Novartis in Switzerland
Novartis in der Schweiz
Novartis en Suisse
Foreword

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Dear Reader,

In 2019, Novartis continued to evolve in many ways and hit new milestones. The last 12 months have seen groundbreaking innovations in the area of state-of-the-art therapies, we have intensified our work in the area of big data and artificial intelligence, and we have taken major steps towards bringing about a cultural transformation within our company.

Last year, our third highly innovative cell and gene therapy was approved for the US market by the American Food and Drug Administration (FDA). This decision is likely to send an important signal for approval processes in other countries, not least of course in Switzerland. The development of our new production site for cell and gene therapies in Stein, situated in the Fricktal region, reflects our belief that these pioneering therapies will be successful.

Digital technologies are one increasingly important factor for the development of innovative medicines and therapies. Accordingly, in 2019 we entered into collaborations with major IT companies, including Microsoft and Amazon Web Services.

We also continued improving in terms of fostering balance between family and work life: Since June 2019, all employees in Switzerland have been entitled to 18 weeks of paid parental leave following the birth or adoption of a child.

In view of all these improvements and innovations, we have also given the old Novartis Swiss Pass everyone knows so well a makeover. Novartis in Switzerland will continue to provide an overview of the main activities going on in the country of our headquarters, but will also cover some new and interesting aspects related to Novartis in Switzerland.

We hope you enjoy reading it.

Best regards,
The Novartis Executive Committee in Switzerland
What drives us

We reimagine medicine to improve and extend people’s lives. We use innovative science and the latest technology to address some of society’s most challenging healthcare issues. We research and develop breakthrough treatments and find new ways to deliver them to as many people as possible. We also aim to reward those who invest their money, time and ideas in our company.
Our commitment to patients and caregivers

Systematically embedding the patient perspective early in medicine development improves the likelihood of getting drugs to market by 19%. In 2018, we therefore adopted our Commitment to Patients and Caregivers, our ambition to embed the patient perspective more systematically and consistently in the life cycle of medicine. It is the outcome of a dialog with over 40 patient organizations representing more than 200 million patients around the world.


Matteo Almeida, 4, was born with spinal muscular atrophy, a rare hereditary disease that leads to progressive muscle weakness. Today, after receiving gene therapy treatment, he is able to play carefree.
An essential and unique part of this Commitment is to annually report on the progress made. We published the baseline data in 2018 and are now reporting our 2019 progress along the four pillars of our Commitment:

### Respecting and understanding the patient community perspective

- **400 PATIENT ORGANIZATIONS** in 18 hubs provide us with their perspective on data and digital
- **120 PATIENT ORGANIZATIONS** in 20 disease areas from 28 countries engaged in global initiatives to inform decision making
- **27 CAPABILITY AND CAPACITY BUILDING** programs of patient organizations supported

### Conducting responsible clinical trials

- **18 CLINICAL STUDIES** to which patients gave input
- **20 TRIAL FEEDBACK QUESTIONNAIRES** from clinical trials sent to patients to get feedback on their participation
- **50 SIMPLIFIED SUMMARIES** made available to study participants

### Expanding access to our medicines

- **2.1 million PATIENTS** reached through Novartis Access, offering a portfolio of 15 medicines addressing key non-communicable diseases in low to mid income countries
- **10 503 PATIENTS** reached through managed access programs; 81% increase versus last year
- **16 million PATIENTS** reached through access programs

### Recognizing the importance of transparency and reporting

- **12 MANUSCRIPTS** and 13 posters published on insights obtained from the patient community to share the learnings
- **50 SIMPLIFIED SUMMARIES** made available to study participants
- **1448 PATIENT ORGANIZATIONS** in 71 countries were supported according to the Transfer of value report
- **Approx. 245 CLINICAL TRIAL RESULTS** posted on novartis.com

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8 Novartis at a glance 9 Novartis at a glance
Our business model

We focus on innovative patent-protected medicines and generics. Both segments have global reach and strong customer relations. Research and development (R&D) forms the core of our business and is a crucial part of our strategy. At the global level, our functional organizations help to increase efficiency and to promote operational excellence.

Our divisions

Innovative Medicines comprises two business units:

Novartis Oncology focuses on patented treatments for a variety of cancers and rare diseases.

Novartis Pharmaceuticals focuses on patented treatments in multiple disease areas to enhance health outcomes for patients and offer solutions to healthcare providers.

Sandoz

Sandoz is a global leader in the production of generic pharmaceuticals and biosimilars. The company contributes to society by meeting increasing healthcare needs, promoting groundbreaking, innovative approaches and offering people all over the world access to high quality medicine.

