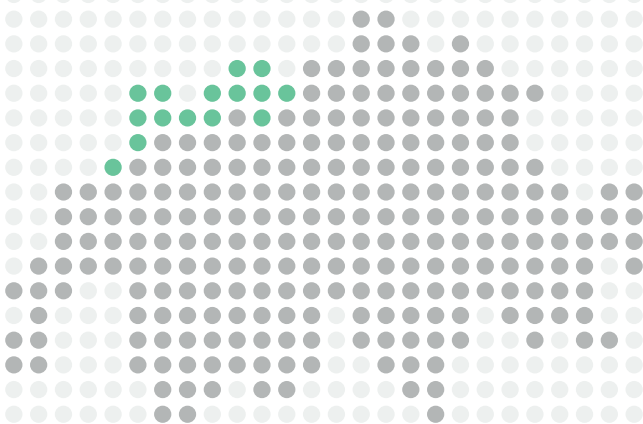


**PHARMACEUTICAL  
HUB SWITZERLAND  
2020**  
BASEL REGION



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**Cantonal Councillor  
Christoph Brutschin,**  
Director of the Department of Economic,  
Social and Environmental Affairs,  
Canton of Basel-Stadt

Switzerland and the pharmaceutical industry have been on a successful path for decades: attractive economic policy conditions have favoured the impressive development of the research-based pharmaceutical industry. At the same time, the pharmaceutical industry, as an important pillar of the economy, contributes above average to Switzerland's prosperity.

More than 50 life sciences companies have their headquarters in the Basel Region, underlining the importance of our location: International pharmaceutical companies and companies for biotechnology, medical technology and nanotechnology. These companies are at home here and are convinced of the good framework conditions that the region offers.

In comparison with international centers of the pharmaceutical industry, Basel has been able to establish itself in the top tier worldwide. This life sciences location has been very successful over the last 10 years. Real value added has doubled and employment has increased by around 6,000 jobs. The most important growth driver has been the increase in value added per employee. Today, Basel is one of the most productive life sciences locations in the world.

If the life sciences industry in the Basel Region aims not only to maintain its above-average performance, but also to successfully expand it, the framework conditions must be continually adapted and improved. This is where politics and administration come into play. After all, it is a question of qualified employees from Switzerland and abroad, the quality of universities and hospitals, a balanced fiscal environment and an attractive range of residential, leisure and cultural facilities. This is what we are working on - not only in the interest of the life sciences companies - but as well.

# PHARMACEUTICAL INDUSTRY IN SWITZERLAND

## 9.3%

AVERAGE ANNUAL GROWTH RATE OF REAL GROSS VALUE ADDED

per year (2008-2018)



## 5.1 x

MORE PRODUCTIVE THAN OVERALL ECONOMY

(2018)

## 36.0 BN.

SWISS FRANCS NOMINAL GROSS VALUE ADDED

in 2018



## 46,800

EMPLOYEES

in 2018

Source: BAK Economics, BFS

### Study on behalf of Interpharma

Further information on the economic importance of the Swiss pharmaceutical industry is provided in our publication, entitled "The Importance of the Pharmaceutical Industry for Switzerland". This is available on our website at Publikationen.

The pharmaceutical industry significantly impacts the Swiss economy both directly and indirectly. The direct economic importance can be measured, for example, by the value of exports, number of employees or gross value added (GVA). The latter is calculated by deducting the value of intermediate goods and services from the goods produced (production value). In 2018, the nominal GVA of the pharmaceutical industry amounted to 36.0 billion Swiss francs – an approximate fourfold increase compared to 20 years earlier. With an average annual growth rate of real GVA of 9.1 percent, the pharmaceutical industry has impacted considerably on the growth of the Swiss economy in recent years.

The indirect effects of the pharmaceutical industry can be measured in addition to its direct effects. Through cross-industry collaboration with other companies, taking pharmaceutical industry demand for intermediate goods and services into account, additional employment is created for 207,300 people. Similarly, the employee demand for consumer goods and services have an indirect effect on the overall economy. The direct and indirect GVA amount to approximately 62.1 billion Swiss francs.

Furthermore, pharmaceutical companies in Switzerland invest heavily in research and development (R&D) - in 2017, the total was 6.5 billion Swiss francs. The share of private-sector investment in R&D accounted for around 18 percent of GVA in 2017. This high rate of investment highlights the importance of the Swiss research hub. In addition, the sector is making a significant contribution to ensuring that Switzerland is also perceived as an innovation driver internationally, leading the European and global innovation rankings.

