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# Japan

## Biotechnology market



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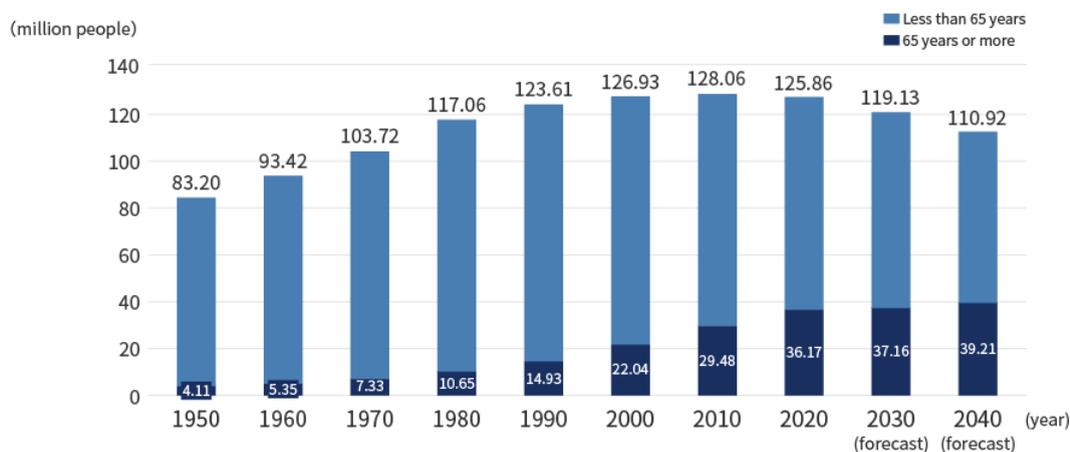
## SUMMARY

- Introduction
- Market overview
- Key areas
- Opportunities for Swiss exporters
- How to enter the Japanese biotech market ?
- Conclusion
- References

## INTRODUCTION

Japan has been a **pioneer country in the biotechnology market**, realizing early its potential and the key role it holds in research and development. Since the 1970s, the Japanese Ministry of Economy, Trade and Industry (METI) has made the development of biotechnology one of its priorities, allowing it to become a fast-growing sector in Japan. Since then, the biotechnology sector has grown steadily to reach **5.2 trillion yen in 2020** (36 billion Swiss francs), which indicates a 70% increase over the last 5 years. This market is expected to continue its growth and reach 15 trillion yen (105 billion Swiss francs) by 2030 according to the National Institute of Technology and Evaluations, mainly due to the aging of the population and the increased interest in improving the healthcare system in Japan.

Figure 1 Trends of the elderly population



(Source) Created based on data from "Statistical Look at the Elderly in Japan" by the Ministry of Internal Affairs and Communications

## MARKET OVERVIEW

Over the years, Japan has done **massive investments in R&D** efforts to support innovation. Indeed, investment in R&D spending is major and represents 3.35% of Japan's GDP (compared to 2.7% in the United States and 2.1% in France) and the total R&D spending was estimated at 19.74 trillion yen (139 billion Swiss francs) in 2021.

In 2021, Japan was the **third country in the world with most the patent grants** with 184,372 patents granted. Furthermore, Japan has 5.6 researchers per 1,000 inhabitants (compared to 4.7 in the US and 3.3 in France). In 2017, science and technology indicators showed that R&D spending and the number of researchers ranked Japan 3rd after the US and China. Interestingly, in the 21st century, Japan is also the country with the highest number of Nobel Prize winners in Life Sciences.

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Within the biotechnology market, the **pharmaceutical biotechnology industry covers more than 50% of the market share** (services and equipment included) and in 2018, there were 659 biotech ventures in Japan. Recently, the healthcare market has been experiencing great growth due to a new healthcare reform and the impulse of the Pharmaceuticals and Medical Devices Agency. However, despite a large medical database (63% of all Japanese patients' medical records are digitized) the Japanese healthcare system is facing a serious shortage of healthcare workers. In response to this issue, the development and usage of robots have been incentivized. Moreover, to reduce its expenses the Japanese Government seeks to promote preventive care and services as currently one-third of the expenditure of medical institutions is for the treatment of lifestyle diseases.

In Japan, the leading brands in the biopharmaceutical industry are **Takeda Pharmaceutical, Chugai Pharmaceutical, Astellas Pharma, Daiichi Sankyo, Eisai, and Otsuka Pharmaceutical**. Likewise, the prominent biotechnology associations are the Japan Bioindustry Association (JBA), playing an important role in terms of the promotion of biotechnology. Furthermore, another major association is the Japan Association of Bio-Industry Executives (JABEX), which is dedicated to uncovering the common needs of the industry and suggests policies to the Japanese government. Most of the members of JABEX are top executives from the bioindustry sector.

