Basic Information

Basic Information on the Pharmaceutical Industry

Overview of Domestic Pharmaceutical Market and NHI Drug Prices

Trends in National Medical Expenses

Without medical system reforms, Japan's national medical expenses will increase at an annual rate of approximately 2 to 4 percent going forward. In fiscal 2017 (the year ended March 2018), national medical expenses[1] totaled ¥42.2 trillion, a ¥0.9 trillion or 2.3 percent increase from the previous year. The accelerating pace of aging of Japan's society presents serious challenges to efficiently managing the increase in medical expenses for the elderly.

1. Source: Trends of recent medical expenditure (FY 2017) by Ministry of Health, Labour and Welfare

Promotion of the Use of Generics

The Japanese government is promoting the use of generics with the primary objective of reducing the cost burden on patients and improving the finances of the health insurance system. Various measures have been carried out under the action program announced in October 2007 to promote the worry-free use of generics. In April 2013, the new "Roadmap to Further Promote the Use of Generics" was formulated. A Cabinet decision in June 2017 set the new goal of raising the volume market share of generics, which was 72.6 percent[2] as of September 2018, to 80 percent by the end of September 2020. The government is also aiming to double the number of biosimilars by the end of March 2021.

2. Preliminary results of the Drug Price Survey

National Health Insurance (NHI) Drug Price Revision

The Ministry of Health, Labour and Welfare (MHLW) generally reviews drug reimbursement prices every two years and sets new standard prices (reimbursement prices) so that the official prices of pharmaceuticals prescribed under the health insurance system approximate their actual market price. MHLW does this by investigating the prices and volumes of all prescription drug transactions during a given period. In fiscal 2018 (the year ending March 2019), drug reimbursement prices are set to decline by 1.65 percent overall on a medical expense basis and 7.48 percent on a reimbursement price basis (-6.17 percent from revision of actual market prices and -1.31 percent from fundamental reform of the drug pricing system).

A special revision of NHI drug reimbursement prices will be implemented in conjunction with the increase in the consumption tax rate in October 2019. In its fiscal 2019 budget, the Japanese government has decided to reduce reimbursement prices by 0.51 percent on a government spending basis (+0.42 percent to reflect the consumption tax and a -0.93 percent revision based on actual market prices and other factors).

NHI Drug Price Revision Rate (%)

	2008	2010	2012	2014*	2016	2018
Industry Average	(5.2)	(6.5)	(6.25)	(2.65)	(7.8)	(7.48)
Chugai	(7.2)	(6.8)	(6.0)	0.8	(5.5)	(6.7)

*Includes provision for increase in consumption tax
Source: Chugai data

Repricing Based on Market Expansion

Under this repricing rule introduced in 1994, drugs priced by the cost calculation method with annual sales exceeding ¥10.0 billion and more than 10 times the original forecast at the time of price revision, or with annual sales exceeding ¥15.0 billion and more than two times the original forecast, are subject to a price reduction of up to 25.0 percent. Drugs priced by methods other than the cost calculation method (including the similar efficacy comparison method) with annual sales exceeding ¥15.0 billion and more than two times the original forecast at the time of the price revision are subject to a price reduction of up to 15.0 percent. In addition,

the prices of drugs that have pharmacological action similar to a drug subject to this repricing rule are reduced by the same rate. In the NHI drug pricing system fundamental reforms of fiscal 2018, the NHI listing of new drugs that takes place four times a year will be used as an opportunity for repricing of drugs with annual sales exceeding ¥35.0 billion. The purpose of this change is to respond more quickly when sales expand rapidly due to an additional indication or other reasons.

Special Market-Expansion Repricing

In the reforms to the drug pricing system in fiscal 2016, an additional repricing rule for drugs with very high annual sales was introduced as a special measure from the standpoint of balancing reward for innovation with the sustainability of the National Health Insurance system. This rule lowers prices by up to 25.0 percent for drugs with annual sales of ¥100.0-150.0 billion and more than 1.5 times the original forecast, and lowers prices by up to 50.0 percent for drugs with annual sales exceeding ¥150.0 billion and more than 1.3 times the original forecast. In addition, the prices of drugs that have pharmacological action similar to a drug subject to the special repricing rule and were comparator drugs at the time of the NHI price listing are reduced by the same rate. In 2016, four active ingredients and six products, including Avastin, were subject to the additional repricing rule. In fiscal 2018, two active ingredients and four products were subject to the rule. In the NHI drug pricing system fundamental reforms of fiscal 2018, it was decided to use the NHI listing of new drugs that takes place four times a year as an opportunity for repricing under this scheme.

Premium to Promote the Development of New Drugs and Eliminate Off-Label Use

As part of the NHI drug pricing system reforms of fiscal 2010 (the year ended March 2011), a new pricing scheme was implemented on a trial basis to promote the creation of innovative medical products and solve the drug lag[3] problem. In this scheme, at the time of the NHI drug price revisions, prices are maintained on drugs for which no generics are available (provided that they have been in the NHI price list for no more than 15 years), and which satisfy certain conditions.

This premium pricing for new drugs was continued on a trial basis in subsequent NHI drug pricing system reforms. However, in the NHI drug pricing system fundamental reforms of fiscal 2018, the decision was made to revise the requirements for companies and products and list them in the drug repricing rules.

Companies that do not respond appropriately to development requests from MHLW will continue to be excluded from eligibility for premium pricing. In addition, indicators have been set for (A) creation of innovative drugs, (B) drug lag countermeasures, and (C) development of novel drugs ahead of other countries, and the pricing premiums may vary according to the level of achievement or fulfillment of these indicators. Healthcare-related ventures are expected to play an important role in the creation of innovative

Response to Requests from the MHLW Review Committee on Unapproved Drugs and Indications with High Medical Needs
(As of February 1, 2019)

Development request	Product	Indication	Development status
First development request	Xeloda	Advanced or recurrent gastric cancer	Approved in February 2011
	Tarceva	Advanced or recurrent pancreatic cancer	Approved in July 2011
	Avastin	Advanced or recurrent breast cancer	Approved in September 2011
	CellCept	Pediatric renal transplant	Approved in September 2011
	Herceptin	Q3W dosage metastatic breast cancer overexpressing HER2	Approved in November 2011
		Neoadjuvant breast cancer overexpressing HER2	
	Kytril	Gastrointestinal symptoms associated with radiotherapy	Approved in December 2011
	Pulmozyme	Improvement of pulmonary function in patients with cystic fibrosis	Approved in March 2012
	Bactramin	Treatment and prevention of pneumocystis pneumonia	Approved in August 2012
	Avastin	Ovarian cancer	Approved in November 2013
Second development request	Avastin	Recurrent glioblastoma	Approved in June 2013 (Malignant glioma)
	Herceptin	Q1W dosage postoperative adjuvant breast cancer overexpressing HER2	Approved in June 2013
	CellCept	Lupus nephritis	Approved in May 2016
Third development request	Tamiflu	Additional dosage for neonates and infants younger than 12 months	Approved in March 2017
	Xeloda	Adjuvant chemotherapy in rectal cancer	Approved in August 2016
	Avastin	Additional Q2W dosage and administration for ovarian cancer	Submitted company opinion and waiting for evaluation by committee
Fourth development request	Copegus	Improvement of viraemia associated with genotype 3 chronic hepatitis C or compensated cirrhosis related to hepatitis C when administered in combination with sofosbuvir	Approved in March 2017
	Xeloda	Neuroendocrine tumor	Submitted company opinion and waiting for evaluation by committee
	Avastin	Cerebral edema induced by radiation necrosis	Submitted company opinion and waiting for evaluation by committee
	Neutrogin	Combination therapy with chemotherapy including fludarabine for relapsed/refractory acute myeloid leukemia	Submitted company opinion and waiting for evaluation by committee

drugs, and will be evaluated accordingly, irrespective of the company indicators.

Regarding the product requirements, the percentage price difference requirement will be abolished, and the price premium will be limited to novel drugs during their patent period, and drugs that are truly innovative and useful. More specifically, it will be limited to orphan drugs, drugs for which development was publicly requested, drugs to which the premium was applied because of their usefulness at the time they were newly listed, and drugs with novel mechanisms of action that are innovative or useful (limited to the top three first-in-class drugs within three years from listing).

In fiscal 2018, 314 active ingredients and 560 products qualified for premium pricing (publicly announced).

Among new drugs subject to premium pricing, including those for which generics (including biosimilars) have been launched or 15 years have elapsed since their drug price listing, the cumulative amount of premium pricing is deducted from the NHI drug price in the subsequent initial drug price revision. Furthermore, a reduction or other adjustment due to the actual market price of the new drug during the fiscal year is made to the NHI drug price less the cumulative amount.

3. The inability of Japanese patients to gain access to global standard or most advanced treatments because the drugs are not developed in Japan

Solving the Drug Lag Problem

In January 2005, MHLW established the Investigational Committee for Usage of Unapproved Drugs as one means of helping solve the drug lag problem. The committee is charged with investigating the clinical necessity and the appropriateness of usage of drugs already approved in Europe and the United States, but not yet approved in Japan. The aim of these investigations is to promote the development of those drugs in Japan.

In February 2010, MHLW established the Review Committee on Unapproved Drugs and Indications with High Medical Needs. This committee evaluates the medical necessity of drugs and indications that are not yet approved in Japan and investigates matters such as the applicability of filings for approval based on evidence in the public domain. As a result of continuous efforts to strengthen the review function of the Pharmaceutical and Medical Devices Agency, an independent administrative institution responsible for reviewing drugs and medical devices for approval, the median total review time for new drugs in fiscal 2017 was 11.8 months. For new drug applications filed in Japan during fiscal 2017, the median review time was 0.2 years longer than that of the United States, which was smaller than in the average year.

Annual Drug Price Survey and Annual NHI Drug Price Revision

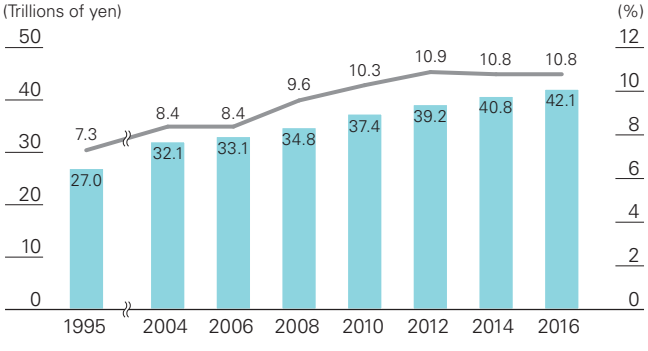
Due to the growing public financial burden of the current situation, in which drug prices are maintained for up to two years even if the market price declines, it was decided in the NHI drug pricing system fundamental reforms of fiscal 2018 that drug price surveys and drug price revisions will be carried out even in interim years when there would ordinarily be no price revisions. Fiscal 2018 and fiscal 2020 (the year ending March 2021) are price revision years even under the current system, and it is expected that a price revision will be implemented in conjunction with the consumption tax rate increase in October 2019. Therefore, the interim-year price revisions under the new rules will take place starting from fiscal 2021 (the year ending March 2022). The scope of items subject to interim-year price revisions will be deliberated by the Central Social Insurance Medical Council (Chuikyo) and other organizations.

Creation of a System for Cost-Effectiveness Assessments

A system of price adjustments based on cost-effectiveness assessments has been approved by Chuikyo, and will be implemented starting in April 2019. The system primarily applies to products that meet the requirements of the selection criteria at the time of their NHI price listing. Cost-effectiveness assessments will be conducted for a certain period after the listing, and the price will be adjusted according to the results. The extent of the price adjustment is the portion corresponding to the amount of the corrective premium for usefulness applied at the time of the drug's initial pricing (for products with a degree of disclosure under 50 percent, as calculated by the cost calculation method, the portion corresponding to operating profit is also subject to adjustment). Price adjustments will be made according to the incremental cost effectiveness ratio (ICER).[4] The corrective premium will be maintained if the ICER is less than ¥5 million (less than ¥7.5 million for anticancer agents), but will be reduced in stages by up to 90 percent if the ICER is ¥5 million or more. The price adjustment will be limited to 10-15 percent of the total drug price.

4. The ICER indicates the extent to which additional investment would be necessary to obtain the additional benefit from replacing existing drug (technology) B with new drug A.

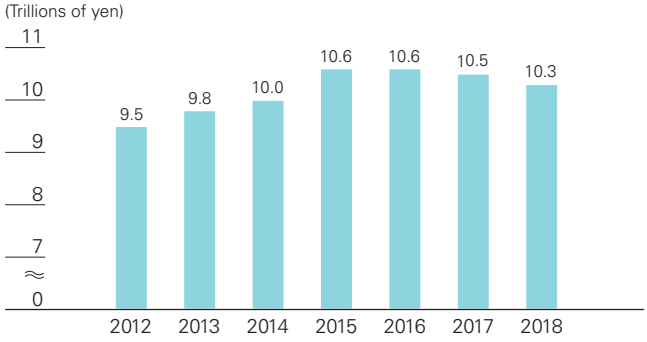
Trends of Medical Care Expenditure



Source: Overview of Estimates of National Medical Care Expenditure, FY2016 by Ministry of Health, Labour and Welfare

Note: National income is based on the actual results of the System of National Accounts announced by the Cabinet Office.

Prescription Drug Market



Oncology

Overview of Disease and Treatment Methods

Leading Cause of Death in Japan

Cancer has been the single most common cause of death in Japan since 1981. In 2017, 373,334 people[1] died of cancer, accounting for 27.9 percent[1] of all deaths in that year and the highest number since government surveys began in 1899.

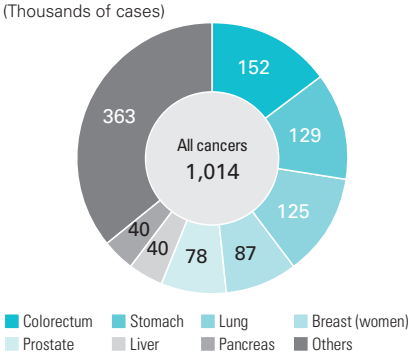
1. Source: Outline of Vital Statistics (2017) by Ministry of Health, Labour and Welfare

Establishment of the Basic Act for Anticancer Measures and Improvement in the Healthcare Environment

The Cancer Control Act was enacted in June 2006 to establish a system so that patients can receive appropriate treatment based on scientific knowledge regardless of the region in which they reside and with respect paid to their wishes, as well as to implement the Basic Plan to Promote Cancer Control Programs (the "Basic Plan"). Since the enactment of the Cancer Control Act, significant results have been obtained, including establishment of designated cancer hospitals and a reduction of the cancer mortality rate and improvement of the five-year survival rate owing to advances in cancer treatment. The goal of reducing the age-adjusted cancer mortality rate by 20 percent over the 10-year period from fiscal 2007 was judged difficult to achieve, and therefore, in December 2015, the Plan for Acceleration of Cancer Control Programs was formulated. This plan specified concrete measures that should be implemented intensively in a short period of time.

Projected Cancer Incidence (2018)

(Thousands of cases)



Source: National Cancer Center Cancer Information Service, "Cancer Registries/Statistics"

Note: Projections were performed with a model incorporating age, calendar year at diagnosis, and their interactions as independent variables, utilizing frequency of incidence of cancer by age bracket from Monitoring of Cancer Incidence in Japan (1975-2014 nationwide estimates) and cancer mortality figures from the Outline of Vital Statistics (1975-2016 estimates). The total may not add up because projections have been performed by cancer type and figures have been rounded.