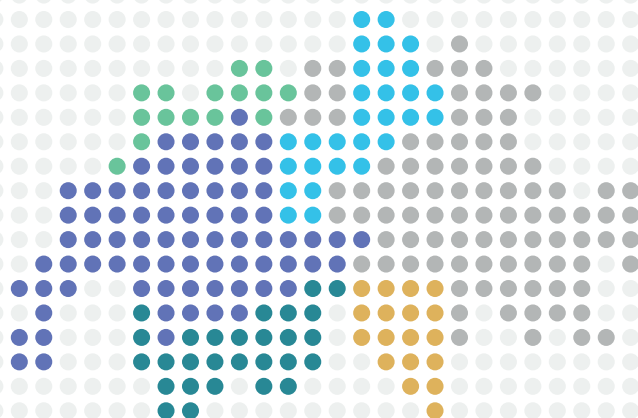
# SWISS PHARMACEUTICAL CLUSTER

Around **90.7%**

OF THE SWISS PHARMACEUTICAL INDUSTRY  
NOMINAL GROSS VALUE ADDED

was achieved in the Basel Region, Espace Mittelland-Bassin Lémanique and Zurich-Zug-Lucerne-Schaffhausen clusters in 2018.

Source: BAK Economics



- Basel Region
- Espace Mittelland-Bassin Lémanique
- Zurich-Zug-Lucerne-Schaffhausen
- Ticino
- Valais

## Basel Region

The Basel Region Pharmaceutical Cluster comprising the cantons of Basel-Stadt, Basel-Land and Jura together with the regions Fricktal and Dorneck-Thierstein, is of major international importance. International companies such as Actelion, Bayer, Boehringer Ingelheim, Novartis and Roche are in this area.

## Espace Mittelland-Bassin Lémanique

The cantons of Bern, Fribourg, Neuchâtel and Solothurn are in the Espace Mittelland Area whilst the Geneva and Vaud cantons are located in the Bassin Lémanique Area. Together they form the Espace Mittelland-Bassin Lémanique cluster, which is home to the Swiss branches of Biogen, Bristol-Myers Squibb, Eli Lilly, GlaxoSmithKline, Merck, Sanofi, Takeda, UCB and Vifor Pharma.

## Zurich-Zug-Lucerne-Schaffhausen

The Zurich-Zug-Lucerne-Schaffhausen cluster has grown into an attractive location for international life sciences companies. It is home to the following companies: AbbVie, Allergan, Amgen, AstraZeneca, Bayer, Biogen, Bristol-Myers Squibb, Cilag, Gilead, Janssen, Lundbeck, Merck, MSD (Merck Sharp & Dohme), Novartis, Pfizer, Roche, Sanofi, Takeda and Vifor Pharma.

## Ticino / Valais

There are also two smaller pharmaceutical clusters in Switzerland: The cluster in Canton Ticino, where pharmaceutical industry has grown historically and which includes now several medium-sized companies. The Canton Valais has a cluster which is extremely important as the area accommodates suppliers who produce chemical inputs for pharmaceutical production.

# BASEL REGION

## THE PHARMACEUTICAL INDUSTRY IN THE BASEL REGION CLUSTER

9.0%

AVERAGE ANNUAL  
GROWTH RATE OF REAL  
GROSS VALUE ADDED  
per year (2008-2018)



130.5

PATENT APPLICATIONS  
in 2015  
(per million inhabitants)

24.5 BN.

SWISS FRANCS NOMINAL  
GROSS VALUE ADDED  
in 2018



28,400

EMPLOYEES  
in 2018

Source: BAK Economics, BFS, OECD

The Basel Region is the leading pharmaceutical region in Switzerland and has a long chemical-pharmaceutical tradition. Numerous life sciences companies are located in this region. These companies fully cover the entire value-added chain of the pharmaceutical industry – from research and development to production and marketing. With CHF 24.5 billion, the Basel Region generates two-thirds of Switzerland's total pharmaceutical value added.

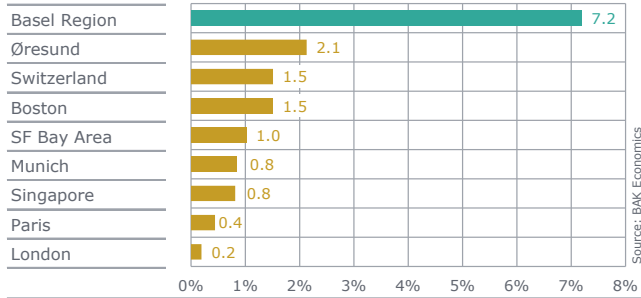
In addition to the pharmaceutical industry, the medical technology sector also produces (electrical and orthopaedic) medical goods. Other companies are active in research and development in the field of biotechnology. Together, these three sectors form the life sciences aggregate.

