Collect data on the experience of using the new pediatric dispersible formulation of *Coartem* in endemic countries. Expand the Indian pilot of Arogya Parivar business model, that provides health education and makes quality medicines accessible and affordable to underserved rural regions.

Novartis Institute for Tropical Diseases

Targets 2008	Results 2008	Targets 2009
Fully consolidate Institute s new ventures Eijkman Institute; Hasanuddin University Clinical Research Institute (NEHCRI); and malaria research while continuing the buildup of the pipeline in dengue fever, tuberculosis and malaria. Maintain vigorous teaching and training activity, as well as high international scientific presence in tropical diseases research and development.	NEHCRI fully functional. First compound for malaria entered preclinical development and compound for dengue fever progressed further in preclinical development. Second class of students from Asia, Africa and Europe successfully completed MSc collaborative program with National University of Singapore, Swiss Tropical Institute and University of Basel. NITD hosted four international conferences and workshops.	Translate preclinical study findings in dengue fever, tuberculosis and malaria into strategic clinical development programs. Continue expansion of pipeline in all three disease areas. Maintain dynamic teaching and training activities, as well as significant scientific international presence in tropical diseases research and development.

Novartis Vaccines Institute for Global Health (New Target)

Targets 2008	Results 2008	Targets 2009
	Institute inaugurated in February 2008 with commissioning of first laboratories. Started first projects for vaccines in neglected diseases of the developing world (salmonella) by staffing the technical development and clinical trial functions.	First vaccine (a conjugate for typhoid fever) enters pilot-scale GMP (good manufacturing practices) production. Prepare start of clinical trials in 2010. Develop process for pilot-scale GMP production in 2010 for vaccines for paratyphoid in Asia and non-typhoid salmonella in Africa.

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COMMITMENT TO PEOPLE AND COMMUNITIES

The next generation of Novartis leaders will be more diverse and more global. Expansion in emerging markets will put a premium on recruitment of the relatively limited number of local executives with the international experience and skills required to work successfully in a global company such as Novartis. To attract and retain talent, employee engagement is a top priority, and the diverse portfolio of healthcare businesses at Novartis offers new recruits opportunities for rapid career development.

Future economic growth will demand more talented associates and leaders, yet the market for future talent will become increasingly competitive. Shifting demographic trends will result in fewer students, fewer graduates and fewer people entering the workforce in the Western world during the next 10 years. Supply of talent for key functional and leadership positions is waning, and a talent gap is clearly visible for some professions and geographies engineers in Germany, for example. Recruitment is increasingly regional or global in specialized fields such as clinical development, biosciences, chemistry and information technology.

Emerging markets are expected to be a driving force in global growth, but in countries such as Russia and China there is a limited pool of executives with the international experience and the language and other skills needed to work successfully in a global company like Novartis. Moreover, younger generations around the world have changing expectations about careers, engagement and the integration of work in their overall lifestyles. Geographic mobility is expected to decrease and talented workers in emerging countries anticipate ample career opportunities closer to home than in the past.

The next generation of Novartis leaders will be more diverse and global, says Juergen Brokatzky-Geiger, Ph.D., Head of Human Resources and member of the Executive Committee of Novartis.

To attract and retain scarce talent, employee engagement will be atop priority. International surveys indicate that corporate citizenship programs as well as diversity and inclusion strategies are key drivers of employee engagement, along with opportunities to improve skills and capabilities, areas in which Novartis scores above benchmarks and norms.

The well-established global Organization and Talent Review (OTR) process enables Novartis to identify, assess and develop associates with high potential. In 2008, 76% of the open positions at the Corporate Executive Group (CEG) level the 350 most senior executives at Novartis were filled with internal candidates, underscoring our focus on internal development of talent.

DIVERSITY AND INCLUSION

By many measures, Novartis already is a highly diverse organization. The CEG includes 27 nationalities. The proportion of female CEG members employed by Novartis Group companies worldwide has climbed to nearly 20% from 10% in 2005. Two of the 11 members of the Novartis Board of Directors are women. There has been notable improvement at Sandoz, our generic pharmaceuticals Division, where women now comprise almost 21% of CEG members employed by Group companies in the Sandoz Division, up from zero only three years ago. The Novartis Institutes for BioMedical Research, our

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pharmaceutical research unit, also have seen a rapid transformation, with women now comprising 18% of the CEG population employed by Group companies of NIBR, compared to 8% in 2005.

The Diversity and Inclusion Advisory Council (DIAC), created in 2006, comprises a group of external experts who advise Novartis on development and implementation of diversity and inclusion strategies and practices. In addition to academics, the DIAC includes businesspeople with direct experience of establishing diversity programs in global businesses. DIAC members also hold open meetings with associates and meet semiannually with Novartis business and diversity leaders to both support and objectively challenge company activities and progress.

Divisions and business units have developed strategies and action plans for diversity and inclusion, based on local situations and business cases. Targets for diversity and inclusion have been integrated into objectives of senior Novartis managers around the world.

Diversity and inclusion initiatives aim to make Novartis better reflect the heterogeneity of customers and stakeholders around the world. A diverse organization is more likely to be a creative environment because the ability to learn new things often comes from differences in views, backgrounds and beliefs, says Daniel Vasella, M.D., Chairman and Chief Executive Office of Novartis. We have to do an even better job of bringing in people from geographies where we have a large and growing presence but under-representation in management and leadership. We have a responsibility to ensure not only that they are identified, but also supported, so they can grow within the organization.

BRAZIL: AGILITY AND ENERGY

At the beginning of the decade, Brazil adopted legislation requiring companies to step up recruitment of people with disabilities. At all companies in Brazil with more than 1 000 employees, disabled people should comprise a minimum of 5% of the workforce. Failure to comply with the new law can result in penalties, including heavy fines and exclusion from government tenders for healthcare products.

The Novartis organization in Brazil had only two disabled employees prior to passage of the law, but an aggressive recruitment campaign added more than 80 disabled people to the payroll, close to the 5% target that must be reached by December 2009. The majority has physical disabilities, including impaired hearing and vision, but the Brazilian unit also has hired two employees with learning disabilities.

The new recruits have been deployed across the Novartis organization in Brazil in many customer-facing positions as well as in production and back-office jobs. The disabled employees we brought into the company are contributing members of the team, says Paula Traldi, Head of Human Resources at the Brazilian unit of Novartis. Interacting with disabled people daily provides insights about health and the kind of pressures faced by caregivers that can be applied to many other diseases. It has brought us closer to our customers and will give us a competitive advantage.

More than 20% of the disabled employees are sales representatives, and many have forged unusually close relationships with the healthcare professionals on whom they call. One physician in Sao Paulo wrote to Novartis extolling the agility and energy of sales representative Claudio Roberto Figueiredo. Because of his professional attitude, Claudio and Novartis stand out from other companies, the doctor added. I had never noticed that Claudio was disabled until one day he apologized because his two prosthetic ankles were making a bit of noise.

Successfully integrating people with disabilities into teams across the company has expanded the experience of associates, and enriched the spirit and culture of Novartis in Brazil, says Alexander Triebnigg, Head of both the Country Organization and Country Pharmaceuticals Organization in

FLUCTUATIONS 2008(1)

Associates as of January 1,2008	**98 200**	**100%**
Separations	-4 644	-5%
Retirements	-919	-1%
Resignations	-9 262	-9%
External hirings	13 342	14%
Associates as of December 31, 2008	**96 717**	**99%**

(1) Fuctuation percentage based on beginning of year balance

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Brazil. And it sends a positive signal about diversity and inclusion to the public, government agencies and customers.

EMERGING MARKETS

Recruitment and retention in China and Russia are fiercely competitive due to rapid economic growth and the imbalance in supply and demand of talent.

One important pillar of engagement for Novartis in China is the Beijing International MBA program, a mini-MBA curriculum at Peking University tailor-made for Novartis middle management. More than 250 associates have either graduated or are currently participating in the program.

In 2008, a similar program was launched to teach future Novartis leaders in Russia. The Novartis Business Academy is a program managed by Sweden s Stockholm School of Economics comprising 10 four-day modules in 12 months to develop midlevel managers in areas ranging from leadership and strategy to marketing, finance and project management. The current class at the Academy includes 40 employees based in Russia, representing all Novartis divisions.

Foreign assignments are another effective retention tool. Since 2006, 20 managers from China have taken part in the Trailblazer program which offers one-year rotations in the United States. A select group of high-potential managers in emerging growth markets was tapped for the Accelerated Development Program (ADP), designed to groom them for challenging new roles throughout the global organization. Executives selected for the ADP program are considered likely candidates for promotion, which could involve transfers to posts in another Novartis Group company such as divisional country head in a top-10 market within the coming five years.

The diverse portfolio of healthcare businesses at Novartis offers additional opportunities for career development. Cross-divisional staffing centers are being established in China and Russia to foster career mobility among divisions and across countries, providing broader experience for promising executives. Traditionally, cross-divisional talent exchange has been limited due to the lack of formal mechanisms to leverage talent-review programs across organizational boundaries.

A SAFER WORKPLACE

Novartis fosters a culture of safe behavior and on-site health promotion. Ongoing training programs for associates aim to bring Novartis closer to its goal of zero accidents. Diverse health-promotion activities are offered at many sites and Occupational Safety and Occupational Medicine teams work together to influence safe behavior and ensure health in the workplace.

Developing a strong safety mindset among associates also is a priority. In 2008, the lost-time injury and illness rate (LTIR) for continuing operations declined to 0.34 per 200 000 hours worked from 0.42 the previous year. As recently as 1997, the LTIR was 1.6 per 200 000 hours worked.

The improvement in workplace safety was achieved through preventative processes such as systematic use of workplace health-risk assessments. An increasing number of Novartis sites had no incidents with lost time. However, we deeply regret the death of one Novartis associate in a traffic-related accident during 2008. We extend our condolence to the family.

As the number of accidents leading to lost time decreases, our focus will shift to reducing accidents leading to injuries in general. This number, called the total recordable case rate (TRCR), was reported in 2007 for the first time. In 2009, a target has been set for a 10% reduction from 2008 levels. A further reduction of LTIR in 2009 is envisioned from an actual rate of 0.34 to 0.31.

ASSOCIATES BY REGION AND DIVISION AS OF DECEMBER 31, 2008(1)

	United States	Canada and Latin America	Europe	Asia/Africa/ Australasia	Total
Pharmaceuticals	13 546	4 391	24 044	11 651	53 632
Vaccines and Diagnostics	1 018	8	3 578	170	4 774
Sandoz	1 161	2 594	15 021	4 370	23 146
Consumer Health	3 812	1 447	4 651	3 104	13 014
Corporate	792	47	1 095	217	2 151
Total	**20 329**	**8 487**	**48 389**	**19 512**	**96 717**

(1) Full-time equivalent positions

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COMMITMENT TO PEOPLE AND COMMUNITIES: TARGETS AND RESULTS FOR 2008 AND TARGETS FOR 2009

Living Wages

Targets 2008	Results 2008	Targets 2009
Continue to use established process for periodic updates of living-wage levels and adjustment of salaries of associates who are below those levels.	The wage-level review identified three cases globally that required adjustment to the living-wage level.	Continue using established processes to update living-wage levels annually and adjust salaries of associates who are below those levels.

Global Employee Survey

Targets 2008	Results 2008	Targets 2009
Plan an aligned approach for the Novartis Global Leadership survey and annual employee climate survey to allow synchronized implementation in 2009.	A global employee survey instrument was designed with focus on engagement across all levels.	Administer the Novartis Global Employee Survey in March 2009. Communicate findings to associates and implement follow-up actions.

Diversity and Inclusion

Targets 2008	Results 2008	Targets 2009
Continue to use the external Diversity and Inclusion Advisory Council (DIAC) as implementation aid. Continue divisional and functional implementation, according to business needs.	The DIAC is an established body supporting and challenging Novartis efforts in diversity and inclusion, particularly in the areas of talent development and marketing strategies. Divisions have created diversity and inclusion strategies and action plans.	Leverage diversity and inclusion to enhance marketing effectiveness, improve integration of diversity and inclusion in talent development and improve training programs on diversity and inclusion. Further implement employee resource groups, diversity-specific mentoring programs and awareness training programs. Establish training for fair and objective recruitment.

Lost-Time Injury and Illness Rate (LTIR)

Targets 2008	Results 2008	Targets 2009
Reduce LTIR to 0.39.	0.34.	Reduce LTIR to 0.31.

Total Recordable Case Rate (TRCR)

Targets 2008	Results 2008	Targets 2009
Baseline measurement.	1.08.	10% improvement by end 2009, based on 2008 level.

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COMMITMENT TO THE ENVIRONMENT

Measures implemented by Novartis Group companies to reduce greenhouse gas emissions have proven their effectiveness. A proactive policy for capital investment in energy conservation is an example of strong support from senior management for energy efficiency, and carbon-dioxide-mitigation programs.

Activities related to the environment at Novartis during 2008 focused on improving energy efficiency and reducing carbon dioxide (CO_2) emissions.

Our long-term commitment to the environment was recognized again when Novartis was named super sector leader for healthcare in the 2008 update of the Dow Jones Sustainability World Index (DJSI World), a global index tracking the performance of sustainability-driven companies worldwide. The annual review of the DJSI is based on economic, social and environmental performance. Among environmental indicators, Novartis received 100% scores from DJSI for both reporting and policy/management system.

EXEMPLARY SUSTAINABILITY

With its energy-saving programs and a stellar safety record, our site in Kundl, Austria, is one of the best examples of how principles of Corporate Citizenship are integrated into day-to-day operations.

Kundl began production of penicillin in 1946 in premises previously used for brewing beer. More than six decades later, it is the only remaining antibiotic developer and producer in Western Europe or the United States.

Sandoz, the generic pharmaceuticals Division of Novartis, has managed to buck the exodus of antibiotic makers to low-cost countries in Asia through consistent productivity gains, including continuous refinement of the bacterial strains in which antibiotics are grown.

Energy use is a major concern at the Kundl site because the key production process fermentation is an energy-intensive technology. Sandoz accounts for more than 40% of annual Groupwide energy consumption while Kundl alone is responsible for about 30% of the division s energy outlays.

Large amounts of electricity are required to ensure air supply to nutrient broths and to drive rotors stirring broths in giant fermenters with capacity of up to 250 cubic meters. The energy we put into production is a cost, and today it is increasingly seen as being detrimental to the environment and a potential liability for our brand, says Ernst Meijnders, Head of both the Kundl site and the Anti-Infectives Business Unit of Sandoz.

In response to such challenges, energy efficiency initiatives within Kundl s fermentation unit have been acknowledged with Novartis Energy Excellence Awards in three of the past five years. These projects have improved economics of production of penicillin V and cephalosporin, both large-scale fermentation processes. Savings in electricity consumption represented 6% of total energy usage by the Kundl site in 2006 and 4% in 2008. Upfront investments of USD 6.7 million have delivered annual savings of USD 8.3 million.

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In 2006, Kundl was acknowledged for a behavior-based energy-efficiency initiative implemented at a manufacturing unit for pharmaceutical products.

Encompassing more than 30 individual projects, this initiative helps to improve energy efficiency through changes in associates behavior rather than technological breakthroughs. The payoff has been annual savings totaling USD 500 000 in return for an initial investment of USD 250 000. Importantly, the behavior-based program was easy to expand across the Kundl site and also can be replicated at other Novartis production sites around the world.

Changing behavior also was the objective of a parallel program focusing on safety. This behavior-based safety initiative has enabled Kundl to achieve significant improvement in its lost-time injury and illness rate (LTIR), the principal safety benchmark used at Novartis production facilities. The site halved its LTIR between 1994 and 1998 to 1.2 accidents per 200 000 hours from 2.5 accidents four years earlier. In 2008, Kundl s LTIR reached 0.28.

To improve quality, energy efficiency or safety, you obviously need the right technology and equipment as well as the right processes. And it s important to have the right performance rewards, Mr. Meijnders says. But it s also critical to foster the right mindset among your people.

Building that mindset starts with a staunch commitment from senior management. The behavior-based safety effort has raised awareness through training of 300 Kundl managers on a new safety policy. An annual agenda of more than 600 audits has been established to deter unsafe behavior.

Monthly meetings of Kundl s management safety committee are attended by representatives from line management, associates, and the site s works council.

Following an accident, the head of the department involved appears at the safety management meeting to describe what happened, give an update on the associate s condition, explain how the accident was handled, and reach agreement about potential remedial steps. A database describing accidents is accessible for all associates at the Kundl site; flyers communicating the site s safety record are distributed regularly to associates.

Moreover, Kundl associates are allowed time during working hours to meet, think creatively about safety and discuss improvements. When they come up with strong proposals, they receive resources to implement them. We try to put up challenging targets and give people opportunities to participate and contribute, Mr. Meijnders says. It s the way to secure buy-in which ultimately is responsible for the mindset change.

ENERGY EFFICIENCY

Novartis has ambitious energy and climate targets with a high priority on energy efficiency and reduced greenhouse gas (GHG) emissions. In 2005, Novartis voluntarily committed to the Kyoto Protocol the international agreement among countries that sets binding targets for reducing GHG emissions by an average of 5% against 1990 levels by 2012. Programs to improve energy efficiency and reduce GHG emissions are beginning to bear fruit. Scope 1 GHG emissions from Novartis sites declined to 404 kilotons in 2008 from 408 kilotons the previous year, despite buoyant growth of Group sales.

For an expanding company like Novartis at the forefront of science, it is a challenge to cut back on carbon emissions, especially because we operate in a low energy-intensive industry, says Keith Saveal, Head Corporate Health, Safety, and Environment and Business Continuity. But increasing energy efficiency is a way of life at Novartis. We want to be a leader in tackling global environmental problems. Moreover, in the face of the prospect

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of a long- term rise in energy costs, increased energy efficiency and a reduced carbon footprint simply make good business sense.

Measures implemented to date to reduce GHG emissions have proven their effectiveness. As part of the ongoing transformation of Novartis headquarters in Basel from an industrial site to a state-of-the-art center for research, development and management, the new buildings require, on average, only about a third of the energy used by older buildings.

A proactive policy for capital investments associated with energy conservation exemplifies strong support from Novartis senior management for the energy efficiency and carbon-dioxide-mitigation programs. Payback periods up to the lifetime of the asset are allowed for projects that save energy. In addition, a review of energy-usage implications by an energy expert is mandatory for all investments or asset acquisitions exceeding CHF 20 000. Increasingly, divisions and business units are appointing energy managers for their worldwide operations while energy-management tools and dedicated training programs are being applied systematically, together with continuous monitoring of targets and performance.

We approach energy savings and reduction of carbon emissions on two key fronts, Mr. Saveal says. First, we have found many simple ways to increase our energy efficiency which has risen by more than 25% since 2003. The second is by investing in innovative energy conservation and renewable energy projects. We still have a long way to go, but we are continuing to identify new ways to make progress towards our energy and climate targets.

To help achieve these ambitious targets, Novartis has introduced a global Data Management System to facilitate data collection in line with more stringent reporting standards. This system provides Group managers with information needed to take early action if deviations against targets occur. The data includes GHG emissions from on-site, fossil fuel combustion and vehicles (all Scope 1); emissions from generation of purchased energy (Scope 2); as well as health and safety information.

GHG EMISSIONS 2003 2008 VERSUS TARGET PATH TO 2012

(in kilotons CO_2)

TRANSFORMING STRATEGY INTO MEASURABLE ACTION

Novartis set a target of a 10% reduction in CO_2 emissions from approximately 23 000 motor vehicles it owns or leases worldwide, compared to the 2005 level. In the United States the target will be achieved by switching to vehicles with hybrid gasoline/electric engines or other fuel-efficient technology. In Europe, Novartis now requires the use of diesel vehicles with particulate filters. In Germany, for example, Novartis has implemented financial incentives for sales representatives who drive fuel-efficient vehicles.

By 2008, emissions had been reduced by 3% from the 2005 level despite an increase in the size of the vehicle fleet.

Meanwhile, Novartis completed a project to define energy standards for new buildings and equipment during 2008. The goal is to ensure efficient, cost-effective and climate-conscious use of energy by applying both the best available technology and the concept of total cost of ownership. The new energy standards apply to building design, building structure and envelope, utilities, machinery, vehicles, lighting systems as well as heating, ventilation and air conditioning (HVAC). HVAC is one of the major sources of energy consumption at Novartis.

Combined heat and power plants (CHP) have become an important option as Novartis strives toward more efficient energy use. Overall efficiency of a CHP installation is about double that of a conventional plant. A CHP plant has recently been installed in Singapore and a second plant is planned for Germany.

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NOVARTIS HEALTH, SAFETY AND ENVIRONMENT (HSE) DATA 2008

	Novartis Group(1)		Pharmaceuticals (Excluding Research)		Novartis Research(2)		Vaccines and Diagnostics		Sandoz		Consumer Health	
	2008	**2007**	**2008**	**2007**	**2008**	**2007**	**2008**	**2007**	**2008**	**2007**	**2008**	**2007**
Employees												
HSE personnel (number of associates working at least 50% for HSE)	**491**	501	**216**	217	**26**	23	**37**	39	**147**	157	**65**	65
Health/Safety												
Lost-time injury and illness rate (LTIR) [per 200 000 hours worked]	**0.34**	0.42	**0.37**	0.45	**0.23**	0.13	**0.51**	0.74	**0.41**	0.53	**0.14**	0.23
Total Recordable Case Rate (TRCR) [per 200 000 hours worked]	**1.08**	1.41	**1.19**	1.68	**1.35**	0.68	**1.52**	2.29	**0.99**	1.28	**0.70**	1.02
Production												
Total production (1000t = metric tons)	**162**	171	**27**	27	**0**	0	**0.3**	0.3	**87**	94	**48**	49
Resources												
Water use (million m3)	**79.1**	83.6	**21.6**	21.8	**1.3**	1.1	**1.1**	1.1	**52.5**	57.0	**2.5**	2.6
Energy use (million GJ)	**16.9**	16.7	**5.7**	5.6	**1.0**	1.0	**1.2**	1.2	**7.5**	7.4	**1.5**	1.5
Emissions into water												
Effluent discharge (million m3)	**14.9**	15.5	**4.1**	4.2	**0.4**	0.4	**1.0**	1.1	**7.7**	8.0	**1.7**	1.8
Chemical oxygen demand (COD) (1000t)	**3.4**	4.0	**0.6**	1.0	**0.0**	0.0	**0.0**	0.0	**2.6**	2.8	**0.2**	0.2
Emissions into air												
Sulfur dioxide, SO2 (t)	**67**	56	**5**	6	**0**	0	**0**	0	**60**	48	**1**	1
Nitrogen oxide NO2 (t)	**298**	327	**116**	149	**8**	9	**20**	17	**133**	130	**22**	22
Volatile organic compounds (VOC) halogenated (t)	**224**	168	**10**	15	**2**	0	**0**	0	**211**	153	**0**	0
Volatile organic compounds (VOC) non-halogenated (t)	**1 594**	1 724	**312**	469	**6**	1	**2**	6	**1 207**	1182	**66**	66
Emissions CO2/GHG												
Scope 1, Combustion and process (1000t)	**404**	408	**158**	157	**11**	11	**28**	30	**182**	184	**26**	26
Scope 1, Vehicles (1000t)	**175**	186	**127**	136	**0**	0	**1**	1	**26**	28	**16**	17
Scope 2, From purchased energy (1000t)	**937**	891	**248**	214	**68**	70	**77**	76	**392**	372	**152**	159
Waste												
Non-hazardous operational waste not recycled (1000t)	**40**	42	**8**	8	**2**	2	**17**	18	**7**	8	**6**	6
Hazardous operational waste not recycled (1000t)	**114**	135	**58**	83	**1**	1	**1**	1	**52**	49	**2**	2
Non-hazardous operational waste recycled(1000t)	**30**	29	**9**	10	**1**	1	**2**	2	**12**	11	**6**	5
Hazardous operational waste recycled (1000t)	**32**	31	**21**	22	**0**	0	**0**	0	**10**	9	**0**	0
Hazardous operational waste landfilled (1000t)	**0.00**	0.10	**0.00**	0.01	**0.00**	0.00	**0.00**	0.02	**0.00**	0.07	**0.00**	0.00

(1) HSE data for Novartis Group reflect continuing operations

(2) HSE data for Novartis Research includes NIBR and Corporate Research

THE REPORTING PROCESS

The HSE Data Management System and data-collection process are key elements of Corporate Citizenship Management at Novartis. The data describes our major material flows across company boundaries and environmental impacts originating from our own operations (Scope 1), as well as greenhouse gas emissions (GHG) from the generation of purchased energy (Scope 2). We do not monitor environmental impacts from the manufacture and delivery of purchased goods and services, nor the use of resources and other related emissions for activities outside company boundaries (Scope 3), such as GHG emissions from transportation by third parties.

HSE data is collected and reviewed on a quarterly basis. The 2008 environmental and resource data published in the Annual Report and on our website are actual data for the period from January through September and best estimates for the period October through December, which will be updated with actual data in the first quarter of 2009. Significant deviations will be reported on our website and restated in next year s Annual Report. The Employees and Health/Safety data are actual from January through December 2008.

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EXPANDING USE OF RENEWABLE ENERGY

Novartis is stepping up the proportion of renewable energy sources in total energy consumption. The Pharmaceuticals Division has invested USD 2.3 million at a production site in Wehr, Germany, to convert a heating system from natural gas to wood chips. The new wood-chip installation came on line in late 2008 and will reduce Scope 1 GHG emissions by 3 400 tons per year. The project will lessen dependency on natural gas and repay the initial investment within five years.

Plans to consolidate operations at the Novartis Animal Health Aqua Business in Canada provide an example of pioneering projects to enhance sustainability. The business produces vaccines to protect cultivated salmon against bacterial and viral diseases. Operations at a facility in Montreal, Canada, were moved to an existing production plant on Prince Edward Island in 2006. This expansion project provided an opportunity to put in place energy-saving initiatives including a ground source heat pump system that provides cooling in the summer and heating in the winter.

Other renewable energy projects include an ongoing energy-reduction program at the Vaccines and Diagnostics Division s production site in Rosia, Italy. The program includes installation of photovoltaic and thermal solar panels on the roofs of existing buildings.

CARBON-OFFSET PROJECTS

Carbon-offset projects also are helping Novartis to reach its voluntary target for reduced GHG emissions. Reflecting dynamic business growth at Novartis, GHG emissions in 2005 were already 30% above the 1990 benchmark level set for the Kyoto target. To achieve the 2012 target in the light of the Group s expanding operations, annual GHG emissions must decline by about 100 000 tons of CO2 equivalent.

While the long-term goal is to lower emissions through internal improvement programs, Novartis is taking advantage of carbon-offset options included in the Kyoto protocol, such as the United Nations Clean Development Mechanism. These options are designed to compensate the amount of carbon released into the atmosphere by providing the option of removing GHG elsewhere through the use of renewable energy, energy conservation or carbon sequestration projects.