Reference: *Japanese Journal of Clinical Oncology* 2014, 44: 36-41

In recent years, it has become apparent that new measures are necessary to fight rare cancers, difficult-to-treat cancers, childhood cancers, and cancers in adolescents and young adults (AYA); to promote new treatments such as genomic medicine; and to address societal problems including employment. The principles of the Cancer Control Act revised in 2016 require that the national and local governments make effective use of healthcare and welfare resources and implement cancer control measures from the viewpoint of serving the public in order to achieve the stated goal of creating a society in which cancer patients can live with peace of mind and dignity. In the 3rd Basic Plan to Promote Cancer Control Programs released in March 2018, measures are being implemented based on three pillars – cancer prevention, cancer medical care and research, and coexistence with cancer – to educate the public, including patients, about cancer and help them to overcome it.

Changes in Treatment Methods

Cancer treatment is increasingly being based on a multidisciplinary approach that combines surgery, radiation therapy and chemotherapy. In particular, the field of anticancer agents is evolving, and highly innovative medicines such as molecular targeted drugs have been introduced. This has brought a dramatic improvement in treatment outcomes in colorectal, lung and breast cancer, gynecological cancers, kidney cancer, brain tumors, malignant melanoma, hematological malignancy and other forms of cancer.

Advances are being made in personalized healthcare, which involves testing patients with companion diagnostics when administering molecular targeted drugs to identify patients who are likely to benefit with minimal strain on the body and few side effects. In addition to enabling physicians to propose the optimal treatment tailored to each patient, this approach offers a number of other benefits. For example, it can reduce national healthcare expenditures by reducing the administration of drugs when their effect cannot be determined. When performing a diagnosis, there may be a number of different molecular targeted drugs available for the same disease, and there are some cases in which looking at the molecules expressed in the target tissues is insufficient for diagnosis; therefore, it is also becoming important to conduct exhaustive biomarker measurements such as multiplex testing and gene panel testing using next-generation sequencing. Moreover, the MHLW and pharmaceutical industry organizations have been setting up a framework to promote the realization of genomic medicine, starting with the Council to Promote the Realization of Genomic Medicine, which was established by the Japanese government in January 2015. The provision of optimal treatments based on each patient's genetic profile is thus becoming a reality.

In addition, cancer immunotherapy, which takes advantage of the body's own immune cells to fight cancer, is another important emerging field of treatment. Immune checkpoint inhibitors, one type of immunotherapy now in use, are a promising new direction in cancer treatment. Cancer has the ability to suppress immune functions to avoid attack from the immune system. By blocking the immune "brakes" (the binding of PD-1 to PD-L1) known as the immune checkpoint, immune cells can be awakened to attack cancer cells. In clinical trial results, immune checkpoint inhibitors have shown promise for long-term survival and cure, even in advanced cancer. Expectations are rising for their high therapeutic efficacy and potential for treating a wide range of cancers. On the other hand, some patients do not respond to cancer immunotherapy, so screening to select patients for whom this therapy is likely to be effective and combination therapy with existing anticancer agents are also being examined.

Avastin (RG435)

Anti-VEGF humanized monoclonal antibody
(Generic name: bevacizumab)
Launch in Japan: June 2007

Basic Information

Avastin is a humanized monoclonal antibody targeting vascular endothelial growth factor (VEGF). It is the first therapeutic agent in the world that inhibits angiogenesis (the growth of the network of blood vessels that supply nutrients and oxygen to the cancer). Unlike conventional anticancer agents that act directly on cancer cells, Avastin acts on the cancer microenvironment. In Japan, Avastin was launched in 2007 for the treatment of unresectable advanced or recurrent colorectal cancer. In 2009, Chugai obtained approval for a new dosage and administration for colorectal cancer and the additional indication of unresectable advanced or recurrent non-squamous non-small cell lung cancer (NSCLC), followed in 2011 by inoperable or recurrent

breast cancer. Chugai also obtained approval for the additional indications of malignant glioma and ovarian cancer in 2013, and advanced or recurrent cervical cancer in May 2016.

Review of 2018 Performance

Sales of Avastin increased ¥2.5 billion, or 2.7 percent, year on year to ¥95.6 billion. Avastin has built a solid position in the treatment of colorectal cancer and lung cancer, but the competitive environment in the field of lung cancer has been changing due to the introduction of immune checkpoint inhibitors and other products. On the other hand, the use of Avastin for other indications, including breast cancer, has increased steadily. Phase III multinational studies in combination with Tecentriq in renal cell carcinoma and hepatocellular carcinoma patients are under way.

Herceptin

Anti-HER2 humanized monoclonal antibody
(Generic name: trastuzumab)
Launch in Japan: June 2001

Basic Information

Herceptin is a humanized monoclonal antibody that targets human epidermal growth factor receptor type 2 (HER2),[2] which contributes to tumor cell growth. The earliest PHC-based anticancer agent, Herceptin has built a solid reputation as an essential treatment for HER2-positive breast cancer since its launch in 2001.

Overexpression of HER2 is found in about 20 percent of breast cancers. Such cancer is diagnosed as HER2-positive. HER2-positive breast cancer progresses rapidly, and has been associated with a poor prognosis. However, treatment outcomes have improved significantly with the emergence of Herceptin and other medicines that target HER2. In 2011, Herceptin obtained approval for the additional indication of advanced or recurrent gastric cancer overexpressing HER2, not amenable to curative resection, bringing personalized healthcare to the field of gastric cancer.

Review of 2018 Performance

Sales of Herceptin decreased ¥5.5 billion, or 16.4 percent, year on year to ¥28.1 billion. The decrease was mainly due to the substantial NHI drug price revision (-20.4 percent) that resulted from the return of the premium for new drug creation. Widely used in first-line treatment of HER2-positive advanced or recurrent breast cancer in combination with Perjeta, Herceptin is also used for more than 90 percent of lymph-node positive patients undergoing postoperative (adjuvant) chemotherapy for HER2-positive breast cancer. For gastric cancer, although Herceptin maintained its established position in first-line treatment, sales decreased slightly due to competition in second-line treatment.

2. A diagnostic test can determine if a patient's breast or gastric cancer cells have overexpression of a protein called HER2. Herceptin, Perjeta and Kadcyla target HER2 and are administered only to patients whose tumors are identified as HER2-positive.

Perjeta (RG1273)

HER2 dimerization inhibitory humanized monoclonal antibody
(Generic name: pertuzumab)
Launch in Japan: September 2013

Basic Information

Perjeta is a humanized monoclonal antibody and is the first molecular targeted therapy that inhibits the dimerization of HER2. The combination of Perjeta and Herceptin, which also targets HER2, provides a more comprehensive blockade of HER signaling pathways associated with the proliferation of tumor cells. Chugai launched Perjeta for the indication of HER2-positive inoperable or recurrent breast cancer in September 2013, after obtaining approval in June 2013. In 2018, Perjeta obtained approval for the additional indication of neoadjuvant and adjuvant therapy for HER2-positive breast cancer.

Review of 2018 Performance

Sales of Perjeta increased ¥2.5 billion, or 18.4 percent, year on year to ¥16.1 billion, exceeding projections. In the clinical practice guidelines for breast cancer, which were updated in July 2015, the combination therapy of Herceptin and Perjeta with docetaxel was the only therapy to receive a Grade A recommendation as a first-line therapy for HER2-positive metastatic or recurrent breast cancer, and uptake as a first-line treatment was steady. In addition, a phase III multinational study is underway for RG6264 (subcutaneous injection), a fixed-dose combination of Herceptin and Perjeta, for the potential treatment of HER2-positive breast cancer.

Kadcyla (RG3502)

Anti-HER2 antibody-tubulin polymerization inhibitor conjugate
(Generic name: trastuzumab emtansine)
Launch in Japan: April 2014

Basic Information

Kadcyla is an antibody-drug conjugate of the anti-HER2 humanized monoclonal antibody trastuzumab (product name: Herceptin) and the potent chemotherapeutic agent DM1, joined together with a stable linker. Chugai filed an application for approval for the treatment of HER2-positive inoperable or recurrent breast cancer in January 2013, obtained approval in September 2013 after priority review, and launched the product in April 2014.

Review of 2018 Performance

Sales of Kadcyla increased ¥0.5 billion, or 6.3 percent, year on year to ¥8.5 billion. Kadcyla is used as a second-line treatment in patients whose cancer worsened in first-line treatment with Herceptin and Perjeta plus a chemotherapeutic agent. In development, a phase III multinational study for the potential treatment of HER2-positive breast cancer (adjuvant) is under way.

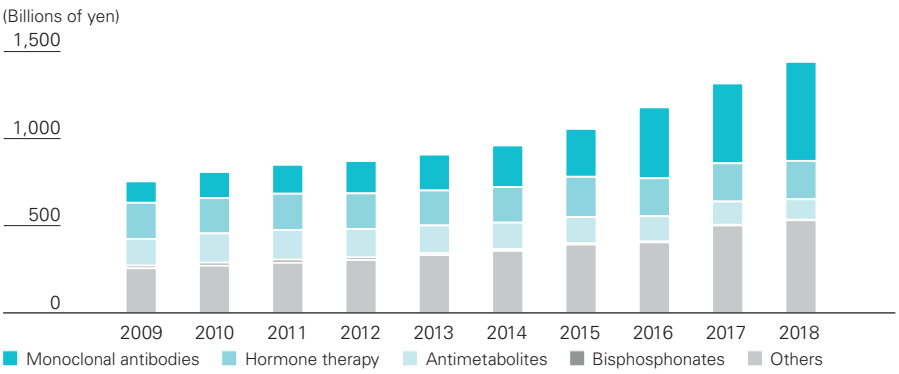
Rituxan

Anti-CD20 monoclonal antibody
(Generic name: rituximab)
Launch in Japan: September 2001

Basic Information

Rituxan is a monoclonal antibody targeting the CD20 antigen found on the surface of lymphocytes. As a standard therapy for CD20-positive B-cell non-Hodgkin's lymphoma (hematological cancer), it has substantially improved clinical outcomes in combination with chemotherapy or in monotherapy. In Japan, Rituxan is marketed jointly by Chugai and Zenyaku Kogyo Co., Ltd. In recent years,

Anticancer Agent Market in Japan



Source: JPM 2009-2018
Reprinted with permission.
The scope of the market is defined by Chugai.

the usefulness of Rituxan has been recognized in treating CD20-positive, B-cell lymphoma in immunosuppressed patients, granulomatosis with polyangiitis (GPA) (formerly known as Wegener's granulomatosis) and microscopic polyangiitis (MPA), refractory nephrotic syndrome with frequent relapses or steroid dependence, suppression of antibody-mediated rejection in ABO-incompatible kidney and liver transplantation, and idiopathic thrombocytopenic purpura (ITP). It has also become a valuable treatment option for patients with autoimmune diseases and other conditions.

Review of 2018 Performance

Sales of Rituxan decreased ¥12.1 billion, or 36.2 percent, year on year to ¥21.3 billion. The decrease was due to more intense competition resulting from the launch of a generic product and the substantial NHI drug price revision (-26.2 percent) with the return of the premium for new drug creation.

Alecensa (AF802/RG7853)

ALK inhibitor
(Generic name: alectinib)
Launch in Japan: September 2014

Basic Information

Alecensa, an oral, small molecule-targeted molecular therapy created by Chugai, inhibits the activity of the tyrosine kinase anaplastic lymphoma kinase (ALK) with *EML4-ALK* fusion gene expressed in about 2 to 5 percent of NSCLC. It was designated as an orphan drug in Japan in September 2013 for the treatment of *ALK* fusion gene-positive unresectable, recurrent/advanced NSCLC. In October 2013, Chugai filed an application for approval. Following approval in July 2014, Alecensa was launched first in Japan in September 2014. In addition to being the first product from Chugai research to be granted breakthrough therapy designation by the U.S. Food and Drug Administration (FDA), Alecensa received its second such designation as a first-line treatment in 2016, and it is contributing to the treatment of patients around the world. Outside Japan, after obtaining approval in the United States in December 2015 and in Europe in February 2017 for the indication of ALK-positive metastatic (advanced) NSCLC in patients whose disease has progressed or who are intolerant to crizotinib, Alecensa obtained approval as a first-line treatment in the United States in November 2017 and Europe in December 2017.

Review of 2018 Performance

Market penetration proceeded further with the announcement of positive results that led to the early stopping for benefit of a study comparing the efficacy and safety of Alecensa and a competing product on patients in Japan (J-ALEX study). Sales of Alecensa in Japan increased ¥3.9 billion, or 23.4 percent, year on year to ¥20.6 billion, due to a high rate of continuation of treatment. Overseas sales of Alecensa (including exports to Roche) increased ¥15.6 billion, or 112.2 percent, year on year to ¥29.5 billion. In development, a phase III multinational study for the potential treatment of ALK-positive NSCLC (adjuvant) is under way.

Xeloda

Antimetabolite, 5-FU derivative
(Generic name: capecitabine)
Launch in Japan: June 2003

Basic Information

Xeloda is a 5-fluorouracil (5-FU) anticancer agent developed at the research laboratories of the former Nippon Roche. Orally administered Xeloda is absorbed by the body, then gradually metabolized by certain highly active enzymes in liver and tumor tissue, and is eventually converted into active 5-FU within tumor tissue. Xeloda has obtained approval for the treatment of inoperable or recurrent breast cancer, colorectal cancer and gastric cancer.

Review of 2018 Performance

Sales of Xeloda increased ¥0.3 billion, or 2.5 percent, year on year to ¥12.5 billion. Backed by Chugai's initiatives to promote adverse drug reaction management, Xeloda has established a top position in adjuvant therapy performed to inhibit recurrence after surgery for colon cancer. In gastric cancer, prescriptions have increased for adjuvant therapy, for which Xeloda obtained approval in November 2015.

Tarceva

Epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor
(Generic name: erlotinib)
Launch in Japan: December 2007

Basic Information

Tarceva is an oral targeted small molecule drug that inhibits the activation of epidermal growth factor receptor (EGFR) tyrosine kinase, which is associated with the growth, progression and metastasis of cancer. In Japan, Tarceva had been used for second-line or later treatment of NSCLC since its launch in 2007, but the approval of an additional indication in June 2013 allowed its use in first-line treatment of patients with *EGFR* mutations, in whom high efficacy is expected. About 15 percent of NSCLC patients in Europe and about 40 percent in Asia diagnose positive for *EGFR* mutations. In 2011, Tarceva obtained approval for the additional indication of pancreatic cancer not amenable to curative resection.

Review of 2018 Performance

Sales of Tarceva decreased ¥2.2 billion, or 21.0 percent, year on year to ¥8.3 billion. In NSCLC, sales decreased compared with the previous year due to competition from other products.