The Basel Region is an attractive location for life sciences companies - not least because of the favourable framework conditions. For example, the Basel Region is characterised by the presence of recognised educational and research institutions.

Furthermore, its proximity to Germany and France, to the international airport of Basel-Mulhouse-Freiburg and the Swiss Rhine ports provide excellent access to all major transport routes.

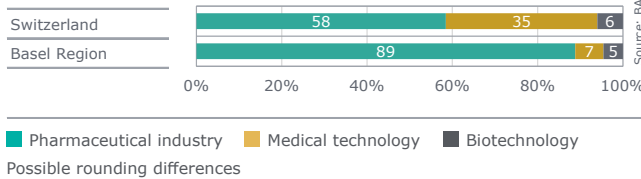
## Employment in the life sciences sector

Share of overall employment (as %), 2018



## Employment in the life sciences sub-sectors

Share relative to total employees (as %), 2018



## The pharmaceutical industry as major employer

Over 32,000 people were employed in the life sciences industry in the Basel Region in 2018. Employment in the life sciences sector accounts for 7.2 percent of regional employment. Thus, the relevance of the industry is much higher than in other life sciences clusters around the globe.

Considering the life sciences sub-sectors, the pharmaceutical industry clearly dominates the Basel Region: Of all life sciences personnel in the Basel Region, around 28,400 work in the pharmaceutical industry, i.e. about 89 percent. These figures highlight the major importance of the pharmaceutical industry for the Basel Region. Furthermore, about six out of ten jobs in the Swiss pharmaceutical industry are located in the Basel Region.



"The pharmaceutical industry in Basel is of central importance in view of our strong economy. In addition to the pharmaceutical industry's strong export sector, the high proportion of jobs also contributes to Switzerland's prosperity. The pharmaceutical industry is an important employer in Switzerland, with more than half of the workforce employed in the Basel Region."

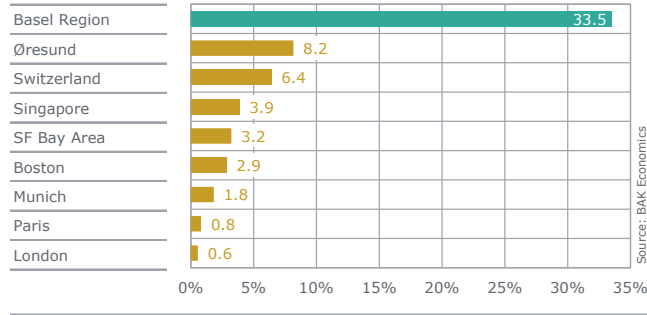
**National Council Elisabeth Schneider-Schneiter**, National Councillor and President of the Basel Chamber of Commerce

## The life sciences sector in the Basel Region

Usually, the life sciences are defined by the pharmaceutical industry, medical technology and research and development in biotechnology. A broader definition includes further categories such as wholesale trade or company administration. The extended scope can make quite a difference: Adding life sciences wholesale trade leads to a 10 percent increase of the number of jobs compared to a narrow delimitation of the cluster (2017, Basel Region excluding districts outside the city).

**Value added in the life sciences sector**

Value added relative to regional total value added (as %), 2018

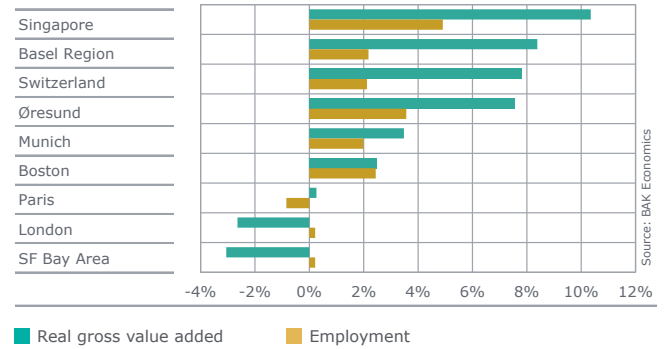


**High value-added contribution of life sciences**

In 2018, the life sciences value added share of the entire cluster value added amounted to approximately 33.5 percent – by far the highest value in comparative terms. In absolute terms, the life sciences industry in the Basel Region generated around 25.6 billion Swiss francs in 2018, with the pharmaceutical industry accounting for around 96 percent.