Carefully considered carbon-offset projects represent a useful tool to foster long-term economic growth for the local population in developing economies, while also helping to meet the Group s CO2 reduction target. In 2007, Novartis purchased 34 square kilometers of pasture land in Argentina with the objective of establishing a forest to sequester carbon. Plantations were started during 2007 and, to date, 1 850 hectares have been planted with approximately 2.2 million young trees. Ultimately, the goal is to establish a sustainable mixed forest with 75% native species. In February 2008, the Forest Stewardship Council certified the Argentina forest project.

A second carbon-offset project sponsored by Novartis is a jatropha plantation and biodiesel project in Mali, West Africa. The seeds of this shrub contain a high proportion of oil that can be pressed and used in production of biodiesel fuel, a natural fertilizer, and potentially biogas energy from the residues.

Because jatropha is a perennial and non-edible crop, it could also provide the local farmers with additional income from their traditional land, complementing cultivation of food crops and feed for animals. Growing jatropha can help protect fields from soil erosion and counter desertification, a major environmental hazard in western Africa. During 2007, the Novartis plantation project started with 350 hectares of jatropha and an additional 1 000 hectares were planted during 2008. The two projects have been submitted for registration under the UN Clean Development Mechanism.

COMMENTS ON 2008 RESULTS

Novartis continues to make progress with respect to energy and water efficiency, GHG emission reduction and elimination of hazardous waste to landfill. The last remaining Novartis facility in the world that has sent organic hazardous waste to landfill has now found a suitable incinerator.

The only environmental target not achieved is for emission of halogenated Volatile Organic Compounds (VOCs). The emission abatement measures taken to reduce emissions from the use of chlorinated solvents were not sufficient to achieve the target and process changes to switch to alternative halogen-free solvents did not become available in the reporting period.

Novartis Group companies around the world paid a total of USD 3 520 in fines for minor HSE violations at a number of sites.

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COMMITMENT TO THE ENVIRONMENT: TARGETS AND RESULTS FOR 2008 AND TARGETS FOR 2009

Energy-efficiency improvement

Targets 2008	Results 2008	Targets 2009
10% by end 2010, based on 2006 level.	8% by end 2008, based on 2006 level.	10% by end 2010, based on 2006 level.

Contact-water-efficiency improvement

Targets 2008	Results 2008	Targets 2009
10% by end 2010, based on 2005 level.	27% by end 2008, based on 2005 level.	10% by end 2010, based on 2005 level.

Volatile organic compounds (VOC) emissions halogenated

Targets 2008	Results 2008	Targets 2009
Maintain 2007 target of 160 tons.	224 tons.	Decreased to 2008 level of 220 tons.

Volatile organic compounds (VOC) non-halogenated

Targets 2008	Results 2008	Targets 2009
Decrease to 1 677 tons by 2008.	1 594 tons.	Decrease to 1 550 tons.

CO2 from vehicles

Targets 2008	Results 2008	Targets 2009
Decrease 10% by end 2010, based on 2005 level.	175 kilotons.	Decrease 10% by end 2010, based on 2005 level.

Scope 1 GHG emissions from operations

Targets 2008	Results 2008	Targets 2009
Decrease 5% below 1990 level by 2008-2012.	404 kilotons.	Decrease 5% below 1990 level by 2008-2012.

Hazardous waste to landfill

Targets 2008	Results 2008	Targets 2009
Decrease to zero tons by 2008.	0.9 tons.	Measures put in place ensure all organic hazardous waste will, in future, be incinerated.

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COMMITMENT TO ETHICAL BUSINESS CONDUCT

Doing business with integrity drives performance by managing risks, fostering competitive advantage and strengthening the reputation of Novartis. Translating values into practice requires more than written standards or monitoring processes, however. Novartis managers are expected to set an appropriate tone and demonstrate leadership with respect to ethical behavior, and training of associates is a central component of our integrity and compliance program.

Ethical conduct at every step of our value chain is critically important for Novartis, as our high performance can only be sustained if it is built on a strong set of ethical values.

It s crucial for all of us to understand that being part of a performance-driven culture doesn t mean just making the numbers, but more importantly doing so the right way, says Joerg Reinhardt, Ph.D., Group Chief Operating Officer and member of the Executive Committee of Novartis.

This focus reflects the conviction that doing business with integrity drives performance by managing risks, fostering competitive advantage and strengthening the company s reputation.

At Novartis, we are convinced that translating values into practice requires more than written standards or simple monitoring or controlling processes. Therefore, the Integrity and Compliance Department promotes a values-based program across the company that supports management in establishing, promoting and enforcing a culture of integrity. The program complements and goes beyond our traditional compliance methods which rely on standards, awareness training, monitoring and auditing by also focusing on leadership, incentives, skills training and decision-making processes to foster responsible business conduct and innovation. More than 200 full- or part-time Integrity and Compliance Officers assist management in implementing the program.

The Group s management of ethical conduct has been recognized by a number of external observers in the field. For example, Novartis was named healthcare super sector leader in the influential Dow Jones Sustainability Index, receiving a perfect score of 100% in the criteria of Codes of Conduct/Compliance/Corruption and Bribery. Novartis also climbed higher in the World s Most Respected Companies list released by the US business magazine Barron s. Novartis ranked number 20, moving up five positions from 2007. Respondents to the Barron s survey cited ethical practices as being among the most important attributes of respect toward large corporations, together with strong management, sound business strategy and competitive edge.

ESTABLISHING INTEGRITY STANDARDS

Having a clear, consistent and easy-to understand set of business-conduct standards is the starting point for a successful integrity and compliance program. To establish and embed such a framework of business standards is challenging in any large organization and became even more so at Novartis with the acquisition of new entities. The number and scope of internal policies and standards became increasingly unwieldy, prompting the decision to initiate a Policy Management Project. The objective is to ensure that clear, consistent and simplified standards are available and understood by all associates.

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While we developed a policy framework in 2007, the following year we had identified a limited set of standards that are short, principle-based and written in language that is easy to understand and apply to all associates, says Dan Ostergaard, Head of Integrity and Compliance at Novartis. We emphasized these criteria because, in the end, what s important is that our business conduct standards help our associates make good decisions.

Following suit, the Pharmaceuticals Division updated its Promotional Code in 2008. The updated code was broadened to cover typical nonpromotional activities such as grants, and integrated our existing additional requirements for interactions with public officials. Importantly, the revised code sets global minimal standards for the most common business practices without interfering with specific local requirements, and clarifies responsibilities between global and local organizations. The goal is effective implementation and minimal bureaucracy.

PROMOTING INTEGRITY STANDARDS

In a large organization such as Novartis, the success of an integrity and compliance program depends on the appropriate tone and actions being taken by management throughout the organization. Therefore, Novartis leaders are expected to take responsibility for integrity and compliance, setting an appropriate tone and demonstrating leadership with respect to ethical behavior.

It is also important to maintain a culture that enables our associates to raise concerns as well as new, innovative ideas that can improve our performance. Integrity standards also are an integral part of all employee performance appraisals. Associates are assessed not only on whether they achieve business objectives, but also on the extent to which they do so by demonstrating the company values.

A central component of the integrity and compliance program is the training of our associates. Our business-integrity training concept comprises both awareness and skills development.

To strengthen awareness of codes and standards all associates including members of the Executive Committee of Novartis are required to complete training in company standards and relevant laws. In addition to face-to-face training provided to management in important compliance areas, during 2008 we further strengthened our comprehensive, mandatory e-learning courses by launching new courses in 14 languages on topics such as conflicts of interest and anti- bribery. As of 2008, 94% of all associates were trained on the Novartis Code of Conduct and 88% on Corporate Citizenship through the e-learning program. New associates are trained on the Code of Conduct during on-boarding, the process of educating new associates to quickly develop competence in their organizational roles.

A new intranet site was also launched, with easy access to our existing standards, information for all associates, polls on integrity issues, a news section and specific tools for Integrity Officers.

In 2008, Corporate Integrity and Compliance and the Corporate Learning Department integrated specific training modules on integrity into the Novartis Leadership Development Program, underscoring that integrity considerations are integral parts of normal business situations. This helps managers recognize and analyze integrity, legal and economic aspects of business activities. As Thomas Wellauer, Ph.D., Head of Corporate Affairs and Member of the Executive Committee of Novartis explains: In an increasingly competitive environment in which local cultural norms

or standards of competition may differ from Novartisvalues and standards, we realize that it is vital to enhance skills training in order to take responsible decisions. Therefore we decided that integrating this into our leadership development training would be one of our priorities for 2008.

To foster the appropriate competence and consistency worldwide, 61 Integrity and Compliance Officers from 40 countries attended workshops during 2008, focusing on skills training and sharing knowledge. To supplement these face-to-face training sessions, Novartis also developed an online course offering interactive training scenarios to strengthen management skills in all aspects of integrity and compliance.

ENFORCING INTEGRITY STANDARDS

Strong enforcement mechanisms also are needed to successfully implement ethical business practices in an organization and to ensure compliance with company standards and applicable laws. At Novartis we do this through decision-making processes to manage risks such as potential conflicts of interest as well as grants and promotional activities.

As in previous years, we required Novartis managers to confirm their understanding and adherence to the Code of Conduct and business conduct standards in 2008.

Clear insight and knowledge of cases of misconduct and program activities are crucial for management to take action when necessary. Therefore the Executive Committee as well as local management teams worldwide are updated regularly. This information is compiled in an annual report submitted to the Audit and Compliance Committee of the Board of Directors.

BUSINESS PRACTICES REPORTING

Inevitably, there are occasions when our internal standards are disregarded and as a result our associates, customers, our business and our reputation may suffer. Novartis associates are obliged to report actual or suspected incidents under a policy

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that guarantees non-retaliation and protection of identity when a person makes a report and during any subsequent action.

In 2005, the Business Practices Office (BPO) was created to consolidate responsibility for receiving reports and determining appropriate responses to the information received. All complaints are investigated and substantiated cases are referred to senior management for appropriate disciplinary action. To help associates report allegations of misconduct, Integrity telephone lines were set up in 2006 covering 70 countries, providing the option of reporting allegations in 51 languages. In 2008 a system for web reporting was introduced to further facilitate the reach of persons who wish to report misconduct.

The BPO report for 2008 underscores the impact of the significantly expanded reporting infrastructure at Novartis. With support from permanent staff in Europe and North America, the BPO has demonstrated its ability to handle complaints from both Novartis associates and external third parties.

During 2008, the BPO received 884 complaints that became investigations. A slight decrease in investigations in the United States was noted during 2008 with an increase in cases being reported in Latin America, Asia, Africa and Australia. To date, 390 of the complaints reported last year have been fully investigated and 231 complaints fully or partly substantiated. Employment contracts of 162 associates were discontinued last year while 66 warning letters were issued and appropriate training undertaken to improve behavior.

Working with the Corporate Integrity and Compliance Department, the BPO provides relevant data from cases to help ensure that training programs address pertinent trends and forms of misconduct identified by investigations.

The goal of the BPO is to raise awareness of potential breaches of values and standards and initiate effective measures, including training, to deter misconduct. Associates are encouraged to proactively address situations involving potential or actual conflict of interest by seeking advice from their supervisor, Integrity and Compliance Officer or the Legal Department.

SUPPLY-CHAIN INITIATIVES

Throughout the Novartis supply chain, a Corporate Citizenship guideline for third-party management sets out the processes implemented by Novartis to ensure ethical business practice. The guideline also establishes minimum requirements business partners must meet in doing business with Novartis Group companies.

Novartis firmly supports the principles of the United Nations Global Compact and is committed to incorporating these principles into our business practices. We give priority to business partners, suppliers and contractors that meet our Third-Party Code of Conduct and share our societal and environmental values. We are convinced that this will benefit not only business development but also the local community and the environment.

Specifically we expect third-party suppliers to meet expectations in the areas of ethics, labor, health and safety, environment and management systems. Our aim is to engage in a constructive dialogue with our business partners around the goals of Corporate Citizenship. We want to create a climate of trust in which third parties feel free to approach Novartis to discuss challenges they face and how we can work together to find solutions. While we recognize our business partners already are obliged to meet local and national standards, we believe it is important in a global environment to strive to meet the highest standards in the appropriate local context.

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COMMITMENT TO ETHICAL BUSINESS CONDUCT: TARGETS AND RESULTS FOR 2008 AND TARGETS FOR 2009

Management Framework

Targets 2008	Results 2008	Targets 2009
Implementation of new policy framework. Implementation of new Integrity & Compliance Program.	New policy framework developed. Integrity & Compliance program implemented.	Implement new policies. Conduct regional work-shops to strengthen application of program.

Code of Conduct

Targets 2008	Results 2008	Targets 2009
Divisions and Corporate to implement two new e-learning courses with 90% completion. Further expand e-training to include refresher courses in addition to new courses. Develop skills training on Code of Conduct topics and integrate into management development program.	New e-learning courses developed and implemented. New training concept with skills training developed, and integrated into management development program.	Update Code of Conduct to include additional key behavioral standards (example: innovation, customer-focus, diversity). Roll out new leadership training for all levels of management.

Fair Business Practices (1)

Targets 2008	Results 2008	Targets 2009
Corporate Citizenship Guideline 3 to be revised. Train relevant Pharma associates on revised promotional practice code.	Corporate Citizenship Guideline 3 and Novartis Pharma Principles and Practices for Professionals (NP4) revised. Pharma associates trained in all regions.	Review codes in all divisions for inclusion of nonpromotional activities, where relevant.

Third Party Management

Targets 2008	Results 2008	Targets 2009
Audit additional 250 third parties. Screen and assess additional 500 questionnaires from Class 2 third-party suppliers. Conduct training programs to further raise awareness within the company.	Completed all planned on-site audits and compliance-assessment questionnaires. Held awareness and training workshops for Novartis third-party management associates from 11 countries.	Design and pilot local supplier information programs to foster social responsibility initiatives. Audit additional 150 third-parties from high-risk countries.

Product Stewardship

Targets 2008	Results 2008	Targets 2009
Continue support of anticipatory Product Stewardship.	Product Stewardship has been fully integrated into the risk management activities of the divisions.	From 2009, product stewardship issues will be referred to in the current Form 20-F on file with the US Securities and Exchange Commission.

Animal Welfare

Targets 2008	Results 2008	Targets 2009
Integrate Novartis Vaccines Institute for Global Health (NVGH) and NIBR site in Shanghai into Novartis animal-welfare organization. Audit third party facilities in countries with no, or weak, animal welfare legislation	Both NVGH and NIBR Shanghai sites were integrated into animal-welfare processes, including visit of the global animal welfare officer. In Pharma Division and Corporate Research, only two of 14 third-party facilities audited in countries with no, or weak, animal welfare legislation required remedial actions.	Monitor the implementation of animal-welfare-related processes in new facilities (Shanghai, Tokyo, Siena). Promote best animal-welfare practices in third-party facilities by auditing facilities in countries with weak laws and regulations, and continuously upgrade contractual study conditions to the highest standards. Organize an animal welfare forum to align the global animal welfare community. Create a Reduce, Refine, Replace award at Novartis.

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INDEPENDENT ASSURANCE REPORT ON THE NOVARTIS CORPORATE CITIZENSHIP REPORTING

To the Audit and Compliance Committee of Novartis AG, Basel (Novartis).

We have performed assurance procedures to provide limited assurance on the following aspects of the 2008 Corporate Citizenship (CC) reporting of Novartis.

SUBJECT MATTER

Data and information disclosed with the CC reporting of Novartis and its consolidated subsidiaries, for the business year ended December 31, 2008, on the following aspects:

- The management and reporting processes with respect to the CC reporting and to the preparation of Health, Safety and Environment (HSE) and CC key figures as well as the control environment in relation to the data aggregation of these key figures; and
- The CC key performance indicators on page 58, the Novartis access-to-medicine projects 2008 figures on page 72 and HSE key figures Novartis Health, Safety and Environment Data 2008 on page 86, published in the Novartis Annual Report 2008 .

CRITERIA

- The CC Policy including the CC Guidelines and the Code of Conduct prepared by Novartis, the CC and the compliance Annual Reporting guidance; and
- The defined procedures by which CC and HSE data is gathered, collated and aggregated internally.

RESPONSIBILITY AND METHODOLOGY

The accuracy and completeness of CC and HSE indicators are subject to inherent limitations given their nature and methods for determining, calculating and estimating such data. Our Assurance Report should therefore be read in connection with Novartis guidelines, definitions and procedures on the reporting of its CC and HSE performance.

The Board of Directors of Novartis AG is responsible for both the subject matter and the criteria. Our responsibility is to provide a conclusion on the subject matter based on our assurance procedures in accordance with the International Standard on Assurance Engagements (ISAE) 3000.

MAIN ASSURANCE PROCEDURES

Our assurance procedures included the following work:

- **Evaluation of the application of group guidelines:** Reviewing the application of the Novartis internal CC reporting guidelines;

- **Site visits:** Visiting the Animal Health and Pharmaceuticals global headquarters, selected country and business unit headquarters and specific sites in Brazil, Germany, Italy, Korea, Poland, Romania, Switzerland and the United States. The selection was based on quantitative and qualitative criteria;

Interviewing personnel responsible for internal reporting and data collection at the sites we visited and at the Group level;

- **Assessment of the key figures:** Performing tests on a sample basis of evidence supporting selected HSE data (for lost time injury and illness rate, hazardous wastes, water use, energy efficiency and CO_2 emission) concerning completeness, accuracy, adequacy and consistency;

- **Review of the documentation and analysis of relevant policies and basic principles:** Reviewing the relevant documentation on a sample basis, including group CC policies, management and reporting structures and documentation;

- **Assessment of the processes and data consolidation:** Reviewing the appropriateness of the management and reporting processes for CC reporting; and Assessing the consolidation process of data at the group level.

CONCLUSIONS

Based on our work described in this report and the assessment of criteria, nothing has come to our attention that causes us to believe that the data and information mentioned in the subject matter and disclosed with the Corporate Citizenship reporting does not give a fair picture of Novartis s performance.

Additionally, nothing has come to our attention that causes us to believe that the management and reporting processes as defined under subject matter above are not functioning as designed, in all material respects.

RECOMMENDATIONS

From our work, we have provided the following recommendations to the management, which have been agreed:

- In 2008 Novartis announced and established a Corporate Citizenship Committee (CCC). Ensure that this body supports the further development of the CC program in the future.

- The internal CC reporting procedures have been further developed continuously. Review these procedures with respect to small reporting units in order to ensure accurate and complete reporting.

Basel, January 15, 2009

PricewaterhouseCoopers AG

/s/ Thomas Scheiwiller
Dr. Thomas Scheiwiller

/s/ Thomas Frei
Thomas Frei

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CORPORATE GOVERNANCE

Novartis is fully committed to good corporate governance.

The corporate governance framework of Novartis determines the management structure, organization and processes within the Group. Its purpose is to support the creation of sustainable long-term value for shareholders, aiming to foster controlled and transparent entrepreneurship, align the interests of Novartis managers and shareholders and allow for efficient decision-making focused on the Group s long-term success

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STANDARDS APPLICABLE TO NOVARTIS

LAWS AND REGULATIONS

Novartis is subject to the laws of Switzerland, in particular Swiss company and securities laws, and to the securities laws of the United States as applicable to foreign private issuers of securities.

In addition, Novartis is subject to the rules of the Swiss Stock Exchange (SIX Swiss Exchange), including the Directive on Information relating to Corporate Governance.

Novartis is also subject to the rules of the New York Stock Exchange (NYSE) as applicable to foreign private issuers of securities. The NYSE requires Novartis to describe any material ways in which its corporate governance differs from that of domestic US companies listed on the NYSE. Different from US law, shareholders under Swiss law do not receive written reports from committees of the Board of Directors; in addition, the Group s external auditors are appointed by shareholders at the Annual General Meeting, as opposed to being appointed by the Audit and Compliance Committee.

SWISS CODE OF BEST PRACTICE FOR CORPORATE GOVERNANCE

Novartis applies the Swiss Code of Best Practice for Corporate Governance.

NOVARTIS CORPORATE GOVERNANCE STANDARDS

Novartis has incorporated the corporate governance standards described above into the Articles of Incorporation and the Regulations of the Board of Directors, its Committees and the Executive Committee of Novartis AG.

The Corporate Governance and Nomination Committee regularly reviews these standards and principles in light of prevailing best practices and makes recommendations for improvements of the corporate governance framework of Novartis for consideration by the full Board of Directors (Board).

Additional corporate governance information can be found on the Novartis website:

www.novartis.com/investors/en/corporate_governance

Printed copies of the Novartis Articles of Incorporation, Regulations of the Board and Charters of Board Committees can be obtained by writing to: Novartis AG, Attn: Corporate Secretary, CH-4056 Basel, Switzerland.

GROUP STRUCTURE

NOVARTIS AG AND GROUP COMPANIES

Under Swiss company law, Novartis AG is organized as a corporation, which has issued shares of common stock to investors. The registered office of Novartis AG is Lichtstrasse 35, CH-4056 Basel, Switzerland.

Business operations are conducted through Novartis Group companies. Novartis AG, a holding company, owns directly or indirectly all companies worldwide belonging to the Novartis Group. Except as described below, the shares of these companies are not publicly traded. The most important Novartis subsidiaries and associated companies are listed in Note 32 to the Group s consolidated financial statements.

DIVISIONS

The Novartis Group conducts its business through four divisions: Pharmaceuticals, Vaccines and Diagnostics, Sandoz and Consumer Health.

MAJORITY HOLDINGS IN PUBLICLY TRADED GROUP COMPANIES

The shares of Idenix Pharmaceuticals, Inc. and Novartis India Limited are publicly traded. Novartis owns:

- 56% of Idenix Pharmaceuticals, Inc. The shares of Idenix Pharmaceuticals are listed for trading on NASDAQ (Valor No. 1630029, ISIN US45166R2040, symbol: IDIX).

- 51% of Novartis India Limited. The remaining shares are registered for trading on the Bombay Stock Exchange (ISIN INE234A01025, symbol: HCBA).

SIGNIFICANT MINORITY HOLDINGS IN PUBLICLY TRADED COMPANIES

Novartis AG holds

- 33.3% of the bearer shares of Roche Holding AG, with its registered office in Basel, Switzerland, and listed on the SIX Swiss Exchange (Valor No. 1203211, ISIN CH0012032113, symbol: RO). The market value of the Group s interest in Roche Holding AG, as of December 31, 2008, was USD 8.5 billion. Novartis does not exercise control over Roche Holding AG, which is independently governed, managed and operated.

- 24.8% of the bearer shares of Alcon Inc., with its registered office in Hünenberg, Switzerland, and listed on the NYSE (symbol: ACL). The market value of the Group s interest in Alcon Inc., as of December 31, 2008, was USD 6.6 billion. Novartis does not exercise control over Alcon Inc., which is independently governed, managed and operated.

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SHAREHOLDERS OF NOVARTIS AG

SIGNIFICANT SHAREHOLDERS

According to the share register, on December 31, 2008, the following shareholders (including nominees and the American Depository Share (ADS) depositary) held more than 2% of the total share capital of Novartis: (1)

- Shareholders: Novartis Foundation for Employee Participation, with its registered office in Basel, Switzerland (holding 4.2% of the share capital); Emasan AG, with its registered office in Basel, Switzerland (holding 3.3%);
- Nominees: JPMorgan Chase Bank, New York (holding 8.9%); Mellon Bank, Everett, Massachusetts (holding 2.6%); Nortrust Nominees, London (holding 2.3%); and
- ADS depositary: JPMorgan Chase Bank, New York (holding 11.8%).

Novartis has not entered into any agreement with any shareholder regarding the voting or holding of Novartis shares.

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(1)Excluding Novartis AG, together with Novartis affiliates, holding treasury shares.

CROSS SHAREHOLDINGS

Novartis has no cross shareholdings in excess of 5% of capital or voting rights with any other company.

DISTRIBUTION OF NOVARTIS SHARES

As of December 31, 2008, Novartis had more than 152 000 registered shareholders. The following table provides information about the distribution of shareholders by number of shares held:

NUMBER OF SHARES HELD

As of December 31, 2008	Number of registered shareholders	% of registered share capital
1 100	20 903	0.04
101 1 000	88 589	1.49
1 001 10 000	38 997	4.09
10 001 100 000	3 708	3.65
100 001 1 000 000	476	5.40
1 000 001 5 000 000	90	7.33
5 000 001 or more(1)	39	55.09
Total registered shareholders/shares	152 802	77.09
Unregistered shares		22.91
Total		100.00

(1)Including Significant Shareholders listed above.

The following table provides information about the distribution of shareholders by type and geographic region. This information relates only to registered shareholders and does not include holders of unregistered shares. Also, the information provided in the table below cannot be assumed to be representative of the entire Novartis investor base since nominees and JPMorgan Chase Bank, as ADS depositary, are registered as shareholders for a large number of beneficial owners.

REGISTERED SHAREHOLDERS BY TYPE AND GEOGRAPHIC REGION

As of December 31, 2008	Shareholders in %	Shares in %
Individual shareholders	95.80	12.51
Legal entities	4.06	40.77
Nominees, fiduciaries	0.14	46.72
Total	100.00	100.00
Switzerland(1)	89.26	43.82
Europe	9.29	13.98
United States	0.51	40.10
Other countries	0.94	2.10
Total	100.00	100.00

(1)Excluding 7.4% of the share capital held by Novartis AG, together with Novartis affiliates, as treasury shares.

CAPITAL STRUCTURE

SHARE CAPITAL OF NOVARTIS AG

The share capital of Novartis AG is CHF 1 321 811 500, fully paid-in and divided into 2 643 623 000 registered shares, each with a nominal value of CHF 0.50. Novartis has neither authorized nor conditional capital. There are no preferential voting shares; all shares have equal voting rights. No participation certificates, non-voting equity securities (Genussscheine) or profit-sharing certificates have been issued.

Novartis shares are listed on the SIX Swiss Exchange and traded on SWX Europe (Valor No. 001200526, ISIN CH0012005267, symbol: NOVN.VX) as well as on the NYSE in the form of American Depositary Shares (ADSs) (Valor No. 567514, ISIN US66987V1098, symbol: NVS).

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SHARE REPURCHASE PROGRAMS

Novartis began repurchasing its shares in 1999. Since then, five share repurchase programs have been completed with the repurchase of shares worth CHF 19 billion. Shares repurchased under the first program were not cancelled. However, shares repurchased under the other four programs were cancelled. At the Annual General Meeting in February 2008, shareholders authorized the Board to launch a sixth program to repurchase shares up to a maximum amount of CHF 10 billion via a second trading line on SWX Europe. In 2008, a total of six million shares were repurchased at an average price of CHF 49.42 per share. The share repurchase program is currently suspended in favor of debt repayment.

CHANGES IN SHARE CAPITAL

Novartis has not increased its share capital during the last three years.

As part of various share repurchase programs, Novartis has reduced its share capital as follows:

CAPITAL REDUCTIONS

Year of reduction	Number of shares cancelled	Amount of capital reduced in CHF
2006	10 200 000	5 100 000
2007	0	0
2008	85 348 000	42 674 000

A table with additional information on changes in the Novartis share capital can be found in Note 5 to the financial statements of Novartis AG.

CONVERTIBLE OR EXCHANGEABLE SECURITIES

Novartis has not issued convertible or exchangeable bonds, warrants, options or other securities granting rights to Novartis shares, other than securities granted to associates as a component of compensation.