Research and development forms the core of our business.
Functional organizations with a global reach

Research and development (R&D) is divided into two organizations:

Novartis Institutes for BioMedical Research (NIBR) is the driving force behind many of our innovations. We collaborate across scientific and organizational boundaries, with a focus on powerful new technologies that have the potential to help produce therapeutic breakthroughs for patients. > p. 47

Global Drug Development (GDD) organization oversees the development of new medicines discovered by our researchers and partners. > p. 49

Novartis Technical Operations (NTO) handles product manufacturing for both Innovative Medicines as well as Sandoz. NTO helps us optimize resource allocation and capacity planning across our production sites. > p. 50

Novartis Business Services (NBS) consolidates support services across our organization, helping drive efficiency, simplification, standardization and quality.

Corporate functions support the enterprise in the areas of finance, human resources, legal and communications.

One of the world’s largest pharmaceutical companies

In terms of global pharmaceutical sales, Novartis is the second largest pharmaceutical company in the world.

The 10 largest pharmaceutical companies in the world (by sales of pharmaceutical products)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>CHF billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Johnson &amp; Johnson</td>
<td>53.0</td>
</tr>
<tr>
<td>2</td>
<td>Novartis</td>
<td>49.9</td>
</tr>
<tr>
<td>3</td>
<td>Roche</td>
<td>46.6</td>
</tr>
<tr>
<td>4</td>
<td>Pfizer</td>
<td>44.0</td>
</tr>
<tr>
<td>5</td>
<td>Merck &amp; Co</td>
<td>42.0</td>
</tr>
<tr>
<td>6</td>
<td>AbbVie</td>
<td>40.1</td>
</tr>
<tr>
<td>7</td>
<td>Sanofi</td>
<td>38.2</td>
</tr>
<tr>
<td>8</td>
<td>Bristol-Myers Squibb</td>
<td>37.8</td>
</tr>
<tr>
<td>9</td>
<td>GlaxoSmithKline</td>
<td>37.8</td>
</tr>
<tr>
<td>10</td>
<td>Lilly</td>
<td>30.3</td>
</tr>
</tbody>
</table>

Novartis in Switzerland

History

Novartis is a global company with a strong commitment to its Swiss roots, which stretch back over 250 years.

Innovation and quality have always been an essential part of our company history, which our three predecessor companies also vouched for: Geigy started in Basel in the 18th century by selling chemicals and dyes, then Ciba was set up in 1859 focusing on the production of dyes. In 1886, the chemical company Sandoz was also founded in Basel.

In 1996, the then merged Ciba-Geigy and Sandoz merged to form Novartis.

We offer medical solutions to address the changing needs of patients and societies around the world. Our core skills lie in the research and development of new medicines. Worldwide, around 109,000 people from 149 nationalities work at Novartis.

Importance of Switzerland

Switzerland is one of the most important research and production hubs of Novartis. The approximately 12,200 employees who work here make an important contribution to the success of the pharmaceutical industry, which has become a stable driver of the economy in Switzerland since Novartis was established in 1996. Around 2% of the company’s total sales are generated in Switzerland.

Many international units are based in Basel, including our company headquarters and the head office of the global Innovative Medicines division. The Campus is one of our most important research sites: Scientists from all over the world are engaged in research here on innovative medicines and therapies.

With the acquisition of the gene therapy company AveXis and the radiopharmaceutical company Advanced Accelerator Applications (AAA) in 2018, we are increasing our presence not only worldwide, but also in Switzerland.
Our sites

- **Basel (BS)**
  - Company headquarters
  - Head office of Innovative Medicines division
  - Research & development
  - Production

- **Schweizerhalle (BL)**
  - Production

- **Stein (AG)**
  - Production

- **Rotkreuz (ZG)**
  - Head office of Swiss business units
  - Innovative Medicines
  - Sandoz

- **Fribourg (FR)**
  - Novartis Ophthalmics AG

- **Geneva (GE)**
  - Advanced Accelerator Applications (AAA)

- **Zurich (ZH)**
  - AveXis

- **Locarno (TI)**
  - Novartis Pharmanalytica
Sites in Switzerland

Basel St. Johann (BS)

Novartis Campus

The Basel site is home to the global headquarters of Novartis. The Novartis Campus is a modern center for research, development and management, where work takes place across divisions and teams. Forward-looking laboratory models and office landscapes with diverse work and encounter zones now shape the character of this former industrial complex.

In light of shifting social and economic conditions, over the coming years we will be opening up the Campus in Basel and allowing partners and companies access to it. Our aim is to improve collaboration with other big players in the areas of research and technology while increasing our involvement and interaction with society and the local community as a whole.