**Growth rate of real gross value added and employment**

Average annual growth rate in life sciences (as %), 2008-2018



**Positive value added and employment growth**

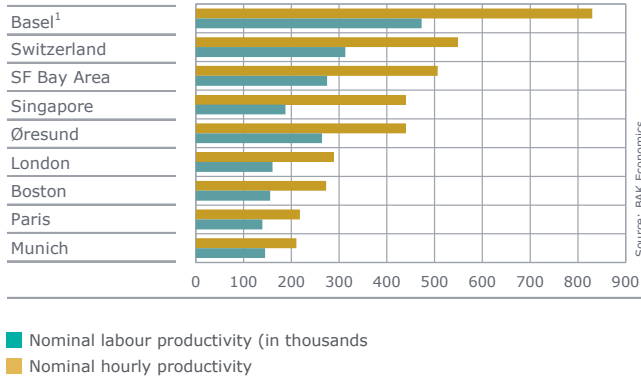
Between 2008 and 2018, the real gross value added of the life sciences industry in the Basel Region witnessed an average annual growth rate of around 8.2 percent. The US regions SF Bay Area and Boston cannot keep up with this dynamic. In nominal terms, the growth of the two US-regions are at a comparable level to the Basel Region. The significant price increases lead to differences between nominal and real value added.

With an average rate of 2.2 percent, employment growth is also slightly above average in the Basel Region. However, in Singapore and Øresund, employment growth was significantly higher.



**Productivity in the life sciences sector**

Nominal labour and hourly productivity  
(in USD, current prices and exchange rates), 2018



**Highest productivity in the pharmaceutical sector**

The Basel Region ranks on top compared to other life sciences locations. Thus, in 2018, the life sciences industry in this area generated 463 Swiss francs (473 USD) per working hour or around 812,000 Swiss francs (830,000 USD) per workplace. Hubs such as San Francisco Bay Area, Singapore or Øresund are much less productive.

The pharmaceutical industry is by far the most productive industry and generates a higher value added than other life sciences sub-sectors but with the same number of employees. In 2018, the pharmaceutical industry in the Basel Region cluster generated 503 Swiss francs (515 USD) per working hour or around 886,000 Swiss francs (906,000 USD) per workplace.

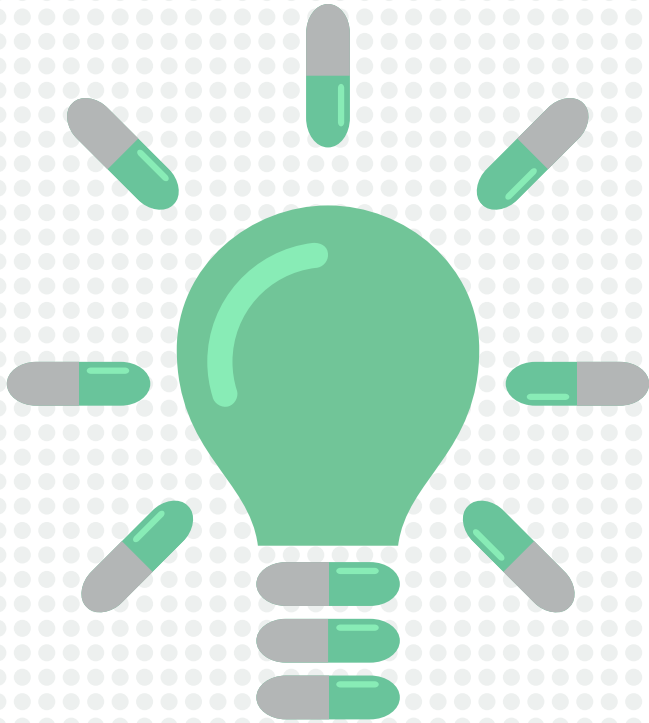
<sup>1</sup> Basel Region without districts



"The region of Northwestern Switzerland is a world-leading life sciences location with a focus on pharmaceuticals, biotechnology and medical technology.

To enable the Life Sciences Cluster to develop further, the Cantonal Government of Basel-Land, together with Basel-Stadt and Jura, is committed to promoting and shaping a unique eco-system consisting of the University of Basel, the Department of Biosystems Science and Engineering at the ETH in Basel (D-BSSE), the Swiss Tropical and Public Health Institute (Swiss TPH), the University of Applied Sciences Northwestern Switzerland (FHNW), private research institutes and the Switzerland Innovation Park Basel Area. Thus, a unique research and development environment is growing up in Allschwil."