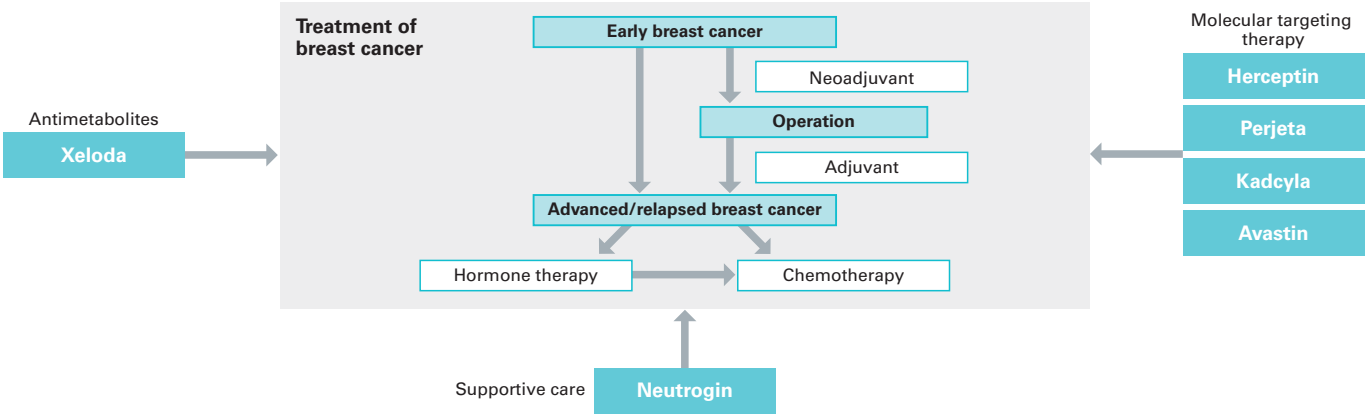
Neutrogin

Recombinant human granulocyte colony-stimulating factor (G-CSF)
(Generic name: lenograstim; overseas product name: Granocyte)
Launch in Japan: December 1991

Basic Information

Neutrogin is a recombinant human granulocyte colony-stimulating factor (G-CSF) created by Chugai. One common side effect of anticancer drugs is neutropenia, a decrease

Extensive Contribution to Cancer Treatment (Breast Cancer)



in the white blood cell count that heightens the risk of developing serious infections. Neutrogin stimulates the differentiation and growth of neutrophils, enabling the safer use of chemotherapy, thus helping to improve treatment outcomes. Neutrogin is also essential in hematopoietic stem cell transplantation, which is performed for illnesses that affect production of normal blood cells, such as leukemia.

Review of 2018 Performance

Sales of Neutrogin decreased ¥1.2 billion, or 9.8 percent, year on year to ¥11.1 billion due to intensified competition.

Tecentriq (RG7446)

Engineered anti-PD-L1 monoclonal antibody
(Generic name: atezolizumab)
Launch in Japan: April 2018

Basic Information

Tecentriq is an engineered anti-PD-L1 monoclonal antibody in-licensed from Roche. One way that tumor cells evade the immune system is by expressing a protein called programmed death-ligand (PD-L1) on their surface, which is believed to shield them from immune system attacks by binding to T cells. Tecentriq restores and maintains the immune response of T cells by binding to PD-L1, and is expected to demonstrate efficacy against cancer cells. Its mode of action differs from conventional treatments that attack cancer cells directly. Since it takes advantage of the patient's own immune response, it is also promising for use in combination with existing drugs and for various cancer types. Chugai obtained approval in January 2018 for the treatment of unresectable advanced or recurrent NSCLC, and obtained approval in December 2018 for the treatment of previously untreated unresectable advanced or recurrent non-squamous NSCLC in combination with Avastin and chemotherapy. In December 2018, Chugai also filed applications for approval of Tecentriq as a treatment for breast cancer and small cell lung cancer (SCLC). In addition, Chugai is participating in phase III multinational studies for the potential treatment of NSCLC (adjuvant), urothelial carcinoma, muscle invasive urothelial carcinoma (adjuvant), renal cell carcinoma, renal cell carcinoma (adjuvant), early breast cancer, ovarian cancer, prostate cancer, hepatocellular carcinoma, and head and neck carcinoma (adjuvant).

Review of 2018 Performance

Sales of Tecentriq were ¥9.1 billion, substantially higher than expected. Uptake was strong because in its position in second-line treatment and later for NSCLC, it can be prescribed regardless of PD-L1 expression.

Gazyva (GA101/RG7159)

Glycoengineered type II anti-CD20 monoclonal antibody
(Generic name: obinutuzumab)
Launch in Japan: August 2018

Basic Information

Gazyva is a glycoengineered type II monoclonal antibody in-licensed from Roche that, like Rituxan, targets CD20. A study that directly compared its efficacy and safety with Rituxan, currently the most widely used monoclonal antibody, in patients in Japan and overseas (the GALLIUM study) was stopped early for benefit after positive results were reported. Gazyva obtained approval for the treatment of CD20-positive B-cell follicular lymphoma in July 2018, and was launched in August 2018. In November 2012, Chugai entered into an agreement with Nippon Shinyaku Co., Ltd. to co-develop and co-market this agent in Japan.

Review of 2018 Performance

Sales of Gazyva after its launch in August 2018 were ¥0.6 billion.

GC33 (RG7686) Development project

Anti-glypican-3 humanized monoclonal antibody
(Generic name: codrituzumab)

GC33, a humanized monoclonal antibody created by Chugai, targets glypican-3 (GPC3), which is specifically expressed in hepatocellular carcinoma. GC33 did not meet the primary endpoint in a phase II multinational monotherapy study started in March 2012. A phase I clinical study for the potential treatment of hepatocellular carcinoma in combination with Tecentriq has been under way since August 2016, and the study results were presented at the European Society of Medical Oncology (ESMO) 2018 Congress.

ERY974 Development project

Anti-glypican-3/CD3 bispecific antibody

ERY974 is the first T-cell redirecting antibody (TRAB) developed by Chugai. TRAB is a bispecific antibody that creates a short bridge between CD3 on T cells and tumor antigen on tumor cells to activate T cells in a tumor antigen-dependent manner, and is expected to demonstrate strong cytotoxicity against tumor cells. GPC3, a tumor antigen targeted by ERY974, is reported to be expressed in multiple types of tumor cells including hepatocellular carcinoma, gastric cancer and esophageal cancer. A phase I clinical study started overseas in August 2016.

RG7596 Development project

Anti-CD79b antibody-drug conjugate
(Generic name: polatuzumab vedotin)

RG7596 is an antibody-drug conjugate of an anti-CD79b monoclonal antibody and the microtubule inhibitor MMAE, joined together with a linker. In-licensed from Roche, the conjugate is designed to deliver MMAE directly into B cells via CD79b, which is expressed on B cells, so that the inhibitor can act. To demonstrate a cytostatic effect on tumor cells, a phase III multinational study for the treatment of previously untreated diffuse large B-cell lymphoma (DLBCL) started in November 2017, and a phase II clinical study for the treatment of relapsed or refractory DLBCL started in Japan in October 2018.

RG7440 Development project

AKT inhibitor
(Generic name: ipatasertib)

RG7440 is an AKT inhibitor in-licensed from Roche. Phase III multinational studies started in June 2017 for the treatment of prostate cancer and in January 2018 for the treatment of breast cancer.

CKI27 Development project

Raf/MEK inhibitor

CKI27 is a Raf and MEK dual inhibitor created by Chugai. Phase I clinical studies in Japan and overseas have been completed. Multiple investigator-initiated clinical studies (as monotherapy and in combination therapy) are ongoing in the United Kingdom and the United States, and study results were announced at the 2017 Annual Meeting of the American Society of Clinical Oncology (ASCO). A presentation of summary results is planned at the International Congress on Targeted Anticancer Therapies (TAT) in 2019.

RG7421 Development project

MEK inhibitor
(Generic name: cobimetinib)

RG7421 is an MEK inhibitor in-licensed from Roche. Chugai started a phase I clinical study for the treatment of solid tumors in Japan in July 2017.

CEA-TCB (RG7802) Development project

Anti-CEA/CD3 bispecific antibody
(Generic name: cibisatamab)

CEA-TCB, a bispecific antibody in-licensed from Roche, is expected to activate T-cells and attack tumor cells by cross-linking CD3 on T-cells to carcinoembryonic antigen (CEA) on tumor cells. With a novel structure engineered to bind simultaneously with one arm to CD3 on T-cells and two arms to CEA on tumor cells, it exhibits higher tumor selectivity and stronger binding to CEA. CEA is reported to be overexpressed in a variety of cancers, including colorectal cancer.

CEA-TCB-mediated intra-tumor T-cell proliferation may yield efficacy in tumor types that are not responsive to current cancer immunotherapies because there are few T-cells in the tumor. In addition, combination immunotherapy of CEA-TCB with Tecentriq is expected to yield a potent antitumor effect

in various CEA-positive cancers by inducing further T-cell activation. Chugai started a phase I clinical study of CEA-TCB for the treatment of solid tumors in Japan in January 2018.

CD20-TDB (RG7828) Development project

Anti-CD20/CD3 bispecific antibody
(Generic name: mosunetuzumab)

CD20-TDB is a bispecific antibody in-licensed from Roche. Similar to CEA-TCB, it is expected to activate T cells and attack tumor cells by cross-linking CD3 on T cells to CD20 on B cells. Chugai started a phase I clinical study for the treatment of hematologic tumors in Japan in March 2018.

RG6268 Development project

ROS1/TRK inhibitor
(Generic name: entrectinib)

RG6268, in-licensed from Roche, is an orally bioavailable CNS-active tyrosine kinase inhibitor that potently and selectively inhibits the ROS1 and TRK family, and also acts on brain metastases. Targeting *NTRK* fusion gene-positive solid tumors, RG6268 has been granted breakthrough therapy designation in the United States, PRIorityMEdicines (PRIME) designation in the EU, and Sakigake designation in Japan. Chugai filed an application for approval for the treatment of *NTRK* fusion gene-positive solid tumors in December 2018.

Bone and Joint Diseases/Autoimmune Diseases

Osteoporosis

Osteoporosis is a disease in which the bones become weak due to advanced age or other factors, increasing the risk of fractures. Osteoporosis patients may incur fractures through normal daily activities. Among these, compression fractures of the spine and femoral neck fractures can decrease quality of life by leaving patients bedridden and can also increase mortality risk. About 13 million people in Japan suffer from osteoporosis. However, the treatment rate stands at around only 20 percent of the estimated number of sufferers because there are usually no symptoms until a fracture occurs. The availability of superior new drugs that have higher efficacy, safety and convenience has brought promise for improvement in the quality of life of patients.

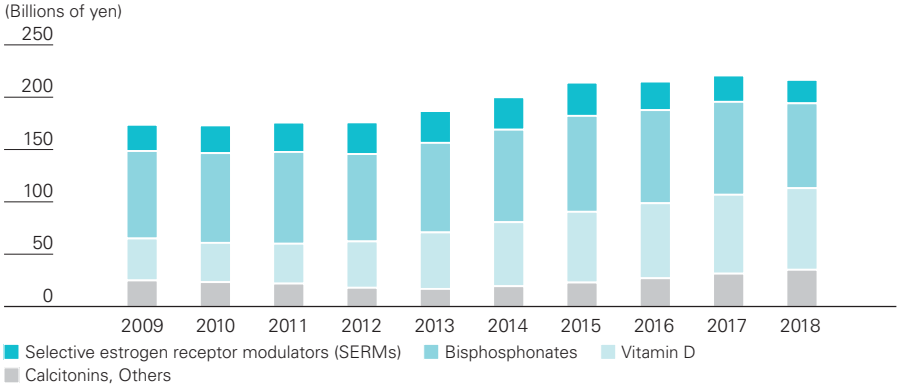
Treatment Methods

Osteoporosis drug therapies include active vitamin D_3 derivatives, which improve bone metabolism, bisphosphonates, which are bone resorption inhibitors, an anti-RANKL antibody, selective estrogen receptor modulators (SERMs), and human parathyroid hormone (PTH), which is a bone formation agent.

Regulatory Trends

National prevention and treatment guidelines for osteoporosis were revised in October 2006. Subsequently, advances have been made in basic and clinical research into osteoporosis; evaluation of fracture risk and criteria for the initiation of drug treatment have been reviewed; and osteoporosis caused by lifestyle-related diseases has been addressed. In the interim, Edirol and other medicines have been approved for insurance coverage. Revisions issued in December 2011 added preventive and diagnostic items in light of the importance of early prevention to broaden the overall scope of osteoporosis treatment. Since then, the 2012 revised diagnostic criteria for primary osteoporosis and management and treatment guidelines for steroid-induced osteoporosis have been adopted. Bonviva IV Injection and other medicines have been launched and covered by insurance, and revised guidelines were issued in July 2015.

Osteoporosis Market in Japan



Source: JPM 2009-2018
Reprinted with permission.
The scope of the market is defined by Chugai.

Recently, an osteoporosis liaison service (OLS) initiated by the Japan Osteoporosis Society was introduced for the purpose of preventing osteoporosis and inhibiting bone fractures by coordinating the efforts of various healthcare professionals, including doctors, nurses, pharmacists and physical therapists. Medical staff involved in liaison and possessing extensive knowledge related to osteoporosis are called osteoporosis managers. This education program has been ongoing since 2012, and more than 2,400 osteoporosis managers were active as of April 2018.

Edirol

Active vitamin D_3 derivative
(Generic name: eldecalcitol)
Launch in Japan: April 2011

Basic Information

Edirol, a vitamin D_3 preparation born out of Chugai's many years of research in vitamin D, is an agent that improves bone metabolism in addition to calcium metabolism. Chugai started sales of Edirol in April 2011 as the successor drug to Alfarol for the indication of osteoporosis. Under an agreement signed in May 2008, Edirol has been co-developed and is currently co-marketed with Taisho Pharmaceutical Co., Ltd. Clinical trials have confirmed that Edirol has a similar safety profile to alfacalcidol with a statistically significant greater effect in preventing fractures. In the 2015 osteoporosis prevention and treatment guidelines, Edirol received a Grade A recommendation, the only one for an active vitamin D_3 preparation, for its effectiveness in increasing bone density and preventing vertebral fractures.

Review of 2018 Performance

Sales of Edirol increased ¥3.3 billion, or 11.1 percent, to ¥32.9 billion. It has become the most widely used active vitamin D_3 preparation because of its superior efficacy in increasing bone mass and preventing fractures compared with existing products. Recognition and understanding of Edirol as a

base treatment has broadened. As a result, its use in combination with other drugs is expanding, as are prescriptions, primarily for new cases. In China, an application has been filed for approval of Edirol as a treatment for osteoporosis.

Bonviva

Bisphosphonate anti-resorptive agent
(Generic name: ibandronate)
Launch in Japan: August 2013

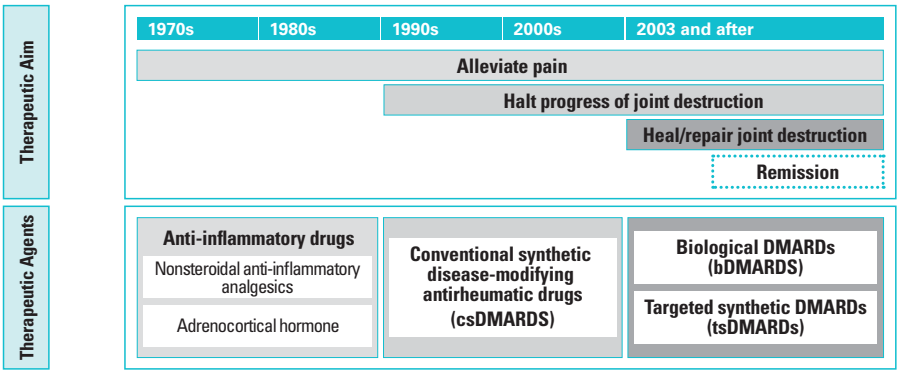
Basic Information

Bonviva is a bisphosphonate in-licensed from Roche. Bonviva IV Injection was launched in August 2013. Under an agreement signed in September 2006, Bonviva is being co-developed and co-marketed with Taisho Pharmaceutical Co., Ltd. Bonviva IV Injection can be given as a rapid intravenous injection once a month, and thus may significantly reduce the burden on patients. It is also expected to benefit patients who have difficulty taking oral formulations or who tend to forget to take their medication. In addition, Bonviva Tablet, a once–monthly oral formulation, demonstrated non-inferiority to Bonviva IV Injection in a phase III clinical trial, and Chugai began sales in April 2016. By enabling drug selection according to patient lifestyle, monthly Bonviva IV Injection and Bonviva Tablet are expected to help improve patient adherence, convenience for healthcare providers and the rate of continuation of treatment.