Schweizerhalle has been a production site since the late 1930s. Today, the employees working in Chemical Production Switzerland mainly produce small-batch, innovative compounds and intermediate products for a range of drugs. These drugs are produced with technically complex, specially designed systems that employ state-of-the-art laboratory technologies; the drugs are then approved for further processing by various partners in the Novartis production network. The site also plays an important role in introducing new drugs within the global Chemical Production network.

Schweizerhalle (BL)

Production
Stein (AG)

Production

Stein, about 30 kilometers up the Rhine from Basel, is a strategically important location for the production and launch of innovative medicines and treatments. One production site each for sterile and solid dosage forms is located here. Each year over 1.3 billion tablets, capsules, ampules, prefilled syringes, vials and autoinjectors are produced, inspected, packaged and shipped to over 150 countries around the world from the site.

In late November 2019, a new, state-of-the-art facility for the production of innovative cell and gene therapy treatments was opened in Stein. Starting in 2020, the facility will provide patients with CAR-T cellular therapy treatment. By the end of 2019, around 185 jobs had already been created in this new division and filled mainly by Novartis employees who were already working in the traditional Pharma and Chemical Production divisions. The opening of the new production facility is a further investment in Switzerland as a key location.

Rotkreuz (ZG)

Head office of Swiss business units

Employees of the Swiss business units share a modern office building in Rotkreuz.

Novartis Pharma Schweiz

The Pharma division of the company is responsible for marketing around 70 prescription medicines in Switzerland. The main therapeutic areas include neurology, immunology, dermatology, ophthalmology, cardiology, and respiratory diseases.

The Oncology division markets around 25 prescription medicines in Switzerland for oncology, hematology, and rare diseases.

Sandoz Pharmaceuticals

The Sandoz subsidiary in Switzerland is one of the leading generics producers in Switzerland. The product portfolio includes more than 200 products in around 1,000 different dosage levels and pack sizes, and covers all the major indication areas. Sandoz is also a pioneer in biosimilars. Sandoz Pharmaceuticals has around 140 internal employees and field staff.
Zurich (ZH)

AveXis

AveXis’ European headquarters are located in Zurich. With cutting-edge technology, AveXis, a Novartis company, is dedicated to developing and commercializing novel treatments for patients suffering from rare and life-threatening neurological genetic diseases. In addition to developing a treatment for spinal muscular atrophy (SMA), AveXis also plans to introduce other novel treatments for rare neurological diseases.

Geneva (GE)

Advanced Accelerator Applications (AAA)

Since 2014, the Geneva office is home to both Advanced Accelerator Applications International and Advanced Accelerator Applications Switzerland. Located adjacent to the picturesque Lake Geneva, this location serves as a collaboration hub for many business functions.

AAA is the radioligand business of Novartis and currently markets one targeted radioligand therapy in oncology and several precision imaging products.

Locarno (TI)

Pharmanalytica

Analytical tests are performed on more than 70 Novartis products at the Locarno site. Pharmanalytica’s responsibilities include performing stability tests and specific release tests for Novartis products, writing stability reports, storing stability samples in climate chambers and developing new analytical methods. Specific approval tests for Novartis products and ingredients are also carried out and new analytical methods developed.

Locarno handles the implementation of new analytical technologies at Novartis as well as the inspection and analysis of potential duplicate or counterfeit products.

As the Novartis center of excellence for stability, the Locarno site plays a leading role in the development and implementation of current standards and is pivotal in establishing new technologies and trends.
Facts and figures 2019

**Employees**
- 12,200 employees in Switzerland (11%)
- 109,000 employees worldwide

**Sales**
- CHF 0.8 bn in Switzerland (2%)
- CHF 47.2 bn worldwide

**Current income taxes**
- CHF 0.8 bn in Switzerland (40%)
- CHF 2 bn worldwide (mean value: 2017-2019)

**Research and development**
- CHF 3.4 bn in Switzerland (37%)
- CHF 9.3 bn worldwide

**Investment in property, plant, and equipment**
- CHF 0.3 bn in Switzerland (20%)
- CHF 1.5 bn worldwide
Our contribution to the Swiss economy

How Novartis contributes to the Swiss economy

The purchase of goods and services by Novartis, its employees’ consumer spending as well as tax and social security contributions all create major impetus for the labor market, economy and funding of public coffers.

Novartis as an economic factor

- Novartis benefits the Swiss economy not only through its business activities, but also indirectly through contracts awarded to other companies and through its employees’ own spending.
- Total value-added effect: CHF 26.2 billion, which equates to 3.8% of Switzerland’s GDP.
- Every CHF 1 of added value created by Novartis generates CHF 0.20 for other companies.