**Cantonal Councillor Thomas Weber**, Head of the Department of Economic Affairs and Health of the Canton of Basel-Landschaft



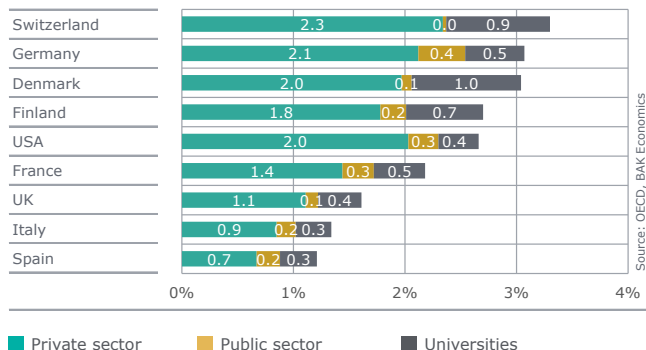
Companies must be able to make dynamic adjustments in order to survive in an ever-changing commercial climate. Innovation – the commercial implementation of new ideas and their impact on the business market – is one of the most important growth factors of a modern economy.

For several years, Switzerland has been one of the world's most innovative countries. Thanks to cutting-edge innovation, Switzerland is a strong competitor in the international stakes. Particularly in knowledge-intensive sectors, capacity for innovation is an important factor when facing location decisions. Companies in the life sciences sector are therefore also interested in locations with a high innovation potential.

The framework conditions in the Basel Region that influence the region's capacity for innovation are shown on the following pages. Research and development expenditures, patent density, the quality of regional universities and the level of education of the workforce are analysed for this purpose.

## Research and Development expenditures

Share of GDP (as %), 2017



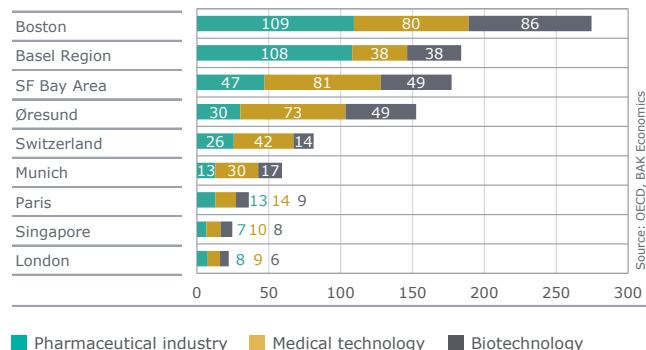
### Private sector invests heavily in research and development

Intensive research and development will generate new knowledge which, in turn, leads to innovation. A great deal is invested into the research and development of new medicines in Switzerland. In 2017 the total was 6.5 billion Swiss francs. Consequently, the pharmaceutical industry contributes to Switzerland's competitive edge and economic growth.

In 2017, research and development expenditures in the private and public sectors together with universities accounted overall for approximately 3.3 percent of the Swiss GDP. Switzerland therefore stands out from the crowd thanks to its intensive research activities and positions itself in first place in the international comparison. Investments in R&D are mostly in the private sector: The share of private-sector-financed R&D expenditure accounted for about 70 percent of total R&D expenditures in 2017.

## Patent Applications

Number of patent applications per million inhabitants, 2015



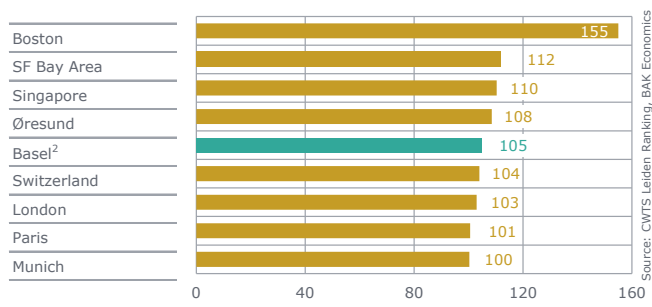
### High density in pharmaceutical patent applications

The number of patent applications provides an insight into the innovation capacity of a region. It allows research productivity to be assessed and the commercial value of knowledge to be measured on a worldwide scale.

The high commitment to research in the Basel Region is apparent from the patent applications. In 2015, around 108 pharmaceutical patent applications were filed per million inhabitants. Compared to the other Swiss pharmaceutical clusters, most of the patent applications were filed in Boston and the Basel Region cluster. With these peak values in the pharmaceutical sector, the Basel Region surpasses life sciences hubs such as San Francisco Bay Area or Øresund.

## Quality of the universities

Index 100 = ø of all the regions studied in Western Europe and the USA between 2010 and 2014), 2018



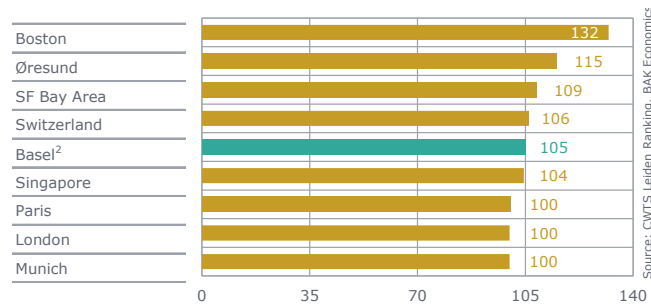
## High quality of regional universities

High-quality academic research entities attract specialists and high-level scientists from all over the world, thus benefitting other areas in addition to research. The quality of local universities is therefore an important location factor, which is particularly relevant for research-intensive sectors such as the pharmaceutical industry.