Finally, the main event for biotechnology industry actors in Japan is the **BioJapan Exhibition** held annually which presents an interesting opportunity for Swiss companies to engage with leaders in the Japanese biotechnology market. This year, the exhibition will take place **in Yokohama from October 11<sup>th</sup> to October 13<sup>th</sup>, 2023**.

## KEY AREAS

In 2021, the former Digital Deputy Director and previous head of the Digital Agency of the Japanese Government Koichi Akaishi unveiled the Japanese government's strategy in the biotechnology sector. This plan involved support for company investment in the following sectors.

### Health sector

- **Biomedicines**

This new type of drug contains a therapeutic active substance produced by living organisms. In 2017, although biomedicines accounted for about 30% of all drug sales worldwide, they accounted for only 10% of sales in Japan. Nonetheless, this sector is growing beyond the search for new active proteins and is also looking at the development of new pharmaceutical formulations as well as new ways of administering medications. Currently, **about 70% of the approved biomedicines in Japan are supplied by foreign companies**, which underlines their importance to this market.

- **Regenerative medicine**

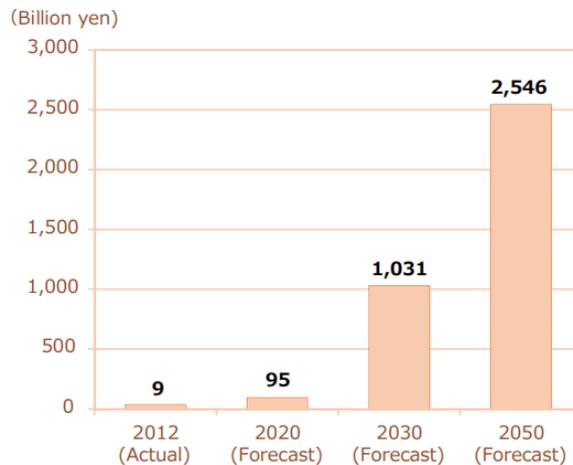
Regenerative medicine aims to treat human diseases by replacing damaged tissue cells with cells or tissues created from stem cells or modified biological materials. At the forefront of this sector is Dr. Shinya Yamanaka, who obtained a Nobel Prize in 2012 in the field of **stem cells**.

Growth forecasts for this sector show that the regenerative medicine market will be worth around **21 billion Swiss francs by 2050**. Innovation in this sector is supported by a recent revision of the landmark Pharmaceutical Law which facilitated a swift approval process for regenerative medicine-related products and investment by foreign companies through support funds.

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Correspondingly, in February 2019, **Japan's Ministry of Health approved the world's first clinical trial of human induced pluripotent stem (iPS) cells** to treat spinal cord injuries.

*Market forecast for regenerative medicine in Japan*



- **Gene therapy**

Gene therapy is a technique that involves delivering genes into an individual's cells or tissues to treat a condition.

In August 2019, the Japanese National Health Insurance board **approved for the first time an insurance system that covers a gene therapy drug**. Consequently, collatogene which is used in the treatment of patients with clogged arteries is now part of the list of drugs covered by the Japanese healthcare system.

- **Digital medicine**

Digital medicine is the combination of medicine and digital technology. It includes, among other, technological innovation in hospital management as well as the use of health monitoring applications.

Although Japan is a major market in the healthcare field, it has been **slow to adopt digital transformation in healthcare**. With the growing challenge of an aging population, many healthcare reform measures have been proposed in Japan, including the **wider use of telemedicine and the use of artificial intelligence** in healthcare.

- **Biomanufacturing systems (industrial products)**

The medical device market accounted for 49 billion Swiss francs in 2018 and is expected to reach more than **66 billion Swiss francs by 2025**, representing a growth rate of 35%. Several factors should support this growth such as favorable legislation, innovative research, and international collaborations. For instance, companies such as Olympus Medical Systems or MC Medicals provide many types of **medical devices used during surgeries**. Medical devices also encompass **diagnostic devices** such as MRI machines. Companies such as Hitachi Medical, GE Healthcare Japan, or Philips are major actors in this sector.

Moreover, partnerships between European and Japanese companies already exist in this sector. For example, in 2018, the German company Karl Storz partnered with Medicaoid Corporation to develop robot-assisted surgery systems.

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## Other sectors

- **High-performance biomaterials**

Biomaterials are non-viable **materials that are implanted to replace or repair tissue**. These biomaterials can be found in nature or created in a laboratory and have the **ability to interact with the human body**.