Jobs for the Swiss labor market

- Novartis is a major contributor to the Swiss labor market – both directly and indirectly.
- In addition to 11 800 jobs created directly, Novartis generates a further 36 300 jobs indirectly in Switzerland, meaning one job at Novartis secures about three additional jobs.
- The business activities of Novartis Switzerland are connected to more than 48 100 jobs in total – or the equivalent of 1% of all jobs in Switzerland.

GDP effects

in CHF, 2018

<table>
<thead>
<tr>
<th></th>
<th>CHF</th>
<th>26.2 bn</th>
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<tbody>
<tr>
<td>Direct effect</td>
<td>CHF 22.2 bn</td>
<td>x 1.2</td>
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<tr>
<td>Overall effect</td>
<td>CHF 26.2 bn</td>
<td></td>
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</table>

Employment effects

in no. of people employed, 2018

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Direct effect</td>
<td>11 800</td>
<td></td>
</tr>
<tr>
<td>Overall effect</td>
<td>48 100</td>
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</tbody>
</table>

Source: WiFOR 2019
Increased productivity thanks to innovative drug therapies

The innovative drug therapies of Novartis also make an impact on the economy and society. Taking certain medications can, for instance, prevent hospitalization and other care-related costs, thereby cutting healthcare spending. Helping patients return to work, to their families and social activities sooner helps to reduce productivity losses resulting from illness-related absences. In other words, drug therapies also play an economic and social role.

A social impact analysis was conducted to study this positive effect for a sample of 50 innovative Novartis medicines and quantify their health and socio-economic impact in Switzerland.

- Novartis reached over 416,000 patients with 50 medicines, translating to a total of 7,200 healthy years added to people’s lives.
- Novartis generated over CHF 1.1 billion of added value in Switzerland through increased productivity in the workplace and society at large.

Sample analysis

**Sample Analysis**

50 innovative Novartis medicines

416,000 persons reached

7,200 added years of life

**Reach**

**Healthcare Footprint**

**Labor Productivity**

- From gainful employment
- From unpaid work

**Socio-Economic Footprint**

> CHF 1.1 billion gross added value

Source: WifOR 2019

1 The healthcare footprint refers to the additional quality-adjusted life years (QALY) attributable to the medications. A QALY value of 1 corresponds to one fully healthy year of life, while a QALY of 0 equates to mortality.

2 Labor productivity includes both gainful employment as well as unpaid work, such as household or care provided privately.

3 The socio-economic footprint refers to the work productivity from additional healthy years of life.
Highlights in Switzerland 2019

Our strategic priorities

Unleash the power of our people
• Advertising many vacancies on a flexible 80-100% basis
• Introduction of 18 weeks of paid parental leave
• Commitment to gender balance in management by 2023
• Reimagining of our performance management as part of the cultural transformation

Deliver transformative innovation
• Opening of a production site for innovative cell and gene therapies (Stein, AG)

Embrace operational excellence
• Further progress in the NBS transformation
• Power Our Purpose: Launch of cost efficiency initiative
• Launch of OneNovartis global intranet
• Global contract for Facility Management with CBRE

Go big on data and digital
• Strategic collaboration with Microsoft
• Strategic collaboration with Amazon Web Services

Building trust with society
• Novartis Community Partnership Day with around 3,000 volunteers in Switzerland
• Main sponsor of Basel Museum Night, with record visitor numbers
• Awarding of the 50th Basel high school graduate prize
• Supporting the Chili project of the Swiss Red Cross (SRC) to prevent violence among children and adolescents
Working at Novartis

The greatest strength of Novartis is our associates, whose diversity, creativity and commitment are crucial to our success.

Our culture
We strive to unleash the power of our people and we cultivate a company culture that is inspired, curious and unbossed.

Our values
Our six values underpin our company culture. They help guide us in our recruitment processes, employee development programs, and individual performance appraisals.

Innovation
Quality
Collaboration
Performance
Courage
Integrity

As part of its restructuring efforts, Novartis plans to cut an estimated 2,150 jobs in production and internal services in Switzerland by 2022.