Review of 2018 Performance

Sales of Bonviva increased ¥0.7 billion, or 8.0 percent, to ¥9.4 billion. The intravenous injection and oral formulations have the same high level of efficacy, and the ability to select the formulation according to the patient's condition has helped to differentiate Bonviva from other bisphosphonates.

Changes in Rheumatoid Arthritis Drug Therapy



With the advent of biologics, the aim of therapy for rheumatoid arthritis has shifted to achieving and maintaining remission.

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a systemic disease characterized by painful inflammation and deformation of joints leading to dysfunction. Without appropriate treatment, the patient's condition deteriorates over time. There are currently an estimated 700,000 to 800,000 patients in Japan suffering from RA, of whom some 330,000 are currently receiving drug treatment. The aging of the patient population has also become a problem in recent years. On the other hand, there are only about 8,000 patients in Japan with juvenile idiopathic arthritis (JIA), a form of RA suffered by children under 16 years of age.

Treatment Methods and Market Conditions

In drug therapy for RA, the introduction of biologics has made high remission rates a realistic treatment goal. Research in recent years suggests that the administration of biologics at the early onset stage is effective in inhibiting bone and joint damage. The global market for these agents is forecast to reach $56.7 billion* by 2024. The market continues to change, and the range of treatment options for RA is expanding. In 2013, biological DMARDs, a new class of oral drugs, were launched in the United States and Japan, and in 2014, a biosimilar was launched in Japan after previously being launched in Europe.

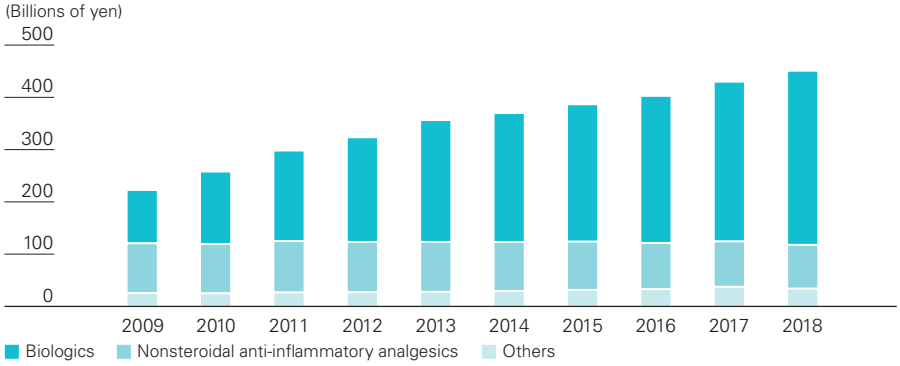
Systemic juvenile idiopathic arthritis (sJIA) accounts for 30 to 40 percent of all JIA cases, but steroids, the main treatment for sJIA, can cause growth impairment and other adverse reactions. Consequently, the approval and launch of Actemra in April 2008 provided a significant advance in therapy.

* Source: Evaluate Pharma®

Regulatory Trends

In November 2018, MHLW released an update of the Report of the Rheumatism and Allergy Countermeasure Committee, which was previously issued in 2005 and 2011. To maximize long-term quality of life of RA patients through appropriate treatment that controls disease activity, and to provide comprehensive support in daily life at workplaces and schools, and for life events such as pregnancy and childbirth, the report calls for (1) enhancement of medical service systems; (2) improvement of the patient environment, including consultation opportunities and access to information, and (3) promotion of research and development and other activities. In Europe, revised treatment recommendations in 2013 added Actemra and Abatacept to the biologic drugs recommended in first-line therapy, which were previously limited to anti-TNF agents. In 2015, a proposed update of clinical practice guidelines was announced at the American College of Rheumatology, with biologics including Actemra added as first-line therapy along with anti-TNF agents. Moreover, the updated European League Against Rheumatism (EULAR) recommendations that were

Rheumatoid Arthritis Market in Japan



Source: JPM 2009-2018
Reprinted with permission.
The scope of the market is defined by Chugai.

announced in June 2016 state the superiority of biologics in interleukin-6 (IL-6) inhibitor therapy in cases where MTX and other therapies cannot be used.

Castleman's Disease

Castleman's disease is a lymphoproliferative disease characterized by symptoms such as systemic lymphadenopathy, fever and general fatigue, as well as various abnormal laboratory test values including anemia, hypergammaglobulinemia and hypoalbuminemia. It has been confirmed that these manifestations result from the excessive production of IL-6, one of the cytokines that causes inflammation. Castleman's disease is very rare, affecting approximately 1,500 people in Japan.

Large-Vessel Vasculitis

Large-vessel vasculitis belongs to a group of autoimmune diseases called vasculitis syndromes. It refers to vasculitis in the aorta and the major aortic branches to the limbs and head and neck, and includes Takayasu arteritis and giant cell arteritis (temporal arteritis).

Takayasu arteritis leads to inflammation of the aortic arch and its branch vessels. It affects women more than men, at a ratio of 9:1, and age of onset is between 20 and 50 years. It occurs most commonly in Asia, including Japan, and the Middle East. Initial symptoms are reduced head and cerebral blood flow-related conditions, primarily dizziness, lightheadedness and headaches, as well as neck pain, chest pain and vascular pain along the limb arteries.

Giant cell arteritis is a granulomatous vasculitis occurring primarily in the aorta and aortic branches, mainly the temporal arteries. It also affects women more than men, at a ratio of 1.6:1, and the age of onset is 55 years or older. It occurs most commonly in Western countries and is rare in Japan. Common initial symptoms include headache, systemic conditions such as fever, and loss of vision.

Systemic Sclerosis

Systemic sclerosis (SSc) is a rare, chronic disorder characterized by blood vessel abnormalities, as well as degenerative changes and scarring in the skin, joints and internal organs. The incidence rate of SSc is difficult to measure, but it is estimated to affect approximately 2.5 million people worldwide, and has the highest fatality rate of any rheumatic disease.

Actemra (MRA/RG1569)

Humanized anti-human IL-6 receptor monoclonal antibody
(Generic name: tocilizumab)
Launch in Japan: June 2005

Basic Information

Actemra, created by Chugai and the first therapeutic antibody originating in Japan, blocks the activity of IL-6, a type of cytokine. It was launched in Japan in June 2005 as a treatment for Castleman's disease. In April 2008, Chugai obtained approval in Japan for the additional indications of RA, polyarticular juvenile idiopathic arthritis (pJIA) and sJIA. In May 2013, Chugai launched a new subcutaneous formulation that improves convenience for patients in addition to the existing drip infusion formulation. This subcutaneous formulation includes the first auto-injector in the Japanese RA market.

Actemra is marketed globally through Roche. In Europe, where the medicine is known as RoActemra, sales for the treatment of RA started in 2009. Chugai's marketing subsidiary co-promotes RoActemra with Roche in the United Kingdom, France and Germany. In the United States, Actemra obtained approval in January 2010 for the treatment of adult patients with moderate to severe active RA who have had an inadequate response to one or more TNF antagonist therapies, and obtained approval in October 2012 as a first-line biologic treatment. In Taiwan and South Korea, where Chugai has marketing rights, Actemra obtained approval in July 2011 and April 2012, respectively. Following its launch in Japan, the subcutaneous formulation obtained approval in the United States in October 2013 and in Europe in April 2014, and has been launched in both markets. RoActemra was also approved for early RA in Europe in September 2014.

Furthermore, Actemra obtained approval for the additional indication of treatment of sJIA in the United States in April 2011 and in Europe in August 2011. Actemra also received breakthrough therapy designation from the U.S. FDA in 2016 as a treatment for giant cell arteritis. In Japan, it became possible in June 2017 to reduce the dose interval of Actemra from two weeks to one week in patients with an inadequate response to use of the subcutaneous formulation for RA. Actemra obtained approval in Japan for the additional indications of Takayasu arteritis and giant cell arteritis in August 2017.

Review of 2018 Performance

Sales of Actemra in Japan increased ¥5.1 billion, or 15.4 percent, to ¥38.2 billion. The increase continued to be driven by the strong growth of the subcutaneous formulation after Chugai obtained approval for an additional dosage and administration with a shorter dose interval of the subcutaneous formulation for RA, and for the additional indications of Takayasu arteritis and giant cell arteritis. Sales of the subcutaneous formulation accounted for more than 50 percent of the total.

Sales of Actemra outside Japan (including exports to Roche) increased ¥19.3 billion, or 32.5 percent, to ¥78.7 billion. Roche's global sales increased 12.0 percent year on year with steady market penetration, including solid uptake of the subcutaneous formulation in all regions.

In development, Actemra obtained approval for the additional indication of chimeric antigen receptor (CAR) T cell-induced cytokine release syndrome in Europe in August 2018. In the United States, an autoinjector obtained approval as an additional formulation for the treatment of RA, giant cell arteritis, and sJIA and pJIA in November 2018.

RG7845 Development project

BTK Inhibitor
(Generic name: fenebrutinib)

RG7845 is an oral, small molecule Bruton's tyrosine kinase (BTK) inhibitor in-licensed from Roche. BTK, a non-receptor tyrosine kinase expressed in B cells and bone marrow, is involved in arteritis and joint destruction associated with RA. RG7845 is expected to improve RA symptoms because it selectively and reversibly binds to the BTK molecule, thereby having an inhibiting effect on its activity. A phase I clinical trial started in June 2017.

Osteoarthritis

The most common joint disease is osteoarthritis. It leads to degeneration of the cartilage in the joints and surrounding areas, causing joint pain and reduced mobility. The prevalence of this disease increases with age. Knee osteoarthritis is particularly common among women, and is reported to affect an estimated 30 percent of women in their fifties, 57 percent in their sixties, and 80 percent at 80 years of age or older.

Academic societies have been aggressively promoting research, diagnosis and treatment of osteoarthritis as an underlying cause of

"locomotive syndrome," a term proposed in the field of orthopedics to designate the condition of individuals at high risk of suffering loss of motor function due to advanced age that leaves them requiring nursing care and bedridden.

The main drug therapies for osteoarthritis include non-steroidal anti-inflammatory analgesics, steroids and hyaluronic acid preparations, with intraarticular administration of hyaluronic acid preparations used as a treatment in the early and middle stages. Intraarticular administration of hyaluronic acid preparations has also demonstrated effectiveness in improving periarthritis of the shoulder and knee joint pain associated with rheumatoid arthritis.

Suvenyl

Agent for joint function improvement
(Generic name: sodium hyaluronate)
Launch in Japan: August 2000

Basic Information

Suvenyl, a drug that improves joint function through injection into the joint cavity, is a high molecular weight sodium hyaluronate drug that alleviates knee osteoarthritis, shoulder periarthritis and knee joint pain caused by RA. With physical and chemical properties close to that of hyaluronic acid found in the body, Suvenyl has been recognized for its superior performance, including its anti-inflammatory and analgesic effects.

Review of 2018 Performance

Sales of Suvenyl decreased ¥1.0 billion, or 11.4 percent, to ¥7.8 billion, due to the impact from NHI drug price revisions and from competing products. In China, phase III clinical studies are under way for the potential treatment of knee osteoarthritis and shoulder periarthritis.

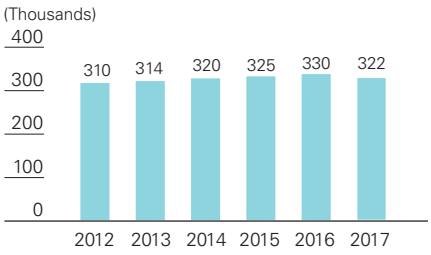
Renal Diseases

Renal Anemia

Complications of Renal Dysfunction

In dialysis patients and end-stage chronic kidney disease (CKD) patients, a key issue is treating the various complications of advanced renal dysfunction, such as renal anemia, secondary hyperparathyroidism, and abnormal calcium and phosphorus metabolism. Of these complications, renal anemia is one of the most frequent, occurring not only in renal disease patients undergoing dialysis but also in pre-dialysis CKD patients. Renal anemia is associated with reduced quality of life, and is also a factor in the progress of organ damage, including decreased cardiac function.

Number of Dialysis Patients in Japan



Source: Overview of Regular Dialysis Treatment in Japan (as of December 31, 2017) by Statistical Survey Committee, The Japanese Society for Dialysis Therapy

The importance of treating renal anemia and chronic kidney disease - mineral and bone disorder (CKD-MBD) was indicated in the Guideline for Renal Anemia in Chronic Kidney Disease (2015) and the Clinical Practice Guidelines for the Management of CKD-MBD (2012) issued by the Japanese Society for Dialysis Therapy and in the Evidence-based Practice Guidelines for the Treatment of CKD (2018) issued by the Japanese Society of Nephrology.

Erythropoiesis-Stimulating Agent (ESA)

Erythropoietin (EPO) is a hemopoietic factor produced mainly in the kidneys. It speeds up erythrocyte production using erythroid progenitor cells found in bone marrow. An erythropoiesis-stimulating agent (ESA) is effective in treating renal anemia caused primarily by the decline in EPO production due to CKD, and is thought to help improve quality of life. ESAs are currently used by approximately 80 percent of dialysis patients as well as by some pre-dialysis CKD patients with renal anemia. ESAs are thus an essential drug for the treatment of renal anemia.

Flat-Sum Reimbursement System for ESAs

Since the 2006 revisions of medical fees, ESAs have been included in medical fee points for hemodialysis (artificial kidney). The integrated fee points are reviewed with each revision of medical fees, and were reduced in 2018, which has led to intensified price competition for ESAs in the dialysis market.

Mircera

Long-acting erythropoiesis-stimulating agent
(Generic name: epoetin beta pegol)
Launch in Japan: July 2011

Basic Information

Mircera is a drug that raises the stability of epoetin beta in the bloodstream through pegylation. It is a new type of renal anemia treatment with the longest serum half-life among ESAs, enabling stable and sustained control of hemoglobin. It stimulates erythropoiesis through a different interaction with the EPO receptor on burst-forming unit erythroid (BFU-E) cells in the bone marrow. Mircera was launched in Japan in July 2011 as a treatment for renal anemia. Outside Japan, Mircera obtained approval in Europe in 2007 and is currently sold in more than 100 countries, including the United States.

The serum half-life of Mircera is virtually the same for intravenous injection or subcutaneous administration, and the drug demonstrates efficacy in relieving the symptoms of anemia when administered at four-week intervals during the maintenance period. Consequently, it is expected to reduce the burden of hospital visits on patients with pre-dialysis CKD and to contribute to better treatment adherence. Furthermore, as a dialysis-related treatment, Mircera is expected to reduce the burden on medical staff and improve medical safety by dramatically reducing administration frequency. The product thus has the potential to expand the range of options for the treatment of renal anemia.