SHAREHOLDER RIGHTS

ONE SHARE, ONE VOTE

Each share registered with the right to vote entitles the holder to one vote at General Meetings.

OTHER SHAREHOLDER RIGHTS

Shareholders representing at least 10% of the share capital may request that an extraordinary General Meeting of shareholders be convened. Shareholders representing shares with an aggregate nominal value of at least CHF 1 million may request that an item be included in the agenda of a General Meeting of shareholders. Such requests must be made in writing at least 45 days before the date of the General Meeting, specify the item to be included in the agenda and contain the proposal on which the shareholder requests a vote.

Shareholders have the right to receive dividends, appoint a proxy and hold such other rights as are granted under Swiss Law.

REGISTRATION AS SHAREHOLDER

No restrictions apply on the transferability of Novartis shares. However, only shareholders registered in the Novartis share register may exercise their voting rights. In order to be registered, a shareholder must declare that he or she acquired the shares in his or her own name and for his or her own account. The Articles of Incorporation provide that the Board may register nominees with the right to vote. For restrictions on registration of nominees, please see under Corporate Governance Restriction on Registration of Nominees.

RESTRICTION ON REGISTRATION WITH THE RIGHT TO VOTE

The Articles of Incorporation provide that no shareholder shall be registered with the right to vote shares composing more than 2% of the Novartis registered share capital. The Board may, upon request, grant an exemption from this restriction. Exemptions are in force for the Significant Shareholders listed under Corporate Governance Shareholders of Novartis AG Significant Shareholders. In 2008, no exemptions were requested.

Given that shareholder representation at General Meetings has traditionally been low, Novartis considers the restriction on registration necessary to prevent a minority shareholder from dominating a General Meeting.

RESTRICTION ON REGISTRATION OF NOMINEES

The Articles of Incorporation provide that no nominee shall be registered with the right to vote shares composing 0.5% or more of the Novartis registered share capital. The Board may, upon request, grant an exemption from this restriction if the nominee discloses the names, addresses and the number of shares of the persons for whose account it holds 0.5% or more of the registered share capital. Exemptions are in force for the

nominees listed under Corporate Governance Shareholders of Novartis AG Significant Shareholders.

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REMOVAL OF RESTRICTIONS ON REGISTRATION

The restrictions on registration contained in the Articles of Incorporation may only be removed by a resolution of the General Meeting of shareholders, with approval of at least two-thirds of the votes represented at the meeting.

AMERICAN DEPOSITARY SHARES

The same restrictions apply to holders of American Depositary Shares (ADSs) as those holding Novartis shares (i.e. the right to vote up to 2% of the Novartis registered share capital unless otherwise granted an exemption by the Board and disclosure requirement for nominees, as described above).

ADS holders may vote by instructing JPMorgan Chase Bank, the ADS depositary bank, to exercise the voting rights attached to the registered shares underlying the ADSs. JPMorgan Chase Bank exercises the voting rights for registered shares underlying ADSs for which no voting instructions have been given by providing a discretionary proxy to the independent proxy (unabhängiger Stimmrechtsvertreter) appointed by Novartis pursuant to Swiss law.

CIRCUMVENTION OF RESTRICTIONS ON REGISTRATION

Shareholders, ADS holders or nominees that are linked to each other or act in concert to circumvent the restrictions on registration are treated as one person or nominee for purposes of the restrictions on registration.

NO RESTRICTION ON TRADING OF SHARES

The registration of shareholders in the Novartis share register or in the ADS register kept by JPMorgan Chase Bank does not affect the transferability of Novartis shares or ADSs. No restrictions are imposed on the trading of registered Novartis shares or ADSs by Novartis or JPMorgan Chase Bank. Registered Novartis shareholders or ADS holders may, therefore, purchase or sell their Novartis shares or ADSs at any time, including prior to a General Meeting regardless of the record date. The record date serves only to determine the right to vote at a General Meeting of Novartis.

RESOLUTIONS AND ELECTIONS AT GENERAL MEETINGS

The General Meeting passes resolutions and elections with the absolute majority of the votes represented at the meeting. However, under the Articles of Incorporation, the approval of two-thirds of the votes represented at the meeting is required for:

- An alteration of the purpose of Novartis AG;
- The creation of shares with increased voting powers;
- An implementation of restrictions on the transfer of registered shares and the removal of such restrictions;
- An authorized or conditional increase of the share capital;
- An increase of the share capital out of equity, by contribution in kind, for the purpose of an acquisition of property, or the grant of special rights;
- A restriction or suspension of rights of options to subscribe;
- A change of location of the registered office of Novartis AG; or
- The dissolution of Novartis AG.

CHANGE-OF-CONTROL PROVISIONS

NO OPTING UP, NO OPTING OUT

The Swiss Stock Exchange Act provides that anyone who, directly, indirectly or acting in concert with third parties, acquires equity securities exceeding 33 1/3% of the voting rights of a company whether or not such rights are exercisable is required to make an offer to acquire all listed equity securities of that company. A company may raise this threshold to 49% of the voting rights (opting up) or may, under certain circumstances, waive the threshold (opting out). Novartis has not adopted any such measures.

CHANGE-OF-CONTROL CLAUSES IN EMPLOYMENT CONTRACTS

Please see under Remuneration Report Contracts with Members of the Executive Committee.

BOARD OF DIRECTORS

COMPOSITION OF THE BOARD OF DIRECTORS AS OF DECEMBER 31, 2008

	Age	Director since	Term expires
Daniel Vasella	55	1996	2010
Ulrich Lehner	62	2002	2011
Hans-Joerg Rudloff	68	1996	2010
Peter Burckhardt	69	1996	2009(1)
Srikant Datar	55	2003	2009
Ann Fudge	57	2008	2011
William W. George	66	1999	2009
Alexandre F. Jetzer	67	1996	2011
Pierre Landolt	61	1996	2011
Andreas von Planta	53	2006	2009
Wendelin Wiedeking	56	2003	2009
Marjorie M. Yang	56	2008	2010
Rolf M. Zinkernagel	64	1999	2009

(1) Peter Burckhardt was re-elected at the Annual General Meeting of February 26, 2008, for a one-year term as he will reach the age limit established in the Articles of Incorporation in 2009.

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INDEPENDENCE OF DIRECTORS

The independence of Directors is a key corporate governance issue. Accordingly, Novartis established independence criteria that are intended to reflect international best-practice standards. These independence criteria (last revised on October 16, 2008) can be found on the Novartis website: www.novartis.com/investors/governance-documents.shtml

The Corporate Governance and Nomination Committee annually submits to the Board a proposal concerning the determination of the independence of each Director. For this assessment, the Committee considers all relevant facts and circumstances of which it is aware.

In its meeting on December 11, 2008, the Board determined that all of its members, except for Daniel Vasella, Alexandre F. Jetzer and William W. George were independent.

Daniel Vasella, the Chief Executive Officer, is the only Director who is also an executive of Novartis. Alexandre F. Jetzer acts for Novartis under a consultancy agreement to support various government relations activities. An immediate family member of William W. George became an executive officer of Novartis as of December 1, 2008.

The Board has delegated Rolf M. Zinkernagel to the Scientific Advisory Board of the Novartis Institute for Tropical Diseases (NITD) and to the Board of Directors of the Genomics Institute of the Novartis Research Foundation (GNF). The Board concluded that these activities are supervisory, and not consultatory, in nature and do not affect Rolf M. Zinkernagel s independence as Director.

ELECTION AND TERM OF OFFICE

All Directors are elected individually.

Directors are elected to terms of office of three years or less by shareholders at General Meetings. The terms of office among Directors are to be coordinated so that approximately one-third of all Directors are subject each year to re-election or election. Under Swiss law, a General Meeting of shareholders is entitled to remove any Director at any time, regardless of his or her remaining term of office.

The average tenure of Directors is seven years and the average age is 61. In principle, a Director must retire after reaching age 70. Under certain circumstances, shareholders may grant an exemption from this rule and re-elect a Director for additional terms of office of no more than three years at a time.

CHAIRMAN AND CHIEF EXECUTIVE OFFICER

The Board regularly reviews the position of the Chairman and Chief Executive Officer. The Board is currently of the firm opinion that it is in the best interest of Novartis and its shareholders that Daniel Vasella serves as Chairman and Chief Executive Officer of the Group.

A number of leading corporate governance codes recognize that the combination of the chairman and chief executive officer roles can be advantageous for a company if combined with an appropriate set of checks and balances. These checks and balances include an independent Lead Director, a majority of independent Directors, regular private meetings of the independent Directors chaired by the Lead Director and separate Board committees (Corporate Governance and Nomination Committee, Audit and Compliance Committee and Compensation Committee) that all are composed exclusively of independent Directors. Novartis has instituted all of these checks and balances.

LEAD DIRECTOR

In 2006, the Board appointed Ulrich Lehner as Lead Director. His responsibilities include ensuring an orderly evaluation of the performance of the Chairman and Chief Executive Officer, chairing the Board s private sessions (i.e. meetings of the independent Directors) and leading the independent Directors in the event of a crisis or in matters requiring their separate consideration or decision. The Lead Director is also a member of all Board committees.

In 2008, the independent Directors held two private sessions chaired by the Lead Director.

ROLE AND FUNCTIONING OF THE BOARD

The Board holds the ultimate decision-making authority for Novartis AG in all matters, except for those decisions reserved to the shareholders by law.

The Chairman sets the agendas of Board meetings. Any Director may request a Board meeting or the inclusion of an item on the agenda. Directors are provided, in advance of Board meetings, with materials intended to prepare them to discuss the items on the agenda. Decisions are made by the Board as a whole, with the support of its four committees (Chairman s Committee, Compensation Committee, Audit and Compliance Committee, and Corporate Governance and Nomination Committee).

The primary functions of the Board include:

- Providing the strategic direction of the Group;
- Determining the organizational structure and the manner of governance of the Group;
- Supervising the business operations overall;
- Approving major acquisitions or divestments;

- Structuring the accounting system, financial controls and financial planning;
- Reviewing and approving the annual financial statements and results release of Novartis AG and the Group;
- Appointing and dismissing members of the Executive Committee, the Head of Internal Audit and other key executives;

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- Promulgating and overseeing compliance with fundamental corporate policies, in particular on financial matters, corporate governance and citizenship, personnel and environmental matters;

- Preparing matters to be presented at General Meetings, including Novartis AG s financial statements and the consolidated financial statements for the Group;

- Regularly evaluating the performance of the Chairman and Chief Executive Officer and reviewing the performance of the members of the Executive Committee;

- Preparing and annually reviewing succession plans for the Chairman and Chief Executive Officer; and

- Performing an annual self-evaluation.

These details are regulated in the Regulations of the Board of Directors, its Committees and the Executive Committee of Novartis AG (Board Regulations), which are published on the Novartis website: www.novartis.com/investors/en/corporate_governance

ROLE AND FUNCTIONING OF THE BOARD COMMITTEES

Each Board committee has a written charter outlining its duties and responsibilities and is led by a Chair elected by the Board. The Board committees meet regularly to consider the items on the agenda determined by the Chair. Board committee members are provided, in advance of meetings, with materials intended to prepare them to discuss the items on the agenda.

THE CHAIRMAN S COMMITTEE

The Chairman s Committee is composed of four Directors. This Committee makes decisions on financial and other matters delegated by the Board to the Chairman s Committee in accordance with the Board Regulations. In addition, in urgent cases, the Chairman s Committee also makes decisions and takes preliminary actions on behalf of the Board.

The Charter of the Chairman s Committee is published on the Novartis website:

www.novartis.com/investors/en/corporate_governance

THE COMPENSATION COMMITTEE

The Compensation Committee is composed of four independent Directors. This Committee reviews Groupwide compensation policies and plans, including share and share option plans and other incentive-based compensation, for approval by the Board. The Compensation Committee advises the Board on the compensation of Non-Executive Directors, decides on the compensation of the Chairman and Chief Executive Officer, the members of the Executive Committee and other key executive officers, and approves the employment contracts of these executives. The Compensation Committee has the authority to retain external compensation consultants and other advisors.

The Charter of the Compensation Committee is published on the Novartis website:

www.novartis.com/investors/en/corporate_governance

THE AUDIT AND COMPLIANCE COMMITTEE

The Audit and Compliance Committee is composed of five independent Directors. This Committee has determined that Srikant Datar, Ulrich Lehner and Hans-Joerg Rudloff each possess specific accounting and financial management expertise and that each is an Audit Committee Financial Expert as defined by the US Securities and Exchange Commission (SEC). The Board has also determined that other members of the Audit and Compliance Committee have sufficient experience and ability in finance and compliance matters to enable them to adequately discharge their responsibilities.

The Audit and Compliance Committee s main duties include:

- Evaluating and selecting the external auditors to be nominated for election at a General Meeting;
- Reviewing the external auditors terms of engagement;
- Determining the scope and the review of the results of external and internal audits;
- Reviewing (together with the Group s external and internal auditors and financial and accounting management) whether the accounting policies and financial controls are appropriate, effective and compliant with the applicable accounting and internal control standards;
- Reviewing and approving the quarterly financial statements of the Group for the first three quarters of each year and the corresponding financial results releases;
- Reviewing internal control and compliance processes and procedures, including those for the management of business risks; and
- Reviewing processes and procedures to ensure compliance with laws and internal regulations.

The Charter of the Audit and Compliance Committee is published on the Novartis website:

www.novartis.com/investors/en/corporate_governance

THE CORPORATE GOVERNANCE AND NOMINATION COMMITTEE

The Corporate Governance and Nomination Committee is composed of five independent Directors. This Committee develops corporate governance principles and recommends these to the Board for approval. Its duties include regular reviews of the Articles of Incorporation with a view to reinforcing shareholder rights, and of the composition and size of the Board and its committees. The Corporate Governance and Nomination Committee annually reviews the independence status of each Director. In addition, the Corporate Governance and Nomination Committee identifies candidates for election as Directors.

The Charter of the Corporate Governance and Nomination Committee is published on the Novartis website: www.novartis.com/investors/en/corporate_governance

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BOARD AND COMMITTEES ATTENDANCE, NUMBER AND DURATION OF MEETINGS IN 2008

	Full Board	Chairman s Committee	Compensation Committee	Audit and Compliance Committee	Corporate Governance and Nomination Committee
Number of meetings in 2008	**8**	**9**	**5**	**8**	**3**
Approximate duration of each meeting (hours)	**7**	**1.5**	**2**	**2.5**	**2**
Daniel Vasella	8(1)	9(1)			
Ulrich Lehner	8	9	5	7(2)	3(3)
Hans-Joerg Rudloff	7	9	5(1)	8	
Peter Burckhardt	8			8	
Srikant Datar	8		0(4)	8(3)	
Ann Fudge	4(5)				1(4)
William W. George	8	8	5(6)		2(2,6)
Alexandre F. Jetzer	8				
Pierre Landolt	8				3
Andreas von Planta	8			8	3
Wendelin Wiedeking	6				
Marjorie M. Yang	5		1(7)		
Rolf M. Zinkernagel	7				3

(1) Chair

(2) Chair until November 2008

(3) Chair since December 2008

(4) Since December 2008

(5) Since February 2008

(6) Until November 2008

(7) Since January 2008

INFORMATION AND CONTROL SYSTEMS OF THE BOARD VIS-À-VIS MANAGEMENT

THE BOARD

The Board ensures that it receives sufficient information from the Executive Committee to perform its supervisory duty and to make decisions that are reserved for the Board. The authority of the Board to determine the compensation of the members of the Executive Committee is an important element to ensure the alignment of Executive Committee members with the interests of Novartis and its shareholders.

The Board obtains the information required to perform its duties through several means:

- Since the Chairman is also the Chief Executive Officer of Novartis, who heads the meetings of the Executive Committee, he is fully informed on all current developments;
- The Chairman and Chief Executive Officer informs all Directors regularly about current developments, including by regularly submitting written reports;
- The minutes of Executive Committee meetings are made available to the Directors;
- Informal teleconferences are held as required between Directors and the Chairman and Chief Executive Officer or the Lead Director;
- A session is held at each Board meeting with all members of the Executive Committee;
- The Board is updated in detail by each Division Head on a quarterly basis;
- By invitation, members of management are invited to attend Board meetings to report on areas of the business within their responsibility; and
- Directors are entitled to request information from members of the Executive Committee or any other Novartis associate, and may also visit any Novartis site.

BOARD COMMITTEES

Board committees regularly meet with management and, at times, outside consultants to review the business, better understand applicable laws and policies affecting the Group and support management in meeting the requirements and expectations of stakeholders.

In particular, the Chief Financial Officer and representative of the external auditors are invited to meetings of the Audit and Compliance Committee. Furthermore, the Heads of Internal Audit, Financial Reporting and Accounting, Risk Management and Compliance, as well as the Business Practices Officer, report on a regular basis to the Audit and Compliance Committee.

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The Audit and Compliance Committee reviews financial reporting processes on behalf of the Board. For each quarterly and annual release of financial information, the Disclosure Review Committee reviews the release for accuracy and completeness of disclosures. The Disclosure Review Committee is chaired by the Chief Financial Officer and is attended by the Chief Operating Officer, the Heads of the Divisions, the Heads of Finance of the Divisions and the Heads of the following Corporate Functions: Legal, Treasury, Financial Reporting and Accounting, Internal Audit and Investor Relations. Decisions made by the Disclosure Review Committee are reviewed by the Audit and Compliance Committee before publication of the quarterly and annual release.

INTERNAL AUDIT

The Internal Audit function carries out operational and system audits in accordance with an audit plan adopted by the Audit and Compliance Committee; assists organizational units in the accomplishment of objectives by providing an independent approach to the evaluation, improvement and effectiveness of their internal control framework; prepares reports regarding the audits it has performed; and reports actual or suspected irregularities to the Audit and Compliance Committee and the Chairman of the Board.

The Audit and Compliance Committee regularly reviews the scope of Internal Audit, the audit plans and the results of the internal audits.

CORPORATE RISK MANAGEMENT

The Corporate Risk Management function reports to the Board on a regular basis on risk assessment and risk management. Organizational and process measures have been designed to identify and mitigate risks at an early stage. Organizationally, the responsibility for risk and risk mitigation is allocated to the divisions, with specialized corporate functions such as Group Finance; Group Quality Operations; Corporate Health, Safety and Environment; and Business Continuity providing support and controlling the effectiveness of the risk management by the divisions.

MANAGEMENT OF THE GROUP

The Board has delegated to the Executive Committee the coordination of the Group s day-to-day business operations. The Executive Committee is headed by the Chief Executive Officer.

The primary functions of the Executive Committee include:

- Implementing the strategies and policies adopted by the Board;

- Regularly assessing the achievement of targets set for the businesses; Drawing up corporate policies, strategies and strategic plans for approval by the Board;

- Submitting to the Board and its committees any proposed changes in management positions of material significance, capital investments, financial measures, acquisitions or divestitures of companies, participations and businesses, contracts of material significance and budgets;

- Implementing matters that have been approved by the Board or its committees;

- Preparing and submitting quarterly and annual reports to the Board or its committees;

- Informing the Board of all matters of fundamental significance to the businesses;

- Appointing and promoting senior management as well as the selection and promotion of new and potential management personnel;

- Implementing modifications to the Group s organization;

- Ensuring the efficient operation of the Group and achievement of optimized results;

- Promoting an active internal and external communications policy;

- Ensuring that management capacity, financial and other resources are provided and used efficiently;

- Promulgating guidelines; and

- Dealing with any other matters as are delegated by the Board to the Executive Committee.

The Chief Executive Officer may appoint or remove non-voting Permanent Attendees to attend the meetings of the Executive Committee. As of December 31, 2008, four Permanent Attendees attend meetings of the Executive Committee.

The organizational structure and the details of the responsibility of the Executive Committee are set forth in the Board Regulations.

The Board has not concluded any contracts with third parties to manage the business.

For biographical information of the members of the Executive Committee and the Permanent Attendees, please see under Corporate Governance Executive Committee and Permanent Attendees Biographical Information.

AUDITORS

DURATION OF THE MANDATE AND TERMS OF OFFICE OF THE INDEPENDENT AUDITORS

Based on a recommendation by the Audit and Compliance Committee, the Board nominates an independent auditor for election at the Annual General Meeting. PricewaterhouseCoopers (PwC) assumed its existing auditing mandate for Novartis in 1996. The

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lead auditor responsible for the mandate, Robert P. Muir, began serving in his role in 2005. The Audit and Compliance Committee ensures that the lead auditor partner is rotated at least every five years.

AUDITING AND ADDITIONAL FEES

PwC charged the following fees for professional services rendered for the 12-month periods ended December 31, 2008, and December 31, 2007:

	2008 USD thousands	2007 USD thousands
Audit Services	24963	21245
Audit-Related Services	3200	904
Tax Services	400	222
Other Services	558	331
Total	**29121**	**22702**

Audit Services are defined as the standard audit work performed each year in order to issue opinions on the consolidated financial statements of the Group, to issue opinions relating to the effectiveness of the Group s internal controls over financial reporting, and to issue reports on local statutory financial statements. Also included are audit services that can only be provided by the Group auditor, such as auditing of nonrecurring transactions and implementation of new accounting policies, audits of accounting infrastructure system controls, pre-issuance reviews of quarterly financial results, consents and comfort letters and any other audit services required for SEC or other regulatory filings.

Audit-Related Services include those other assurance services provided by the independent auditor but not restricted to those that can only be provided by the auditor signing the audit report. They comprise amounts for services such as acquisition due diligence and related audits, audits of pension and benefit plans, IT infrastructure control assessments, contractual audits of third-party arrangements, assurance services on corporate citizenship reporting, and consultation regarding new accounting pronouncements.

Tax Services represent tax compliance, tax returns, assistance with historical tax matters and other tax-related services.

Other Services include training in the finance area, benchmarking studies, assessment of certain non-financial processes and license fees for use of accounting and other reporting guidance databases.

As the independent auditor, PwC is responsible for opining on whether the audited financial statements comply with International Financial Reporting Standards (IFRS) and Swiss law. Additionally, PwC is responsible for opining on the effectiveness of internal control over financial reporting.

The Audit and Compliance Committee is responsible for overseeing the conduct of these activities by management and PwC. During 2008, the Audit and Compliance Committee held eight meetings. At each of these meetings, PwC was invited to attend during the discussion of agenda items that dealt with accounting, financial reporting or auditing matters and any other important matters. PwC provided to the Audit and Compliance Committee the written disclosures required by Rule 3526, Communications with Audit Committees Concerning Independence, of the Public Company Accounting Oversight Board (PCAOB), and the Audit and Compliance Committee and PwC have discussed PwC s independence from Novartis and Novartis management.

Based on the reviews and discussions with management and PwC referred to above, the Audit and Compliance Committee recommended to the Board, and the Board approved, inclusion of the audited financial statements in the Annual Report for the year ended December 31, 2008.

POLICY ON PRE-APPROVAL OF AUDIT AND NON-AUDIT SERVICES OF INDEPENDENT AUDITORS

The Audit and Compliance Committee s pre-approval is required for all audit and non-audit services provided by PwC. These services may include audit services, audit-related services, tax services and other services, as described above. Pre-approval is detailed as to the particular service or categories of services, and is subject to a specific budget.

PwC and management report, on a quarterly basis, to the Audit and Compliance Committee regarding the extent of services provided in accordance with this pre-approval and the fees for the services performed to date. The Audit and Compliance Committee may also pre-approve additional services on a case-by-case basis.

INFORMATION AND COMMUNICATIONS POLICY

INTRODUCTION

Novartis is committed to open and transparent communication with shareholders, financial analysts, customers, suppliers and other stakeholders. Novartis aims to disseminate material developments in its businesses in a broad and timely manner that comply with the rules of the SIX Swiss Exchange and the NYSE.

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COMMUNICATIONS

Novartis publishes an Annual Report each year that provides information on the Group s results and operations. In addition to the Annual Report, Novartis prepares an annual report on Form 20-F that is filed with the SEC. Novartis discloses quarterly financial results in accordance with IFRS and issues press releases from time to time regarding developments in its businesses.

Novartis furnishes press releases relating to financial results and material events to the SEC via Form 6-K. An archive containing Annual Reports, annual reports on Form 20-F, and quarterly results releases, as well as related materials such as slide presentations and conference call webcasts, is on the Novartis Investor Relations website (www.novartis.com/investors). A press release archive is available on the Novartis website: http://www.novartis.com/newsroom/media-releases/index.shtml

Information contained in reports and releases issued by Novartis is only correct and accurate at the time of release. Novartis does not update past releases to reflect subsequent events and advises against relying on them for current information.

INVESTOR RELATIONS PROGRAM

An Investor Relations team manages the Group s interaction with the international financial community. Several events are held each year to provide institutional investors and analysts various opportunities to learn more about Novartis.

Investor Relations is based at the Group s headquarters in Basel, Switzerland. A team is also located in New York to coordinate interaction with US investors. Information is available on the Novartis website: www.novartis.com/investors. Investors are also welcome to subscribe to a free e-mail service on this site.

FURTHER INFORMATION

Topic	Website information
SHARE CAPITAL	
Information on the Novartis capital structure	Articles of Incorporation of Novartis AG www.novartis.com/investors/en/corporate_governance Novartis key share data www.novartis.com/investors/share-data-analysis/index.shtml
SHAREHOLDER RIGHTS	
Information on Novartis shares and shareholder participation rights	Articles of Incorporation of Novartis AG www.novartis.com/investors/en/corporate_governance Investor Relations information www.novartis.com/investors

BOARD OF DIRECTORS AND EXECUTIVE COMMITTEE	
Internal organization and allocation of responsibilities	Board Regulations www.novartis.com/investors/en/corporate_governance
SENIOR MANAGEMENT	
	Senior Leadership Team http://www.novartis.com/about-novartis/people/executive-committee.shtml
NOVARTIS CODE FOR SENIOR FINANCIAL OFFICERS	
	Novartis Code of Ethical Conduct for CEO and Senior Financial Officers www.novartis.com/investors/en/corporate_governance
ADDITIONAL INFORMATION	
Overview of investor information	Novartis Investor Relations www.novartis.com/investors

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FROM LEFT TO RIGHT AND TOP TO BOTTOM: WILLIAM W. GEORGE, ULRICH LEHNER, DANIEL VASELLA, PETER BURCKHARDT, WENDELIN WIEDEKING, ROLF M. ZINKERNAGEL, HANS-JOERG RUDLOFF, ANDREAS VON PLANTA, PIERRE LANDOLT, SRIKANT DATAR, ANN FUDGE, ALEXANDER F. JETZER, MARJORIE M. YANG

BOARD OF DIRECTORS
MEMBERS

Daniel Vasella, M.D.
Chairman and CEO
Swiss, age 55

Ulrich Lehner, Ph.D.
Vice Chairman and Lead Director
German, age 62

Hans-Joerg Rudloff
Vice Chairman
German, age 68

Peter Burckhardt, M.D.
Swiss, age 69

Srikant Datar, Ph.D.
American, age 55

Ann Fudge
American, age 57

William W. George
American, age 66

Alexandre F. Jetzer
Swiss, age 67

Pierre Landolt

Swiss, age 61

Andreas von Planta, Ph.D
Swiss, age 53

Dr. Ing. Wendelin Wiedeking
German, age 56

Marjorie Yang
Chinese, age 56

Rolf M. Zinkernagel, M.D.
Swiss, age 64

HONORARY CHAIRMAN

Alex Krauer, Ph.D.