At the same time, it is planned to add 450 positions for highly-qualified individuals at the new European center for cell and gene therapy at the Stein location, which opened in late November 2019. Around 185 positions (as of December 2019) have already been filled with retrained Novartis personnel from other production areas.
Starting a career

Talented, engaged and responsible young people are our future. We therefore offer people starting out on their career diverse opportunities for development. Current vacancies are regularly advertised on our careers portal: www.novartis.com/career

Students and university graduates

For our core business, we look in particular for students and university graduates in the fields of natural science, medicine and engineering. However, we also require specialists in the fields of economics, law, psychology and social sciences who are interested in starting their career at Novartis. Internships are available at every stage of academic training and are offered to:

- Bachelor’s degree students
- Master’s degree students
- Graduates
- MBA students
- PhD students and Postdocs

Vocational training

Around 90 trainees start an apprenticeship at Novartis each year. Altogether, Novartis trains around 280 apprentices at any given time. The main focus of this training is on research and development and production. We provide trainees with knowledge and skills in the following occupations:

- Laboratory technician in biology
- Laboratory technician in chemistry
- Chemical and pharmaceutical technician
- Automation engineer
- Office assistant
- Computer scientist
- Commercial assistant
- Logistitician
- Polymechanic
- Animal keeper

Around 90 trainees start an apprenticeship at Novartis each year.
Diversity and inclusion in Switzerland

We want all our associates to be able to unleash their full potential every day. We embrace diversity and value inclusive behavior, as both fuel innovation and drive engagement, thereby helping us to attract and retain talent. Diversity and inclusion are a fundamental part of our culture!

We believe in equal pay for equal work, as outlined in our Code of Conduct and our Equal Pay International Coalition pledge. With this commitment, we have the vision to reach gender balance in management by 2023.

We nurture an inclusive environment, so for example:

- Fostering Employee Resource Groups in Switzerland, voluntary networks who have shared interests, experiences, and perspectives.

Offering an extensive range of support to balance work and private life, e.g.:
- **Parental leave**: Novartis parents in Switzerland will get 18 weeks of paid parental leave.
- **Flexible working**: Across the globe, we are committed to flexibility and offer various flexible work models, collaborative technologies and activity-based workspaces.
- **Work and Care Services**: Supporting associates with childcare, care for family members and home care.

As a full-time Novartis associate, having a WLB contract means that you are reducing your base salary for additional vacation days.

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**Novartis employees in Switzerland**

![Employee Breakdown Graph](image)

- **97 NATIONALITIES**
- **9 EMPLOYEE RESOURCE GROUPS**
- **7% WITH A WLB CONTRACT**

1 HR Report 2019
2 D&I Report Year 2018

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**IN THE WORKPLACE**

- **BABYBOOMERS**
  - 17%
- **GEN Y**
  - 31%
- **GEN X**
  - 52%

- **44% FEMALE**
- **56% MALE**
Reimagining medicine

The path to a new medicine

Each treatment begins as an idea, which is incubated, refined and tested – first in the laboratory and later in the clinic – over many years.

Our researchers advance these promising ideas from a variety of internal and external sources, focusing on projects with the potential to significantly improve or extend lives.
We develop and produce innovative medicines to address patient needs in disease areas where our experience and knowledge has the potential to produce transformative treatments. With 24 major approvals in key markets and 33 major submissions, we made significant progress in 2019.

In **oncology**, we offer and are engaged in research on treatment options for various cancers affecting, for example, the breast, skin, lung, kidney, or parts of the blood and bone marrow. A particularly innovative development is CAR-T (chimeric antigen receptor-modified T-cells) therapy, in which the T-cells of the patient are selectively reprogrammed to recognize cancer cells and destroy them.

In **immunology and dermatology**, our main focus is on the treatment of psoriasis and chronic rheumatic diseases (psoriatic arthritis, ankylosing spondylitis).

In **respiratory diseases**, we have an established portfolio for the treatment of chronic obstructive pulmonary disease (COPD) and allergic asthma.

In **cardiovascular diseases**, our focus is on patients who suffer from heart failure or have had a heart attack.

In **neurology**, we are occupied above all with the treatment of multiple sclerosis and migraine.

In the **eye-care** division, we offer treatment options for patients with retinal diseases and increased intraocular pressure, amongst other things.

In **infectious diseases**, we focus on innovative therapies to combat malaria and other tropical diseases.
New therapeutic platforms

We use innovative, state-of-the-art instruments to give patients who are suffering from serious diseases – including genetic disorders or deadly types of cancer – access to completely new treatment methods. We are reimagining medicine to provide patients all over the world with revolutionary therapies that meet their needs.

The open, interdisciplinary philosophy of our researchers is helping us to explore the variety of opportunities these platforms have to offer, to overcome barriers and to incorporate the latest scientific findings to that end.

Cell and gene therapies

Cell and gene therapies aim to stop or reverse the course of a disease instead of simply slowing its progression or relieving symptoms. Often, these are one-time treatments that can mitigate the underlying cause of a disease and have the potential to heal certain diseases.