Swiss universities are generally considered as internationally renowned. With 105 points, the universities in the Basel Region cluster have a comparatively good score and rank in the middle tier of the life sciences hubs taken into consideration.

## Quality of the universities in the life sciences sector

Index 100 = ø of all the regions studied in Western Europe and the USA between 2010 and 2014), 2018



Universities in the Basel Region also rank relatively high when compared to international life sciences Universities. The region is renowned for first-class university research and is well placed thanks to the University of Basel and other prestigious institutes such as the Friedrich Miescher Institute, for instance.

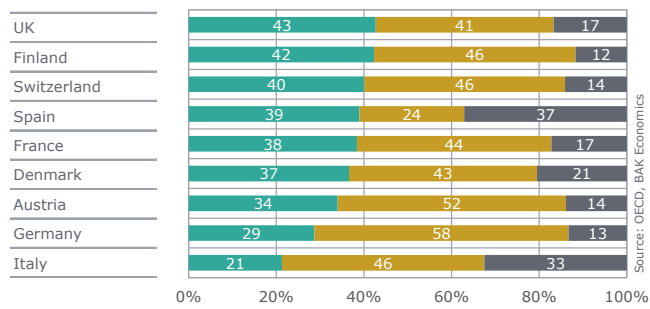
## BAK Quality of Universities Index

The BAK Quality of Universities Index is based on the CWTS Leiden Ranking and assesses the quality of universities in a given area. It is measured by the total number of publications generated by a university as well as the number of publications in the fields of biomedical and health sciences and their citation frequency.

<sup>2</sup> Basel Region without districts

## Level of education

Share of gainfully employed (as %), 2017



■ Tertiary ■ Secondary ■ Primary

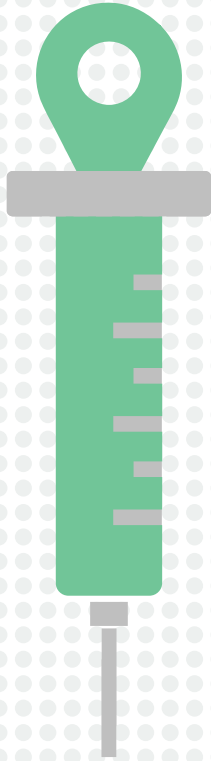
Possible rounding differences

## Highly qualified workforce

Employees' qualifications are an important indicator of the competitive edge and innovative capacity of an economy. For sectors with a high research and development activity, such as the pharmaceutical industry, professionals with tertiary education are particularly important.

In 2017, the proportion of tertiary-educated employees in Switzerland accounted for 40 percent of all those in gainful employment, compared to just under one quarter in 2000. In the life sciences industry, the tertiary ratio of 56 percent is well above average. Compared to other European countries, Switzerland has a high level of education.

# INWARD INVESTMENT FACTORS



In addition to in-house variables, inward investment factors are also important for companies in order to optimise their economic activity. In the light of globalisation, inward investment factors are of increasing commercial importance.

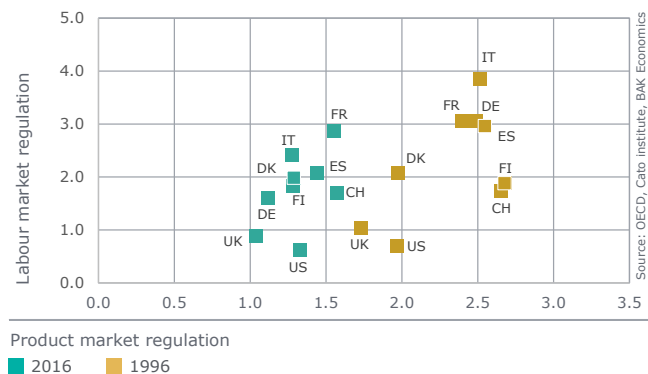
The discussion on inward investment factors can be viewed from two perspectives: Whereas hard factors such as taxation and regulation are mostly relevant for companies, other factors including the level of education and quality of life are more important for employees.

An improvement in regional location quality is therefore important in order to remain attractive for companies already settled or interested in settling in a given area as well as for highly qualified employees.

Various indicators from the areas of taxation, accessibility and regulation are considered on the following pages to evaluate the location quality of the Basel Region.