CORPORATE SECRETARY

Monika Matti

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Daniel Vasella, M.D.

Swiss, age 55

Function at Novartis AG Dr. Vasella has served as Chief Executive Officer and executive member of the Board of Directors since the merger that created Novartis in 1996. He was appointed Chairman of the Board of Directors in 1999. Dr. Vasella has led Novartis through dynamic growth to rank among the world s most successful healthcare companies with a business strategy focused on a diversified portfolio of pharmaceuticals, vaccines, generics and consumer health. He has also implemented several pioneering initiatives to ensure access to medicines in the areas of malaria, cancer and leprosy, among others, dedicating 2.5% of revenues each year to these programs.

Other activities Dr. Vasella is a member of the Board of Directors of Pepsico, Inc., New York, and of Alcon, Inc., Switzerland. He is also a member of the Global Health Program Advisory Panel of the Bill & Melinda Gates Foundation, a foreign honorary member of the American Academy of Arts and Sciences, the International Business Leaders Advisory Council for the Mayor of Shanghai, and the International Board of Governors of the Peres Center for Peace in Israel.

Professional background Dr. Vasella graduated with an M.D. from the University of Bern, Switzerland, in 1979 and was a practicing physician until he joined Sandoz Pharmaceuticals Corporation in 1988, where he held the position of CEO before the merger. Dr. Vasella has been honored with several awards, including the Harvard Business School s Alumni Achievement Award and Appeal of Conscience Award, the AJ Congress Humanitarian Award, the Ordem Nacional do Cruzeiro do Sul (Brazil), and holds the rank of Chevalier in the Ordre national de la Légion d honneur (France). He was also awarded an honorary doctorate by the University of Basel. In addition, a readership survey by the Financial Times selected Dr. Vasella as the most influential European businessman of the past quarter century. During Dr. Vasella s tenure as Chairman and CEO, Novartis has been included on Ethisphere Institute s list of the world s most ethical companies, Fortune magazine s list of the world s most admired companies and the Barron s magazine list of the world s most respected companies.

Ulrich Lehner, Ph.D.

German, age 62

Function at Novartis AG Ulrich Lehner has been a member of the Board of Directors since 2002. He qualifies as an independent Non-Executive Director. He serves as Vice Chairman, Lead Director and Chairman of the Corporate Governance and Nomination Committee. He is also a member of the Audit and Compliance Committee, the Chairman s Committee and the Compensation Committee. The Board of Directors has appointed him as Audit Committee Financial Expert.

Other activities Ulrich Lehner is Chairman of the supervisory board of Deutsche Telekom AG and serves as a member of the supervisory board of E.ON AG, of Thyssen Krupp AG, of HSBC Trinkaus & Burkhardt KGaA and of Porsche Automobil Holding SE, all in Germany. He is also a member of the shareholders committee of Henkel AG & Co. KGaA and of Oetker KG, both in Germany.

Professional background Ulrich Lehner graduated in business administration and mechanical engineering from the Darmstadt University of Technology in 1975. From 1975 to 1981, he was an auditor with KPMG Deutsche Treuhand-Gesellschaft AG in Duesseldorf. In 1981, he joined Henkel KGaA. After heading the Controlling Department of Fried. Krupp GmbH in Germany from 1983 to 1986, Ulrich Lehner returned to Henkel as Finance Director. From 1991 to 1994, he headed the Management Holding Henkel Asia-Pacific Ltd. in Hong Kong, and from 1995 to 2000, served as Executive Vice President, Finance/Logistics (CFO), of Henkel KGaA. From 2000 to 2008, Ulrich Lehner served as Chairman of the Management Board of Henkel KGaA.

Hans-Joerg Rudloff

German, age 68

Function at Novartis AG Hans-Joerg Rudloff has been a member of the Board of Directors since 1996. He qualifies as an independent Non-Executive Director. He is Vice Chairman and Chairman of the Compensation Committee. He is also a member of the Chairman s Committee and the Audit and Compliance Committee. The Board of Directors has appointed him as Audit Committee Financial Expert.

Other activities Hans-Joerg Rudloff serves on a number of Boards of Directors, including the TBG Group (Thyssen-Bornemisza Group), Monaco, and RBC, Russia. In 2005, Hans-Joerg Rudloff became Chairman of the International Capital Markets Association (ICMA), Switzerland. In 2006, he joined the Board of Directors of Rosneft, a Russian state-controlled oil company, and became Chairman of the audit committee. He serves as the Chairman of the Board of Directors of Bluebay Asset Management Ltd., United Kingdom, and the Marcuard Group, Switzerland. He is also member of the board of directors of New World Resources B.V., Netherlands. In addition, Hans-Joerg Rudloff is a member of the advisory boards of Landeskreditbank Baden-Wuerttemberg and EnBW (Energie Baden-Wuerttemberg), both in Germany.

Professional background Hans-Joerg Rudloff studied economics at the University of Bern. After graduating in 1965, he joined Credit Suisse in Geneva. He moved to the New York-based investment banking firm of Kidder Peabody Inc. in 1968. He later headed Swiss operations and was elected Chairman of Kidder Peabody International. In 1978, he became a member of the Board of Directors of Kidder Peabody Inc, United States. In 1980, he joined Credit Suisse First Boston, Switzerland, was elected Vice Chairman in 1983 and became Chairman and CEO in 1989. From 1986 to 1990, Hans-Joerg Rudloff was also a member of the executive board of Credit Suisse in Zurich, in charge of all securities and capital-market departments. From 1994 to 1998, Hans-Joerg Rudloff was Chairman of MC- BBL in Luxembourg. In 1994, he was appointed to the Board of Directors of Sandoz AG. In 1998, Hans-Joerg Rudloff joined Barclays Capital, United Kingdom, where he is presently Chairman.

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Peter Burckhardt, M.D.

Swiss, age 69

Function at Novartis AG Dr. Burckhardt has been a member of the Board of Directors since 1996. He qualifies as an independent Non-Executive Director. He is a member of the Audit and Compliance Committee.

Other activities From 1982 to 2004, Dr. Burckhardt was Chairman of the Novartis (formerly Sandoz) Foundation for Biomedical Research in Switzerland. Since 1990, he has been the organizer and Chairman of the International Symposia on Nutrition and Osteoporosis. Since 2008, he is chief editor of the scientific review Osteology.

Professional background Dr. Burckhardt is a Professor of Medicine. He has an M.D. from the University of Basel and is a trained internal medicine and endocrinology specialist from the University of Lausanne and the Massachusetts General Hospital, Boston. Dr. Burckhardt has been Head of the Department of Internal Medicine at the University Hospital of Lausanne from 1982 to 1989 and Chief of Medical Services at the same hospital from 1988 to 2004. In addition to his clinical activities, Dr. Burckhardt conducts clinical research, mainly in bone diseases and calcium metabolism. He has authored more than 300 scientific publications and is an editorial board member of several international scientific journals. He was president of the Swiss Society of Internal Medicine and a member of the Appeal Committee of Switzerland s National Agency for Drug Controls. He was Chairman of the country affiliates and a member of the executive committee of the International Foundation for Osteoporosis and served as treasurer of the foundation until 2006. Other experiences include board memberships in the Swiss Societies of Nutrition, Clinical Chemistry, Endocrinology, Bone and Mineral Research, the Committee for Endocrinology of the European Community and advisory roles to scientific foundations in Switzerland and Germany.

Srikant Datar, Ph.D.

American, age 55

Function at Novartis AG Srikant Datar has been a member of the Board of Directors since 2003. He qualifies as an independent Non-Executive Director. He is Chairman of the Audit and Compliance Committee and a member of the Compensation Committee. The Board of Directors has appointed him as Audit Committee Financial Expert.

Other activities Srikant Datar is a member of the Board of Directors of ICF International Inc., Virginia, and KPIT Cummins Infosystems Ltd., India. He currently holds the Arthur Lowes Dickinson Professorship at Harvard University.

Professional background In 1973, Srikant Datar graduated with distinction in mathematics and economics from the University of Bombay. He is a Chartered Accountant and holds two master s degrees and a Ph.D. from Stanford University. Srikant Datar has worked as an accountant and planner in industry and as a professor at the Carnegie Mellon University, Stanford University and Harvard University in the United States. Srikant Datar is Senior Associate Dean at the Graduate School of Business Administration of Harvard. His research interests are in the areas of cost management, measurement of productivity, new product development, time-based competition, incentives and performance evaluation. He is the author of many scientific publications and has received several academic awards and honors. Srikant Datar has advised and worked with numerous renowned firms such as General Motors, Mellon Bank and Morgan Stanley in research, development and training.

Ann Fudge

American, age 57

Function at Novartis AG Ann Fudge has been a member of the Board of Directors since 2008. She qualifies as an independent Non-Executive Director. She is a member of the Corporate Governance and Nomination Committee.

Other activities Ann Fudge serves on the Board of Directors of General Electric, Connecticut, and on the Board of Overseers of Harvard University. She is also a Trustee of the Rockefeller Foundation and of Morehouse College, and Chair of the U.S. Programs Advisory Panel of the Gates Foundation.

Professional background Ann Fudge received her B.A. from Simmons College and her M.B.A. from Harvard University Graduate School of Business. She is former Chairman and CEO of Young & Rubicam Brands. Before that, she served as President of the Beverages, Desserts and Post Division of Kraft Foods.

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William W. George

American, age 66

Function at Novartis AG William W. George has been a member of the Board of Directors since 1999. He is a member of the Chairman s Committee.

Other activities William W. George is a member of the Boards of Directors of Goldman Sachs, New York, and Exxon Mobil, Texas. He is Professor of Management Practice at Harvard Business School. He is a trustee of the Carnegie Endowment for International Peace and the World Economic Forum USA.

Professional background William W. George received a Bachelor of Science in industrial engineering (B.S.I.E.) from Georgia Institute of Technology in 1964 and an M.B.A. from Harvard University in 1966. From 1966 to 1969, he worked in the U.S. Department of Defense as a special assistant to the Secretary of the Navy and as assistant to the Comptroller. After serving as President of Litton Microwave Cooking Products, California, William W. George held a series of executive positions with Honeywell, New Jersey, from 1978 to 1989. He then served as President and Chief Operating Officer of Medtronic, Inc., Minnesota and, from 1991 to 2001, as its Chief Executive Officer. From 1996 to 2002, he was Medtronic s Chairman. He has served as Executive-in-Residence at Yale School of Management; Professor of Leadership and Governance at IMD International in Switzerland, and visiting Professor at the Ecole Polytechnique Fédérale Lausanne (EPFL) in Switzerland.

Alexandre F. Jetzer

Swiss, age 67

Function at Novartis AG Alexandre F. Jetzer has been a member of the Board of Directors since 1996.

Other activities Alexandre F. Jetzer is a member of the supervisory board of Compagnie Financière Michelin, Switzerland, and of the board of the Lucerne Festival Foundation, Switzerland. He is a member of the International Advisory Panel on Biotechnology Strategy of the Prime Minister of Malaysia, a member of the Investment Advisory Council of the Prime Minister of Turkey and economic advisor to the Governor of Guangdong Province, China. He is also a member of the Development Committee of the Neuroscience Center of the University of Zurich, Switzerland.

Professional background Alexandre F. Jetzer graduated with master s degrees in law and economics from the University of Neuchâtel, Switzerland, and is a licensed attorney. From 1967 to 1980, he served as General Secretary of the Swiss Federation of Commerce and Industry (Vorort). Alexandre F. Jetzer joined Sandoz in 1980. In 1981, he was appointed member of the Sandoz Group Executive Committee in his capacity as Chief Financial Officer. In 1990, he became Head of Management Resources and International Coordination. From 1995 to 1996, he was Chairman and Chief Executive Officer of Sandoz Pharmaceuticals Corporation in East Hanover, New Jersey, and at the same time served as President and CEO of Sandoz Corporation in New York. After the merger which created Novartis in 1996 until 1999, he was Head of International Coordination, Legal & Taxes and a member of the Executive Committee of Novartis.

Permanent Novartis management or consultancy engagements Alexandre F. Jetzer has a consultancy agreement with Novartis International AG (Government Relations Support).

Pierre Landolt

Swiss, age 61

Function at Novartis AG Pierre Landolt has been a member of the Board of Directors since 1996. He qualifies as an independent Non-Executive Director. He is a member of the Corporate Governance and Nomination Committee.

Other activities Pierre Landolt is currently Chairman of the Sandoz Family Foundation and a Director of Syngenta AG. He is a partner with unlimited liabilities of the private bank Landolt & Cie. Pierre Landolt serves, in Brazil, as President of the Instituto Fazenda Tamanduá, the Instituto Estrela de Fomento ao Microcrédito, AxialPar Ltda and Moco Agropecuaria Ltda. In Switzerland, Pierre Landolt is the Chairman of Emasan AG and Vaucher Manufacture Fleurier SA and the Vice-Chairman of Parmigiani Fleurier SA. He is a Director of EcoCarbone SA and Amazentis SA and was formerly Chairman of the CITCO Group (1995-2005). He is also Vice-Chairman of the Montreux Jazz Festival Foundation.

Professional background Pierre Landolt graduated with bachelor s degree in law from the University of Paris Assas. From 1974 to 1976, he worked for Sandoz Brazil SA. In 1977, he acquired an agricultural estate in the semi-arid northeast region of Brazil and, over several years, converted it into a model farm in organic and biodynamic production. Since 1997 Pierre Landolt has been Associate and Chairman of AxialPar Ltda, Brazil, an investment company focused on sustainable development, with investments in fish farming, soybean for human consumption and organic vegetable. In 2000, he co-founded EcoCarbone SA, France, a company active in the design and development of carbon-sequestration processes in Asia, Africa, South America and Europe. In 2007, he co-founded Amazentis SA, a start-up company active in the convergence space of medication and nutrition. In addition to his private activities, Pierre Landolt has been President of the Sandoz Family Foundation since 1994 and oversees the development of the foundation in several investment fields, inter alia hotel, watch making and telecommunications.

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Andreas von Planta, Ph.D.

Swiss, age 53

Function at Novartis AG Andreas von Planta has been a member of the Board of Directors since 2006. He qualifies as an independent Non-Executive Director. He is a member of the Audit and Compliance Committee and the Corporate Governance and Nomination Committee.

Other activities Andreas von Planta is Vice Chairman of Holcim Ltd. and of the Schweizerische NationalVersicherungs-Gesellschaft AG, both in Switzerland, and is a member of the boards of various Swiss subsidiaries of foreign companies and other non-listed Swiss companies. He is a member of the board of editors of the Swiss Review of Business Law and is a former Chairman of the Geneva Association of Business Law. Andreas von Planta is Chairman of the regulatory board of the SIX Swiss Exchange AG.

Professional background Andreas von Planta holds lic. iur. and Ph.D. degrees from the University of Basel and an LL.M. from Columbia University School of Law, New York. He passed his bar examinations in Basel in 1982. Since 1983, he has been living in Geneva, working for the law firm Lenz & Staehelin where he became a partner in 1988. His areas of specialization include corporate law, corporate finance, company reorganizations, and mergers and acquisitions.

Dr. Ing. Wendelin Wiedeking

German, age 56

Function at Novartis AG Wendelin Wiedeking has been a member of the Board of Directors since 2003. He qualifies as an independent Non-Executive Director.

Other activities Wendelin Wiedeking is Chairman of the executive board of Porsche Automobil Holding SE and of Dr. Ing. h.c. F. Porsche AG, both in Germany. He is also a member of the supervisory board of Volkswagen AG and of AUDI AG, both in Germany.

Professional background Wendelin Wiedeking graduated in mechanical engineering in 1978 and worked as a scientific assistant in the Machine Tool Laboratory of the Rhine-Westphalian College of Advanced Technology in Aachen, Germany. His professional career began in 1983 as Director s Assistant in the Production and Materials Management area of Dr. Ing. h.c. F. Porsche AG in Stuttgart-Zuffenhausen. In 1988, he moved to Glyco Metall-Werke KG in Wiesbaden as Division Manager, where he advanced by 1990 to the position of Chief Executive Officer and Chairman of the Board of Management of Glyco AG. In 1991, he returned to Porsche AG as Production Director. A year later, the supervisory board appointed him spokesman of the executive board (CEO), and Chairman in 1993.

Marjorie M. Yang

Chinese, age 56

Function at Novartis AG Marjorie M. Yang has been a member of the Board of Directors since 2008. She qualifies as an independent Non-Executive Director. She is a member of the Compensation Committee.

Other activities Marjorie M. Yang is Chairman of the Esquel Group, Hong Kong. She currently sits on the Boards of Directors of Swire Pacific Ltd., CLP Holdings and The Hong Kong and Shanghai Banking Corporation Ltd., all in Hong Kong. She is also a member of the National Committee of the Chinese People s Political Consultative Conference, Chairman of the Textile and Clothing Sector Committee, Vice Chairman of the China Association of Enterprises with Foreign Investment and a member of the M.I.T. Corporation. Marjorie M. Yang is on the Board of

Dean s Advisors of Harvard Business School.

Professional background Marjorie M. Yang graduated with a B.S. in mathematics from M.I.T. and holds an M.B.A. from Harvard Business School. From 1976 to 1978, she was an associate in Corporate Finance, Mergers and Acquisitions with the First Boston Corporation in New York. In 1979, she returned to Hong Kong and helped create Esquel. She has been Chairman of the Esquel Group since 1995.

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Rolf M. Zinkernagel, M.D.

Swiss, age 64

Function at Novartis AG Dr. Zinkernagel has been a member of the Board of Directors since 1999. He qualifies as an independent Non-Executive Director. He is a member of the Corporate Governance and Nomination Committee.

Other activities Dr. Zinkernagel is a member of the Swiss Society of Allergy and Immunology, the American Associations of Immunologists and of Pathologists, member of the Advisory Council of BMS Singapore, and Past President of the executive board of the International Union of Immunological Societies (IUIS). He is also a member of the scientific advisory boards of Bio-Alliance AG, Germany; Aravis General Partner Ltd., Cayman Islands; Telormedix, Switzerland; Esbatech, Switzerland; Novimmune, Switzerland; Cancevir, Switzerland; xbiotech, Canada; Nuvo Research, Inc., Canada; ImVision, Germany; MannKind, California; and Laboratoire Koch, Switzerland. Dr. Zinkernagel is also a science consultant to Chilka Ltd., Grand Cayman; Ganymed, Germany; and Zhen-Ao Group, China. He is also a member of the Advisory Panel of Swiss Re, Switzerland.

Professional background Dr. Zinkernagel graduated from the University of Basel with an M.D. in 1970. From 1992 to 2008, he was Professor and Director of the Institute of Experimental Immunology at the University of Zurich. Dr. Zinkernagel has received many awards and prizes for his work and contribution to science, the most prestigious being the Nobel Prize for Medicine, which he was awarded in 1996.

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FROM LEFT TO RIGHT AND TOP TO BOTTOM: JOSEPH JIMENEZ, JEFFREY GEORGE, DANIEL VASELLA, JOERG REINHARDT, THOMAS WERLEN, ANDREAS RUMMELT, MARK C. FISHMAN, DAVID EPSTEIN, RAYMUND BREU, GEORGE GUNN, THOMAS WELLAUER, JUERGEN BROKATZKY-GEIGER, ANDRIN OSWALD

EXECUTIVE COMMITTEE

MEMBERS

Daniel Vasella, M.D.
Swiss, age 55

Raymund Breu, Ph.D.
Swiss, age 63

Juergen Brokatzky-Geiger, Ph.D.
German, age 56

Mark C. Fishman, M.D.
American, age 57

Joseph Jimenez
American, age 49

Joerg Reinhardt, Ph.D.
German, age 52

Andreas Rummelt, Ph.D.
German, age 52

Thomas Wellauer, Ph.D.
Swiss, age 53

Thomas Werlen, Ph.D. Swiss, age 43

PERMANENT ATTENDEES

David Epstein
American, age 47

Jeffrey George
American, age 35

George Gunn, MRCVS
British, age 58

Andrin Oswald, M.D.
Swiss, age 37

SECRETARY

Bruno Heynen

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MEMBERS OF THE EXECUTIVE COMMITTEE

Daniel Vasella, M.D.
Swiss, age 55

Dr. Vasella graduated with an M.D. from the University of Bern, Switzerland, in 1979 and was a practicing physician until he joined Sandoz Pharmaceuticals Corporation in 1988. Dr. Vasella has served as Chief Executive Officer of the Group since the merger that created Novartis in 1996, and was appointed Chairman of the Board of Directors in 1999. Dr. Vasella has led Novartis through dynamic growth to rank among the world s most successful healthcare companies with a business strategy focused on a diversified portfolio of pharmaceuticals, vaccines, generics and consumer health to meet the full spectrum of patient needs. He has also implemented several pioneering initiatives to ensure access to medicines in the areas of malaria, cancer and leprosy, among others. Dr. Vasella is a director of Pepsico, Inc., New York, and of Alcon, Inc., Switzerland. He is also a member of the Global Health Program Advisory Panel of the Bill & Melinda Gates Foundation, a foreign honorary member of the American Academy of Arts and Sciences, the International Business Leaders Advisory Council for the Mayor of Shanghai and the International Board of Governors of the Peres Center for Peace in Israel.

Raymund Breu, Ph.D.
Swiss, age 63

Raymund Breu graduated from the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland, with a Ph.D. in mathematics. In 1975, he joined the Treasury Department of the Sandoz Group, and in 1982 became Head of Finance for the Sandoz affiliates in the United Kingdom. In 1985, he was appointed Chief Financial Officer of Sandoz Corporation in New York, where he was responsible for all Sandoz Finance activities in the United States. In 1990, he became Group Treasurer of Sandoz Ltd., Basel, Switzerland, and, in 1993, Head of Group Finance and Member of the Sandoz Executive Board. Following the formation of Novartis in 1996, Raymund Breu assumed his current position as Chief

Financial Officer and member of the Executive Committee of Novartis. He is also a member of the Board of Directors of Swiss Re and the Swiss takeover commission.

Juergen Brokatzky-Geiger, Ph.D.
German, age 56

Juergen Brokatzky-Geiger graduated with a Ph.D. in chemistry from the University of Freiburg, Germany, in 1982. He joined Ciba-Geigy Ltd. in 1983 as a Laboratory Head in the Pharmaceuticals Division. After a job rotation in the United States, he held positions of increasing responsibility in Research and Development (R&D) including Group Leader of Process R&D, Head of Process R&D, and Head of Process Development and Pilot Plant Operations. During the merger of Ciba-Geigy and Sandoz in 1996, Juergen Brokatzky-Geiger was appointed Integration Officer of Technical Operations. He later became the Head of Chemical and Analytical Development and served as the Global Head of Technical R&D from 1999 to August 2003. Juergen Brokatzky-Geiger was appointed to his present position as Head of Human Resources on September 1, 2003. He has been a member of the Executive Committee of Novartis since January 1, 2005.

Mark C. Fishman, M.D.
American, age 57

Dr. Fishman graduated with a B.A. from Yale College in 1972 and an M.D. from Harvard Medical School in 1976. He was appointed President of the Novartis Institutes for BioMedical Research (NIBR) in 2002. Before joining Novartis, Dr. Fishman was Chief of Cardiology and Director of the Cardiovascular Research Center at the Massachusetts General Hospital in Boston and Professor of Medicine at Harvard Medical School. Dr. Fishman serves on several editorial boards and has worked with national policy and scientific committees including those of the US National Institutes of Health (NIH) and the Wellcome Trust. He completed his Internal Medicine residency, Chief Residency and Cardiology training at the Massachusetts General Hospital. He has been honored with many awards and distinguished lectureships, and is a member of the Institute of Medicine of the National Academies (US) and Fellow of the American Academy of Arts and Sciences. He has been a member of the Executive Committee of Novartis since 2002.

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Joseph Jimenez
American, age 49

Joseph Jimenez graduated with a B.A. degree from Stanford University in 1982 and earned an M.B.A. from the University of California, Berkley in 1984. He began his career at The Clorox Company, California, and later served as president of two operating divisions at ConAgra, Nebraska. In 1998, he joined the H.J. Heinz Company, Pennsylvania, and was named President and Chief Executive Officer of the North America business. From 2002 to 2006, he served as President and Chief Executive Officer of Heinz in Europe. Before joining Novartis, he served as a non-executive director of AstraZeneca plc, United Kingdom, from 2002 to 2007, and was an advisor for the private equity organization Blackstone Group, New York. He joined Novartis in April 2007 as CEO of the Consumer Health Division. He was appointed to his present position as CEO of the Pharmaceuticals Division in October 2007. He has been a member of the Executive Committee of Novartis since November 1, 2007.

Joerg Reinhardt, Ph.D.
German, age 52

Joerg Reinhardt graduated with a Ph.D. in pharmaceutical sciences from the University of Saarbruecken, Germany, in 1981. He joined Sandoz Pharma Ltd. in 1982 and held positions of increasing responsibility in Research and Development for the company. In 1994, he was named Head of Development for Sandoz Pharma Ltd. After the merger that created Novartis in 1996, Joerg Reinhardt became Head of Preclinical Development and Project Management for Novartis and assumed the position of Head of Pharmaceutical Development in 1999. From 2006 to 2008, he served as Head of the Vaccines and Diagnostics Division. On December 1, 2008, he was named Chief Operating Officer of Novartis. He chairs the Board of Directors of the Genomics Institute of the Novartis Foundation in La Jolla, California, United States. Joerg Reinhardt has been a member of the Executive Committee of Novartis since January 1, 2007.

Andreas Rummelt, Ph.D.
German, age 52

Andreas Rummelt graduated with a Ph.D. in pharmaceutical sciences from the University of Erlangen-Nuernberg, Germany. He joined Sandoz Pharma Ltd. in 1985 and held various positions with increasing responsibility in Development. In 1994, he was appointed Head of Worldwide Technical Research and Development, a position he retained following the merger that created Novartis in 1996. From 1999 to 2004, Andreas Rummelt served as Head of Technical Operations of the Novartis Pharmaceuticals Division and from 2004 to 2008 as Head of Sandoz. On December 1, 2008, he was named Group Head of Quality Assurance and Technical Operations. Andreas Rummelt has been a member of the Executive Committee of Novartis since January 1, 2006.

Thomas Wellauer, Ph.D.
Swiss, age 53

Thomas Wellauer graduated with a Ph.D. in systems engineering and an M.S. in chemical engineering from the Swiss Federal Institute of Technology (ETH) in Zurich, Switzerland. He also holds an M.B.A. from the University of Zurich. Thomas Wellauer joined Novartis in 2006 as Head of Corporate Affairs. He started his career with McKinsey and Company, Switzerland, becoming a Partner in 1991 and Senior Partner in 1996. In 1997, he was named CEO of the Winterthur Insurance Group, Switzerland, which later was acquired by Credit Suisse. At Credit Suisse he was a member of the Group Executive Board, initially responsible for the Group s insurance business before becoming CEO of the Financial Services Division. Most recently before joining Novartis, Thomas Wellauer headed and completed the Clariant Performance Improvement Program, a global turnaround project at the specialty chemicals maker. He has been a member of the Executive Committee of Novartis since January 1, 2007.