Review of 2018 Performance

Sales of Mircera decreased ¥0.8 billion, or 3.3 percent, to ¥23.1 billion. While the use of Mircera in pre-dialysis CKD patients expanded, sales decreased because of an NHI drug price revision as well as intensified price competition in the dialysis market after integrated fee points for artificial kidney (hemodialysis) were reduced due to the revision of medical fees.

Others

Oxarol

Agent for secondary hyperparathyroidism
(Generic name: maxacalcitol)
Launch in Japan: September 2000

Basic Information

Synthesized by Chugai, Oxarol is the first intravenous active vitamin D_3 derivative agent in Japan. It treats secondary hyperparathyroidism, a result of conditions such as impaired vitamin D activation associated with renal dysfunction, by acting directly with high concentration on the parathyroid gland to control parathyroid hormone synthesis and secretion, and by acting to improve bone metabolism. With its short serum half-life, Oxarol shows efficacy and enables treatment in patients who previously could not be treated adequately with oral vitamin D_3 derivatives due to the onset of hypercalcemia.

Review of 2018 Performance

Sales of Oxarol decreased ¥0.9 billion, or 11.1 percent, to ¥7.3 billion due to the impact of the NHI drug price revision, despite slower uptake of a generic product.

EOS789 Development project

EOS789 is an oral drug created by Chugai with a molecular weight of over 500 g/mol. Following the completion of a phase I clinical trial as a potential treatment for hyperphosphatemia in Japan, a phase I clinical trial for the same indication started overseas in February 2017.

Neurology

Alzheimer's Disease

Alzheimer's disease (AD) is the most common form of dementia. Pathologically, it is a progressive neurodegenerative disease that causes neuron death in the brain and brain atrophy. It leads to a general and progressive loss of memory and other cognitive functions, which can interfere with daily life. While existing AD treatments have some effect in slowing disease progression by several months, they are unable to stop the neuron death, and a treatment for the underlying cause does not yet exist. Consequently, unmet medical need is high, and there is strong demand for a more effective drug.

RG1450 Development project

Anti-amyloid-beta human monoclonal antibody
(Generic name: gantenerumab)

RG1450 is an anti-amyloid-beta human monoclonal antibody in-licensed from Roche. The drug targets aggregate amyloid beta, with a high binding affinity to plaques in particular. It is expected to reduce cognitive deterioration by removing amyloid beta in the brain. Phase III multinational studies of RG1450 as a potential treatment for AD began in June and July 2018.

RG7412 Development project

Anti-amyloid-beta humanized monoclonal antibody
(Generic name: crenezumab)

RG7412 is an anti-amyloid-beta humanized monoclonal antibody in-licensed from Roche. The drug targets all types of amyloid beta, with a high binding affinity to oligomers. It is expected to reduce cognitive deterioration by removing amyloid beta in the brain. A phase III multinational study of RG7412 as a potential treatment for AD is under way.

Neuromyelitis Optica Spectrum Disorder

Neuromyelitis optica spectrum disorder (NMOSD) is a neurological autoimmune disorder characterized by severe optic neuritis and transverse myelitis. The disease affects 0.3 to 4.4 in 100,000 people, and there are about 4,000 patients in Japan. It is an incurable disease that typically appears around the age of 40 years and affects women more than men, at a ratio of 9:1. Symptoms include loss of vision (in some cases progressing to blindness) and impairment of motor function and sensation. In some cases, the disease results in death. However, as there are no approved treatments available, NMOSD is an orphan disease with high unmet medical need. It is believed to occur when aquaporin-4 (AQP4) in the central nervous system is attacked by autoantibodies called anti-AQP4 antibodies. Formerly, the diagnostic criteria of neuromyelitis optica (NMO) accompanied by optic neuritis and myelitis, and NMOSD accompanied by either optic neuritis or myelitis were proposed. Recently, however, it was proposed to reorganize and unify the definitions of both disorders under the term NMOSD. This term is now widely used to refer to a broader spectrum of disease.

SA237 Development project

Anti-IL-6 receptor humanized monoclonal antibody
(Generic name: satralizumab)

SA237, created by Chugai, is a next-generation therapeutic antibody that has shown success in blocking IL-6 receptors with a longer duration of action. Chugai created SA237 by applying its novel antibody technology (Recycling Antibody technology) that enables a single antibody molecule to block the target antigen repeatedly. As a result, a prolonged serum half-life has been demonstrated in clinical trials, and it is expected that a lower dosing frequency will be possible. Because IL-6 promotes the production of the anti-AQP4 antibodies that cause NMOSD, this drug is expected to improve (reduce recurrence of) the symptoms of these diseases as it inhibits the production of those antibodies by blocking the IL-6 signal. Two Chugai-sponsored phase III multinational studies in NMO and NMOSD patients achieved their primary endpoints. In addition to its designation as an orphan drug by the U.S. FDA, SA237 was also granted

orphan drug designation in Europe in 2016. Furthermore, in June 2016, Chugai concluded a license agreement that grants Roche exclusive rights for the development and marketing of SA237 worldwide, with the exception of Japan, South Korea and Taiwan. SA237 was granted breakthrough therapy designation by the FDA in December 2018 for the treatment of NMO and NMOSD.

Duchenne Muscular Dystrophy

Duchenne muscular dystrophy (DMD) is a fatal hereditary disease primarily characterized by degeneration, necrosis and regeneration of the skeletal muscles, with progressive muscle weakness as the clinical symptom. It is caused by a mutation of the dystrophin gene located on the X chromosome. It affects one in 3,000 to 4,000 males at birth, and the estimated number of patients in Japan is between 4,000 and 5,000. Currently, steroids are the only approved treatment available in Japan, but it has been recognized that life expectancy and quality of life have improved due to progress in breathing control methods such as noninvasive positive-pressure ventilation.

RG6206 Development project

Anti-myostatin-inhibiting adnectin fusion protein

RG6206 is a recombinant protein with two anti-myostatin adnectin molecules binding to the human IgG1 Fc fragment. Myostatin is a cell growth inhibitor that negatively regulates skeletal muscle mass. By lowering the level of active, free serum myostatin, RG6206 is expected to have therapeutic effects including maintenance of muscular strength associated with an increase in skeletal muscle mass. A phase II/III multinational study is under way.

Spinal Muscular Atrophy

Spinal muscular atrophy (SMA) is a lower motor neuron disease characterized by amyotrophy and progressive muscle weakness caused by degeneration of anterior horn cells in the spinal cord. The estimated number of patients in Japan is reported to be around 1,000. The disease is caused by a defect in the *SMN1* gene, and onset usually occurs in childhood. In severe cases it is fatal.

RG7916 Development project

SMN2 splicing modifier
(Generic name: risdiplam)

RG7916 is an SMN2 splicing modifier that increases generation of a protein derived from the *SMN2* gene. This protein is nearly identical to the protein made from the *SMN1* gene, which is not functional in SMA patients. RG7916 shows promise in improving neural and muscular function. A phase II/III multinational study is under way. RG7916 was granted PRIME designation by the European Medicines Agency (EMA) in December 2018.

Parkinson's Disease

Parkinson's disease is a progressive neurodegenerative disease characterized by aggregation of α-synuclein in the central nervous system and peripheral nervous system. A wide range of motor symptoms (tremor, muscle rigidity, akinesia, impairment of postural reflexes, etc.) and non-motor symptoms (sleep disorders, autonomic dysfunction, cognitive and mental disorders, etc.) occur. The estimated number of patients in Japan is 150,000. A progressive disease seen mainly in people age 50 or older, it can lead to becoming bedridden as the condition worsens.

RG7935 Development project

Anti-α-synuclein monoclonal antibody
(Generic name: prasinezumab)

RG7935 inhibits the spread of synuclein and the expansion of nerve cell death by removing neurotoxic α-synuclein aggregations with an antibody, and is expected to reduce and delay progression of the disease. A phase I clinical trial began in February 2018.

Others

GYM329/RG6237 Development project

GYM329, created by Chugai, is a next-generation antibody that applies Chugai's proprietary antibody technologies, including its recycling antibody and sweeping antibody technologies. A phase I clinical trial of GYM329 for the potential treatment of neuromuscular disease began in October 2018. Chugai out-licensed GYM329 to Roche at an early stage before the start of clinical testing in order to accelerate global development by taking advantage of Roche's experience and expertise.

RG7906 Development project

RG7906 is a small molecule drug in development for the potential treatment of psychiatric disorders. A phase I clinical trial began in January 2019.

Other Diseases

Hemophilia

Hemophilia is a disease that leads to bleeding in the joints, muscles and other areas in the body due to a congenital deficiency or abnormal function of blood coagulation factors. A low level or absence of blood coagulation factor VIII is known as hemophilia A, while a low level or absence of blood coagulation factor IX is referred to as hemophilia B. Treatment of hemophilia A is centered on replacement therapy to supplement factor VIII. However, since it involves intravenous injections two to three times a week, treatment is a significant burden, particularly on children. Moreover, patients must be monitored for the development of autoantibodies, called inhibitors, to the supplemented factor. Patients with inhibitors are treated by means such as bypass therapy or immune tolerance therapy, but these therapies are limited in terms of convenience and the stability of their effects. A more useful treatment method is therefore needed.

Hemlibra (ACE910/RG6013)

Anti-factor IXa/X bispecific antibody
(Generic name: emicizumab)
Launch in Japan: May 2018

Hemlibra is an anti-factor IXa/X bispecific antibody that employs Chugai's innovative antibody engineering technologies. Like factor VIII, which is low or missing in hemophilia A, Hemlibra simultaneously binds to factor IXa and factor X, stimulating the activation of factor X by activated factor IX and promoting normal blood coagulation for hemostasis. Unaffected by inhibitors, Hemlibra can prevent

bleeding with once weekly (or less-frequent) subcutaneous injections, and is promising as a drug that can potentially change the existing system of treatment. Another key feature is that Chugai's proprietary technology ART-Ig can be applied to Hemlibra, enabling industrial production of bispecific antibodies.

Chugai concluded an out-licensing agreement with Roche in July 2014 and in May 2017 entered into a license agreement with JW Pharmaceutical Corporation for the exclusive marketing rights in South Korea. The drug received breakthrough therapy designation from the U.S. FDA in September 2015 for its potential to prevent bleeding in hemophilia patients with inhibitors, and in April 2018 for its potential to prevent bleeding in patients without inhibitors. Applications for approval for the treatment of hemophilia A (with inhibitors) were filed in the United States and Europe in June 2017 and in Japan in July 2017. In the United States, Hemlibra received priority review designation in August 2017, and in November 2017 obtained approval for routine prophylaxis with once-weekly subcutaneous administration in adult and pediatric patients with hemophilia A with factor VIII inhibitors. Hemlibra was also granted accelerated assessment in Europe, and received regulatory approval from the European Commission in February 2018. In Japan, it obtained approval in March 2018 and was launched in May 2018. It also obtained approval in Taiwan in December 2018.

Applications were filed in the United States, Europe and Japan in April 2018, and in Taiwan in January 2019, for routine prophylaxis of bleeding episodes, as well as for additional dosage and administration as a biweekly or four-weekly treatment, for people with hemophilia A without inhibitors. In the United States, Hemlibra was granted priority review status in June 2018, and in October 2018, it obtained approval for prophylactic treatment by subcutaneous administration once weekly, every two weeks, or every four weeks in adults or children with hemophilia A without inhibitors, as well as additional dosing options of every two weeks or every four weeks in adults and children with hemophilia A with inhibitors. Hemlibra also obtained approval in Japan in December 2018, and received an approval recommendation from the EU Committee for Medicinal Products for Human Use (CHMP) in February 2019.

Review of 2018 Performance

Hemlibra was launched in Japan for treatment of patients with inhibitors in May 2018, and sales were ¥3.0 billion. With more cases than expected in which people struggled to control bleeding, the launch was smooth as switches to Hemlibra took place early on, mainly in pediatric patients.

Influenza

Influenza is an acute infectious disease characterized by the rapid onset of high fever (38 degrees centigrade or higher) and severe systemic symptoms. It is highly infectious, and epidemics can develop quickly. In some cases, secondary infections can lead to very serious illness and death. Influenza is classified into types A, B and C based on differences in the antigenicity of the underlying virus. Types A and B can infect humans and cause major outbreaks.

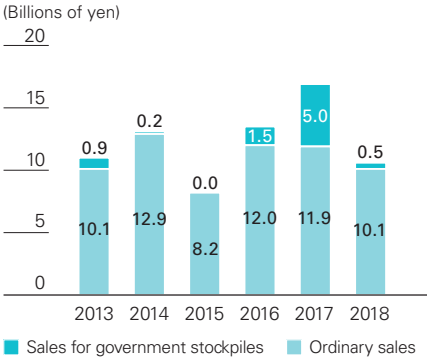
Tamiflu

Anti-influenza agent
(Generic name: oseltamivir phosphate)
Launch in Japan: February 2001

Basic Information

Tamiflu is an oral anti-influenza agent that is effective against both type A and type B infections. It inhibits viral replication by blocking the action of neuraminidase, an enzyme essential for the multiplication of the influenza virus. Launched in capsule form in February 2001 and dry syrup form in July 2002, dosages are available for patients one year of age and older. From March 2007, restrictions on the use of Tamiflu in teenage patients with seasonal influenza were in force in Japan. The measure was introduced as a safety precaution following several reports of abnormal behavior in influenza patients who had taken Tamiflu. In May 2018, the Subcommittee on Drug Safety of the Ministry of Health, Labour and Welfare confirmed that abnormal behavior occurs regardless of whether anti-influenza drugs have been given, and in July 2018, the same subcommittee decided that the restrictions should be removed. Accordingly, the package insert was revised and restrictions on the use of Tamiflu in teenage patients were removed in August 2018. The shelf life of Tamiflu capsules was extended to 10 years from seven years for capsules manufactured after July 2013, and the shelf life of dry syrup was extended to 10 years starting with the portion shipped in 2015. In March 2017, Chugai obtained approval for additional dosage and administration of Tamiflu Dry Syrup for neonates and infants younger than 12 months.

Tamiflu Sales



Review of 2018 Performance

Sales of Tamiflu decreased ¥6.2 billion, or 36.7 percent, to ¥10.7 billion. Ordinary sales were ¥10.1 billion, while sales for government stockpiles were ¥0.5 billion. Chugai continued to highlight the drug's efficacy and the benefits of its unique dry syrup formulation.

Others

CellCept

Immunosuppressant
(Generic name: mycophenolate mofetil)
Launch in Japan: November 1999

Sales of CellCept increased ¥0.1 billion, or 1.1 percent, to ¥9.0 billion. CellCept is used to treat refractory rejection after kidney transplants and to prevent rejection after kidney, heart, liver, lung and pancreas transplants. The need for transplantation medication has been rising in Japan, driven by advances in transplantation therapy. In May 2016, CellCept received approval for the indication of lupus nephritis, a refractory disease associated with the autoimmune disease systemic lupus erythematosus.

Atopic Dermatitis

A type of allergic disorder, atopic dermatitis is a chronic skin disease characterized by an itchy rash that alternately improves and worsens. Scratching the affected area exacerbates the skin symptoms and makes the itching worse, leading to an itch-scratch cycle. The basic treatment is drug therapy using topical steroid preparations and/or immunosuppressants to control the inflammation and a skin care regimen to prevent the inflammation from recurring.

