

2019

Introduction to Biotechnology and Pharmaceutical Industries

in Taiwan (R.O.C.)





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Bravo Taiwan

Why Taiwan



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Preface

The biotech industry is based on innovation, R&D, incorporates interdisciplinary technologies to develop products, and serves with high added value. The innovation and advancement of technologies render the biotech industry critical to sustainable economic development.



Taiwan began promoting the biotech and pharmaceutical industries in the 1980s. Relevant policies and measures have been successively approved and implemented,

creating a favorable environment for the development of these industries. In 2016, the biotech and pharmaceutical industries were included in the "Five plus two" innovative industries plan, and Biomedical Industry Innovation Program was also approved and implemented, with the aim of strengthening the growth capacity and international competitiveness of these industries.

Via collaboration between industry practitioners and the government, Taiwan's biotech and pharmaceutical industries enjoyed success to become leading our national industries and prominent players in the global arena. Revenue in the biotech and pharmaceutical industries in 2017 totaled NT\$325 billion, with a growth rate of 3.17%. The amount of private investment in these industries that year was NT\$52.616 billion, 3.3% higher than that in 2016. By June 2018, the number of listed and over-the-counter biotech and pharmaceutical companies in Taiwan was 117, whereas the number submitting applications for listed or over-the-counter status was 64. In addition, the number of R&D-based biotech and pharmaceutical companies that perform clinical trials on new drugs or develop characteristic products is increasing substantially. These

companies raise funds for product R&D and company operations through diverse financing channels in the capital market.

Through relevant policies and connections with both establishing and emerging biotech markets worldwide, Taiwan's biotech industry is rapidly penetrating the international market. Various investment incentives from the Taiwanese government and a favorable investment environment attract foreign companies to invest here, which in turn prompts both domestic and foreign private companies to engage in biotech and pharmaceutical R&D as well as the related business operations and international cooperation. Developed industrial clusters, a favorable environment, and collaboration among the industry, government, and academia are all accelerating the development of the biotech and pharmaceutical industries, making Taiwan a major player for high-quality R&D and innovation in these fields.

Richard Ley

Director General
Industrial Development Bureau, MOEA
October, 2018



General Environment

Taiwan is located at the southernmost point of Northeast Asia in the center of the East Asian island arc and on the western edge of the Pacific Ocean, with Japan and the Ryukyu Islands to its north and the Philippines to its south. Taiwan is not only a crucial Asia-Pacific trade and logistics hub but also a major strategic base. Its 36,000 km² area encompasses diverse natural resources and rich cultures.

Capital: Taipei

Land Area: 36,000 km² Population: 23.50 million

Primary Ethnic Groups: Han Chinese, Aboriginal Groups, and New Immigrants Languages: Mandarin, Taiwanese, Hokkien, Hakka, and Indigenous Languages Religions/Belief Systems: Buddhism, Taoism, Folk Beliefs, Christianity, and Islam

Pleasant Climate

Taiwan remains warm throughout the year, with greater temperature variations in spring and winter than in summer or fall. The average annual temperature is 22 °C, with lows typically hovering at approximately 12 – 17 °C. The south is generally warmer than the north, with average January temperatures of approximately 16 °C in Taipei and 20 °C in Kaohsiung.

Stable Political System

Taiwan is currently a member of several international economic organizations, including the World Trade Organization, the Asia-Pacific Economic Cooperation group, and the Asian Development Bank, and engages in regular trade and exchanges with over 140 countries worldwide. As the global economy becomes more liberal and develops more rapidly, Taiwan is continually adjusting its industrial strategies, easing regulations, removing investment restrictions, and reinforcing intellectual property measures in line with international trends.