The development of our new production site for cell and gene therapies in Stein, situated in the Fricktal region, reflects our belief in the success of these pioneering therapies and in Switzerland as a key location.

Radioligand therapies

Our pioneering work with innovative technologies goes beyond cell and gene therapies. For example, researchers at the Novartis companies Advanced Accelerator Applications (AAA) and Endocyte are developing radioligand therapies, i.e. targeted medicines for the irradiation of tumors.

Focusing our company

Surging innovation in medical science and technology is driving exciting advances in healthcare. At the same time, the world’s population continues to grow and people are living longer, fueling a rise in chronic diseases. These trends highlight the importance of delivering true innovation that produces better health outcomes for patients and society – and with more efficiency. That is why we are taking important steps to focus our portfolio to remain a leading medicines company. In 2019, we strengthened our operations, expanded our therapeutic platforms and accelerated our push into the data and digital healthcare space. Together, these steps are set to increase our ability to deliver breakthrough therapies to patients more quickly.
Data science and digital technologies

In R&D, we are using digital technologies and data analytics to help find new drugs and bring them to patients more quickly. For instance, we are using artificial intelligence to improve the way we plan and run our development operations, including clinical trials of experimental treatments. A new system called Nerve Live uses predictive analytics to more effectively plan and run clinical trials. It includes two control rooms located on Basel Campus that receive real-time updates on all ongoing trials to direct actions in support of our global teams.

Strategic Alliance with Microsoft

Transforming medicine with artificial intelligence (AI) is central to the multiyear strategic alliance between Novartis and Microsoft. Announced in October 2019, the core element of this collaboration is the creation of the Novartis AI innovation lab. Two objectives underlie this AI lab and the alliance in general: AI empowerment and AI exploration. The first endeavors to empower associates across all businesses with AI platforms which can augment our associates’ capabilities to take on the next wave of challenges in medicine. The second objective is to leverage the potential of AI in some of the most complex computational challenges in life sciences, like the optimization of cell and gene therapies at scale or generative chemistry.

Currently, data42 has run input from over 2 700 clinical studies.

Strategic Alliance with Amazon Web Services

A further pivotal strategic collaboration was announced in 2019 with Amazon Web Services (AWS). Through harnessing AWS’ competencies in cloud services, the multiyear alliance aims to produce an enterprise-wide data and analytics platform which will reimagine business operations. Novartis Insights Centers are at the heart of this alliance, these platforms can offer live insights into the manufacturing and distribution processes. This information can then be used by associates to make better decisions and adapt procedures where necessary. The transformation will begin within Novartis Technical Operations (NTO).

data42

Through artificial intelligence and deep learning, data42 strives to uncover hidden insights from the scores of clinical and research trial data collected by Novartis. Twenty petabytes of information come from the research and development department alone. After the data has been sorted and pooled together, the future platform runs analyses and can potentially reveal previously unnoticed pieces of information. Currently, data42 has run input from over 2 700 clinical studies and numerous machine-learning models have been tested.
Research and development

Our pipeline contains more than 200 projects in different phases of clinical development, including potential new products and additional indications or new formulations for established products. In the next few years, we plan to launch a substantial number of new products.

Switzerland is a key location for Novartis research and development. In 2019, we invested a total of CHF 3.4 billion in this country. To expand our scientific expertise and capacity for innovation, Novartis sets great store by partnerships with companies and universities.

Research in Switzerland

Novartis Institutes for BioMedical Research (NIBR)
The Novartis Institutes for BioMedical Research (NIBR) is the driving force behind many of our innovations, collaborating across scientific and organizational boundaries to enable therapeutic breakthroughs for patients. The Basel site is one of NIBR’s key research locations globally and is home to more than 2,200, or one third, of NIBR’s scientists, physicians and business professionals. Research in Basel uses pioneering methods and cutting-edge technology to achieve breakthroughs in areas such as the treatment of musculoskeletal disorders, cancer, and diseases of the skin and immune system.

With its global organization, NIBR maintains more than 300 partnerships with universities and private research institutions throughout the world.

In Switzerland our key partners are:

- Paul Scherer Institute
- University of Basel
- University Hospital Basel
- University of Berne
- University of Zurich
- University Hospital Zurich
- Swiss Federal Institute of Technology Zurich
- Swiss Federal Institute of Technology Lausanne
- University of Applied Sciences, Northwestern Switzerland (FHNW)
- Friedrich Miescher Institute for Biomedical Research (FMI)
- Institute of Molecular and Clinical Ophthalmology Basel (IOB)
Friedrich Miescher Institute for Biomedical Research
The Friedrich Miescher Institute for Biomedical Research (FMI), which was established in Basel as a foundation in 1970, conducts basic research in the field of biomedicine and employs around 340 people – many of them are PhD students and postdocs. The world-renowned institute uses the latest technologies to look into the underlying molecular mechanisms of cells and organisms involved in health and disease.