Thomas Werlen, Ph.D.
Swiss, age 43

Thomas Werlen holds lic.iur. and Ph.D. degrees in law from the University of Zurich and a master s degree in law from Harvard Law School. He is a member of the New York bar and the Zurich bar. Thomas Werlen started his professional career with the law firm Lenz & Staehelin in Zurich in 1990. After graduation from Harvard Law School in 1995, he joined Cravath, Swaine & Moore in New York. In 2001, he was elected a partner in the London office of Allen & Overy. He joined Novartis in January 2006 as General Counsel of Novartis and responsible for the Group s legal affairs. He is also Secretary to the Corporate Governance and Nomination Committee of the Board of Directors. In addition, he is a member of the regulatory board of the SIX Swiss Exchange AG. Thomas Werlen has been a member of the Executive Committee of Novartis since October 16, 2008, after previously serving as a Permanent Attendee since September 2007.

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PERMANENT ATTENDEES OF THE EXECUTIVE COMMITTEE

David Epstein
American, age 47

David Epstein graduated with a B.S. degree in pharmacy from Rutgers University College of Pharmacy in 1984 and with an M.B.A. in finance and marketing from the Columbia University Graduate School of Business in 1987. Before joining Novartis, he was an associate in the Strategy Practice of the consulting firm Booz Allen Hamilton in the United States. David Epstein joined Sandoz, a predecessor company of Novartis, in 1989 and held various leadership positions of increasing responsibility for the company, including Chief Operating Officer of Novartis Pharmaceuticals Corporation in the United States and Head of Novartis Specialty Medicines. He currently serves as Head of Novartis Oncology. Since December 1, 2008, he also leads the new unit Molecular Diagnostics. David Epstein has been a Permanent Attendee of the Executive Committee of Novartis since December 1, 2008.

Jeffrey George
American, age 35

Jeffrey George graduated with an M.A. from the Johns Hopkins University s School of Advanced International Studies in 1999, where he studied international economics and emerging markets political economy, and received an M.B.A. from Harvard University in 2001. Before joining Novartis, he was a Senior Director of Strategy & Business Development at Gap Inc. in San Francisco, and from 2001 to 2004 was with McKinsey & Company in San Francisco. He joined the Novartis Vaccines Division in January 2007 as Head of Commercial Operations for Western and Eastern Europe and then advanced to Head of Emerging Markets for the Middle East, Africa, Southeast Asia and CIS at Novartis Pharma. On December 1, 2008, Jeffrey George was named Head of Sandoz. He has been a Permanent Attendee of the Executive Committee of

Novartis since December 1, 2008.

George Gunn, MRCVS
British, age 58

George Gunn graduated with a Bachelor of veterinary medicine and surgery degree and a diploma in veterinary state medicine from the Royal (Dick) School of Veterinary Studies in Edinburgh, United Kingdom, in 1973. In 2008, he received an honorary doctorate in veterinary medicine and surgery from the University of Edinburgh. Before joining Novartis, George Gunn was President of Pharmacia Animal Health, based in the United States. Prior to Pharmacia, he spent over 15 years in positions of increasing responsibility in healthcare companies. He worked as a veterinary surgeon for nine years before joining industry. George Gunn joined Novartis in 2003 as Head of Novartis Animal Health, North America. In January 2004, George Gunn assumed his present position as Head of the Animal Health Business Unit. In addition to this role, he was appointed Head of the Consumer Health Division on December 1, 2008. George Gunn has been a Permanent Attendee of the Executive Committee of Novartis since December 1, 2008.

Andrin Oswald, M.D.
Swiss, age 37

Dr. Oswald graduated with an M.D. from the University of Geneva, Switzerland, in 1999. Dr. Oswald was a delegate of the International Committee of the Red Cross (ICRC) to Nepal from 2002 to 2003. Before joining Novartis in 2005, he worked with McKinsey & Company, Switzerland. From 2005 to 2008, Dr. Oswald advanced from Assistant to the Chairman and CEO to Head of the Country Pharma Organization (CPO) and Country President for Novartis in South Korea to CEO of and Global Head of Development Franchises at Novartis Pharma. On December 1, 2008, he was named Head of the Vaccines and Diagnostics Division. Dr. Oswald has been a Permanent Attendee of the Executive Committee of Novartis since December 1, 2008.

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REMUNERATION REPORT

Novartis aspires to be an employer of choice and attract the best talent worldwide.

Novartis offers competitive compensation and benefit plans for associates around the world that are transparent, coherent and aligned with the Group s pay-for-performance philosophy. These plans underline the importance placed on superior and sustained performance that supports long-term business objectives in the interest of the Group and its shareholders and does not sacrifice for short-term objectives.

The independent external advisor to the Board s Compensation Committee reviewed this Report and concluded that it addresses required issues adequately to ensure transparency of key elements of the Group s compensation philosophy and executive remuneration.

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REMUNERATION REPORT

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GENERAL PRINCIPLES AND PROCESSES

PERFORMANCE-BASED COMPENSATION

The success of Novartis depends to a large extent on the abilities and dedication of its associates. We aspire to be an employer of choice with the ability to attract, retain and motivate the most talented and performance driven associates around the world.

Our compensation policy applies to all Novartis associates and is designed to:

- Align the objectives of our associates with the interests of our shareholders;
- Incentivize our associates to create sustainable value for Novartis and its shareholders;
- Support a diverse and performance-oriented culture and meritocracy that allows Novartis to reward high-performing individuals who adhere to best business practices and whose commitment and contribution enable the Group to achieve its goal to be one of the world s most admired and respected healthcare companies; and to
- Be competitive with a relevant group of other world-class and industry peer companies who operate and compete for talent on a global basis.

Paying for performance is the guiding principle of the Novartis compensation policy. For superior performance, total compensation awarded to individual associates may reach levels comparable to the top quartile levels of compensation offered by the relevant benchmark companies.

Under the performance-dependent variable compensation plans, Novartis defines target incentive percentages (i.e. a percentage of annual base salary) for each participating associate at the start of a performance period, which is traditionally the start of a new year. In general, these target percentages are multiplied at the end of the performance period with individual payout multipliers for each associate. The size of the multiplier depends on the incentive plan, on the associate s actual performance against individual objectives as agreed to at the beginning of the performance period as well as compliance with the Novartis Values and Behaviors, and on the overall performance of the Group or relevant business area.

Incentive payout multipliers usually range from 0 to 2. For exceptional performance, higher payout multipliers may apply. Such cases require the approval of the Chairman and Chief Executive Officer and, for certain executives, the approval of the Compensation Committee. All compensation plans and levels are reviewed regularly based on publicly available data as well as on analyses by independent compensation research companies and external compensation advisors. Trends and developments in the field of compensation and corporate governance are carefully

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analyzed, reviewed and discussed on an ongoing basis with outside experts, accountants and consultants.

SOURCE OF THE SHARES AWARDED

Novartis continues to use shares repurchased in the market to fulfill obligations to deliver shares as required for the variable compensation plans.

PERFORMANCE MANAGEMENT PROCESS

Each Novartis associate is subject to a formal performance appraisal process that promotes a culture of continuous improvement, supports individuals in meeting their development aspirations and strengthens organizational capabilities. It is a core process for improving individual, team and overall business performance.

For each performance year, line managers and their direct reports jointly determine and agree upon performance measures and business objectives. These objectives are derived from the cascading of business objectives established at the Group, division, function or business area levels.

Two performance assessments are carried out each year a mid-year and a year-end review. The reviews consist of formal meetings between each associate and his or her line manager to evaluate the associate s performance, both in light of the business objectives defined at the beginning of the year and of the Groupwide Novartis Values and Behaviors. Based on the year-end performance rating, line managers and next-level line managers determine the incentive awards for each associate under review as well as the target compensation for the coming year.

SHARE OWNERSHIP

The Novartis Board maintains share ownership guidelines to realize the ownership philosophy among senior executives and Directors. These guidelines require a group of approximately 30 key executives to own at least a certain multiple of their annual base salary in Novartis shares or options, and for all Directors to own at least a certain number of Novartis shares.

COMPENSATION TO NOVARTIS ASSOCIATES

Competitive compensation packages are designed with reference to total compensation levels for comparable positions at relevant benchmark companies.

The benchmark companies for compensation differ with and are dependent upon the nature of specific positions. For specific pharmaceutical positions, a peer group of industry competitors is considered that consists of Abbott Laboratories, Amgen, AstraZeneca, Bristol-Myers Squibb, Eli Lilly, GlaxoSmithKline, Johnson & Johnson, Merck, Pfizer, Roche, Sanofi-Aventis, Schering-Plough and Wyeth. For other positions, a wider group of relevant benchmark companies is considered from a variety of different industry sectors, such as fast moving consumer goods and general industry. Benchmark information is adjusted as necessary to reflect the size and scope of the respective business and the specific requirements of a particular position. Benchmark data are obtained from multiple sources and data providers, depending on the quality of their data in the relevant industries and geographies.

The Compensation Committee scrutinizes compensation data from various external compensation advisors to remain well informed about developments and best practices in the compensation area. Since 2007, Pearl Meyer & Partners LLC acts as independent external advisor to the Committee. Pearl Meyer& Partners LLC reports directly to the Committee and provides no other services to Novartis.

As long as an associate achieves his or her performance targets, the total amount of compensation awarded is generally comparable to the median level of compensation provided by relevant benchmark companies. In case of over- or under-performance by an associate, the actual total compensation delivered is adjusted up or down, as appropriate.

The compensation package of Novartis associates consists of an annual base compensation along with variable compensation components as described below.

The independent external advisor reviewed the 2008 Remuneration Report and concluded that the report covers the required issues in sufficient depth to ensure transparency of the key elements of executive reward.

BASE COMPENSATION

Base compensation is intended to give each associate a fixed salary. These levels depend upon job characteristics, market competitiveness and the associate s skills. The salary evolution depends on the associate s individual performance and the level vis-à-vis the benchmark.

VARIABLE COMPENSATION

Novartis has three main variable compensation plans: annual incentive plans, the Novartis Equity Plan Select and the Long- Term Performance Plan.

Under the Novartis Equity Plan Select and the Long-Term Performance Plan, all awards must be delivered in the form of equity in Novartis, except in the United States where awards from the Long-Term Performance Plan may also be delivered in cash under the Deferred Compensation Plan.

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ANNUAL INCENTIVE PLANS

Most associates participate in annual incentive plans. Under these plans, awards are made each year based on the associate s individual year-end performance rating as well as on the Group s or business area s performance. If an associate receives a rating below a certain threshold, or if other circumstances so require, no awards are granted under these plans.

Associates in certain countries and certain key executives worldwide are encouraged to receive their incentive awards fully or partially in Novartis shares instead of cash. To that end, Novartis maintains several leveraged share savings plans under which Novartis matches investments in shares after a holding period. In principle, participating associates may only participate in one of these plans in any given year.

- Shares invested in the Swiss Employee Share Ownership Plan (ESOP), which is available in Switzerland to approximately 11 000 associates, have a three-year blocking period and are matched at the end of the blocking period with one share for every two shares invested. Approximately 4 900 associates chose to participate in this plan related to incentives paid for performance in 2008.

- In the United Kingdom, associates can invest up to 5% of their monthly salary, up to a maximum of GBP 125, in shares and may also be invited to invest all or part of their net incentive in shares. Two invested shares are matched with one share, which will vest after three years. During 2008, approximately 1 500 associates in the United Kingdom participated in these plans.

- Approximately 30 key executives worldwide were invited to participate in a five-year Leveraged Share Savings Plan (LSSP) as part of compensation for performance in 2008. Shares are invested in this plan for five years. At the end of the investment period, Novartis matches the invested shares at a ratio of 1:1 (i.e. one share awarded for each invested share).

In general, no shares are matched under these plans if an associate leaves Novartis prior to expiration of the blocking period for reasons other than retirement, disability or death.

NOVARTIS EQUITY PLAN SELECT

Awards under this plan may be granted each year based on the associate s individual year-end performance rating, talent rating and Group or business area performance. No awards are granted for ratings below a certain threshold.

Participants in this plan can elect to receive their incentive in the form of shares, share options, or a combination of both. Each share option is tradable, expires on its tenth anniversary and is exercisable to receive one share (1:1). The exercise price equals the market price of the underlying share at the grant date.

If associates in North America choose to receive the Select incentive amount (or part of it) in tradable share options on American Depositary Shares (ADS), then the resulting number of share options is determined by dividing the respective Select incentive amount by a value that equals 95% of the IFRS value of the options on ADS. For associates in other countries, the divisor equals 90% of the IFRS value of options on shares.

Shares and tradable share options have a vesting period of two years in Switzerland and three years in other countries. As a result, if a participant leaves Novartis for reasons other than retirement, disability or death, unvested shares and share options are forfeited, unless determined otherwise by the Compensation Committee (for example, in connection with a reorganization or divestment).

A total of 10 633 participants received a total of 29.6 million tradable share options and 4 609 853 restricted shares under the Novartis Equity Plan Select , for their performance in 2008, representing a participation rate of approximately 11% of all full- time equivalent associates worldwide. Approximately 9% of the total equity value awarded under the plan was granted to members of the Executive Committee.

TOTAL EQUITY VALUE AWARDED (%)

As of December 31, 2008, a total of 70.6 million share options granted to associates were outstanding, covered by an equal number of shares and corresponding to 2.9% of the total number of outstanding Novartis shares (excluding treasury shares).

LONG-TERM PERFORMANCE PLAN

The Novartis Long-Term Performance Plan rewards key executives who have a significant impact on the long-term success of the Group.

Performance is measured against annual Economic Value Added targets (EVA, as defined in the Novartis accounting manual). Any award depends on the Group s overall accumulated performance over a three-year period. If the actual performance of the Group is below a threshold level or the participant leaves during the performance period for reasons other than retirement, disability or death, then generally no shares are awarded.

The Compensation Committee amended the Long-Term Performance Plan in 2005 to make Group EVA, as opposed to division or business area EVA, the relevant criterion and to make the performance period three years. The first delivery of shares under the

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amended plan occurred in January 2009 based on Group EVA achievement over the performance period 2006 to 2008. For this performance period, approximately 105 key executives were awarded performance shares.

Approximately 110 key executives (for the performance period 2007 to 2009), 110 key executives (for the performance period 2008 to 2010) and 105 key executives (for the performance period 2009 to 2011) have been granted Novartis performance share units. Grants are dependent upon Group EVA achievements and may or may not lead to actual awards in January 2010, January 2011 and January 2012, respectively.

SPECIAL SHARE AWARDS

In addition to base and variable compensation described above, selected associates may receive extraordinary or annual awards of restricted or unrestricted shares. These special share awards are discretionary, providing flexibility to reward particular achievements or exceptional performance and retain key contributors.

Restricted special share awards generally have a five-year vesting period. If a participant leaves Novartis for reasons other than retirement, disability or death, the participant will generally forfeit unvested shares. Approximately 310 associates at different levels in the organization were awarded restricted shares in 2008.

CONTRACTS WITH MEMBERS OF THE EXECUTIVE COMMITTEE

In accordance with best practices in corporate governance, it is Novartis principle that new employment contracts with members of the Executive Committee should contain:

- No unusually long notice periods;
- No change-of-control clauses; and
- No severance payments.

Two existing contracts with members of the Executive Committee are not in line with this principle since they provide for a notice period of 36 months (in both cases) or a change-of-control clause (in one case). To align these contracts, Novartis gave notice in 2007 to these two members of the Executive Committee.

The employment contract of Dr. Daniel Vasella in his current roles as Chairman and Chief Executive Officer, which includes a severance payment of USD 57 million (based on the year-end spot exchange rate of CHF 1.055 = USD 1.00) and a payment in case of a change-of-control event of USD 142 million (based on the same year-end spot exchange rate), will expire at the Annual General Meeting in 2009. These two payments are mutually exclusive. In October 2008, the Board and Dr. Vasella have reached an agreement on the terms of a new contract extending his current roles as Chairman and Chief Executive Officer of Novartis. The new contract will be finalized before the existing contract expires.

EXECUTIVE COMMITTEE COMPENSATION

GENERAL PRINCIPLES

The compensation policies, performance management process and incentive plans described above apply equally to members of the Executive Committee, including the Chairman and Chief Executive Officer.

Decisions concerning the compensation of Executive Committee members are based on an evaluation of the individual performance of the member as well as on the performance of their respective business area or function. The Compensation Committee considers the achievement of both short-term and long-term performance targets, including net sales growth, economic value creation (operating and net income, earnings per share and economic value added) and market share growth as well as ongoing efforts to optimize organizational effectiveness and productivity.

During the year, the Compensation Committee reviewed the General Principles underpinning executive compensation and confirmed these as appropriate for Novartis.

COMPENSATION OF THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER

GENERAL PROCESS

At the end of each year, the Chairman and Chief Executive Officer present his proposed individual objectives and targets for the coming year to the Board. The Board reviews and discusses this proposal, and, after any desired amendments, gives its approval. In particular, the Board ensures that the Chairman and Chief Executive Officer s objectives are in line with the Group s goals of fostering sustainable long-term performance and that they are not sacrificed by short-term financial objectives but support long-term business objectives in the interest of the Group and its shareholders.

Toward the end of each year, the Chairman and Chief Executive Officer prepares a self-appraisal, which is discussed with the Lead Director and the rest of the Board. The Lead Director also holds individual discussions with all Non-Executive Directors about the Chairman and Chief Executive Officer s performance.

In January, the Board approves the audited financial results, evaluates the extent to which targeted financial objectives for the past year have been achieved and compares these results with peer industry companies, taking into account general financial criteria and industry

developments. In a private session, limited to the independent Non-Executive Directors, the overall performance of the

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Chairman and Chief Executive Officer is discussed, after which the independent Non-Executive Directors share their appraisal with him.

Afterwards, the Compensation Committee decides upon the total remuneration package for the previous year and the target compensation (base and variable compensation as well as special share awards) for the coming year, taking into account all relevant factors including available benchmark information and the advice of the independent external advisor.

TARGETS FOR VARIABLE COMPENSATION OF THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER

For short-term performance measurement, the financial criteria typically include net sales growth, operating income, net income, earnings per share and market share. For long-term performance measurement, the financial target criterion is Economic Value Added (EVA, as defined in the Novartis accounting manual). The Compensation Committee measures the Chairman and Chief Executive Officer s performance relative to predetermined targets for these short- and long-term criteria.

Non-financial targets may typically include the following objectives: successful acquisitions, disposals and licensing transactions, Research and Development performance, product launches, successful implementation of growth or cost containment initiatives, or the successful launch of new sites or operations.

COMPENSATION OF THE CHAIRMAN AND CHIEF EXECUTIVE OFFICER FOR 2008

The Compensation Committee met in a separate session with external advisors on January 20, 2009, to determine the compensation for 2008 for the Chairman and Chief Executive Officer (he does not attend this meeting and is not a member of the Compensation Committee).

The Compensation Committee based its decision on its assessment of the Chairman and Chief Executive Officer s performance versus his financial and non-financial targets set by the Board, taking into account the year-end feedback collected by the Lead Director from each independent Director. The results were assessed from both quantitative and qualitative perspectives. Moreover, given its conviction that judgment should be applied in addition to focusing on metrics when assessing a senior executive s performance, the Compensation Committee also applied discretion in its assessment.

Taking the above into consideration, the Compensation Committee concluded that, with the exception of certain targets related to the Sandoz Division, the Chairman and Chief Executive Officer exceeded all his financial and non-financial targets, including the progress of the Forward initiative.

Outside the Sandoz Division, the Compensation Committee particularly welcomed the substantial growth in all other divisions (Pharmaceuticals, Vaccines and Diagnostics and Consumer Health), each of them exceeding their respective financial targets. Further, with the investment in

Alcon Inc., Novartis continued to strengthen its position as a leading healthcare company while at the same time improving its financial strength. In addition, the Compensation Committee noted the excellent retention rate within Novartis of high performers and high-potential associates.

The compensation granted by the Compensation Committee to the Chairman and Chief Executive Officer for 2008 is detailed in the table below. Compared to the compensation awarded for 2007, which decreased 33% compared to 2006, the amount for 2008 increased 21% from 2007 (when including shares matched under the Leveraged Share Savings Plans).

COMPENSATION OF OTHER EXECUTIVE COMMITTEE MEMBERS
GENERAL PROCESS

In January, the Board meets with the Chairman and Chief Executive Officer to review and discuss the performance of other members of the Executive Committee for the previous year, taking into account the audited financial results as well as the level of achievement of individual financial and non-financial targets.

In a separate session, the Compensation Committee decides, in the presence of the Chairman and Chief Executive Officer and based on his recommendations, on the variable compensation for other members of the Executive Committee and other key executives for the previous year. At the same meeting, the Compensation Committee decides on the target compensation packages for these executives for the coming year.

In addition to the full-year assessment, the mid-year performance of other members of the Executive Committee is reviewed in June. At the same time, the Board also carries out a mid-year review of the performance of the individual businesses.

At any point during the year, special share awards may be granted for performance or retention reasons.

COMPENSATION OF OTHER EXECUTIVE COMMITTEE MEMBERS FOR 2008

At its meeting on January 20, 2009, the Compensation Committee decided on the amounts of variable compensation for 2008 for the other members of the Executive Committee by applying the principles described above. The specific compensation decisions made for the members of the Executive Committee reflect their achievements against the financial and non-financial performance targets established for each of them at the beginning of the year.

DISCLOSURE PRINCIPLES FOR EXECUTIVE COMMITTEE COMPENSATION

The compensation table below discloses the compensation granted to members of the Executive Committee for 2008. The following paragraphs describe the principles underlying the data in the table.

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ALIGNMENT OF REPORTING AND PERFORMANCE

The compensation table below synchronizes the reporting of annual compensation with the performance in that specific year, i.e. all amounts awarded for performance in 2008 are included in full.

VALUATION PRINCIPLES

Shares and share options under the compensation plans are generally granted with a vesting(1) period. In addition, associates in Switzerland, including members of the Executive Committee, may block(2) shares received under any compensation plan for up to 10 years.

The Compensation Committee believes that such restrictions affect the value of the shares and share options.

The Swiss Federal Tax Administration, in its Kreisschreiben Nr. 5, provides for a methodology pursuant to which unvested or blocked shares or share options shall be valued with a discount for each year they are unvested or blocked. In addition, for the valuation of share options, the Swiss Tax Authorities apply in a standing practice for Novartis (since 1997) an option valuation model based on Black-Scholes.

In the Compensation Committee s view, this is the appropriate methodology to report the economic value of shares and share options for executive compensation under Swiss law because, unlike IFRS, it takes into account the trading restrictions due to vesting and blocking. The application of this methodology to determine the value of the shares and share options granted for the year 2008 is explained in footnote 9 to the Executive Committee Compensation table below and applies to all members of the Executive Committee.

See Note 28 to the Group s consolidated financial statements for information on executive officer and Director compensation as calculated under IFRS.

LOANS AND OTHER PAYMENTS TO MEMBERS OF THE EXECUTIVE COMMITTEE

LOANS TO MEMBERS OF THE EXECUTIVE COMMITTEE

No loans were granted to current or former members of the Executive Committee during 2008. No such loans were outstanding as of December 31, 2008.

OTHER PAYMENTS TO MEMBERS OF THE EXECUTIVE COMMITTEE

During 2008, no payments (or waivers of claims) other than those set out in the compensation table below were made to members of the Executive Committee or to persons closely linked (3) to them.

PAYMENTS TO FORMER MEMBERS OF THE EXECUTIVE COMMITTEE

During 2008, no payments (or waivers of claims) were made to former members of the Executive Committee or to persons closely linked (3) to them.

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(1) Vesting refers to the waiting period under an equity-based incentive plan that must expire before the associate becomes irrevocably entitled to the shares or share options involved. If an associate leaves before the end of the vesting period for reasons other than retirement, disability or death, the associate will generally forfeit his or her rights to such shares or share options.

(2) Blocking refers to the ability of associates in Switzerland to opt for an extended trading restriction period (including vesting) of up to 10 years from the date of grant. Novartis encourages associates to block their shares because doing so aligns the associates interests with those of shareholders.

(3) Persons closely linked are (i) their spouse, (ii) their children below age 18, (iii) any legal entities that they own or otherwise control, and (iv) any legal or natural person who is acting as their fiduciary.

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EXECUTIVE COMMITTEE COMPENSATION FOR PERFORMANCE IN 2008(1)

		Base compensation	Variable compensation						Other compensation		Tota
			Annual incentive		Equity Plan Select		Long-Term Performance Plan	Special share awards			
	Currency	Cash (Amount)	Cash (Amount)	Shares (Number)(2)	Shares (Number)(3)	Options (Number)(4)	Shares (Number)(5)	Shares (Number)(6)	Pension benefits (Amount)(7)	Other (Amount)(8)	(Amoun
Daniel Vasella (Chairman and Chief Executive Officer)	CHF	3 000 000	0	115 768	167 754	1 132 076	79 945	31 226	140 293	175 485	**17 07**
Raymund Breu	CHF	1 103 004	0	21 589	0	582 717	14 699	0	110 689	0	**3 20**
Juergen Brokatzky-Geiger	CHF	6 33 504	0	11 220	11 219	75 705	8 442	0	162 919	42 022	**2 39**
Thomas Ebeling(13) (until December 1, 2008)	CHF	1 035 837	634 554	0	59 138	0	14 785	0	127 976	502 708	**6 26**
Mark C. Fishman	USD	938 333	11 586	16 963	86 063	0	16 327	0	169 920	104 366	**5 92**
Joseph Jimenez	CHF	941 670	1 197 000	0	0	552 076	12 662	0	227 009	202 152	**3 99**
Joerg Reinhardt	CHF	943 337	0	20 045	33 409	225 453	12 261	0	153 563	8 687	**4 08**
Andreas Rummelt	CHF	918 338	0	4 631	15 436	0	12 261	0	160 430	31 441	**2 58**
Thomas Wellauer	CHF	636 674	0	8 947	21 473	0	8 530	0	147 663	9 632	**2 35**
Thomas Werlen(14) (as of October 16, 2008)	CHF	135 417	0	2 263	0	36 648	942	0	33 221	4 519	**37**
Total(15)	CHF	**10 364 480**	**1844108**	**201 426**	**394 492**	**2 604 675**	**180 854**	**31 226**	**144 7874**	**1 089 728**	**48 75**

See Note 33 to the Group s consolidated financial statements for 2007 data

(1) Does not include reimbursement for travel and other necessary business expenses incurred in the performance of their services as these are not considered compensation.

(2) Participants elected to invest some or all of the value of their incentives in the five-year Leveraged Share Savings Plan (LSSP) rather than to receive cash or to invest in the Swiss three-year Employee Share Ownership Plan (ESOP; if eligible). Daniel Vasella and Raymund Breu have voluntarily extended the five-year blocking period of these shares to ten years.