Major Economic Indicators, Taiwan 2017



GDP: US\$572.7 billion

GDP per Capita: US\$24,318

Economic Growth: 2.89%

Foreign Exchange Reserves: US\$451.5 billion



Export Value: US\$317.24 billion

Import Value: US\$259.26 billion



Unemployment: 3.72% (end of 2017)

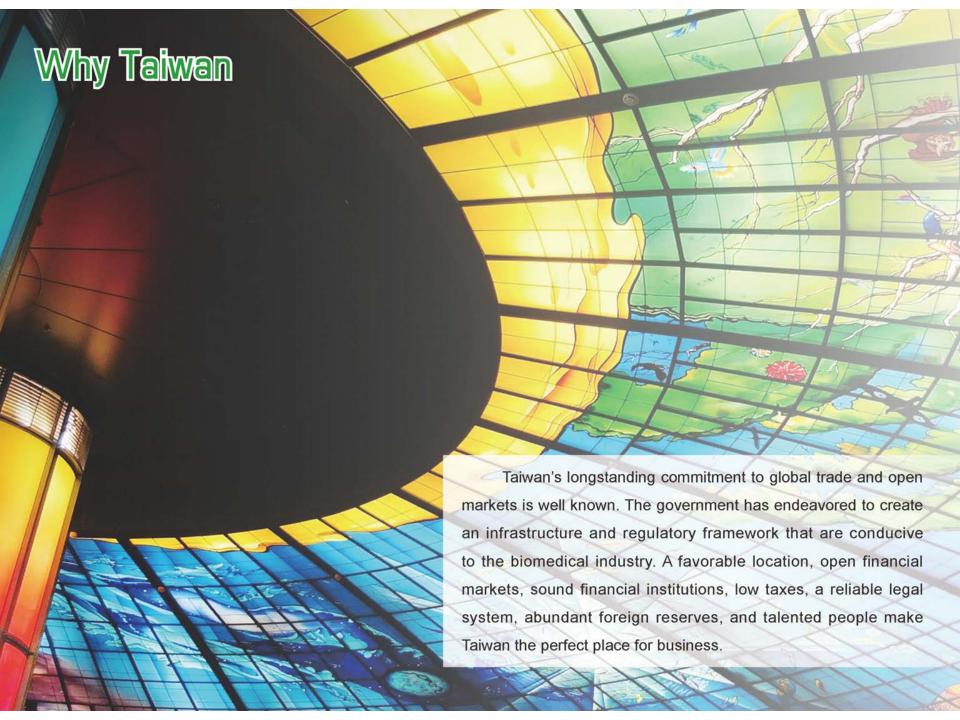
Labor Participation Rate: 58.92 (end of 2018.06)

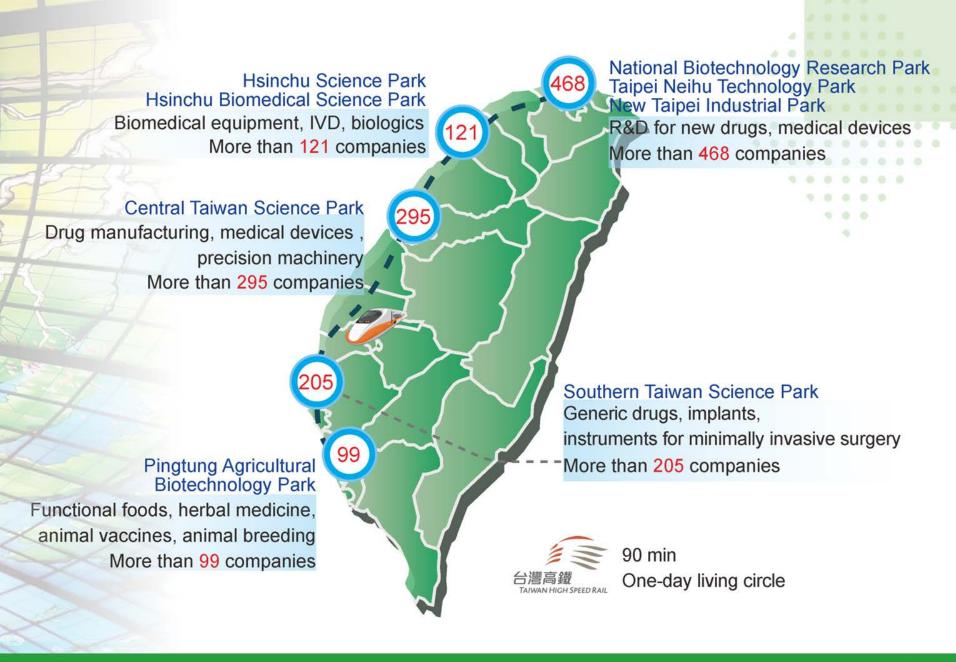
*Sources: National Statistics, R.O.C. (Taiwan)