The institute focuses on quantitative biology, epigenetics and neurobiology. Through its association with the Novartis Institutes for BioMedical Research and the University of Basel, the FMI is at the interface between academic research and biomedical practice.

Development of breakthrough medicines
The Global Drug Development (GDD) organization oversees the development of new medicines discovered by our researchers and partners.

The organization regularly evaluates potential new products in the Novartis pipeline and ensures we allocate resources to the most promising development projects. It also drives the adoption of common standards and procedures, best practices and new technologies, with the aim of greater efficiency and effectiveness.

65 trials involving around 960 patients were conducted by Novartis in Switzerland in 2019.
Novartis Technical Operations (NTO) plays a critical role in driving business growth and performance. With a global network of over 60 sites, we manufacture high quality, cost-effective products, and ensure they are delivered on time, every time, safely and efficiently. In total, we supply around 70 billion units to 150 countries every year. Our aspiration is to be the leading manufacturer in the industry. We continuously look for new and innovative solutions to reimagine manufacturing.

Our continuous manufacturing site in Basel is the first in the industry to integrate all steps of chemical and pharmaceutical production in one location. Our site in Stein continues to be a key launch site: at the end of 2019, we established a sophisticated production facility there for innovative cell and gene therapies. The first therapies from Stein have been made available to patients in Europe and Switzerland since early 2020.
Promotion of research

FreeNovation

In the world of science, many key breakthroughs occur not by setting strict targets, but due to the pioneering spirit of people who are able to give their creativity free rein. Despite this, there is little room for unconventional thoughts and actions in today’s research funding programs. This is why the Novartis Research Foundation has set up the FreeNovation program to support unorthodox project proposals. It is designed for researchers in Switzerland who are rarely given a chance to explore their scientific problems and solutions within the confines of conventional funding schemes.

Supporting research in this way is unique in the Swiss life sciences sector. Through this program, Novartis is aiming to encourage unconventional thought and boost Switzerland’s attractiveness as a research location.

Next Generation Scientist

The Next Generation Scientist program by Novartis and University of Basel is an intensive internship program for talented and motivated research scientists from low- and middle-income countries. The three-month program, hosted at the Novartis research site in Basel, Switzerland, is designed to foster both their scientific and professional development. Guided by Novartis mentors, the fellows work on a jointly agreed upon, precompetitive scientific or clinical research project and participate in a leadership development program designed to enhance their decision-making and communication skills. Research projects allow selected fellows to use state-of-the-art methodologies and work with leading experts in the fields, with the aim of them later applying what they have learned in their home countries. A key element of the programs is bi-directional learning. Scientists and physicians at Novartis and University of Basel learn from fellows by gaining a greater understanding of science and health in other countries.
Novartis is on a journey to build trust with society and maximize our positive social impact wherever we do business.

We focus our efforts on the following areas:
• Holding ourselves to the highest ethical standards
• Being part of the solution on pricing and access to medicines
• Helping tackle global health challenges
• Demonstrating social responsibility

Pricing and access

Novartis has a long-standing commitment to access to healthcare. We have been pioneering innovative access models for more than two decades. In 2019, our access programs reached 16 million patients globally. Further, we made progress on the implementation of the Novartis Access Principles to systematically integrate access strategies into how we research, develop and deliver our new medicines globally and introduced a set of targets to track our progress.
Addressing global health challenges

Malaria
For over 20 years, Novartis has played a pioneering role in helping fight malaria. Since 2001, we have provided more than 900 million treatments, including more than 390 million pediatric treatments, contributing to a significant reduction in malaria deaths. In collaboration with Medicines for Malaria Venture, we are working to develop a new formulation of our antimalarial for infants weighing less than five kilograms.

Sickle cell disease (SCD)
In January, we announced a five-year agreement with the Ministry of Health of Ghana, Ghana Health Service and the Sickle Cell Foundation of Ghana to adopt a holistic approach to tackling the diagnosis and treatment of SCD. Our goal is to expand the program to 10 countries in sub-Saharan Africa by 2022.

Chagas disease
In March, we joined the Global Chagas Disease Coalition. This alliance aims to increase awareness of Chagas disease, to foster synergies in controlling the disease and to promote access to diagnosis and treatment.

Leprosy
Novartis and the Novartis Foundation have been working with partners for over 30 years to eliminate leprosy, reaching more than 7 million patients worldwide with free multidrug therapy.