An example in this sector would be the collaboration between The North Face and Japanese biotech startup Spiber to produce a textile fiber from fermented bacteria in order to manufacture and sell the first parka made from spider silk yarn.

- **Bioplastics**

Bioplastics are **bio-based materials**, i.e. derived from renewable and/or biodegradable resources. For instance, in 2019, the Japanese company Seven-Eleven switched to biosourced plastics made from plant-derived materials in order to reduce their carbon dioxide emissions.

- **Sustainable production systems in the agricultural sector**

This sector revolves around the creation of **non-polluting** services, goods, or systems that **conserve energy and natural resources** while remaining economically viable.

- **Organic waste and wastewater treatment**

**Japan's intense growth leads to mass production which results in a large amount of waste**. In response to this issue, a number of companies are working to create innovative solutions to tackle this problem. For example, in 2017, Sekisui Chemical in partnership with US biotechnology leader LanzaTech has started exploring new possibilities by producing ethanol from waste through the fermentation process. Their goal is to produce raw materials locally and in an eco-responsible manner using local waste materials.

- **Large-scale wooden buildings**

In Japan, wood is an abundant resource but seldom used due to restrictive laws and fire risks. However, in 2010 the Ministries in charge of construction (MLIT) and forestry (MAFF) adopted different laws promoting the use of wood. Since then, many measures have been taken to **use bio-sourced materials in construction**.

## OPPORTUNITIES FOR SWISS EXPORTERS

The Japanese pharmaceutical market offers Swiss SMEs and start-ups **a considerable number of entry opportunities**, particularly in the field of **innovative biopharmaceuticals**, which have a unique selling proposition. Starting in 2009 with the Japan-Switzerland Economic Partnership Agreement and in 2019 with the Japan-EU Partnership Agreement, there has been a substantial standardization of pharmaceutical categorization and facilitation of European and Japanese certification rules, thus facilitating exports in general.

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Due to the aging population problem in Japan and the shortage of healthcare workers, health tech is strongly expanding. Japan is actually in the process of developing **new healthcare solutions to meet the aging of the Japanese population problem as well as public policies aimed at reducing social security expenditures.**

Among the areas with the most opportunities for European companies, there is **personalized medicine** or customized treatment for patients and in particular molecularly targeted drugs. Then, **health promotion equipment** and **services encouraging personal initiative from patients** such as health monitoring equipment. Finally, the Ministry of Health, Labour and Wealth is working on the realization of a comprehensive community care system that will need new **information-sharing technology.**

## HOW TO ENTER THE JAPANESE BIOTECH MARKET ?

The Japanese market is a **mature market with particularly demanding customers and many established suppliers.** To examine the market niche, which might be reached with a new product, it is a good idea to first network at trade fairs with strong Japanese participation (e.g., BIO International Convention, BIO-Europe, Analytica) or even better at Japanese trade fairs, such as **BioJapan** where there is a **SWISS Pavilion** to obtain first-hand feedback from the market. Documents about products and services should preferably be already translated in Japanese (Swiss Business Hub Japan will help). Participation at such trade fairs will also provide a good opportunity to talk to Japanese license scouts as many Japanese companies involved in biotech are present as exhibitors or visitors. Consequently, participation and exhibition in such trade fairs is highly recommended.

## CONCLUSION

To conclude, Japan is a prime market for biotechnology. Indeed, its aging population as well as its labor shortage also in the healthcare sector make Japan a country where biotechnologies will play a major role in the future. Innovation is of high priority in medical biotechnology, agro-food, as well as industrial and environmental biotechnology. Swiss exporters with innovative technologies/clear USPs will find exciting opportunities in the Japanese market. Compared to other markets more familiar to Swiss companies, Japan is however unique and requires patience to step in and long-term commitment to become successful.

In addition to regulatory requirements, language, business culture, customer support and expectations regarding after-sales and product quality are quite different and should be taken into account when setting up a market-entry strategy.

A close partnership with a large domestic actor looking to integrate a new technology or provide a new product or service is a good way to overcome typical local differences. A joint venture, a joint development agreement, a licensing agreement or finding a local distributor are options to consider in a first step. Setting up a subsidiary should be part of the long-term goals.

This factsheet is intended to provide Swiss small and medium sized enterprises with first basic information on the Japanese market.

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Swiss Business Hub Japan offers customized solutions to Swiss exporters. As this factsheet provides only very basic information on the Japanese biotechnology market in general, we invite Swiss exporters to talk to us to discuss their individual goals and strategies in depth. The SBHJ maintains a vast network. We open doors to Japanese businesses.

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