Asia-Pacific Hub

Taiwan serves as an Asia-Pacific transportation hub connecting Northeast and Southeast Asia. Its first-rate international airports enable convenient travel averaging only 2.55 hours from Taipei to six major western Pacific cities (Tokyo, Seoul, Beijing, Shanghai, Hong Kong, and Singapore), and world-class Kaohsiung Port facilitates goods shipment averaging only 56 hours to five major regional ports (Manila, Singapore, Hong Kong, Shanghai, and Tokyo). Taiwan not only forms a crucial link for Europe, America, and Japan with emerging Asia-Pacific markets but also is a preferred location for multinationals establishing their regional headquarters.







8 Investment Advantages

Asia-Pacific Medical Hub

Taiwan serves as an Asia-Pacific transportation hub connecting Northeast and Southeast Asia.



Strong Competitiveness

Taiwan's economy power is robust and globally renowned.



Comprehensive Bio-industrial Clusters

Taiwan has built up biotech and medical industry clusters based on local characteristics and geographical environment.



Excellent Labor Force

Taiwan's excellent labor force is retained by its universal education system, which produces more than 300,000 new graduates each year at the college level or above.





Taiwan has a dense, comprehensive transportation network and relatively inexpensive water, electricity, and telecommunications utilities that approach 100% penetration.

Reliable Legal Environment

Taiwan has a mature and well-established legal system. Additionally, regulations for commercialization are timely adjusted in line with changing international norms, and foreign investors enjoy substantial protection under the Statute for Investment by Foreign Nationals.

Well-Protected Intellectual Properties

Regarding protection for intellectual properties, Taiwan adheres to international treaties and norms. The relevant policies and laws are open and transparent in Taiwan.

Friendly towards Fundraising and Financing

Abundant capital, stable exchange rates, and relatively low interest rates and capital costs make Taiwan a friendly environment for fundraising and financing.





In the 2017 Pharmaceutical Research and Manufacturers of America (PhrMA) evaluation, Taiwan ranked 3rd among 2 emerging countries.

The **Economist**

INTELLIGENCE UNIT

The Economist Intelligence Unit forecasts Taiwan's business environment to be 14th best in the world during the 2014-2018 period.



In the Global Competitiveness Report 2017-2018 issued by the World Economic Forum (WEF), Taiwan ranks 15th among 137 economies and 5th in the Asia-Pacific.



In the World Bank's "Doing Business 2018" report, Taiwan finished 15th out of 190 economies for ease of doing business.



In the World Competitiveness Ranking 2018 report by the International Institute for Management Development(IMD), Taiwan's competitiveness ranks 17th out of 61 countries and 4th in the Asia-Pacific.

Taiwan's Advantages

- Abundant biotech personnel familiar with the European, US, and Asian markets.
- Active capital markets and convenient fundraising channels.
- One-Stop Service Window for the biomedical industry (Biotechnology and Pharmaceutical Industries Promotion Office (BPIPO), MOEA).
- Drug review regulations conforming to international standards and pharmaceutical processes in accordance with internationally accepted PIC/S GMP specifications.
- Taiwan Clinical Trial Consortium (TCTC), working to promote Taiwan as an Asia-Pacific regional leader in new drug and clinical trials and facilitate development and commercialization of international and domestic biomedical products.