## Market regulation

Product and labour market regulation index (0 = very liberal; 6 = strictly regulated), 1996 and 2016



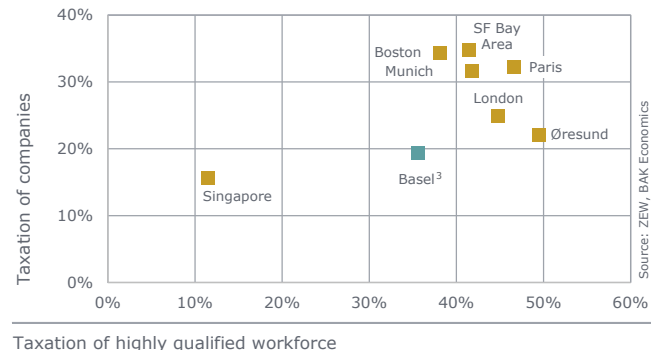
## Economy-friendly regulation

State regulations can lead to high administrative costs or preclude market access. However, at the same time, regulations can also promote competition and economy-friendly structures. The intensity of (labour and product) market regulation therefore has a significant impact on the attractiveness of a location.

Generally, it should be noted that all countries in the sample were regulated less strongly in 2016 compared to 1996. The international comparison of labour and product market regulation shows that Switzerland had a moderate level of regulation in 2016. Whilst the Anglo-Saxon countries have an even more liberal market structure, regulation of the labour market in Spain, Italy and France is essentially higher than in Switzerland.

## BAK Taxation Index

Taxation of companies and highly qualified workforce, ø 2003-2019



## Competitive taxation system

Taxation is one of the most important factors in international competition for business locations. This is because the tax system of an area is extremely important for both companies and employees alike. Switzerland and its areas have a competitive tax system.

The Basel Region is attractive based on an international comparison of taxation systems. Both corporate taxation and the taxation of highly qualified employees are lower compared to other international life sciences locations.

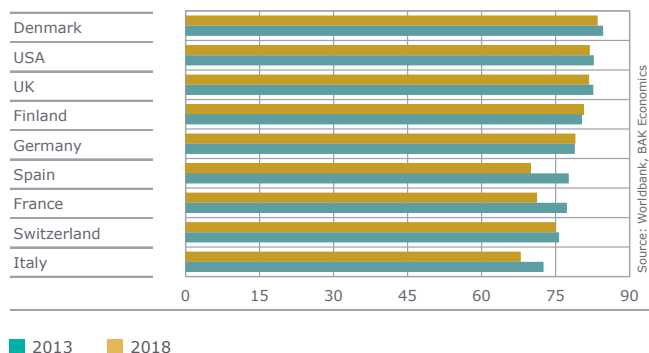
### Measurement of taxation (Taxation Index)

Company taxation including all indirect company taxes and/or for a highly qualified employee earning 100,000 euros after tax.

<sup>3</sup> Basel Region without districts

## Doing Business Index

Maximum: Index 100, 2013 and 2018



## Average regulatory environment for business purposes

In 2018, Switzerland ranked 28<sup>th</sup><sup>4</sup> in the Doing Business Index and was therefore in the middle tier of high-earning OECD countries. In terms of a European comparison, Switzerland is close to the Benelux countries, the Netherlands and Belgium, but cannot compete with the Nordic countries and the larger economies such as the United Kingdom and Germany. While Switzerland ranks among the top 20 countries in terms of access to electricity, property rights and tax regime, its position is much lower when it comes to framework conditions for investor protection and business start-ups.

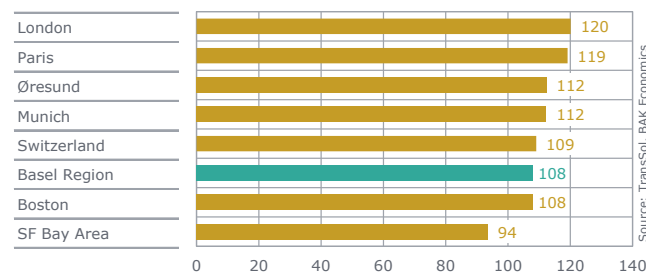
### Doing Business Index

The index ranks economies according to their ease of doing business. The higher the ranking, the more business-friendly the regulatory conditions are in terms of starting and operating a local firm.

<sup>4</sup> Source: The World Bank, 2018

## Global Accessibility

Index (100 = ø of all areas inspected 2002), 2018



## Good connections

Accessibility of production locations and markets plays a major role when choosing a business location. As various corporate processes often take place in different locations with growing globalisation, international networking is particularly important.