(3) Daniel Vasella has voluntarily blocked these shares (including the two-year vesting period) for ten years. Joerg Reinhardt and Thomas Wellauer have voluntarily blocked these shares (including the two-year vesting period) for five years.

(4) Novartis employee share options are tradable. Share options granted under the Novartis Equity Plan Select outside North America will expire on January 18, 2019, have a two-year vesting period in Switzerland (three years in other countries) and have an exercise price of CHF 53.65 per share (the closing price of Novartis shares on the grant date of January 20, 2009). Options on ADSs granted to participants in North America will expire on January 18, 2019, have a three-year vesting period and an exercise price of USD 46.42 per ADS (the closing price of Novartis ADSs on the grant date of January 20, 2009).

(5) Awarded under the Long-Term Performance Plan based on the achievement of Economic Value Added (EVA) objectives over the performance period ended December 31, 2008. Daniel Vasella and Raymund Breu have voluntarily blocked these shares for ten years, Joerg Reinhardt and Thomas Wellauer for five years, and Joseph Jimenez and Andreas Rummelt for three years.

(6) Consists of an unrestricted share award to Daniel Vasella, granted at January 11, 2008, against the prevailing share price of CHF 64.05. Daniel Vasella has voluntarily blocked these shares for ten years.

(7) Service costs of pension and post-retirement healthcare benefits accumulated in 2008, and employer contributions to defined contribution pension plans in 2008.

(8) Includes perquisites and other compensation paid during the year; does not include cost allowances and tax-equalization payments regarding the international assignment of Joerg Reinhardt.

(9) Values of shares granted are discounted by 6% per year depending on the length of the combined vesting and blocking period. For example, the value of a share award subject to a two-year vesting/ blocking period calculated in accordance with the methodology described in the Kreisschreiben Nr. 5 equals 89% of its market value at the grant date. The value of a share award with a combined vesting/blocking period often years equals 55.839% of its market value at the grant date. The closing share price on the grant date (January 20, 2009) was CHF 53.65 per Novartis share and USD 46.42 per ADS. The values of share options granted are reported based on the valuation principles contained in a tax ruling from the Swiss tax authorities, reflecting the principles as disclosed in the aforementioned Kreisschreiben Nr. 5. According to this methodology, tradable share options under the Equity Plan Select with a vesting period of two years have a value of CHF 1.55 per option at grant.

(10) Reflects shares to be awarded in the future if the associate remains with the Group. The members of the Executive Committee were invited to invest their incentive awards for 2008 in the leveraged share saving plans either the three-year Swiss Employee Share Ownership Plan (ESOP) or the five-year Leveraged Share Savings Plan (LSSP) to further align their interest with those of the shareholders. Under the plan rules, participants will receive additional shares (matching shares) after the expiration of either the three- or five-year vesting period. Under the five-year LSSP plan, each share invested entitles the participant to receive one matching share. Under the three-year ESOP plan, for every two shares invested, the participant receives one matching share. If a participant leaves prior to the expiration of the vesting period, in general no matching shares will be awarded. Raymund Breu and Thomas Werlen have voluntarily blocked these matching share units for 15 years (including the five-year vesting period). Daniel Vasella and Andreas Rummelt have voluntarily blocked these matching share units for ten years (including the five-year vesting period). Joerg Reinhardt has voluntarily blocked these matching share units for eight years (including the five-year vesting period).

(11) The values of shares and share options reflected in this column have been calculated using the valuation methodology described in footnote 9. Regarding the valuation of matching shares (please see footnote 10) the following applies: if a member of the Executive Committee has chosen to block the shares to be received in the future under the five-year Leveraged Share Savings Plan for an additional 10 years, leading to a combined vesting/ blocking period of 15 years, then the value of the matching shares reflected in the table will be 41.727% of the share price on the grant date. The closing share price on the grant date (January 20, 2009) was CHF 53.65 per Novartis share and USD 46.42 per ADS.

(12) All amounts are gross amounts (i.e. including social security due by the associate). The employer s share of social security contributions is not included.

(13) Thomas Ebeling decided to leave Novartis by the end of February 2009. The base compensation, variable compensation and pension benefits in the table relate to the period during which he was a member of the Executive Committee. His share awards under the Equity Plan Select and the Long- Term Performance Plan were replaced by equivalent cash payments at the discretion of the Compensation Committee. The other compensation (Other) includes the contractual salary payments from December 1, 2008, to the end of February 2009 and the pension benefit costs over this period.

(14) The base compensation in the table reflects the salary over the period from October 16, 2008, to the end of the year 2008. The granted equity and other compensation reflect the compensation that is attributable to the period as an Executive Committee member. This means that for these compensation components 2.5/12 of the annual compensation is disclosed.

(15) Amounts in USD for Mark Fishman were converted at a rate of CHF 1.083516 = USD 1.00, which is the same average exchange rate used in the Group s consolidated financial statements.

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NON-EXECUTIVE DIRECTOR COMPENSATION

GENERAL PRINCIPLES

Based on a proposal made by the Compensation Committee, the Board determines the compensation of Non-Executive Directors. They receive an annual fee in an amount that varies with the responsibilities of each Director. They do not receive additional fees for attending meetings or acting as committee chairs.

Directors can choose to receive the annual fee in cash, shares or a combination of both. Directors do not receive share options.

CONTRACTS WITH NON-EXECUTIVE DIRECTORS

There are no service contracts with any Non-Executive Director other than with Alexandre F. Jetzer. The contract with Alexandre F. Jetzer does not provide for any severance payments or for benefits upon termination.

LOANS AND OTHER PAYMENTS TO NON-EXECUTIVE DIRECTORS

LOANS TO NON-EXECUTIVE DIRECTORS

No loans were granted to current or former Non-Executive Directors during 2008. No such loans were outstanding as of December 31, 2008.

OTHER PAYMENTS TO NON-EXECUTIVE DIRECTORS

During 2008, no payments (or waivers of claims) other than those set out in the table below were made to current Non-Executive Directors or to persons closely linked to them (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation).

PAYMENTS TO FORMER NON-EXECUTIVE DIRECTORS

During 2008, no payments (or waivers of claims) were made to former Non-Executive Directors or to persons closely linked to them (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation), except for an amount of CHF 62 298 that was paid to the Honorary Chairman.

COMPENSATION TO NON-EXECUTIVE DIRECTORS IN 2008(1)

	Annual cash compensation (CHF)	Shares (number)	Total(2) (CHF)
Ulrich Lehner Vice Chairman Lead Director Chairman s Committee (Member) Corporate Governance and Nomination Committee (Chair) Compensation Committee (Member) Audit and Compliance Committee (Member)	1 050 000	0	1 050 000
Hans-Joerg Rudloff Vice Chairman Chairman s Committee (Member) Compensation Committee (Chair) Audit and Compliance Committee (Member)	736 337	0	736 337
Peter Burckhardt Audit and Compliance Committee (Member)	319 517	2 342	403 278
Srikant Datar Audit and Compliance Committee (Chair) Compensation Committee (Member)	356 875	1 845	475 047
Ann Fudge Corporate Governance and Nomination Committee (Member)	243 750	2 050	375 053
William W. George(3) Chairman s Committee (Member)	375 000	3 513	600 008
Alexandre F. Jetzer(4)	14 738	5 465	308 633
Pierre Landolt(5) Corporate Governance and Nomination Committee (Member)	128 604	4 591	422 658
Andreas von Planta Audit and Compliance Committee (Member) Corporate Governance and Nomination Committee (Member)	426 578	1 562	501 338
Wendelin Wiedeking	112 694	4 017	369 983
Marjorie M. Yang Compensation Committee (Member)	422 601	0	422 601
Rolf M. Zinkernagel Corporate Governance and Nomination Committee (Member)	685 898	0	685 898
Total	**4 872 592**	**25 385**	**6 350 834**

(1) Does not include reimbursement for travel and other necessary business expenses incurred in the performance of their services as these are not compensation. All shares were granted at January 11, 2008, against the prevailing share price of CHF 64.05.

(2) A Non-Executive Director who is tax resident in Switzerland can voluntarily choose to block the shares. In 2008, Peter Burckhardt blocked his shares for ten years, Alexandre F. Jetzer for three years and Andreas von Planta for five years. The value of the shares reflected in this table has been calculated using the valuation methodology described under Remuneration Report Disclosure Principles for Executive Committee Compensation Valuation Principles.

(3) William W. George resigned from the Compensation Committee (Member) and the Corporate Governance and Nomination Committee (Chair) as of December 1, 2008.

(4) In addition, Alexandre F. Jetzer was paid CHF 350 004 for consulting services.

(5) According to Pierre Landolt, the Sandoz Family Foundation is the economic beneficiary of the compensation.

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OWNERSHIP OF NOVARTIS SHARES AND SHARE OPTIONS BY EXECUTIVE COMMITTEE MEMBERS

OWNERSHIP GUIDELINES

The Board requires Executive Committee members to own at least a certain multiple of their base salary in Novartis shares or vested tradable share options. The multiple is five for the Chairman and Chief Executive Officer and three for other Executive Committee members. Executive Committee members are given three years from the date of nomination to comply with the minimum shareholding requirements.

In the event of a substantial drop in the share price, the Board may, at its discretion, extend that time period. As of December 31, 2008, all Executive Committee members who have served at least three years on the Executive Committee, complied with the share ownership guidelines.

SHARES AND SHARE OPTIONS OWNED

The total number of vested and unvested Novartis shares (including share units yet excluding unvested matching share units from leveraged share savings plans) and share options owned by members of the Executive Committee as of January 20, 2009, is shown in the tables below.

As of January 20, 2009, no member of the Executive Committee together with persons closely linked to them (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation) owned 1% or more of the outstanding shares of Novartis, either directly or through share options.

SHARES OWNED BY EXECUTIVE COMMITTEE MEMBERS

	Number of shares owned(1)
Daniel Vasella	2 504 724
Raymund Breu	445 845
Juergen Brokatzky-Geiger	110 369
Mark C. Fishman	286 167
Joseph Jimenez	25 826
Joerg Reinhardt	389 541
Andreas Rummelt	232 210
Thomas Wellauer	72 202
Thomas Werlen	38 388
Total	4 105 272

(1) lncludes holdings of persons closely linked to members of the Executive Committee (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation).

SHARE OPTIONS OWNED BY EXECUTIVE COMMITTEE MEMBERS

	Number of share options owned (1)						
	2009	**2008**	**2007**	**2006**	**2005**	**Other**	**Total**
Daniel Vasella	1 132 076	1 290 631	802 855	0	887 790	0	4 113 352
Raymund Breu	582 717	421 798	479 929	416 667	496 381	324 556	2 722 048
Juergen Brokatzky-Geiger	75 705	109 016	55 130	47 620	34 127	9 559	331 157
Mark C. Fishman	0	184 870	142 724	124 876	151 659	367 680	971 809
Joseph Jimenez	552 076	157 266	0	0	0	0	709 342
Joerg Reinhardt	225 453	0	158 787	0	0	488 620	872 860
Andreas Rummelt	0	0	0	0	0	0	0
Thomas Wellauer	0	106 693	0	0	0	0	106 693
Thomas Werlen	175 912	0	0	0	0	141 215	317 127
Total							**10 144**
	2 743 939	**2 270 274**	**1 639 425**	**589 163**	**1 569 957**	**1 331 630**	**388**

(1) Share options disclosed for a specific year were granted under the Novartis Equity Plan Select. The column Other refers to share options granted in 2004 or earlier, to share options granted to these executives while they were not members of the Executive Committee, and to share options bought by the members of the Executive Committee or persons closely linked to them on the market (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation).

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TERMS OF SHARE OPTIONS GRANTED TO MEMBERS OF THE EXECUTIVE COMMITTEE

The share options granted to the members of the Executive Committee under the share-based compensation plans are exercisable for one share each (1:1). The terms of the share options granted since 2005 are shown in the table:

Grant year	Exercise price (CHF/USD)	Vesting (years) (CH/US)	Term (years)
2009	53.65/46.42	2/3	10
2008	64.05/57.96	2/3	10
2007	72.85/58.38	2/3	10
2006	71.30/54.70	2/3	10
2005	57.45/47.84	2/3	10

OWNERSHIP OF NOVARTIS SHARES AND SHARE OPTIONS BY NON-EXECUTIVE DIRECTORS

OWNERSHIP GUIDELINES

Non-Executive Directors are required to own at least 5 000 Novartis shares within three years after joining the Board. As of December 31, 2008, all Non-Executive Directors who have served at least three years on the Board complied with these share ownership guidelines.

SHARES AND SHARE OPTIONS OWNED

The total number of vested and unvested shares and share options owned by Non-Executive Directors and persons closely linked to them (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation) as of January 20, 2009, is shown in the following tables.

As of January 20, 2009, none of the Non-Executive Directors together with persons closely linked to them (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation) owned 1% or more of the outstanding shares of Novartis, either directly or through share options.

SHARE OWNED BY NON-EXECUTIVE DIRECTORS

	Number of shares owned(1)

Ulrich Lehner	22 193
Hans-Joerg Rudloff	61 917
Peter Burckhardt	19 754
Srikant Datar	13 797
Ann Fudge	2 203
William W. George	128 555
Alexandre F. Jetzer	80 800
Pierre Landolt (2)	24 304
Andreas von Planta	105 800
Wendelin Wiedeking	23 135
Marjorie M. Yang	18 000
Rolf M. Zinkernagel	22 800
Total	523 258

(1) Includes holdings of persons closely linked to Non-Executive Directors (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation).

(2) According to Pierre Landolt, of the total number, 24 093 shares are held by the Sandoz Family Foundation.

SHARE OPTIONS OWNED BY NON-EXECUTIVE DIRECTORS

	Number of share options owned		
	Granted by Novartis in 2002 or earlier(1)	**Other share options acquired in the market(2)**	**Total**
Ulrich Lehner	0	0	0
Hans-Joerg Rudloff	24 570	0	24 570
Peter Burckhardt	0	0	0
Srikant Datar	10 000	0	10 000
Ann Fudge	0	0	0
William W. George	44 835	0	44 835
Alexandre F. Jetzer	32 214	0	32 214
Pierre Landolt(3)	24 191	0	24 191
Andreas von Planta	0	0	0
Wendelin Wiedeking	0	0	0
Marjorie M. Yang	0	0	0
Rolf M. Zinkernagel	23 597	0	23 597
Total	**159 407**	**0**	**159 407**

(1) The last year in which Novartis granted share options to Non-Executive Directors was in 2002. In 2002, Novartis granted 79 087 share options to Non-Executive Directors at an exercise price of CHF 62 and a term of nine years.

(2) Includes holdings of persons closely linked to Non-Executive Directors (see definition under Remuneration Report Disclosure Principles for Executive Committee Compensation).

(3) According to Pierre Landolt, the Sandoz Family Foundation is the economic beneficiary of all share options.

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PENSION AND HEALTHCARE PLANS

GENERAL POLICY

Pension benefits at Novartis are generally designed to provide a safety net against financial hardship that may result from disability or death as well as to provide a reasonable level of retirement income reflecting the number of years of service with Novartis. As a general policy, the level of pension benefits provided to associates is country-specific and is influenced by local market practice and regulations. Since a significant number of associates are employed either in Switzerland or the United States, the pension and healthcare benefits in those countries are described in more detail below.

SWISS PENSION PLANS

SWISS PENSION FUND

The Swiss Pension Fund of Novartis operates a defined benefit plan that provides retirement benefits and risk insurance for death and disability. It is funded by contributions from Group companies and the insured associates. The Swiss Pension Fund insures remuneration up to a maximum base salary of CHF 220 000 per year, reduced with an offset of 30% of salary up to a maximum of CHF 24 120. Annual incentives of associates with base salaries below CHF 220 000 are insured through a defined contribution Incentive/Bonus Insurance plan, which is financed through contributions by Novartis and the insured associates.

SWISS MANAGEMENT PENSION FUND

The Swiss Management Pension Fund is essentially a defined contribution plan that also provides retirement benefits and risk insurance for death and disability for components of remuneration in excess of the maximum insurable amount of base salary described in the previous paragraph. The Swiss Management Pension Fund insures base salary above CHF 220 000, and annual incentives, up to an aggregate maximum of CHF 795 600; it is funded through contributions by Novartis and the insured associates.

US PENSION PLANS

US DEFINED BENEFIT PLAN

The pension plan for certain US-based associates of Novartis Corporation and its US affiliates is a funded, tax-qualified, noncontributory defined benefit pension plan. The amount of annual earnings covered by the pension plan is generally equal to the associate s base salary and annual incentive. The amount of annual earnings that may be considered in calculating benefits under this pension plan is limited by law (in 2008: USD 230 000). Novartis Corporation and its US affiliates also maintain various unfunded supplemental pension plans to cover associates for amounts over and above this limitation. Prior to January 1, 2006, the defined benefit pension plans were closed to new entrants at various dates specific to certain companies. Coinciding with eliminating new eligibility to the defined benefit plans, our US subsidiaries implemented defined contribution plan structures for new associates.

US DEFINED CONTRIBUTION PLANS

US-based associates generally are eligible to participate in tax-qualified defined contribution plans in which they may contribute a portion of their annual compensation (subject to the annual limitation described above) and receive a matching contribution from the company that is generally USD 1 for each USD 1 contributed by the participant. Associates can receive up to 6% of their base salary and annual incentive as employer contributions.

In addition, certain Group companies in the United States sponsor defined contribution plans, with contributions ranging from 3% to 10% of annual covered compensation. Associates who still accrue service years in US defined benefit plans do not receive such company contributions.

Novartis Corporation and its US subsidiaries also maintain various unfunded supplemental defined contribution plans to cover associates for amounts over and above the USD 230 000 limitation.

HEALTHCARE PLANS

In Switzerland, Novartis does not provide healthcare benefits to associates. In other countries, healthcare plans have been established in accordance with local market practices.

In the United States, all Group companies offer associates healthcare benefits that are subsidized by the company. Certain Group companies also provide contributory post-retirement medical plans that complement US government-provided Medicare.

PENSION BENEFITS TO THE MEMBERS OF THE EXECUTIVE COMMITTEE

The members of the Executive Committee (with the exception of Mark C. Fishman) participate in the same Swiss pension plans as other Swiss-based associates. The Swiss Pension Fund aims to provide a maximum pension of 60% of the insured remuneration under its plan. For participants in the Swiss Management Pension Fund, Novartis pays 20% of the insured remuneration as an additional contribution.

The US defined benefit pension formula that applies to Mark C. Fishman is a pension equity plan (PEP) formula that applies to other participating US associates. Benefits under the PEP formula are based on:

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- The associate s highest average earnings for a consecutive five calendar-year period during the last 10 calendar years of service with Novartis; and

- The associate s accumulated PEP credits (expressed as a percentage of final average earnings, and ranging from 2% to 15% for each year of service based on the associate s attained age and accumulated service in a particular year).

Benefits accrued under the PEP plan are payable after retirement in the form of an annuity or a lump sum. The US defined contribution plan that applies to Mark C. Fishman is the same plan that applies to other participating US associates; however, the additional company contribution does not apply to him.

In 2008, no contributions to defined benefit plans were made for Mark C. Fishman and CHF 152 837 were made for other members of the Executive Committee. For defined contribution plans, the employer contribution amounted to USD 56 559 for Mark C. Fishman and CHF 963 130 for other members of the Executive Committee.

EXECUTIVE COMMITTEE ACCUMULATED PENSION BENEFITS

The pension benefits accumulated by Executive Committee members in the defined benefit plans as of December 31, 2008, as well as the employer pension contributions in 2008, are summarized in the following table:

	Currency	Accumulated benefit in defined benefit plans(1)	Employer contributions to defined benefit plans	Employer contributions to defined contribution plans
Daniel Vasella	CHF	89244	18632	125 340
Raymund Breu	CHF	109836	18632	125340
Juergen Brokatzky-Geiger	CHF	93 408	18608	120 863
Mark C. Fishman	USD	113 190	0	56559
Joseph Jimenez	CHF	4908	18608	115 120
Joerg Reinhardt	CHF	81 636	18632	115 120
Andreas Rummelt	CHF	90 108	18608	115 120
Thomas Wellauer	CHF	422 112	18608	114620
Thomas Werlen(2)	CHF	53 868	3 877	16 485

(1) Accumulated benefits may include voluntary employee contributions or transfers of portability sums from previous employers pension funds.

(2) The employer contributions reflect the contributions attributable to the period as an Executive Committee member (2.5/12 of the annual contributions).

BENEFITS TO NON-EXECUTIVE DIRECTORS

No pension benefits are granted to Non-Executive Directors.

APPROVAL OF THE REMUNERATION REPORT

The Board is of the opinion that Novartis shareholders should be involved in the debate on the remuneration system and should have the right to express their views on remuneration. The Remuneration Report will be continued to be presented and discussed at the Annual General Meeting under the agenda item Approval of the Annual Financial Statements. The Board is convinced that the Remuneration Report should not be submitted to a consultative vote by shareholders. This view is based on the fact that the individual performance assessment and the determination of compensation of the members of the Executive Committee is the responsibility of the Compensation Committee and the Board.

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FINANCIAL HIGHLIGHTS 2008 CONTINUING OPERATIONS(1)

KEY FIGURES

	2008 USD millions	2007 USD millions	Change %
Net sales	**41 459**	38 072	9
Operating income(2)	**8 964**	6 781	32
Return on net sales (%)	**21.6**	17.8	
Net income(2)	**8 163**	6 540	25
Basic earnings per share (USD)(3)	**3.59**	2.81	28
Change in net liquidity	**-8 654**	6 751	
Equity at year-end	**50 437**	49 396	2
Dividend (CHF)(4)	**2.00**	1.60	25

TOTAL ASSETS

(In USD billions and %)

TOTAL EQUITY AND LIABILITIES

(In USD billions and %)

NET SALES GROWTH

(In %)

NET SALES GROWTH BY REGION

(In %)

OPERATING INCOME GROWTH(2)

(In %)

OPERATING MARGIN(2)

(In %)

CASH FLOW FROM OPERATING ACTIVITIES AND FREE CASH FLOW

(In USD millions)

(1) Excluding Consumer Health discontinued operations divested during 2007

(2) 2007 results include pre-tax exceptional charges of USD 590 million for a Corporate environmental provision increase and USD 444 million for the Forward restructuring initiative that totaled USD 1034 million (USD 788 million after tax)

(3) Average number of shares outstanding in 2008: 2265.5 million (2007: 2317.5 million)

(4) Dividend for 2008: Proposal to 2009 Annual General Meeting

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KEY FINANCIAL DEVELOPMENTS IN 2008

NOVARTIS IN 2008	delivers another year of record results from continuing operations on the overall solid expansion of the Group s strategic healthcare portfolio
NET SALES FROM CONTINUING OPERATIONS	rise 9% (+5% in local currencies, or lc) to USD 41.5 billion on the improving performance in Pharmaceuticals as well as important contributions from Vaccines and Diagnostics and Consumer Health
PHARMACEUTICALS	gains momentum from dynamic growth in Oncology, the portfolio of high blood pressure medicines and USD 2.9 billion of contributions from recently launched products. Net sales rise 10% (+5% lc) to USD 26.3 billion and led by Europe, Japan, Latin America and priority emerging markets, while the US (-2%) returns to growth in the second half of 2008 and nearly offsets the 2007 impact of generic competition and *Zelnorm* suspension
VACCINES AND DIAGNOSTICS	posts 21% (+20% lc) increase in net sales to USD 1.8 billion on higher deliveries of influenza vaccines, particularly H5N1 pandemic vaccines to the US government, as well as steady growth in the blood-testing diagnostics business
SANDOZ	shows 5% (+1% lc) rise in net sales to USD 7.6 billion as improving performances in many markets, including Central and Eastern Europe, were largely offset by a 10% decline in the United States due to lack of new product launches
CONSUMER HEALTH	achieves 7% (+4% lc) growth in net sales to USD 5.8 billion as all businesses expand in challenging market conditions and led by new product launches in CIBA Vision
OPERATING INCOME FROM CONTINUING OPERATIONS	advances 32% to USD 9.0 billion on the solid business expansion and productivity gains from Forward, the Group s productivity initiative Excluding exceptional 2007 charges for the Corporate environmental provision increase (USD 590 million) and Forward (USD 444 million), operating income rises 15%
ALCON	became an associated company of Novartis in July 2008 after a 25% stake was acquired from Nestlé as part of an agreement providing future rights to increase to 77% and obtain majority control of the world leader in eye care
NET INCOME FROM CONTINUING OPERATIONS	grows 25%, at a slower pace than operating income due to an unusually low tax rate in 2007 and the start of interest expenses in mid-2008 for the 25% Alcon investment
BASIC EARNINGS PER SHARE	rise 28% to USD 3.59 for continuing operations compared to USD 2.81 in 2007, at a faster pace than net income due to fewer outstanding shares
DIVIDEND	of CHF 2.00 per share proposed for 2008 to shareholders, a 25% increase from CHF 1.60 in 2007 and representing an estimated payout ratio of 53% of net income
FORWARD INITIATIVE	is progressing quickly to improve speed, flexibility and productivity as USD 1.1 billion of cost savings were achieved in 2008, exceeding the USD 670 million target. The 2010 pre-tax annual cost savings goal is USD 1.6 billion compared to the 2007 base

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OPERATING AND FINANCIAL REVIEW

This operating and financial review should be read together with the Group s consolidated financial statements in this Annual Report. The consolidated financial statements and the financial information discussed below have been prepared in accordance with International Financial Reporting Standards (IFRS) as published by the International Accounting Standards Board (IASB).

OVERVIEW

Novartis provides healthcare solutions that address the evolving needs of patients and societies worldwide. Our broad portfolio includes innovative medicines, preventive vaccines and diagnostic tools, generic pharmaceuticals and consumer health products. Novartis is the only company to have leadership positions in each of these areas.

The Group s businesses are divided into four global operating divisions:

- Pharmaceuticals: Innovative patent-protected pharmaceuticals
- Vaccines and Diagnostics: Human vaccines and blood-testing diagnostics
- Sandoz: Generic pharmaceuticals
- Consumer Health: OTC (Over-the-Counter medicines), Animal Health and CIBA Vision (contact lenses and lens-care products)

Our strategy is to strengthen this healthcare portfolio through sustained investments in innovation as well as targeted acquisitions. In April 2008, Novartis announced an agreement with Nestlé S.A. providing the right to acquire 77% majority ownership of Alcon Inc. (NYSE: ACL), the world leader in eye care, in a two-step process. The potential value of these transactions is up to approximately USD 39 billion. In July 2008, the first step was completed when Novartis acquired a 25% stake for USD 10.4 billion in cash. In the optional second step, Novartis has the right to acquire Nestlé s remaining 52% majority stake between January 1, 2010, and July 31, 2011, for a fixed price of USD 181 per share, or up to approximately USD 28 billion. During this period, Nestlé has the right to require us to buy its remaining stake at a 20.5% premium to Alcon s share price at that time, but not exceeding USD 181 per share. Novartis has no obligation to purchase the remaining 23% of shares held by Alcon minority shareholders.