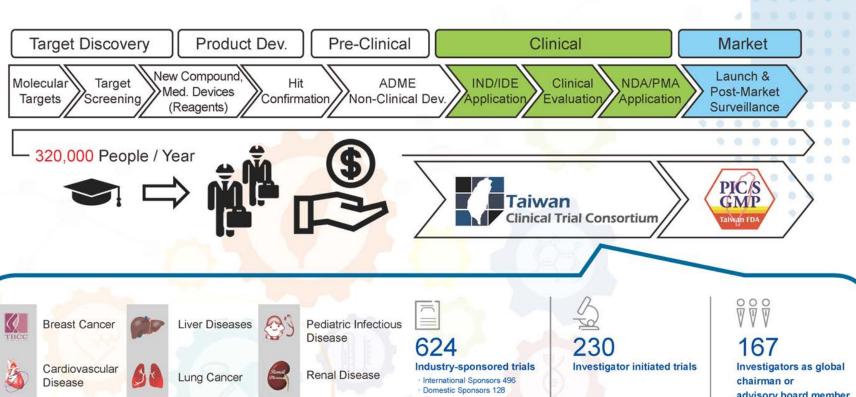












· 12 Disease-specific clinical trial consortiums

Gastrointestinal

Disease &

Infectious

Disease

Helicobacter

· 281 Highly motivated and devoting investigators

Mental

Disorders

Oncology

Phase I

Stroke

UGI Cancer

Publications

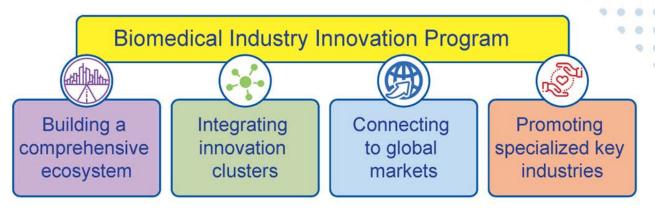
73.3% The achievement rate of site initiation

advisory board member

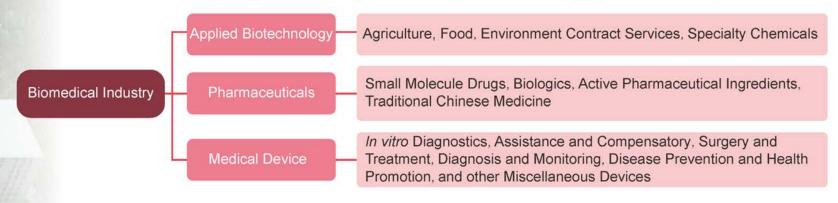
260,767 Subjects recruited



The Taiwanese government has designated biomedicine as one of the "5+2" innovative industries for priority development. The Biomedical Industry Innovation Program aims to make Taiwan an Asia-Pacific biomedical R&D hub, focusing on "local global, and future links" and comprising four action plans: building a comprehensive ecosystem, integrating innovation clusters, connecting global market resources, and promoting specialized key industries.

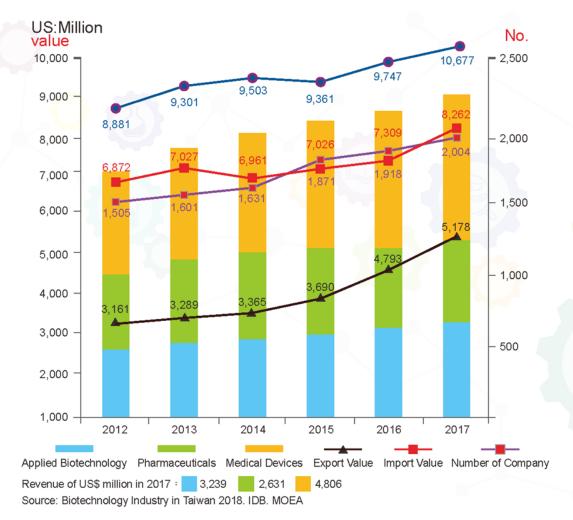


Taiwan's biomedical industry comprises three major sectors: applied biotechnology, pharmaceuticals, and medical devices.