In the Global Accessibility Index, the Basel Region ranks with 108 points behind other international life sciences hubs. However, it has good international connections thanks to its proximity to France and Germany, and enjoys excellent access to an important freight traffic route with the Swiss Rhine ports.

### Measurement of accessibility

Indexed value that quantifies the global accessibility of a region. It reflects the outbound accessibility from a region to locations in the rest of the world.





## Actelion

Actelion Pharmaceuticals Ltd is part of the Janssen pharmaceutical companies of Johnson & Johnson and is the world leader in pulmonary arterial hypertension (PAH). The PAH portfolio covers the disease spectrum of WHO Functional Class II to IV and includes drugs for oral, inhaled and intravenous treatment of this progressive, life-threatening rare disease. Janssen has added pulmonary hypertension as a sixth therapeutic area of focus to expand Actelion's leadership position in this important disease area.

[www.actelion.com](http://www.actelion.com)



## Bayer Location Basel

Bayer is one of the leading life sciences companies worldwide. For more than 150 years we have been growing through research, development and innovation in the fields of health care and nutrition.

The number of people is growing steadily, and they are getting older and older. We all want to stay healthy and have enough to eat; a major challenge for the global community. For us at Bayer, it is motivation and incentive to be passionately committed to the health and nutrition of people. We work every day to put our knowledge and skills at the service of people: by developing and making available high-quality products that help people improve their lives a little. That is the essence of what we do. We call it: Science For A Better Life.

In Switzerland, Bayer employs over 1,600 people in Basel, Zurich, Muttentz and Zollikofen.

[www.bayer.ch](http://www.bayer.ch)



### **Boehringer Ingelheim**

Boehringer Ingelheim is a group that maintains global operations with 143 group companies in 50 countries and employs over 45,600 people. Boehringer Ingelheim employs around 100 people in Switzerland and is active in the fields of human pharmaceuticals and animal health. The family-owned company, which was created in 1885, has the following key areas, namely cardiometabolic diseases, diabetes and respiratory tract diseases, cancer, central nervous system disorders and immunology.

[www.boehringer-ingenheim.ch](http://www.boehringer-ingenheim.ch)



### **Novartis**

Novartis is a global company with Swiss roots going back more than 150 years. As a leading global pharmaceutical company, we use scientific innovation and digital technologies to develop breakthrough treatments in areas of high unmet medical need. Our purpose is to reimagine medicine to improve and extend people's lives. Novartis is active in more than 140 countries with the Group headquarters in Switzerland. Worldwide 109,000 associates work for Novartis of which about 12,200 are based in Switzerland. Novartis has eight locations in Switzerland: Basel BS, Schweizerhalle BL, Stein AG, Freiburg FR, Geneva GE, Locarno TI, Rotkreuz ZG and Zurich ZH. The Novartis campus in Basel is one of our most important research sites: Scientists from all over the world are engaged in research here on innovative medicines and therapies.

[www.novartis.ch](http://www.novartis.ch)



### **Roche**

Roche is one of the world's leading research-based healthcare companies with two strong core businesses: pharmaceuticals and diagnostics as well as an expertise in the field of health data. The Roche Group, with headquarters in Basel, operates in over 100 countries and had over 97,000 employees worldwide in 2019. Roche is the world's biggest Biotech company supplying targeted medicines for oncology, immunology, infectious diseases, ophthalmology and central nervous system disorders. Basel/Kaiseraugst is one of the largest sites worldwide with over 10,000 employees from more than 90 nations. Not only is the corporate management located here but also all of the global functions. Roche Pharma (Switzerland) Ltd in Basel with its approximately 170 employees is responsible for marketing & sales, medical affairs, registration and quality assurance of Roche's medicines in Switzerland. Roche is also one of the largest training companies in Switzerland with 420 apprentices in 14 different professions.

[www.roche.ch](http://www.roche.ch)

ETH	Swiss Federal Institute of Technology
GDP	Gross Domestic Product
GVA	Gross Value Added
ISIC	International Standard Industrial Classification of All Economic Activities
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
SFSO	Swiss Federal Statistical Office

## Information on areas

Boston	Boston-Cambridge-Newton
Munich	Munich Region
SF Bay Area	San Francisco Bay Area

## Demarcation of the life sciences industry

The definition of the life sciences industry used in this publication includes the following ISIC branches: Pharmaceutical Industry (21), Electronic Medical Technology (26.6), Orthopaedic Medical Technology (32.5) and Research and Development on Biotechnology (72.11).

## Publishing information

Published by:

Interpharma

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The content of the publication can also be found on the Interpharma website. Graphics from the latest version may be downloaded for your free use provided the source is quoted.

Print: Schwabenprint GmbH, Stuttgart

Deutsche Originalversion verfügbar

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