In March, the Novartis Foundation and Microsoft announced a strategic alliance to develop an artificial intelligence (AI)-enabled digital health tool to aid in the early detection of leprosy.

Novartis Foundation
The Novartis Foundation works with global partners, including the University of Basel and the Swiss Tropical and Public Health Institute, to strengthen healthcare systems and improve access to healthcare in low-income communities. In 2019, the Novartis Foundation announced it would refocus its efforts on how digital, data and AI can transform global health.

Better Hearts Better Cities
Better Hearts Better Cities was launched in 2017 to help improve cardiovascular health in three low-income urban populations: Ulaanbaatar, Mongolia; Dakar, Senegal; and São Paulo, Brazil. In each city, the Novartis Foundation leveraged partnerships with local and national government agencies, along with an array of civil society organizations, reached more than 4 million people in under two years and significantly increased hypertension diagnosis, treatment and control rates.

Since 2001, we have provided more than 900 million malaria treatments.
Health and safety and environment

Health

A decent work atmosphere and the health and well being of our associates are paramount. The Energized for Life prevention program offers a holistic approach that helps employees manage their energy levels through mindfulness, diet, exercise and relaxation techniques. Novartis also offers all of its employees free health check-ups and ergonomic tips.

Safety

In 2019, the rate of occupational accidents and disease among Novartis employees in Switzerland resulting in an absence of one day or longer stood at 0.12.

The Life Saving Rules were introduced to further reduce the risk of serious accidents. These ten basic safety rules must be applied when carrying out activities that pose a high risk of severe injury or death.
**Environment**

**Energy and greenhouse gas emissions**

It is our goal to use resources efficiently and reduce our greenhouse gas emissions. With a view to reaching the highest international environmental standards, we aim to become carbon neutral by 2025, and plastic and water neutral by 2030, and have put processes in place to minimize the carbon footprint of our supply chain.

In Switzerland, we are supporting these objectives by constructing new, energy-efficient buildings, increasing our use of district heating and not least changing the way energy is consumed.

Since 2016, the energy consumption of Novartis in Switzerland by 10%. Our electricity comes primarily from renewable sources; district heating is sourced mainly from waste and wood.
By 2025, Novartis aims to halve its water consumption for all industrial and sanitary wastewater compared to 2016 levels. By 2030, we aim to be water neutral in all areas of our operations.

Other possibilities for saving water will be explored as well, particularly in the area of sanitary facilities (sinks, toilets, showers, etc.).

Reducing the overall volume of waste is one of the key environmental objectives of Novartis. Many measures are therefore aimed at either reducing the generation of waste or recycling as much waste as possible.

The volume of hazardous waste generated depends heavily on the production processes used. In Switzerland, there has been an increase of 17% since 2015.

Municipal waste accounts for only 11–14% of the total waste volume. Here, we see a downward trend. In the last five years, the specific volume of municipal waste also went down by 20%.

Through the Novartis Plastic-Free Workplace initiative, we have started to phase out “everyday single-use plastics” from our campuses and offices around the world.

In Switzerland, for example, the range of office materials will be streamlined, and plastic products will be replaced with alternatives whenever possible. PET water bottles will be banished from most buildings. From January 1, 2020, the restaurants and coffee bars will avoid offering disposable dishes, cutlery, and beverage and coffee cups (as well as lids, plastic stirrers/spoons) for takeaway orders where possible.
Sponsoring and Donations

With its sponsoring and donation activities, Novartis engages in various initiatives and projects in humanitarian emergency relief, social affairs and the fostering of culture and sports. The main focus of this support is on activities that are either related to our business interests or in close geographic proximity to the company sites of Novartis.

Fostering social affairs

In the social sphere, institutions and initiatives that help disadvantaged people are sponsored in a variety of ways. For example, Novartis donates to local charitable organizations, neighborhood meeting points, soup kitchens and contact centers for parents, children and juveniles.

Engagement in local communities

The annual Community Partnership Day is an opportunity for Novartis associates to spend a day working on a local, charitable project. In 2019, more than 13 800 associates worldwide got involved, including 3 000 in Switzerland.

Sponsoring culture

Novartis cultivates long-standing partnerships with well-known Swiss institutions, such as the Fondation Beyeler, Kunstmuseum Basel, and the Kunsthalle Baselland, as well as with the Basel Museumsnacht and the Theater Basel. Novartis is also a main sponsor of the Baloise Session.

Sponsoring sports

Novartis is the main sponsor of FC Basel and the basketball team Starwings Basket Regio Basel. In central Switzerland, Novartis is the official health care partner of the EV Zug hockey team. We also support the junior sections of various football clubs in the Basel region as well as various running sports events.