In 2017, revenue in Taiwan's biotechnology and pharmaceutical industries amounted to US\$10,677 million, representing a growth of approximately 3% over that in 2016 (US\$9,747 million).

Medical devices represent the largest subsector in Taiwan's biotech and pharmaceutical industries, with the revenue of US\$4,806 million in 2017, or 45% of the total revenue in these industries. The export value increased to US\$5, 178 million in 2017 from US\$4.793 million in 2016, and the import value similarly increased from US\$7,337 million (2016) to US\$8,262 million (2017).

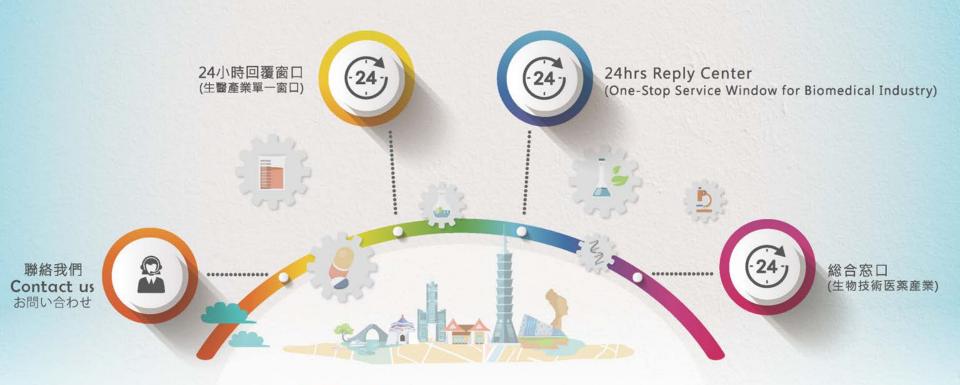




The public offering market represents a platform for the government, companies, and investors to raise funds and invest directly. Taiwan's negotiable securities market is divided into over-the-counter and exchange markets according to review conditions. Companies interested in becoming listed or nonpublic microenterprises intending to engage in innovative and creative undertakings can raise funds through the emerging stock market or the Go Incubation Board for Startup and Acceleration Firms (GISA) stock market by underwriting firms familiar with the relevant operations and regulations.

As of June 2018, Taiwan had 117 listed biotech and medical care companies, with a combined value of US\$27.29 billion. In addition, 64 and 19 companies have registered on the emerging and GISA stock markets, respectively. Through diverse capital market fundraising channels for operating and R&D funds, the value of Taiwan's public capital market continues to increase.

Best Partner for the Biomedical Industry: One-Stop Service Window

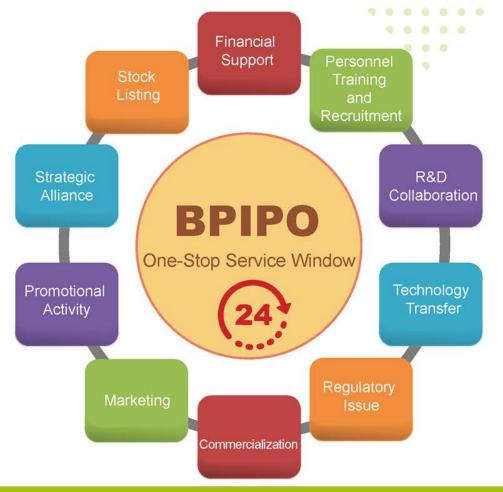




Whatever you are seeking in the biomedical industry, the BPIPO's One-Stop Service Window is here to help.