Results from continuing operations in 2008 and 2007 exclude contributions from the Medical Nutrition and Gerber Business Units, which were divested in 2007 and resulted in a combined after-tax divestment gain of USD 5.2 billion. The sale of these businesses in separate transactions to Nestlé S.A. completed the divestment of remaining non-healthcare businesses. Both were previously included in the Consumer Health Division, but are now classified as discontinued operations in the consolidated financial statements.

Novartis achieved net sales of USD 41.5 billion in 2008 from continuing operations, up 9% (+5% in local currencies, or lc). Pharmaceuticals delivered accelerating growth while overcoming the 2007 challenges from the entry of generic competition for some products in the US and the suspension of *Zelnorm*. Important contributions from other businesses particularly Vaccines and Diagnostics and Consumer Health further supported the performance.

Operating income from continuing operations advanced 32% to USD 9.0 billion based on the solid business expansion and productivity gains from Forward, the Group s productivity initiative launched in December 2007. Results in 2007 included approximately USD 1.0 billion of exceptional charges (USD 590 million for the Corporate environmental provision increase and USD 444 million in Forward restructuring charges). Excluding these two charges, operating income was up 15% in 2008.

Net income from continuing operations grew 25% to USD 8.2 billion, at a slower pace than operating income mainly due to an unusually low tax rate in 2007 as well as the start of financing costs in July 2008 for the 25% Alcon investment. Excluding the above exceptional charges in 2007, net income rose 11% in 2008. Basic earnings per share from continuing operations were up 28% to USD 3.59 from USD 2.81 in 2007 on fewer outstanding shares.

Headquartered in Basel, Switzerland, the Group employed approximately 96700 full-time equivalent associates as of December 31, 2008, and has operations in approximately 140 countries around the world.

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FACTORS AFFECTING RESULTS OF OPERATIONS

A number of key factors influence the Group s results of operations and the development of our businesses.

The global healthcare market is expected to continue growing due to long-term demographic and socioeconomic trends worldwide. Both in industrialized countries and emerging markets, the aging of the population, along with sedentary lifestyles and poor nutritional habits, are producing a rising incidence of chronic diseases. These and other factors are prompting greater use of medicines. At the same time, new medicines and healthcare products are being developed to better treat many diseases as a result of technological advances and consistent investments in innovation.

The growing burden of healthcare costs as a percentage of Gross Domestic Product in many countries, however, is placing intense pressure on governments and payors to control spending even more tightly. Deteriorating economic conditions are a complicating factor, and signs are emerging that the current economic slowdown may have a more negative impact on healthcare expenditures than in past recessions, in part due to the ongoing shift of costs to patients.

As a result, the healthcare industry operates in an ever-more challenging environment as government-controlled authorities around the world and managed-care providers in the US are stepping up actions to cut costs and restrict access to higher-priced new medicines. Some generic drug manufacturers, meanwhile, have become more aggressive in challenging intellectual property rights for patented medicines. At the same time, investments needed for the Research & Development of new medicines have risen dramatically, in part because of increasing scrutiny of drug safety and efficacy.

In response to this fast-changing environment, Novartis has built up its presence in businesses that go beyond the traditional focus on patent-protected medicines. These areas include preventive vaccines and diagnostics, generic pharmaceuticals and consumer health products. We have invested heavily in all of these businesses through internal initiatives intended to drive organic growth as well as through acquisitions, and will continue to do so in the future.

Novartis believes this diversified portfolio focused solely on healthcare best addresses the needs of patients and customers, providing a broad range of products that offer important treatment benefits while helping to reduce overall healthcare costs. A growing number of patients, physicians and payors worldwide can benefit from this range of products offered by Novartis. These include new medicines seeking to offer improved efficacy and safety (Pharmaceuticals), preventive vaccines and diagnostic tools (Vaccines and Diagnostics), off-patent generic pharmaceuticals (Sandoz), and readily available products to support day-to-day health (Consumer Health).

This strategy also helps Novartis to mitigate the negative impact of economic challenges faced by healthcare systems and many patients, particularly in the area of patent-protected medicines. It also offers attractive opportunities for future growth in these attractive market segments.

FUNDAMENTAL DRIVERS REMAIN STRONG

With demographics and socioeconomic developments driving long-term growth in demand for healthcare, Novartis expects its businesses to keep expanding in the coming years, both in the established markets of the US, Western Europe and Japan, as well as in many emerging markets.

AGING POPULATION FACES INCREASING HEALTHCARE NEEDS

The elderly represent a growing proportion of the world s population, a result of increasing life expectancy and declining birth rates. Nearly 500 million people worldwide were age 65 and older in 2006, and this number is expected to increase to one billion by 2030, according to a study published in 2007 by the US National Institute of Aging and the US Department of State. According to this study, the proportion of elderly people in the US is projected to rise to 13% from 8% by 2030, surpassing the number of children in the coming decade. In addition, the numbers of people over age 85 are increasing rapidly. While the elderly represent a greater percentage of the population in developed countries, older populations are generally growing more rapidly in the emerging markets. The increase in life expectancy is partly due to improved healthcare, but the aging of the population also creates increasing medical costs for governments, healthcare systems and patients since studies show the incidence of disease, and use of medicines, rises with age.

Novartis has many products in its portfolio that could provide benefits to the aging population by treating diseases and conditions that disproportionately afflict this group, including cardiovascular disease, cancer, Alzheimer s disease, osteoporosis, age- related macular degeneration and seasonal influenza.

EMERGING MARKETS GROW FASTER THAN DEVELOPED COUNTRIES

At a time of slowing pharmaceuticals sales growth in many industrialized countries, the longer-term economic expansion in several emerging markets has led to higher growth rates and an increasing contribution to the industry s global performance. According to IMS Health, a leading provider of industry information, the global pharmaceuticals market (both patent-protected and generic pharmaceuticals) is expected to grow 4.5 5.5% in 2009, at a similar pace compared to 5 6% in 2008. However, the 2009 forecast is slower than the 6 7% seen in 2007, and also below growth rates in previous years. The industry s sales in 2009 are expected to exceed USD 820 billion.

Key trends of recent years including faster growth in emerging markets, tougher regulation and cost-control measures, and patent expirations for many top-selling branded drugs may become even more prominent in 2009 and the future.

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Among developed markets, the US the world s largest pharmaceuticals market is forecast by IMS to grow only 1 2% in 2009 to about USD 285 billion, due in part to economic conditions as well as patent expiries and fewer new product launches. The top five European countries (France, Germany, Italy, Spain and the United Kingdom) are forecast to grow 3 4% in 2009, tempered by the increasing use of health benefit assessments, government cost-containment efforts and economic conditions.

At the same time, the seven leading emerging markets Brazil, China, India, Mexico, Russia, South Korea and Turkey are forecast by IMS to grow in 2009 at a combined 14 15% pace to about USD 110 billion in annual sales. These countries are benefiting from increasing government spending as a percentage of Gross Domestic Product on healthcare as well as broader public and private funding to improve access to medicines.

Novartis continues to take actions to increase its presence in a number of high-priority emerging markets, particularly China, Russia, South Korea and Turkey in the Pharmaceuticals Division, while implementing new business models in other emerging markets. Emerging markets, which accounted for approximately 24% of the Group s net sales in 2008, are expected to make increasingly significant contributions to future long-term results of operations.

LIFESTYLE CHANGES BOOST PREVALENCE OF CHRONIC ILLNESSES

Economic growth and change in nutritional habits have led to changes in lifestyles, both in industrialized and emerging countries. Surveys show people in general have become more sedentary and have adopted dietary habits that have in turn increased the risks of disease. These trends have led to a rapid rise in the incidence of chronic illnesses such as obesity, cardiovascular disease, diabetes, cancer and lung disorders. A World Health Organization report in October 2008 noted that heart attacks and related problems remain the world s top killer, claiming 29% of people who die each year, followed by infectious diseases and cancer. Novartis offers many products to help patients with chronic diseases, and will continue to make significant R&D investments into new treatments.

SCIENTIFIC ADVANCES DRIVE THE DISCOVERY OF NEW MEDICINES

Ongoing developments in technologies and the understanding of diseases are laying a foundation for the creation of new treatments for medical conditions for which none currently exist or where current treatment options are inadequate. R&D investments by the global pharmaceuticals industry have risen more than tenfold during the last 20 years, according to the US industry trade association PhRMA, leading to a significant increase in the number of drugs in development pipelines.

Based on recent advances in technologies, particularly the analysis of human genome data, the number of drugs in development is expected to rise further based on improving information about the role of specific genes and proteins in the human body. Like other research-based pharmaceutical companies, we are making major investments in these new technologies. These could have a fundamental effect on product development and, in turn, could affect future results of operations.

INCREASINGLY CHALLENGING BUSINESS ENVIRONMENT

While the overall healthcare market has grown steadily, the competitive operating environment is becoming even more challenging. Factors include increasing cost pressures from payors, the threat of patent expirations for leading products, a period of relatively low industry-wide R&D productivity and increasing scrutiny of drug safety by regulatory agencies. Novartis believes it is well- positioned to address these challenges.

PRESSURE OF PATENT EXPIRATIONS AND GENERIC COMPETITION

The pharmaceuticals industry faces a continuing high level of patent expirations, with branded products representing approximately USD 24 billion in combined annual sales set to lose patent protection in 2009, similar to levels seen in recent years, according to IMS Health.

Given the ongoing pressure of patent expirations, innovation is critical to the success of companies like Novartis. Sustainable growth can come only by discovering and developing new products that address unmet needs, are accepted by patients and physicians, and are reimbursed by payors. Our ability to gain regulatory approvals, and then successfully secure and defend intellectual property rights is particularly important for the Pharmaceuticals Division. The loss of exclusivity for one or more important product due to patent expiration, generic challenges, competition from new branded products or changes in regulatory status could have a material negative impact on the Group s results of operations.

Novartis takes active steps to defend its intellectual property rights, including initiating patent infringement lawsuits against generic drug manufacturers and, to a lesser degree, against other research-based pharmaceutical companies. Some generics manufacturers, however, are increasingly conducting at risk launches of products before final resolution of legal challenges for patent infringement.

In 2008, sales of four Novartis pharmaceutical products *Lotrel* (high blood pressure), *Lamisil* (fungal infections), *Trileptal* (epilepsy) and *Famvir* (viral infections) continued to lose sales following the start of generic competition in the US during 2007. As a result of generic competition, combined net sales for these products in the US declined from USD 2.6 billion in 2006 to USD 1.6 billion in 2007, and further to USD 536 million in 2008. This sharp reduction had an adverse effect on the results of operations of the Pharmaceuticals Division in 2007 and 2008.

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Our three best-selling products *Diovan* (high blood pressure), *Gleevec/Glivec* and *Zometa* (both for cancers) could potentially face significant competition in the coming two to six years in various markets, particularly the US and Europe. Competition could come in a number of forms: patent challenges, the entry of generic versions of another medicine in the same therapeutic class, or the regular expiration of patents. In particular, the patent on our top-selling drug, *Diovan,* expires in major European Union countries during 2011 and in the US in September 2012. In addition, sales of *Diovan* may begin to erode earlier in certain EU countries and the US ahead of a competitor product, Cozaar®, becoming the first branded medicine in this therapeutic class to lose market exclusivity (EU: 2009, US: 2010). Similarly, zoledronic acid, the active ingredient in *Zometa* as well as in *Aclasta/Reclast* (osteoporosis), is currently the subject of US patent litigation, with the possibility of an at risk launch by one or more generic competitors as early as the end of 2010. The loss of exclusivity for any one of these products could have a material adverse effect on the Group s business, financial condition and results of operations.

In addition to *Zometa* and *Aclasta/Reclast,* key products in the Pharmaceuticals Division that are the subject of ongoing US patent litigation include *Femara* (breast cancer), *Lescol* (high cholesterol), *Focalin/Ritalin LA* (Attention Deficit/Hyperactivity Disorder) and *Comtan/Stalevo* (Parkinson s disease). The loss of exclusivity for some of these products could have a significant adverse effect on the results of operations of the Pharmaceuticals Division. In addition, *Neoral* (transplantation) and *Voltaren* (pain), which are still among the Pharmaceuticals Division s top-ten selling products and had combined net sales of USD 1.8 billion in 2008, have encountered generic competition for some time in many markets. Although these products continue to generate relatively stable results, future sales from these products may decline further, which in turn could have an adverse effect on the Pharmaceuticals Division s business, financial condition and results of operations.

REGULATORY APPROVALS DROP AND SCRUTINY OF SAFETY RISES

Although scientific advances continue to lead to breakthroughs for patients, the pharmaceuticals industry has suffered from a dearth of regulatory approvals for new drugs in recent years. For example, the US Food and Drug Administration (FDA) approved only 18 entirely new drugs (new molecular entities) in 2007, one of the lowest single-year totals since 1983, when there were 14 new approvals. New product approvals for the industry are expected to remain low, with only 25 30 new molecular entities slated for launch in 2009, which follows FDA approvals for 24 brand new medicines in 2008, according to IMS Health. This decline in productivity comes at a time when the worldwide pharmaceuticals industry is spending more than USD 40 billion each year on R&D activities.

Following widely publicized issues such as the Merck & Co. recall of its pain medicine Vioxx® in 2004, healthcare regulators are increasingly focusing on product safety and efficacy as well as the risk/benefit profile of developmental drugs. Regulators are requiring more clinical trial data, with a significantly higher number of patients and more detailed analyses. As a result, obtaining regulatory approvals has become more challenging for pharmaceutical companies. In addition, maintaining regulatory approvals has become increasingly expensive as companies are now required to gather far more detailed safety and other clinical data on products after approval.

Similar to our industry peers, Novartis has suffered setbacks in recent years in gaining regulatory approvals for new products as well as being able to keep products on the market, primarily in the Pharmaceuticals Division. For example, in March 2007, we received an approvable letter from the FDA regarding *Galvus* (diabetes), which required Novartis to conduct additional major clinical trials to obtain US regulatory approval. Although *Galvus* was subsequently approved in the EU, a resubmission for US approval is not planned. Separately, in the second half of 2007, *Prexige* (osteoarthritic pain) was withdrawn in Australia and the EU based on post-marketing reports of serious liver side-effects, including two deaths in Australia, allegedly associated with longterm uses of higher doses. This product was subsequently withdrawn from remaining markets during 2008.

PRESSURE TO REDUCE DRUG PRICES AND INCREASE ACCESS TO MEDICINES

Prices for healthcare products, primarily patented medicines, continue to stir significant political debate in both industrialized and developing countries. These debates focus on the relative costs of medicines at a time of rapidly rising overall expenditures for healthcare and an economic slowdown. As a result, payors primarily government-controlled agencies as well as insurance companies and managed care organizations in the US have been exerting pressure for some time to cut prices, urging physicians to use more generics and restricting access to new medicines. Patients also are being forced to pay a larger contribution toward their own healthcare costs, which has limited the growth of patented pharmaceuticals in countries such as the US. At the same time, this trend has led to growth in the use of OTC and generic pharmaceuticals, market segments in which Novartis is one of the world leaders.

OTHER NOVARTIS BUSINESSES FACE COMPETITION

Businesses in the Novartis portfolio outside of the Pharmaceuticals Division also face their own challenges.

SANDOZ

The strong longer-term growth outlook for the generic pharmaceuticals market and the ongoing loss of exclusivity for several important industry products can create significant opportunities for Sandoz, but competition in this industry is very intense. Sandoz believes it has competitive advantages based on leadership positions in the world s top generics markets, active in countries covering 90% of the world s population, as well as its track record in gaining regulatory approvals for difficult-to-make generics that apply advanced technologies or are challenging to manufacture.

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However, many of the division s products are considered commodities, with multiple sellers competing aggressively on price. In addition, pressure is increasing in some markets, particularly Europe and the US, to further reduce prices for generic pharmaceuticals. These pressures stem both from government regulations and various distributors that are aggressively seeking to increase their profit margins at the expense of generics manufacturers.

Finally, a number of factors have tended to limit the availability or decrease the value of marketing exclusivity periods granted to generics companies in certain markets. These can be a significant source of revenue for generics companies, particularly the 180-day exclusivity period granted in the US by the Hatch-Waxman Act. Among the negative factors are aggressive steps taken by branded pharmaceuticals companies to counter the growth of generics, and increased competition among generics companies to achieve these periods of exclusivity. Pricing pressures and efforts by competitors of Sandoz have had, and likely will continue to have, a negative influence on the Division s results of operations.

VACCINES AND DIAGNOSTICS

In the Vaccines and Diagnostics Division, the demand for some products such as influenza vaccines is seasonal, while the demand for others such as pediatric combination vaccines depends upon birth rates in developed countries and emerging markets. Some vaccines that make an important contribution to the division s net sales and profits, particularly the key influenza vaccines, are considered commodities, meaning there are few therapeutic differences among products offered by a number of competitors. In addition, the seasonal influenza vaccine market suffered from price erosion in 2008 amid an oversupply of vaccines across the industry. The ability to develop differentiated, effective and safe vaccines, to gain approval for inclusion in national immunization recommendation lists, and to then consistently produce and deliver high-quality vaccines in time for the relevant disease seasons are critical to the success of this business.

CONSUMER HEALTH

Consumer spending, economic conditions, intense competition and efforts in many countries to shift healthcare costs to patients are among factors influencing results in the Consumer Health Division, which relies on consumer acceptance and loyalty to leading products brands in order to generate growth. The OTC Business Unit, which ranks No. 4 in this segment, faces significant competition from other major healthcare companies as well as from growing use in the US of so-called private label brands (consumer products sold by major retailers under own-label brands). In Animal Health, changes in the number of companion animals being maintained in consumer households in key geographic regions (particularly the US and Europe) can influence results, while the farm animal business continues to be affected by the global farming crisis. In CIBA Vision, trends in the use of contact lenses are dependent upon various factors that include economic cycles, consumer acceptance of new and existing products, innovations in contact lens technologies and consumer preference in general for these products.

LEGAL PROCEEDINGS MAY HAVE A SIGNIFICANT NEGATIVE EFFECT ON OUR RESULTS OF OPERATIONS

In recent years, the industries of which we are a part have become important targets of litigation around the world, especially in the US. A number of our subsidiaries are, and will likely continue to be, subject to various legal proceedings that arise from time to time, including product liability, commercial, employment and wrongful discharge, antitrust, securities, sales and marketing practices, health and safety, environmental

and tax litigation and claims, government investigations and intellectual property disputes. As a result, we may become subject to substantial liabilities that may not be covered by insurance. Litigation is inherently unpredictable, and excessive verdicts sometimes occur. As a consequence, we may in the future incur judgments or enter into settlements of claims that could have a material adverse effect on our results of operations or cash flows.

PATENT LITIGATION

Our Pharmaceuticals Division frequently defends its patents against challenges by our competitors. Should we fail to successfully defend our patents, we will be faced with generic competition for the relevant products, and a resulting loss of revenue.

At the same time, our Sandoz Division may, from time to time, seek approval to market a generic version of a product before the expiration of patents claimed by one of our competitors for the branded product. We do this in cases where we believe that the relevant patents are invalid, unenforceable, or would not be infringed by our generic product. As a result, we frequently face patent litigation, and in certain circumstances, we may elect to market a generic product even though patent infringement actions are still pending. However, these so-called at-risk launches could result in Sandoz facing substantial damages if we do not prevail in litigation.

The CIBA Vision Business Unit of our Consumer Health Division also has been required to defend its patents against frequent challenges by competitors.

PRICING LITIGATION

The US subsidiaries of our Pharmaceuticals and Sandoz Divisions are the subjects of separate lawsuits brought by private plaintiffs and state and local government entities alleging that they have fraudulently overstated the Average Wholesale Price and best price, which are, or have been, used by the US federal and state governments in the calculation of, respectively, US Medicare reimbursements and Medicaid rebates. A limited number of similar actions have been brought to trial to date against various pharmaceutical companies, including one against our subsidiary in the Pharmaceuticals Division, and in certain instances, substantial

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damages have been awarded. Recent damage awards are on appeal. Should we fail to successfully defend the cases against us, we could face substantial damages if the final court decision is adverse to us.

GOVERNMENTAL INVESTIGATIONS

Governments and regulatory authorities have been stepping up their compliance and law enforcement activities in recent years in key areas, including corruption, marketing practices, antitrust and trade restrictions. Our businesses have been subject, from time to time, to such governmental investigations and information requests by regulatory authorities. For example, we are cooperating with civil and criminal investigations currently being undertaken by the US Attorney s Office into allegations of potential off-label promotion of our epilepsy drug *Trileptal*. While the outcomes of government and regulatory investigations are unpredictable, they are costly, divert management from our business and may affect our reputation. In some instances, the inherent uncertainty of litigation, the resources required to defend against governmental actions and the risk to reputation as well as of potential exclusion from US federal government reimbursement programs have contributed to decisions by companies in our industry to enter into settlement agreements with governmental, and particularly federal, authorities. Those settlements have involved and may continue to involve large cash payments, including the potential repayment of amounts allegedly obtained improperly and penalties up to treble damages. In addition, settlements of healthcare fraud cases typically involve corporate integrity agreements that are intended to regulate company behavior for a period of years. Also, matters underlying governmental investigations and settlements may be the subject of separate private litigation.

Adverse judgments or settlements in any of these cases could have a material adverse effect on our business, financial condition and results of operations.

NOVARTIS STRATEGIES FOR SUSTAINABLE GROWTH

Novartis believes it has one of the best portfolios to address the demands of the dynamically changing healthcare environment.

We are implementing longer-term strategic initiatives to create sustainable growth. Key actions include strengthening our healthcare portfolio, driving innovation through R&D investments, expanding in high-growth markets and improving operational efficiency.

SELECTIVELY STRENGTHEN HEALTHCARE PORTFOLIO

Each of the four divisions is expected to play a significant role in the future success of the Group, providing opportunities for growth by offering a range of medicines and vaccines to patients, physicians and payors. We will continue to evaluate internal and external opportunities to improve the competitiveness of these businesses and better position the Group for success. The strong performances of the Vaccines and Diagnostics and

Sandoz Divisions in recent years reflect the positive impact of significant investments. The focused diversification also helps to balance industry risks.

INNOVATIVE MEDICINES

The aim of the Pharmaceuticals Division is to provide patients and physicians with new and better medicines that deliver improved efficacy and fewer side-effects as well as to address unmet medical needs. Novartis ranks as one of the top 10 companies worldwide based on sales of patent-protected medicines, with leading positions in cardiovascular and cancer treatments and an expanding presence in neuroscience. Viewed as having one of the most respected pipelines in the industry, we will continue to invest heavily in Research & Development. We are also reviewing ways to more efficiently support new product launches by using new selling models and advanced marketing tools, particularly in the US and Europe. We are also committed to being a preferred partner for strategic alliances with biotechnology companies, both for development compounds and new technologies, and these collaborations will remain important to future business developments.

PREVENTION

The Vaccines and Diagnostics Division markets vaccines as well as blood-testing diagnostic tools that protect against many life- threatening diseases, providing access to the fast-growing human vaccines market. This division was created in April 2006 following the Group s acquisition of the remaining stake in Chiron Corporation not already held by Novartis. We further strengthened this business in September 2007 by entering into a strategic R&D alliance with Intercell, an Austrian biotechnology company focused on vaccines development.

COST-SAVING ALTERNATIVES

Sandoz markets generic products that replace branded medicines after patent expiry, providing cost-effective alternatives for patients, physicians and payors. With the acquisition in 2005 of two leading generic pharmaceuticals companies (Hexal AG and Eon Labs, Inc.), Sandoz became the world s second-largest generics company. Competitive advantages include strengths in difficult to-make generics, particularly extended-release formulations of medicines and biosimilars (follow-on versions of previously approved biotechnology drugs). Given these capabilities, which provide access to higher-value areas of the generic pharmaceuticals market, Sandoz is expected to become an increasing contributor to our future results of operations.

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PATIENT AND CONSUMER EMPOWERMENT

The Consumer Health Division comprises the OTC, Animal Health and CIBA Vision Business Units, all of which provide high-quality consumer healthcare products with well-known brands. These businesses have gained market share in their respective segments through a focus on strategic brands, product innovation and expansion in emerging markets. While divesting non-healthcare activities, these three businesses have been strengthened through targeted acquisitions. For example, the North American rights to various OTC products were acquired in 2006 from Bristol-Myers Squibb Co., while the acquisition of Sankyo Lifetech s animal health business in Japan in 2007 expanded the geographic presence of Animal Health.

STEP UP INNOVATION

Maintaining a competitive advantage in the healthcare industry requires significant R&D investments. The ability of Novartis to continue to grow all of our businesses and replace sales lost due to the end of exclusivity for important products depends upon the capability of the Group s R&D activities to identify and develop high-potential products and bring them quickly to market.

Like our competitors in the healthcare industry, Novartis will continue making significant investments in drug discovery. We are also taking steps to accelerate R&D activities throughout the Group and to find ways to lower attrition rates among pipeline products in the final stages before regulatory approvals. For example, a reorganization of the Pharmaceuticals Development organization that started in late 2007 has strengthened project focus, streamlined organizational structures and simplified decision-making processes.

Novartis has been building its innovative position by building capabilities and expertise in biologic therapies, which now represent 25% of our preclinical pharmaceuticals research portfolio. Biologic treatments, often referred to as large molecules, are made from living cells and stimulate a response against specific disease targets. They often are intended to treat diseases that have been difficult to treat with small molecule medicines based on chemical substances. Novartis formed the Novartis Biologics Unit in 2007, establishing a dedicated innovation team with a strong biotech culture in the areas of discovery and development unique to biologics. The unit has full access to the extensive Novartis R&D organization and multiple therapeutic areas.

The quality of our current development pipeline reflects investments made in the Group s own R&D activities, in many cases more than 10 20 years ago, as well as recent acquisitions and licensing collaborations. We have consistently had one of the highest R&D investment rates as a percentage of net sales in the industry, reflecting our commitment to bringing innovative and differentiated products to patients with novel therapeutic benefits.

Our Pharmaceuticals Division uses up to one-third of its annual R&D expenditures to reach licensing agreements with other companies, particularly specialized biotechnology firms, to co-develop promising compounds. These collaborations enable us to capitalize on the potential of these compounds and to expand our development pipeline. Complementing internal R&D activities, Novartis (like other companies) has entered into a significant number of alliances in recent years. Equity investments are sometimes made in a licensing partner, or a decision is made to fully acquire a company to gain exclusive access to novel compounds. The industry-wide decline in R&D productivity in recent years, however, has led to increasing competition for collaborations with specialized players at the forefront of their fields. Funding requirements for R&D activities are likely to continue to grow in the future and are expected to continue rising at a faster rate than net sales. These investments,

however, are critical to our continuing success. In 2008, we invested USD 7.2 billion in R&D activities throughout the Group, a 12% increase over 2007 and representing 17.4% of net sales.

EXPAND IN HIGH-GROWTH MARKETS

Novartis is expanding in high-growth markets around the world, particularly in a number of the seven leading countries of Brazil, China, India, Mexico, Russia, South Korea and Turkey identified by IMS Health as important to the healthcare industry. Even in light of the weakened economic conditions in some of these countries, these long-term investments are crucial to capturing market share and being well-positioned for the eventual economic recovery.