Pruritus in Dialysis Patients

Pruritus is a complication found in more than 40 percent of dialysis patients. Various factors are thought to play complex roles in development of the condition, including skin dryness, accumulation of uremic toxins, secondary hyperparathyroidism, complement activation by dialysis membranes, the effect of heparin, and itch mediators. It is systemic and refractory, and the degree, site and timing of itching vary by patient. The itching not only reduces quality of life due to discomfort and sleeplessness, but is also reported to be involved in life expectancy.

CIM331 Development project

Anti-IL-31 receptor A humanized monoclonal antibody
(Generic name: nemolizumab)

Nemolizumab (CIM331) is an anti-IL-31 receptor A humanized monoclonal antibody originating from Chugai. The drug is expected to suppress itching and skin inflammation in atopic dermatitis by blocking IL-31, a proinflammatory cytokine, from binding to its receptor.

A phase II clinical study of CIM331 as a potential treatment for pruritus in dialysis patients has been completed.

In July 2016, Chugai entered into a global license agreement granting Galderma S.A. of Switzerland exclusive rights for the development and marketing of nemolizumab worldwide, with the exception of Japan and Taiwan. In September 2016, Chugai entered into a license agreement granting Maruho Co., Ltd. the rights for the development and marketing of nemolizumab in the skin disease area for the Japanese market. Clinical trials by both companies are currently under way.

Paroxysmal Nocturnal Hemoglobinuria

Paroxysmal nocturnal hemoglobinuria (PNH) is a disorder that leads to complications such as thrombosis and CKD, in addition to anemia and dark brown urine caused by hemolysis as well as infections and bleeding tendency associated with a decrease in white blood cells and platelets. It is a progressive and life-threatening disease in which acquired genetic mutation affecting hematopoietic stem cells causes the creation of red blood cells that have no complement resistance, and hemolysis occurs when complements are activated in vivo. An estimated 430 patients suffer from PNH in Japan, and the disease reportedly affects approximately 5,000 people globally. Although this number is small, PNH is a progressive disease with a high risk of mortality. The drug approved in Japan to suppress hemolysis in patients who need blood transfusions must be administered once every two weeks, requiring regular hospital visits due to the seriousness of the disease.

SKY59/RG6107 Development project

Anti-C5 recycling antibody

SKY59 is a recycling antibody discovered by Chugai that inhibits the C5 complement component. By blocking cleavage of C5 to C5a and C5b, it is expected to inhibit complement activation, which is the cause of a number of diseases. In PNH, SKY59 may have a suppressive effect on hemolysis by preventing the destruction of red blood cells. Application of multiple Chugai proprietary antibody engineering technologies resulted in a prolonged half-life (in preclinical trials), and the antibody is being developed as a subcutaneous self-injection. Chugai is co-developing SKY59 with Roche, and a phase I/II multinational study began in November 2016. In September 2017, SKY59 received orphan drug designation in the United States as a potential treatment for PNH.

wAMD/DME

Wet age-related macular degeneration (wAMD) is a disease in which abnormal blood vessel growth (choroidal neovascularization) caused by age-related accumulation of waste products extends into the space under the retinal pigment epithelium (RPE) or between the retina and the RPE, leading to retinal tissue injury. If the choroidal neovascularization and the associated effusion progress into the fovea centralis, which governs vision, it may lead to deterioration of visual acuity along with the symptoms of image distortion, vision loss and central scotoma. Left untreated, wAMD may lead to irreversible visual impairment.

Diabetic macular edema (DME) is a retinal disease associated with diabetic retinopathy. In diabetes, consistently high blood sugar causes blockage of retinal capillaries, ischemic change, and edema induced by vascular hyperpermeability. Blurred vision occurs when swelling extends to the central part of the macula, which governs vision. Left untreated, DME may lead to irreversible visual impairment.

RG7716 Development project

Anti-VEGF/Ang-2 bispecific antibody
(Generic name: faricimab)

RG7716, which Chugai in-licensed from Roche, is the first bispecific antibody for ophthalmology diseases. It selectively binds to vascular endothelial growth factor (VEGF-A), a key mediator of angiogenesis and vascular permeability, and angiopoietin-2 (Ang-2, an antagonist of Ang-1, which contributes to the stability of mature vessels), a destabilizer of chorioretinal vessels and inducer of vascular permeability. By simultaneously neutralizing intraocular VEGF-A and Ang-2 in wAMD and DME patients, RG7716 is expected to demonstrate better treatment outcomes and a more sustained effect than the anti-VEGF drugs that are the current standard of care. A phase I clinical trial began in 2017, and a phase III multinational study for the potential treatment of DME began in September 2018.

Endometriosis

Affecting one out of 10 women in their twenties to forties, endometriosis is the repeated proliferation and shedding of endometrial tissue outside the uterus, accompanied by dysmenorrhea and chronic lower abdominal pain, and is a cause of infertility. The disease can interfere with daily life, including absences from work or school, as sufferers find it difficult to do more than lie still when symptoms are severe. The only existing medications are hormonal agents. Moreover, if the pain cannot be controlled by drugs, the only treatment is surgical removal, and many patients experience a recurrence years after surgery, making this a disease with a high level of unmet medical need.

AMY109 Development project

AMY109 is the third therapeutic antibody to apply the recycling antibody technology created by Chugai. Its approach differs from hormone therapy, which is the standard treatment for endometriosis, and its anti-inflammatory action is expected to provide new value to patients. A phase I clinical study started in February 2018.

9-Year Financial Summary

Chugai Pharmaceutical Co., Ltd. and Consolidated Subsidiaries/Years ended December 31

International Financial Reporting Standards (IFRS)	2018		2017		2016		2015	
	IFRS	Core[1]	IFRS	Core	IFRS	Core	IFRS	Core
Results								
Revenues[2]	579.8		534.2		491.8		498.8	
Sales	527.8		499.3		472.7		468.4	
Royalties and other operating income	51.9		34.9		19.1		30.4	
Cost of sales	(262.8)	(261.9)	(254.2)	(252.9)	(247.9)	(246.7)	(240.2)	(238.9)
Operating expenses	(192.6)	(187.6)	(181.1)	(178.1)	(167.0)	(164.5)	(171.8)	(169.3)
Marketing and distribution	(73.7)	(73.7)	(72.8)	(72.8)	(69.8)	(69.8)	(74.8)	(74.7)
Research and development	(99.2)	(94.2)	(92.9)	(88.9)	(85.0)	(82.6)	(83.8)	(81.9)
General and administration	(19.7)	(19.7)	(15.3)	(16.3)	(12.2)	(12.1)	(13.2)	(12.8)
Operating profit	124.3	130.3	98.9	103.2	76.9	80.6	86.8	90.7
Profit before taxes	121.4	127.5	97.0	101.3	74.4	78.1	87.3	91.2
Net income	93.1	97.3	73.5	76.7	54.4	56.8	62.4	64.9
Attributable to Chugai shareholders	92.5	96.7	72.7	75.9	53.6	56.1	61.1	63.7
Core EPS (Yen)	—	176.42	—	138.68	—	102.50	—	116.42
Cash dividends per share (Yen)	86		62		52		58	
Core payout ratio	—	48.7%	—	44.7%	—	50.7%	—	49.8%
Financial Position								
Net operating assets	505.3		440.2		431.1		380.4	
Total assets	919.5		852.5		806.3		787.4	
Total liabilities	(163.0)		(159.6)		(159.8)		(160.1)	
Total net assets	756.5		692.9		646.5		627.3	
Investments in property, plant and equipment	71.8		34.3		19.4		28.7	
Depreciation	14.6		14.5		14.8		14.0	
Main Indicators								
Cost to sales ratio	49.8%	49.6%	50.9%	50.7%	52.4%	52.2%	51.3%	51.0%
Ratio of operating profit to revenues	21.4%	22.5%	18.5%	19.3%	15.6%	16.4%	17.4%	18.2%
Ratio of research and development expenditures to revenues	17.1%	16.2%	17.4%	16.6%	17.3%	16.8%	16.8%	16.4%
Ratio of net income to equity attributable to Chugai shareholders (ROE)[3]	12.8%	—	10.9%	—	8.4%	—	10.0%	—
Ratio of profit before taxes to total assets (ROA)[4]	13.7%	—	11.7%	—	9.3%	—	11.4%	—
Equity per share attributable to Chugai shareholders (BPS) (Yen)	1,381.26	—	1,265.46	—	1,181.67	—	1,146.17	—
Ratio of equity attributable to Chugai shareholders	82.2%	—	81.2%	—	80.1%	—	79.5%	—
Number of employees	7,432		7,372		7,245		7,169	

1. Core basis results are the results after adjusting non-Core items to IFRS basis results. Core basis results are used by Chugai as internal performance indicators, for representing recurring profit trends both internally and externally, and as indices for establishing profit distributions such as returns to shareholders.
2. Revenues do not include consumption tax.
3. Ratio of net income to equity attributable to Chugai shareholders (ROE) = Net income attributable to Chugai shareholders / Capital and reserves attributable to Chugai shareholders (average of beginning and end of fiscal year)
4. Ratio of profit before taxes to total assets (ROA) = Profit before taxes / Total assets (average of beginning and end of fiscal year)

(Billions of yen)

2014		2013		2012	
IFRS	Core	IFRS	Core	IFRS	Core
461.1		423.7		386.6	
436.9		401.3		375.2	
24.2		22.4		11.3	
(218.1)	(217.0)	(187.0)	(186.1)	(168.2)	(167.3)
(167.2)	(166.8)	(157.9)	(157.7)	(143.7)	(143.7)
(71.7)	(71.7)	(71.6)	(71.5)	(67.9)	(67.9)
(80.8)	(80.6)	(74.3)	(74.1)	(66.6)	(66.6)
(14.6)	(14.6)	(12.1)	(12.1)	(9.2)	(9.2)
75.9	77.3	78.7	79.9	74.7	75.6
76.2	77.6	76.9	78.1	72.7	73.6
52.1	53.0	51.9	52.6	46.8	47.4
51.0	51.9	50.9	51.6	46.1	46.6
—	95.04	—	94.69	—	85.64
48		45		40	
—	50.5%	—	47.5%	—	46.7%
357.7		325.2		307.9	
739.5		697.2		645.3	
(141.8)		(124.0)		(116.2)	
597.8		573.2		529.2	
16.3		13.0		14.2	
13.7		13.5		13.3	
49.9%	49.7%	46.6%	46.4%	44.8%	44.6%
16.5%	16.8%	18.6%	18.9%	19.3%	19.6%
17.5%	17.5%	17.5%	17.5%	17.2%	17.2%
8.7%	—	9.3%	—	9.0%	—
10.6%	—	11.5%	—	11.8%	—
1,092.90	—	1,049.47	—	970.08	—
80.6%	—	82.0%	—	81.8%	—
7,023		6,872		6,836	

(Billions of yen)

Japanese GAAP	2012	2011
Results		
Revenues[1]	391.2	373.5
Sales	375.2	363.6
Other operating revenues	16.0	9.9
Cost of sales	167.7	157.5
Selling, general and administrative expenses	147.1	153.6
Marketing and distribution expenses	92.0	97.7
Research and development expenditures	55.1	55.9
Operating income	76.4	62.4
Net income (loss)	48.2	35.2
Net income per share (basic) (Yen)	88.58	64.75
Net income per share (diluted) (Yen)	88.54	64.72
Cash dividends per share (Yen)	40	40
Payout ratio	45.2%	61.8%
Financial Position		
Total assets	587.7	533.5
Total net assets[2]	490.1	459.1
Capital investments	14.2	11.9
Depreciation and amortization	15.3	15.9
Main Indicators		
Cost to sales ratio	44.7%	43.3%
Ratio of operating income to revenues	19.5%	16.7%
Ratio of research and development expenditures to revenues	14.1%	15.0%
Return on equity[3]	10.2%	7.8%
Return on assets[4]	8.6%	6.8%
Net assets per share (Yen)	896.02	839.50
Shareholders' equity to total assets	83.0%	85.6%
Number of employees	6,836	6,779

1. Revenues do not include consumption tax.
2. Net assets include minority interests.
3. Return on equity = Net income / Shareholders' equity (average of beginning and end of fiscal year)
4. Return on assets = Net income / Total assets (average of beginning and end of fiscal year)

Management's Discussion and Analysis

Management Policy

Based on its strategic alliance with Roche, Chugai's Mission is to dedicate itself to adding value by creating and delivering innovative products and services for the medical community and human health around the world. Aiming at becoming a top innovator for advanced and sustainable patient-centric healthcare, we set up our fundamental management policy of growing together with society. To achieve our goal, we have leveraged our close relationship with Roche and built systems capable of efficiently and continuously developing and launching new drugs. Refining our strengths has also contributed to achieving innovation that has enabled us to create state-of-the-art drug discovery technology and maintain the top share of the domestic oncology area.

In the previous mid-term business plan, IBI 18, we generated record revenues and operating profit in each of the three years from 2016 through 2018, and focused on the core strategy of acquiring and implementing competitiveness at a top global level. In the new mid-term business plan, IBI 21, we aim to accelerate the growth of society and the Company through innovation focusing on the creation of innovative new drugs. The numerical outlook through the final year of the plan is a compound annual growth rate for Core EPS in the high single digits, based on a fixed exchange rate. Chugai is also aiming for a consolidated dividend payout ratio that averages 50 percent of Core EPS to provide a stable allocation of profit to all shareholders.

Overview of Results

Revenues

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Revenues	491.8	534.2	**579.8**	+8.5%
Sales	472.7	499.3	**527.8**	+5.7%
Royalties and other operating income (ROOI)	19.1	34.9	**51.9**	+48.7%

- In 2018, revenues exceeded the level of the previous year despite the impact of NHI drug price revisions because of strong sales of mainstay products in Japan and of new products Tecentriq and Hemlibra, and an increase in exports to Roche and ROOI.
- ROOI increased year on year due to an increase in one-time income from the transfer of long-term listed products and the out-licensing of a developed product for diabetes.

Domestic Sales by Area

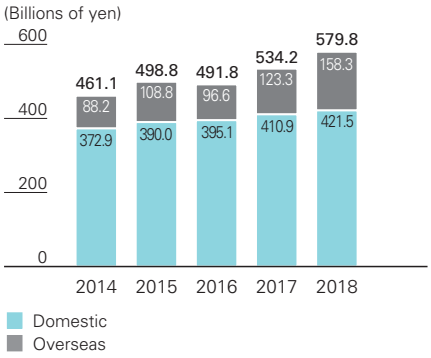
(Billions of yen)

	2016	2017	2018	2017/2018 Change
Domestic sales (excluding Tamiflu)	379.7	388.4	**389.2**	+0.2%
Oncology	220.3	225.9	**225.7**	-0.1%
Bone and joint diseases	86.1	93.3	**100.5**	+7.7%
Renal diseases	41.1	39.3	**36.3**	-7.6%
Others	32.2	29.9	**26.8**	-10.4%
Tamiflu sales	13.5	16.9	**10.7**	-36.7%
Ordinary sales	12.0	11.9	**10.1**	-15.1%
Sales for government stockpiles	1.5	5.0	**0.5**	-90.0%

Note: Sales of the transplant, immunology and infectious diseases area, which were disclosed separately up until 2016, were disclosed in Others from 2017. Figures for 2016 have been restated accordingly.