The Biotechnology and Pharmaceutical Industries Promotion Office (BPIPO) is the single contact window for Taiwan's biomedical industry. It is an one-stop service window designed to assist companies in the biomedical industries worldwide. The assistances provided by BPIPO include: financial support, investment promotion, stock listing, personnel training and recruitment, R&D collaboration, technology transfer, commercialization, marketing, promotion activities, strategic alliances, and others.

Over the past few years, BPIPO has helped Taiwan's biomedical industry to obtain investments of more than US\$1,500 million per year. BPIPO has also helped set up more than three innovative companies per year. The One-Stop Service Window has helped more than 100 companies per year.



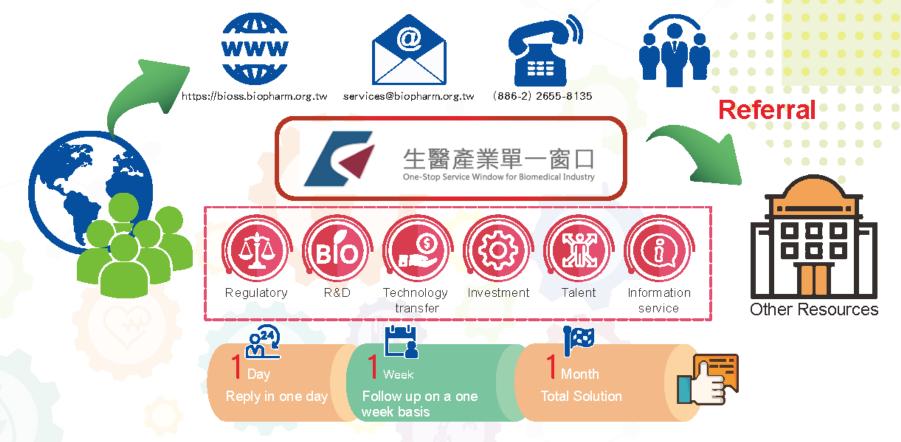
Responding to private sector's consultation needs, the One-Stop Service Window for the biomedical industry provides a convenient, comprehensive, and interactive platform connecting the professional resources and service capacities of various ministries through webpages, email, and social media. This platform employs project management methods and provides 24-hour support. By compiling information and providing customized follow-up, the BPIPO assists the biomedical industry in overcoming investment and operational obstacles. Multilingual website interfaces are gradually being added to expand services for international vendors, who are thus able to obtain information on the status of Taiwan's biotechnology industry and related investment incentives and engage in investment and business cooperation.

We provide the following services:

- Consultation and referral services such as assistance for regulation and inspection units, technology transfer and commercialization, R&D and practical application, cooperation and investment promotion, and market information.
- Consultation on development policies, incentives, and applications.
- 🕒 Assisting biotech and medical care companies in investing, fundraising, and conducting investment briefings.
- Information pertaining to land acquisition and the setting up.



BPIPO QR Code



One-Stop Service Window for Biomedical Industry Biotechnology and Pharmaceutical Industries Promotion (BPIPO)

https://www.biopharm.org.tw

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MOEA Industrial Development Bureau, MOEA

Formulating industrial development policies, strategies, and measures; promoting programs related to industrial upgrading, development and management of industrial zones; formulating fiscal and financial measures for industrial development, industrial pollution control, industrial safety counseling and factory management, general industrial administration.

- **(886-2)** 2754-1255
- www.moeaidb.gov.tw
- service@moeaidb.gov.tw

★ Department of Industrial Technology, MOEA

Formulating industrial technology development policies; assigning government high-tech project budgets to research institutions to implement and promote industrial development with the goal of establishing emerging high-tech industries and accelerating industrial upgrading.

- **(886-2)** 2321-2200
- www.moea.gov.tw/MNS/doit e/home/Home.aspx

★ Biotechnology & Pharmaceutical Industries Promotion Office, MOEA

Acting as the single contact window for domestic and international biomedical-related industries; acting as One-Stop Service Window, promoting industrial investment and integration; assisting biotech, pharmaceutical, medical device industry development and upgrade.

- **(886-2)** 2655-8135
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