Novartis has been taking significant actions to increase its presence in a number of these priority markets as well as adapting commercial models to better meet the needs of other emerging markets. A new cross-divisional operation was created in 2007 to accelerate growth in smaller emerging markets and better position the presence of all Novartis products. These areas include Northern and Sub-Saharan Africa, Central Asia and some countries in Southeast Asia. The Pharmaceuticals Division is also undertaking aggressive investments to accelerate growth in China, Russia, South Korea and Turkey, while Sandoz continues to expand its leadership in Central and Eastern Europe.

In 2008, Novartis generated approximately 64% (2007: 66%) of the Group s net sales from continuing operations in the world s seven largest developed markets, while 10% (2007: 9%) of net sales came from these seven leading emerging markets listed above. At the same time, combined net sales in these seven priority emerging markets grew 18% lc in 2008 compared to 1% lc growth in the seven largest developed markets. Emerging markets in general accounted for approximately 24% of the Group s net sales in 2008 compared to 22% in 2007. As a result, emerging markets are expected to make increasingly significant contributions to our future results of operations.

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IMPROVE ORGANIZATIONAL EFFICIENCY

Novartis is constantly exploring ways to improve productivity. In particular, we are taking actions to improve our competitiveness in a fast-changing healthcare environment through Forward, the Group s productivity initiative that has streamlined organizational structures and changed the way the Group operates. This initiative is expected to generate significant cost savings and help prepare Novartis for future growth. At the same time, we will continue investing in higher-value activities, particularly R&D in new biological therapies and expansion in key emerging markets.

As part of this initiative started in December 2007, Novartis has been streamlining and simplifying organizational structures in the corporate headquarters as well as in the Pharmaceuticals and Consumer Health Divisions. These initiatives have removed management layers, eliminated structural duplications and reduced resources used for general and administrative functions. We are also evaluating and optimizing supply networks worldwide. Initiatives are also progressing rapidly to standardize and streamline shared functions such as procurement, information technology and financial transaction processing to generate benefits in cost management and economies of scale. Some administrative activities also are being outsourced or transferred to lower-cost countries.

Through these initiatives, which are designed to maximize resources available to support ongoing profitable growth, the aim is to reduce the Group s cost base by approximately USD 1.6 billion by 2010 compared to 2007 levels. Annual cost savings of approximately USD 1.1 billion were achieved in 2008, exceeding the planned target of USD 670 million, mainly on the strength of accelerated procurement savings.

In order to implement these efficiency measures, Novartis recorded a restructuring charge of USD 444 million in 2007 that included plans for the reduction of approximately 2 500 full-time-equivalent positions, or approximately 2.5% of the Group s worldwide workforce at the end of 2007. A majority of these reductions were achieved through natural attrition and vacancy management, with all of these actions done in a socially responsible manner.

Separate initiatives are underway to find more efficient marketing approaches to support new product launches. A strong marketing message and rapid penetration of multiple geographic territories are vital for a product to attain peak sales as quickly as possible before the loss of patent protection or the entry of competitive products. We continually evaluate our marketing models in the divisions and adjust the composition of sales forces, as appropriate.

As the US market becomes more complex, a new program called the Customer Centric Initiative was launched in October 2008 to implement a new regional US business model in the Pharmaceuticals Division that will better address customer needs and increasing differences among the needs of local markets. Five new regional units have been created with cross-functional responsibility for the full primary care product portfolio, replacing nationally managed sales forces. This new model is designed to be more effective at driving sales growth by better meeting the diverse and specific needs of customers as well as deploying resources more efficiently. As part of this initiative, approximately 550 full-time- equivalent positions were eliminated in the US sales organization in a socially responsible manner, with more than half achieved by not filling vacant positions. The new organization started on January 1, 2009. A one-time charge of USD 19 million was taken in the fourth quarter of 2008, with annual cost savings of USD 80 million anticipated starting in 2010.

ACQUISITIONS, DIVESTMENTS AND OTHER SIGNIFICANT TRANSACTIONS

Novartis has made several acquisitions, strategic investments and divestments in recent years that have had a significant and on-going impact on its financial condition and results of operations.

In 2007, we narrowed our focus solely to healthcare through the divestments of the Medical Nutrition (effective July 1) and Gerber Business Units (effective September 1).

At the same time, contributions from strategic acquisitions have a significant impact on the Group s results of operations. The remaining stake in Chiron Corporation was acquired in April 2006 to create the new Vaccines and Diagnostics Division, while Sandoz strengthened its position as a world leader in generic pharmaceuticals through the 2005 acquisitions of Hexal AG and Eon Labs, Inc.

As a result of these acquisitions and also through other actions such as the agreement in 2008 providing future rights to majority control of the eye-care company Alcon the Group s results of operations are increasingly affected by charges for the amortization of intangible assets as well as impairment charges and other one-time costs related to the integration of acquisitions. These are described in more detail under Effect of Intangible Asset Charges and Significant Exceptional Items.

Novartis continually evaluates potential opportunities for targeted acquisitions or other strategic transactions, including product licensing agreements, that would improve our competitive position and create value for shareholders.

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ACQUISITIONS IN 2008

CORPORATE ALCON

On April 7, Novartis announced an agreement with Nestlé S.A. under which we obtained rights to acquire in two steps majority ownership of Alcon Inc. (NYSE: ACL), a Swiss-registered company only listed on the New York Stock Exchange. The potential total value of the two steps is up to approximately USD 39 billion. The first step was completed on July 7, 2008, when Novartis acquired an initial 24.8% stake in Alcon, representing 74 million shares, from Nestlé for USD 10.4 billion in cash. Alcon s closing share price was USD 148.44 on April 4, the last trading day before the signing of this agreement. However, the investment reflects a price of USD 140.68 per share. The transaction price of USD 143.18 per share was determined by using Alcon s volume-weighted average share price between January 7, 2008, and April 4, 2008. This price was later reduced by approximately USD 2.50 per share to account for the dividend paid by Alcon in May 2008. We paid for this stake from internal cash reserves and external short-term financing.

In the optional second step, Novartis has the right to acquire Nestlé s remaining 52% majority stake in Alcon between January 1, 2010, and July 31, 2011, for a fixed price of USD 181.00 per share, or up to approximately USD 28 billion. During this period, Nestlé has the right to require us to buy its remaining stake at a 20.5% premium to Alcon s share price at the time of exercise, but not exceeding USD 181.00 per share. We have no obligation to purchase the remaining 23% of shares held by Alcon minority shareholders.

The Group has determined that the put and call options represent contracts in a business combination to buy, sell or acquire at a future date, and are therefore exempt from recognition under IAS 39.

The purchase price allocation of the USD 10.4 billion paid for the 24.8% stake consisted of the Group s share of Alcon s reported net assets (USD 1.1 billion), additionally appraised tangible and intangible assets (USD 5.1 billion) and implicit goodwill (USD 4.2 billion). Since the July 7 acquisition date the investment has contributed a loss of USD 11 million to the 2008 consolidated income statement.

As a result of the 37% decline in Alcon s share price at the end of 2008 to USD 89.19 from the price paid for the initial 24.8% stake, Novartis performed an impairment test on the investment s carrying value.

This test assessed the value in use to Novartis of this strategic investment by valuing estimated discounted cash flows and future dividend streams from Alcon against the fair value less costs to sell of this stake, as measured by the closing price on December 31, 2008, on the NYSE for the 23% of Alcon s publicly traded shares.

Since the higher of the estimated value in use and the fair value less costs to sell exceeded the carrying value of USD 140.68 per share, no impairment charge was recorded. Key assumptions and sensitivity analysis information are provided in note 10 to the Group s consolidated financial statements.

If only Alcon s year-end closing price had been used for the impairment test, the value of this investment would have been USD 6.6 billion, or approximately USD 3.8 billion below the year-end carrying value on the Novartis consolidated balance sheet. If this amount had been used as an impairment charge, the Group s reported net income in 2008 of USD 8.2 billion would have been reduced by approximately USD 3.5 billion to USD 4.7 billion.

PHARMACEUTICALS SPEEDEL

On July 10, Novartis announced the all-cash purchase of an additional 51.7% stake in Speedel Holding AG (SIX: SPPN) through off-exchange transactions together with plans to buy all remaining shares in the Swiss biopharmaceuticals company in a mandatory public tender offer under the same conditions. Following these actions, and in addition to the previously held 9.5% stake, Novartis now holds more than 99.8% of Speedel s outstanding shares. This process, including the delisting of Speedel s shares on the SIX Swiss Exchange, is expected to be completed in early 2009. The acquisition price for the 90.3% interest not previously held is approximately CHF 939 million (or USD 888 million) excluding USD 26 million of cash held by Speedel as of the July acquisition date of majority control. Speedel has been fully consolidated as a subsidiary since the July acquisition of a majority stake. Based on a final purchase price allocation, Speedel s identified net assets were USD 472 million and produced goodwill of USD 493 million. As a result of this purchase price allocation, the value of the initial 9.5% stake rose by USD 38 million, which was recorded in the consolidated statement of recognized income and expense. The consolidation of Speedel resulted in immaterial amounts being included in the Group s 2008 consolidated income and operating cash flow statements.

PHARMACEUTICALS PROTEZ

On June 4, Novartis agreed to acquire Protez Pharmaceuticals, a privately held US biopharmaceuticals company, gaining access to PTZ601, a broad-spectrum antibiotic in Phase II development against potentially fatal drug-resistant bacterial infections. Novartis paid USD 102 million in cash to acquire 100% of Protez, whose owners are eligible for additional payments of up to USD 300 million contingent upon the future success of PTZ601. Protez has been consolidated since the transaction completion date of July 17. Based on the purchase price allocation, identified net assets from Protez amounted to USD 72 million and produced goodwill of USD 30 million. The consolidation of Protez has resulted in immaterial amounts being included in the Group s 2008 consolidated income and operating cash flow statements.

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PHARMACEUTICALS NEKTAR PULMONARY BUSINESS

On October 21, Novartis agreed to acquire Nektar Therapeutics Inc. s pulmonary business unit for USD 115 million in cash. In this transaction, which was completed on December 31, 2008, Novartis acquired research, development and manufacturing assets of Nektar s pulmonary business unit, including tangible assets as well as intellectual property, intangible assets and related expertise. The full purchase price has been allocated to the net assets acquired with no residual goodwill.

OTHER SIGNIFICANT TRANSACTIONS IN 2008

CORPORATE ISSUANCE OF SWISS FRANC BONDS

On June 26, Novartis issued two Swiss franc bonds totaling CHF 1.5 billion (approximately USD 1.4 billion) in the Swiss capital market, with each listed on the SIX Swiss Exchange. One was a 3.5% four-year bond for a total of CHF 700 million issued by Novartis Securities Investment Ltd. and guaranteed by Novartis AG. The other was a 3.625% seven-year bond of CHF 800 million issued by Nova rtis AG.

DIVESTMENTS/DISCONTINUED OPERATIONS IN 2007

CONSUMER HEALTH GERBER BUSINESS UNIT

On September 1, Novartis completed the divestment of the Gerber infant products Business Unit for approximately USD 5.5 billion to Nestlé S.A. resulting in a pre-tax divestment gain of approximately USD 4.0 billion and an after-tax gain of USD 3.6 billion.

CONSUMER HEALTH MEDICAL NUTRITION BUSINESS UNIT

On July 1, Novartis completed the divestment of the remainder of the Medical Nutrition Business Unit for approximately USD 2.5 billion to Nestlé S.A. resulting in a pre-tax divestment gain of USD 1.8 billion and an after-tax gain of USD 1.6 billion.

Gerber and Medical Nutrition are reported as discontinued operations in all periods in the Group s consolidated financial statements. These businesses in total had 2007 net sales of USD 1.7 billion and operating income of USD 311 million before their respective divestment.

OTHER SIGNIFICANT TRANSACTIONS IN 2007

VACCINES AND DIAGNOSTICS INTERCELL

On September 28, Novartis entered into a strategic alliance with Intercell AG, an Austrian biotechnology company focused on vaccines development. In accordance with the agreement, Novartis paid USD 383 million (EUR 270 million), and also recorded USD 207 million (EUR 146 million) of intangible assets and acquired an additional 4.8 million shares for USD 176 million (EUR 124 million) that increased the Novartis holding in Intercell to 15.9%. The equity investment is accounted for as an available-for sale marketable security within the financial assets of the division.

PHARMACEUTICALS BETASERON®

On September 14, Novartis and Bayer Schering Pharma AG received regulatory approval to complete an agreement related to various rights for the multiple sclerosis treatment Betaseron® under an earlier agreement between Schering and Chiron Corporation transferred to Novartis in April 2006. Under the new agreement, Novartis received a one-time payment of USD 200 million, principally for manufacturing facilities transferred to Bayer Schering, as well as receiving rights to market a Novartis-branded version of Betaseron® called *Extavia* starting in 2009 in the EU and later in the US following anticipated approval. As a result of the clarification of the intangible product rights, a reassessment was made of the related assets from the Chiron acquisition as of April 20, 2006. This resulted in an increase of USD 235 million in identified net assets in 2007 relating to the Chiron 2006 acquisition.

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IMPACT OF INTANGIBLE ASSET CHARGES AND SIGNIFICANT EXCEPTIONAL ITEMS

As a result of acquisitions, divestments and other factors, the Group s reported operating income and net income have been signifi-cantly affected by the amortization of intangible assets, impairment charges, expenses relating to the integration of acquisitions and other items that management deems exceptional. The following table shows operating income and net income excluding these items:

	Pharmaceuticals		Vaccines and Diagnostics		Sandoz		Consumer Health continuing operations		Corporate	
	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007
	USD millions	USD millions	USD millions	USD millions	USD millions	USD millions	USD millions	USD millions	USD millions	USD millions
Reported operating income	**7 579**	**6 086**	**78**	**72**	**1 084**	**1 039**	**1 048**	**812**	**-825**	**-1 228**
Recurring amortization	414	411	318	295	284	293	77	89	2	3
Impairment of intangible assets	320	446	1		23	32		4		
Intangible asset charges	**734**	**857**	**319**	**295**	**307**	**325**	**77**	**93**	**2**	**3**
Exceptional gains from divesting brands, subsidiaries and financial investments	-184	-171								
Forward initiative restructuring expenses	-19	307					-4	97		40
Other restructuring expenses	102	25			29	11				
Impairment of property, plant & equipment	13				2	31			1	
Impairment of financial assets	53	41				27			37	10
Environmental provision increases										590
Legal provisions, litigations and other settlements	79		-49	-83						
Suspension of *Zelnorm*		80								
Other product recall costs					28					
Release of pre-launch inventory provisions	-45	-107								
Release of US government rebate provision	-104									
Acquisition-related restructuring and integration expenses (including acquisition-related accounting impact	6		11	25				9		

of inventory adjustments), net										
Change in contractual terms triggering revenue recognition			-50							
Total of significant exceptional items	**-99**	**175**	**-88**	**-58**	**59**	**69**	**-4**	**106**	**38**	**640**
Total adjustments	**635**	**1 032**	**231**	**237**	**366**	**394**	**73**	**199**	**40**	**643**
Adjusted operating income	**8 214**	**7 118**	**309**	**309**	**1 450**	**1 433**	**1 121**	**1 011**	**-785**	**-585**
Income from associated companies										
Recurring amortization related to income from associated companies, net of tax										
Net financial income										
Taxes (adjusted for above items)										
Adjusted net income from continuing operations										
Adjusted net income attributable to Novartis shareholders										
Adjusted basic earnings per share from continuing operations										

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EFFECTS OF CURRENCY FLUCTUATIONS

We transact our business in many currencies other than the US dollar, our reporting currency.

The following provides an overview of net sales and expenses from continuing operations for 2008 and 2007 for currencies most important to the Group:

Currency		2008 %	2007 %
US dollar (USD)	Net sales	34	39
	Operating expenses	31	36
Euro (EUR)	Net sales	32	30
	Operating expenses	28	28
Swiss franc (CHF)	Net sales	2	2
	Operating expenses	16	14
Japanese yen (JPY)	Net sales	7	6
	Operating expenses	5	5
Other currencies	Net sales	25	23
	Operating expenses	20	17

We prepare our consolidated financial statements in US dollars. As a result, fluctuations in the exchange rate between the US dollar and other currencies may have a significant effect on both the Group s results of operations as well as on the reported value of our assets, liabilities, revenue and expenses as measured in US dollars. This in turn may significantly affect reported earnings (both positively and negatively) and the comparability of period-to-period results of operation.

For purposes of our consolidated balance sheets, we translate assets and liabilities demoninated in other currencies into US dollars at the prevailing market exchange rates as of the relevant balance sheet date. As a result, even if the amounts or values of these items remain unchanged in the respective local currency, changes in exchange rates have an impact on the amounts or values of these items in our consolidated financial statements. For purposes of the Group s consolidated income statements, revenue and expense items in local currencies are translated into US dollars at average exchange rates prevaliling during relevant period.

We seek to manage currency exposure by engaging in hedging transactions where management deems appropriate. For 2008, we entered into various contracts that change in value with movements in foreign exchange rates in order to preserve the value of assets, commitments and expected transactions. We also use forward contracts and foreign currency options to hedge expected net revenues in foreign currencies. For more information on how these transactions affect our consolidated financial statements and on how foreign exchange rate exposure is managed. see notes 1, 5 and 15 to the Group s consolidated financial statements.

The average value of the US dollar against other currencies important for Novartis deteriorated significantly in 2008. The following table sets forth the foreign exchange rates of the US dollar against the Swiss franc, euro and Japanese yen, respectively, used for foreign currency translation when preparing the Group s consolidated financial statements:

	2008		2007	
USD per unit	Average for year	Year end	Average for year	Year end
EUR	1.470	1.411	1.371	1.465
CHF	0.925	0.948	0.834	0.881
JPY (100)	0.970	1.107	0.850	0.884

CURRENCY TRANSLATION IMPACT ON KEY FIGURES CONTINUING OPERATIONS

	Local currencies change in% 2008	Local currencies change in% 2007	USD change in% 2008	USD change in% 2007
Net sales	5	6	9	11
Operating income	20	-14	32	-11
Net income	13	-7	25	-4

For additional information on the effects of currency fluctuations, see Quantitative and Qualitative Disclosures about Non-ProductRelated Market Risk.

The following table provide a breakdown of liquid funds and financial debt by currency:

LIQUID FUNDS AND FINANCIAL DEBT BY CURRENCY (AS OF DECEMBER 31)

	Liquid funds in % 2008	Liquid funds in % 2007	Financial debt in % 2008	Financial debt in % 2007
USD	71	70	22	13
EUR	7	18	18	40
CHF	19	9	36	19
JPY			21	22
Other	3	3	3	6
	100	100	100	100

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CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Our principal accounting policies are set out in note 1 to the Group s consolidated financial statements and are prepared in accordance with International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB). Given the uncertainties inherent in our business activities, we must make certain estimates and assumptions that require difficult, subjective and complex judgments. Because of uncertainties inherent in such judgments, actual outcomes and results may differ from our assumptions and estimates. Application of the following accounting policies requires certain assumptions and estimates that have the potential for the most significant impact on our consolidated financial statements.

REVENUE

We recognize product sales when there is persuasive evidence that a sales arrangement exists, title and risk and rewards for the products are transferred to the customer, the price is fixed and determinable, and collectability is reasonably assured. At the time of the sale, we also record estimates for a variety of sales deductions, including rebates, discounts and incentives, and product returns. Sales deductions are reported as a reduction of revenue.

In 2008, we started to enter into innovative pay-for-performance arrangements with certain healthcare providers, especially in the United Kingdom and Germany. Under these agreements, we may be required to make refunds to the healthcare providers or to provide additional medicines free of charge if anticipated treatment outcomes do not meet predefined targets. Potential refunds and the delivery of additional medicines at no cost are estimated and recorded as a reduction of revenue at the time the related revenues are recorded. Estimates are based on historical and clinical data. In cases where historical experience and clinical data are not sufficient for a reliable estimation of the outcome, revenue recognition would be deferred.

DEDUCTIONS FROM REVENUES

As is typical in the pharmaceuticals industry, our gross sales are subject to various deductions that are composed primarily of rebates and discounts to retail customers, government agencies, wholesalers, health insurance companies and managed healthcare organizations. These deductions represent estimates of the related obligations, requiring the use of judgment when estimating the effect of these sales deductions on gross sales for a reporting period. These adjustments are deducted from Gross Sales to arrive at Net Sales.

The following summarizes the nature of some of these deductions and how the deduction is estimated. The US market has the most complex arrangements related to revenue deductions. Specific reference is therefore made to the US market and where applicable to the Pharmaceuticals Division s US operating unit, Novartis Pharmaceuticals Corporation (NPC). However, in a number of countries outside the US, including major European countries, we provide rebates to government and other entities. These rebates are often mandated by government regulations or laws.

- The US Medicaid program is administered by State governments using State and federal funds to provide

assistance to certain vulnerable and needy individuals and families. In 1990, the Medicaid Drug Rebate Program was established to reduce State and federal expenditures for prescription drugs. Under the rebate program, Novartis subsidiaries have signed agreements to provide rebates on drugs paid for by a State. Calculating the rebates to be paid involves interpreting relevant regulations, which are subject to challenge or change in interpretative guidance by government authorities. Provisions for estimating Medicaid rebates are calculated using a combination of historical experience, product and population growth, product price increases, the mix of contracts and specific terms in the individual State agreements. These provisions are adjusted based on established processes and experiences from refiling data with individual States.

- On January 1, 2006, an additional prescription drug benefit was added to the US Medicare program, referred to as Medicare Part D, that funds healthcare benefits to individuals age 65 and older. Individuals who previously had dual Medicaid/Medicare drug benefit eligibility had their Medicaid prescription drug coverage replaced as of January 1, 2006, by the new Medicare Part D coverage. This benefit is provided through private prescription drug plans, and this change led to a significant shift of plan participants between the two programs in which some of our US subsidiaries participate. Provisions for estimating Medicare Part D rebates are calculated based on the terms of individual plan agreements, product sales and population growth, product price increases and the mix of contracts.

- Any rebate adjustments may involve revisions to provisions for several periods since Medicaid and Medicare rebate claims are typically submitted to Novartis up to six months after products are dispensed to patients.

- Our US subsidiaries participate in industry- and government- sponsored programs designed to offer savings on prescription drugs to eligible patients. These savings depend on a patient s current drug reimbursement coverage and personal income level. Provisions for obligations resulting from these programs are based on historical experience, trend analysis and current program terms.

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- Chargebacks occur where our subsidiaries have arrangements with indirect customers in the US to sell products at prices that are lower than the price charged to wholesalers. A chargeback represents the difference between the invoice price to the wholesaler and the indirect customer s contract price. We account for vendor chargebacks by reducing accounts receivable by an amount equal to our estimate of chargebacks attributable to a sale. Provisions for estimated chargebacks are calculated using a combination of factors such as historical experience, product growth rates, payments, level of inventory in the distribution channel, the terms of individual agreements and our estimate of claims processing time lag. Chargebacks are generally settled within one to three months of incurring the liability by reducing trade receivables.

- We offer rebates to key managed healthcare plans, group purchasing organizations and other direct and indirect customers to sustain and increase market share for our products. These rebate programs provide customers a rebate after they attain certain performance parameters related to product purchases, formulary status or pre-established market share milestones relative to competitors. Since rebates are contractually agreed upon, rebates are estimated based on the terms of individual agreements, historical experience, expected mix of reimbursement programs and projected product growth rates. We adjust provisions related to customer rebates periodically to reflect actual experience.

- To evaluate the adequacy of provision balances, we use internal and external estimates of the level of inventory in the distribution channel, actual claims data received and the lag time for processing rebate claims. Management estimates the level of inventory of the relevant product held by retailers and in transit. External data sources include reports of wholesalers and third- party market data purchased by Novartis.

- When we sell a product providing a customer the right to return, we record a provision for estimated sales returns based on our sales returns policy and historical rates. Other factors considered include product recalls, expected marketplace changes and, in the US, the entry of generic products. In 2008, sales returns amounted to approximately 1% of gross product sales. In the Vaccines and Diagnostics Division, where no Novartisspecific historical return rate experience is available sales are only recorded based on evidence of product consumption.

- We adjust shipping patterns for our pharmaceutical products to maintain customer inventories consistent with underlying patient demand. In the US we monitor inventories at the wholesaler level based on gross sales volume and prescription volume information obtained from third-party data providers as well as information received from key wholesalers. Based on this information, inventories of NPC s pharmaceutical products on hand at wholesalers and other distribution channels in the US were approximately one month at December 31, 2008.

- NPC has entered into fee-for-service agreements with certain US pharmaceutical wholesalers. These agreements cover items such as product returns, payment timing, chargeback processing, inventory data provisions and inventory levels held by the wholesaler. These agreements provide a financial disincentive for wholesalers to

purchase product quantities exceeding current customer demand.

- We offer cash discounts to customers in the US and other countries to encourage prompt payment. Cash discounts, which are typically 2% of gross sales in the US, are accrued at the time of invoicing and deducted from revenue.

- Following a decrease in the price of a product, we generally grant customers a shelf stock adjustment for a customer s existing inventory for the involved product. Provisions for shelf stock adjustments, which are primarily relevant within the Sandoz Division, are determined at the time of the price decline or at the point of sale if a price decline can be reasonably estimated based on inventory levels of the relevant product.

- Other sales discounts, such as consumer coupons and discount cards, are offered in some markets. These discounts are recorded at the time of sale, or when the coupon is issued, and are estimated utilizing historical experience and the specific terms for each program.

- Discounts, rebates or other deductions shown on invoices to customers are generally deducted directly from gross sales without recording them in the revenue deduction provision.

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The following tables show the worldwide extent of our revenue deductions, related payment experiences and provisions:

PROVISIONS FOR REVENUE DEDUCTIONS

2008	Provisions offset against gross trade receivables at Jan 1, 2008 USD millions	Provisions at Jan 1, 2008 USD millions	Effect of currency translation USD millions	Payments/ utilizations USD millions	Income statement charge Adjustments of prior years USD millions	Income statement charge Current year USD millions	Provisions offset against gross trade receivables at Dec 31, 2008 USD millions	Provisions at Dec 31, 2008 USD millions
US Medicaid, Medicare and State program rebates and credits, including prescription drug savings card rebates		490		-754	-117	762		381
US managed healthcare rebates		197		-423	2	493		269
Non-US healthcare plans and program rebates		174	-12	-281	-16	450		315
Chargebacks (including hospitals)	296		-14	-1 934		1 936	-218	66
Direct customer discounts, cash discounts and other rebates	336	159	-5	-1 298	-3	1 223	-311	101
Sales returns and other deductions		492	-24	-496	-12	573		533
Total	**632**	**1 512**	**-55**	**-5 186**	**-146**	**5 437**	**-529**	**1 665**

2007	Provisions offset against gross trade receivables at Jan 1, 2007 USD millions	Provisions at Jan 1, 2007 USD millions	Effect of currency translation USD millions	Payments/ utilizations USD millions	Income statement charge Adjustments of prior years USD millions	Income statement charge Current year USD millions	Provisions offset against gross trade receivables at Dec 31, 2007 USD millions	Provisions at Dec 31, 2007 USD millions
US Medicaid, Medicare and State program rebates and credits, including prescription drug savings card rebates		538						