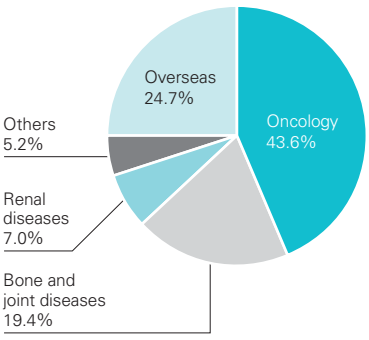
- In 2018, domestic sales (excluding Tamiflu) increased year on year despite the impact of the NHI drug price revisions in April 2018, led by new products in the oncology area and firm sales in the mainstay bone and joint diseases area.
- During 2018, we maintained our number-one share of the domestic oncology market (17.9 percent)*. Strong sales of Tecentriq, launched in April 2018, and steady increases in sales of mainstay products such as Alecensa offset lower sales of Herceptin and Rituxan due to the NHI drug price revisions in 2018.
- In the bone and joint diseases area, sales of mainstay products increased strongly, including Actemra, Edirol, which has been recognized as a standard therapy for osteoporosis, and Bonviva, which is available in both oral and intravenous formulations and has equivalent effect.

Revenues



Percentage of Total Sales (Excluding Tamiflu)

(2018)



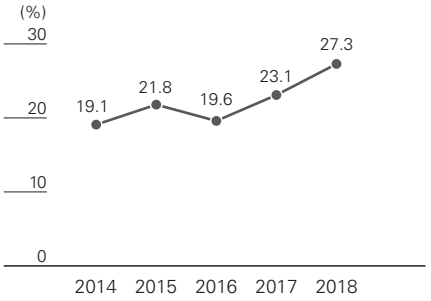
Overseas Sales

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Overseas sales	79.5	94.0	**127.9**	+36.1%
Actemra (exports to Roche)	59.1	59.4	**78.7**	+32.5%
Alecensa (exports to Roche)	3.7	13.9	**28.9**	+107.9%

- Overseas sales increased year on year in 2018. Contributing factors included solid sales of Actemra centered on the subcutaneous formulation and exports of Alecensa to Roche that exceeded forecasts at the beginning of the year due to its significant penetration of the U.S. and European markets.

Overseas Sales Ratio



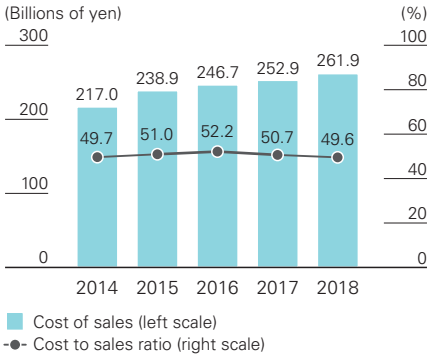
Cost of Sales (Core basis)

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Cost of sales	(246.7)	(252.9)	**(261.9)**	+3.6%
Cost to sales ratio	52.2%	50.7%	**49.6%**	-1.1% pts

- The cost to sales ratio decreased year on year in 2018, mainly because Chugai products, which have a lower cost to sales ratio than products in-licensed from Roche, accounted for a higher percentage of the sales mix.

Cost of Sales/Cost to Sales Ratio



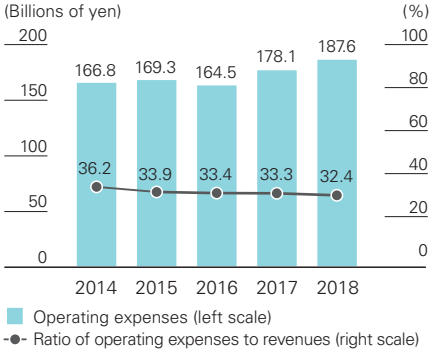
Operating Expenses (Marketing and Distribution Expenses, R&D Expenditures and General and Administration Expenses) (Core Basis)

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Total operating expenses	(164.5)	(178.1)	**(187.6)**	+5.3%
Marketing and distribution expenses	(69.8)	(72.8)	**(73.7)**	+1.2%
R&D expenditures	(82.6)	(88.9)	**(94.2)**	+6.0%
General and administration expenses	(12.1)	(16.3)	**(19.7)**	+20.9%

- Marketing and distribution expenses increased slightly year on year in 2018 because of an increase in promotional activities centered on new products and other factors.
- R&D expenditures increased year on year due to factors including the progress of development projects.
- General and administration expenses increased year on year due to an increase in expenses including legal fees and the enterprise tax.

Operating Expenses/ Ratio of Operating Expenses to Revenues



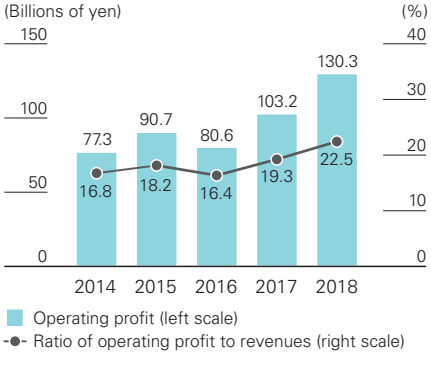
Operating Profit and Net Income (Core Basis)

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Operating profit	80.6	103.2	**130.3**	+26.3%
Ratio of operating profit to revenues	16.4%	19.3%	**22.5%**	+3.2% pts
Net income	56.8	76.7	**97.3**	+26.9%
Net income attributable to Chugai shareholders	56.1	75.9	**96.7**	+27.4%

- Operating profit and net income increased year on year in 2018. Factors included an increase in ROOI. In addition, the ratio of operating profit to revenues increased because of a lower cost to sales ratio due to the higher percentage of Chugai products in the sales mix.

Operating Profit/ Ratio of Operating Profit to Revenues

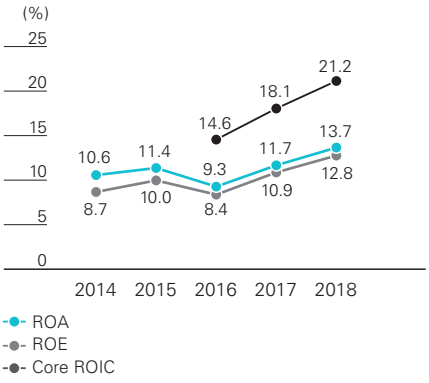


Profitability Indicators (Consolidated)

	2016	2017	2018	2016/2017 Change
Gross profit to revenues (%) (Core)	49.8	52.7	**54.8**	+2.1% pts
Operating profit to revenues (%) (Core)	16.4	19.3	**22.5**	+3.2% pts
Ratio of profit before taxes to total assets (ROA[1]) (%) (IFRS)	9.3	11.7	**13.7**	+2.0% pts
Ratio of net income attributable to Chugai shareholders (ROE[2]) (%) (IFRS)	8.4	10.9	**12.8**	+1.9% pts
Core return on invested capital (Core ROIC[3]) (%)	14.6	18.1	**21.2**	+3.1% pts

1. ROA = Profit before taxes / Total assets (average of beginning and end of fiscal year)
2. ROE = Net income attributable to Chugai shareholders / Capital and reserves attributable to Chugai shareholders (average of beginning and end of fiscal year)
3. Core ROIC = Core net operating profit after taxes / Net operating assets (Core ROIC is calculated by using Core income taxes)

ROA/ROE/Core ROIC



Financial Position

Assets, Liabilities and Net Assets

In conjunction with its decision to apply IFRS from 2013, Chugai has reorganized the consolidated balance sheets and discloses assets and liabilities including net operating assets for use as internal performance indicators (Roche discloses the same indicators). No items have been excluded from the IFRS balance sheet, as the Core basis results concept only applies to the income statement.

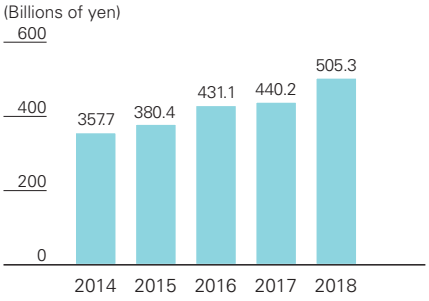
Net Operating Assets (NOA)

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Net working capital	258.5	250.7	**235.1**	-6.2%
Long-term net operating assets	172.7	189.5	**270.1**	+42.5%
Net operating assets (NOA)	431.1	440.2	**505.3**	+14.8%

- Net working capital at December 31, 2018 decreased from a year earlier, largely because inventories decreased due to the absence of front-loaded purchases centered on global products in the previous year and the effect of the transfer of long-term listed products.
- Long-term net operating assets increased from a year earlier because of an increase in investments in property, plant and equipment, primarily due to the purchase of land in Yokohama for a new laboratory.
- As a result, NOA increased from a year earlier due to factors including investments for the future.

Net Operating Assets



NOA are the total of net working capital and long-term net operating assets. Net working capital is composed of accounts receivable, inventories, accounts payable and other payables and receivables. Long-term net operating assets are composed of property, plant and equipment, intangible assets, and other items.

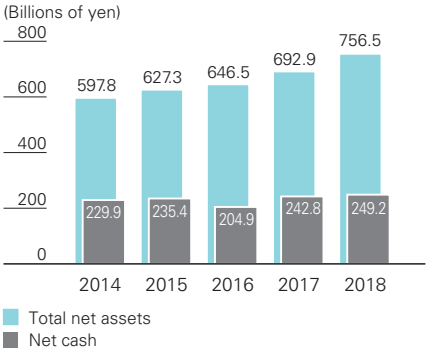
Total Net Assets

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Net operating assets (NOA)	431.1	440.2	**505.3**	+14.8%
Net cash	204.9	242.8	**249.2**	+2.6%
Other non-operating assets – net	10.5	9.9	**2.1**	-78.8%
Total net assets	646.5	692.9	**756.5**	+9.2%

- Total net assets at December 31, 2018 increased from a year earlier due to the purchase of land in Yokohama for a new laboratory.
- Despite aggressive investments for future growth, net cash has stayed above ¥200.0 billion for the past six years as Chugai's ability to generate cash has remained high.

Total Net Assets/Net Cash



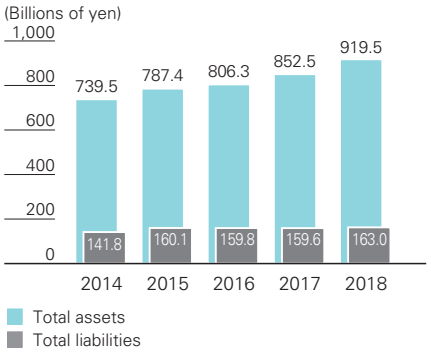
Total Assets and Total Liabilities

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Total assets	806.3	852.5	**919.5**	+7.9%
Total liabilities	(159.8)	(159.6)	**(163.0)**	+2.1%

- Looking at the components of total assets, total liabilities and total net assets, total liabilities at December 31, 2018 did not change significantly from a year earlier, and total assets and total net assets increased from a year earlier.

Total Assets/Total Liabilities

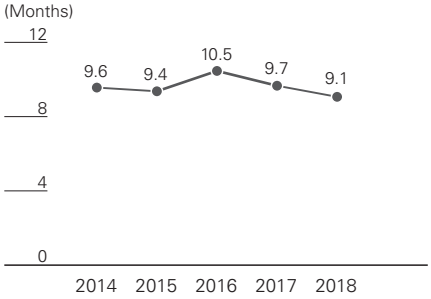


Financial Position Indicators

	2016	2017	2018	2017/2018 Change
Ratio of equity attributable to Chugai shareholders (%)	80.1	81.2	**82.2**	+1.0% pts
Core return on net operating assets (Core RONOA) (%)	14.0	17.6	**20.6**	+3.0% pts
Cash conversion cycle (months)	10.5	9.7	**9.1**	-0.6 months
Net cash turnover period (months)	5.0	5.5	**5.2**	-0.3 months
Current ratio (%)	468.0	487.5	**443.8**	-43.7% pts
Debt-to-equity ratio (%)	0.1	0.0	**0.0**	—

Notes: 1. Ratio of equity attributable to Chugai shareholders = Capital and reserves attributable to Chugai shareholders (fiscal year-end) / Total assets (fiscal year-end)
2. Core RONOA = Core net income / Net operating assets
3. Cash conversion cycle = [Trade accounts receivable / Sales + (Inventories – Trade accounts payable) / Cost of sales] x Months passed
4. Net cash turnover period = Net cash / Revenues x Months passed
5. Current ratio = Current assets (fiscal year-end) / Current liabilities (fiscal year-end)
6. Debt-to-equity ratio = Interest-bearing debt (fiscal year-end) / Capital and reserves attributable to Chugai shareholders (fiscal year-end)

Cash Conversion Cycle



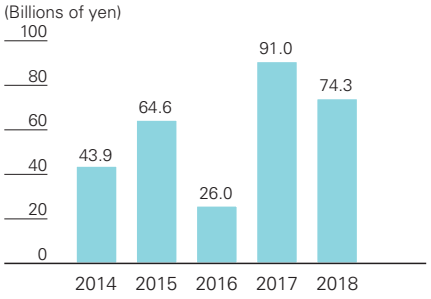
Cash Flows

In conjunction with its decision to apply IFRS from 2013, Chugai has reorganized the consolidated statements of cash flows and uses free cash flows as internal performance indicators (Roche discloses the same indicators). No items have been excluded from cash flows, as the Core basis results concept only applies to the income statement.

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Movement of Free Cash Flows				
Operating profit	76.9	98.9	**124.3**	+25.7%
Operating profit, net of operating cash adjustment	98.5	121.0	**147.4**	+21.8%
Operating free cash flow	26.0	91.0	**74.3**	-18.4%
Free cash flow	4.3	64.7	**43.7**	-32.5%
Net increase/decrease in cash	(30.5)	37.9	**6.4**	-83.1%
Consolidated Statement of Cash Flows				
Cash flows from operating activities	38.8	107.6	**119.1**	+10.7%
Cash flows from investing activities	(10.1)	(36.7)	**(74.1)**	+101.9%
Cash flows from financing activities	(33.4)	(29.6)	**(35.0)**	+18.2%
Net increase in cash and cash equivalents	(6.3)	43.7	**7.8**	-82.2%
Cash and cash equivalents at end of year	95.4	139.1	**146.9**	+5.6%

Operating Free Cash Flow



Operating free cash flow

- Operating profit, net of operating cash adjustment, totaled ¥147.4 billion after adjustment for items including ¥14.6 billion for depreciation of property, plant and equipment and impairment.

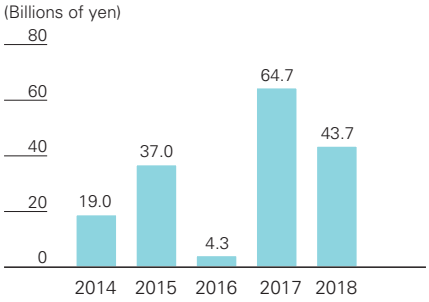
- Operating free cash flow was ¥74.3 billion. It is calculated by adjusting operating profit, net of operating cash adjustment, by subtracting the decrease in net working capital of ¥4.5 billion and subtracting expenditures of ¥77.7 billion for the purchase of property, plant and equipment and intangible assets. Purchases of property, plant and equipment mainly involved the purchase of land in Yokohama for a new laboratory and investments in research and plant equipment.

Free cash flow (FCF)

- Free cash flow for 2018 was ¥43.7 billion after items including income taxes paid of ¥31.6 billion and settlement for transfer pricing taxation of ¥3.2 billion.
- Net cash as of December 31, 2018, after dividends paid and foreign currency translation adjustments, increased ¥6.4 billion compared with the end of the previous fiscal year to ¥249.2 billion.

Note: Chugai formerly stated free cash flow net of dividends paid, but began stating free cash flow before dividends paid from the second quarter of 2016. Chugai changed its presentation of free cash flow to a generally accepted calculation that conforms to the change in the way that Roche defines free cash flow. Free cash flow from 2014 has been restated accordingly. The change has had no effect on operating free cash flow.

Free Cash Flow



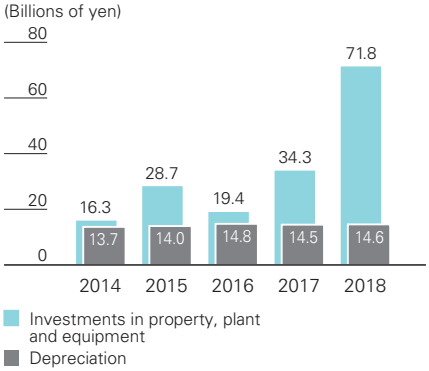
Capital Investments

(Billions of yen)

	2016	2017	2018	2017/2018 Change
Investments in property, plant and equipment	19.4	34.3	71.8	+109.3%
Depreciation	14.8	14.5	14.6	+0.7%

- The increase in capital investments in 2018 was largely the result of expenditures to purchase land in Yokohama for a new laboratory and to acquire research and plant equipment.
- Chugai plans to make capital investments of ¥56.0 billion during 2019, consisting primarily of new investment in the main facilities below, and expects depreciation to total ¥15.0 billion.

Capital Investments in Property, Plant and Equipment/Depreciation



Major Capital Investments – Current and Planned

(Chugai Pharmaceutical Co., Ltd.)

Facilities (Location)	Description	Planned investment (Billions of yen) Total amount	Planned investment (Billions of yen) Investment to date	Fund-raising method	Start of construction	Planned transfer/ completion date
—	Purchase of land for business in Totsuka-ku, Yokohama	43.4	43.0	Self-financing	March 2016	December 2018
—	Comprehensive collaboration in research activities with IFReC	10.0	—	Self-financing	April 2017	March 2027
Ukima Research Laboratories (Kita-ku, Tokyo)	Construction of a new synthetic research building for strengthening the process development function of small and middle molecule APIs	4.5	1.3	Self-financing	May 2018	January 2020

(Chugai Pharma Manufacturing Co., Ltd.)

Facilities (Location)	Description	Planned investment (Billions of yen) Total amount	Planned investment (Billions of yen) Investment to date	Fund-raising method	Start of construction	Planned transfer/ completion date
Utsunomiya Plant (Utsunomiya City, Tochigi)	Enhancement of high-mix, low-volume production capability for pre-filled syringe form products (Installation of tray filler)	6.0	6.0	Self-financing	September 2013	October 2018
Ukima Plant (Kita-ku, Tokyo)	Enhancement of high-mix, low-volume production of antibody APIs for initial commercial products (Expansion of production capability with construction of UK3 facility)	37.2	36.7	Self-financing	November 2015	December 2018

Outlook for 2019

Forecast Assumptions

For 2019, Chugai assumes exchange rates of ¥114/CHF, ¥128/EUR, ¥111/USD and ¥82/SGD.

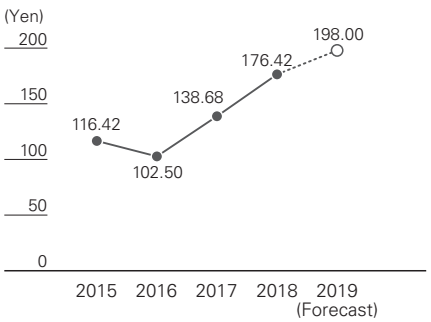
Results Forecast (Core Basis)

(Billions of yen)

	2017	2018	2019 Forecast	2018/2019 Change
Sales	499.3	527.8	528.0	0.0%
Domestic	405.3	399.9	389.1	-2.7%
Overseas	94.0	127.9	138.9	+8.6%
Royalties and other operating income (ROOI)	34.9	51.9	64.5	+24.3%
Royalty and profit-sharing income	17.2	24.1	53.5	+122.0%
Other operating income	17.7	27.9	11.0	-60.6%
Core operating profit	103.2	130.3	143.0	+9.7%
Core EPS (Yen)	138.68	176.42	198.00	+12.2%

- Domestic sales are forecast to decrease compared with 2018 despite expected sales growth from new products including Hemlibra and Tecentriq due to competing products including generics and the effect of NHI drug price revisions.
- Overseas sales are forecast to increase in exports to Roche compared with 2018 because of favorable growth of Alecensa and sustained growth in Actemra sales volume.
- ROOI is forecast to increase substantially because component royalties and profit-sharing income are expected to increase, primarily from Roche in connection with Hemlibra. At the same time, other operating income is expected to decrease due to factors including the absence of one-time income from transfer of long-term listed products recognized in 2018.
- Regarding cost of sales and operating expenses, we expect the cost to sales ratio to decrease compared with the previous year due to changes in the composition of sales by product, but we expect overall operating expenses to increase, mainly due to an increase in R&D expenditures as a result of the progress of development projects.
- We forecast that Core operating profit and Core EPS will increase despite the expected slight decrease in domestic sales, mainly as a result of growth in exports to Roche, additional royalty income from Roche for Hemlibra, and the lower cost to sales ratio.

Core EPS*



* Core EPS = Core net income attributable to Chugai shareholders / Diluted weighted average shares outstanding

Fundamental Profit Distribution Policy and Dividends

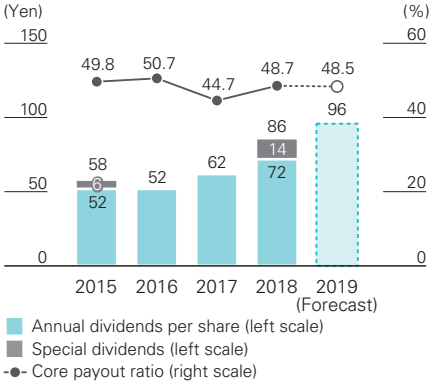
After taking strategic funding needs and the results forecast into account, Chugai aims for a consolidated payout ratio of 50 percent of Core EPS on average to provide for stable allocation of profit to all shareholders. Internal reserves will be used to increase corporate value through investments for further growth in existing strategic areas and to explore future business opportunities.

(Yen)

	2016	2017	2018	2019 Forecast
Basic net income per share (EPS)	98.12	133.04	169.08	—
Core EPS	102.50	138.68	176.42	198.00
Equity per share attributable to Chugai shareholders (BPS)	1,181.67	1,265.46	1,381.26	—
Cash dividends per share	52	62	86	96
Core payout ratio	50.7%	44.7%	48.7%	48.5%

- Cash dividends per share for 2018 totaled ¥86.
- The five-year average Core EPS payout ratio for 2018 was 48.6 percent. (We expect the five-year average Core EPS payout ratio for 2019 to be 48.4 percent.)
- The forecast for cash dividends per share for 2019 includes an interim dividend of ¥48.

Dividends per Share/Core Payout Ratio



Business Risks

Chugai's corporate performance is subject to material impact from a range of possible future events. Below, we list what we consider the principal sources of risk to the development of our business. We recognize the possibility of these risk events actually occurring, and have prepared policies to forestall such events and take appropriate measures when they do occur.

The categories of risk identified in this section are based on assessments made by Chugai Pharmaceutical as of December 31, 2018.

New Product Research and Development

With the aim of becoming a top innovator for advanced and sustainable patient-centric healthcare, powered by its unique strength in science and technology, Chugai aggressively pursues research and development in Japan and overseas. Our development pipeline is well stocked, especially in the field of oncology. However, bringing all drug candidates smoothly through to the market from the development stage may not be possible, and we expect to have to abandon development in some cases. When such a situation occurs, there is a possibility of a material impact on Chugai's business performance and financial position, depending on the product under development.

Changes in Product Environments

In recent years, there have been rapid technological advancements in the pharmaceutical industry, and Chugai faces fierce competition from pharmaceutical companies in Japan and overseas. Chugai's business performance and financial position may be materially affected by changes in product environments caused by the sale of competitor products and generics and also by changes in marketing and technology license contracts concluded by Chugai.

Side Effects

Pharmaceutical products are approved by regulatory authorities in each country after stringent screening. However, because of the characteristics of these products, it is difficult to completely prevent side effects from their use even if all possible safety measures are taken. In cases where side effects occur, in particular newly discovered serious side effects, there is a risk of a material impact on Chugai's business performance and financial position.

Medical System Reform

Japan's health insurance system is being reformed against a backdrop of rapid demographic change, with a falling birthrate and an increasing number of elderly people. As part of this process, measures are being taken to curb medical expenses, including revisions to the system of reimbursement of medical fees, and NHI drug price reforms. Overseas, pressure to reduce drug costs is increasing, especially in advanced countries. Future measures to curb drug costs in these countries could materially affect Chugai's business performance and financial position.

Intellectual Property Rights

Chugai recognizes that it applies intellectual property rights in pursuing its business activities, and takes care to distinguish its own proprietary intellectual property rights and licensing arrangements recognized under law. However, the possibility remains of unintentional infringement on third-party intellectual property rights. Major disputes related to intellectual property rights relating to our business could have a material impact on Chugai's business performance and financial position.

Strategic Alliance with Roche

In line with its strategic alliance with Roche, Chugai is the only pharmaceutical partner of Roche in the Japanese market and has granted Roche first refusal rights with respect to its products in global markets outside Japan, excluding South Korea and Taiwan. Consequently, Chugai has in-licensed and out-licensed many products and projects from and to Roche. Changes in Chugai's strategic alliance with Roche for any reason could have a material impact on its business performance and financial position.

International Business Activities

Chugai actively conducts international operations including overseas marketing and research and development, and export and import of bulk drug products. These international business activities expose Chugai to risks associated with legal and regulatory changes, political instability, economic uncertainty, local labor-management relations, changes in and interpretations of systems of taxation, changes in foreign currency markets, differences in commercial practices and other issues. Compliance and other problems arising from these issues could have a material impact on Chugai's business performance and financial position.

Information Technology Security and Information Control

Chugai makes full use of a wide range of information technology systems in its business activities. Consequently, it is subject to the risk of its operations being disrupted due to system malfunctions, computer viruses or other external factors. In addition, an accident or other incident resulting in the leakage of confidential information could have a material impact on Chugai's business performance and financial position.

Impact from Large-Scale Disasters and Other Contingencies

In the event of natural disasters such as earthquakes or typhoons, or accidents such as fires or other contingencies, damage to Chugai's business sites or sales locations, or those of its business partners, could interrupt its operations. In addition, Chugai could incur significant expenses for the repair of damaged buildings and facilities. Such circumstances could therefore have a material impact on Chugai's business performance and financial position.

Litigation

There is a possibility that litigation may be brought against Chugai over side effects of pharmaceuticals, product liability, labor issues, fair trade or other issues associated with its business activities, which could have a material impact on Chugai's business performance and financial position.

Environmental Issues

In addition to complying with laws and regulations related to environmental issues, Chugai has established a set of even higher voluntary standards and has been making efforts to achieve them. In the course of Chugai's business activities, violations of relevant laws or regulations may occur as a result of an accident or other incident. Any related expenses could have a material impact on Chugai's business performance and financial position.

Consolidated Financial Statements

1. Consolidated income statement and consolidated statement of comprehensive income

(1) Consolidated income statement in millions of yen

	Year ended December 31	
	2018	2017
Revenues	**579,787**	**534,199**
Sales (Notes 2 and 3)	527,844	499,308
Royalties and other operating income (Notes 2 and 3)	51,943	34,891
Cost of sales	(262,847)	(254,171)
Gross profit	**316,940**	**280,028**
Marketing and distribution	(73,706)	(72,800)
Research and development	(99,202)	(92,947)
General and administration	(19,710)	(15,347)
Operating profit	**124,323**	**98,934**
Financing costs (Note 4)	(111)	(110)
Other financial income (expense) (Note 4)	449	(87)
Other expense (Note 5)	(3,212)	(1,706)
Profit before taxes	**121,449**	**97,031**
Income taxes (Note 6)	(28,370)	(23,490)
Net income	**93,079**	**73,541**
Attributable to:		
Chugai shareholders (Note 21)	92,488	72,713
Non-controlling interests (Note 22)	591	827
Earnings per share (Note 26)		
Basic (yen)	169.08	133.04
Diluted (yen)	168.80	132.83

(2) Consolidated statement of comprehensive income in millions of yen

	Year ended December 31	
	2018	2017
Net income recognized in income statement	**93,079**	**73,541**
Other comprehensive income		
Remeasurements of defined benefit plans (Notes 6 and 21)	(2,472)	916
Financial assets measured at fair value through OCI (Notes 6 and 21)	363	-
Items that will never be reclassified to the income statement	**(2,109)**	**916**
Available-for-sale financial assets (Notes 6 and 21)	-	1,204
Financial assets measured at fair value through OCI (Notes 6 and 21)	0	-
Cash flow hedges (Notes 6 and 21)	(225)	(3,293)
Currency translation of foreign operations (Notes 6 and 21)	(3,158)	3,713
Items that are or may be reclassified to the income statement	**(3,383)**	**1,624**
Other comprehensive income, net of tax (Note 6)	**(5,492)**	**2,540**
Total comprehensive income	**87,587**	**76,081**
Attributable to:		
Chugai shareholders (Note 21)	87,078	75,154
Non-controlling interests (Note 22)	509	927

2. **Consolidated balance sheet** in millions of yen

	December 31, 2018	December 31, 2017
Assets		
Non-current assets:		
Property, plant and equipment (Note 7)	222,388	171,569
Intangible assets (Note 8)	22,699	21,078
Financial non-current assets (Note 9)	9,723	11,350
Deferred tax assets (Note 6)	35,568	34,501
Other non-current assets (Note 10)	29,077	14,836
Total non-current assets	**319,455**	**253,333**
Current assets:		
Inventories (Note 11)	159,360	169,056
Accounts receivable (Note 12)	179,556	174,284
Current income tax assets (Note 6)	3	717
Marketable securities (Note 13)	102,533	104,018
Cash and cash equivalents (Note 14)	146,860	139,074
Other current assets (Note 15)	11,781	11,990
Total current assets	**600,093**	**599,141**
Total assets	**919,548**	**852,473**
Liabilities		
Non-current liabilities:		
Long-term debt (Note 16)	(82)	(207)
Deferred tax liabilities (Note 6)	(9,031)	(9,211)
Defined benefit plan liabilities (Note 24)	(14,671)	(9,292)
Long-term provisions (Note 17)	(2,072)	(2,041)
Other non-current liabilities (Note 18)	(1,946)	(15,923)
Total non-current liabilities	**(27,802)**	**(36,674)**
Current liabilities:		
Short-term debt (Note 16)	(133)	(129)
Current income tax liabilities (Note 6)	(19,567)	(18,541)
Short-term provisions (Note 17)	(1)	(79)
Accounts payable (Note 19)	(71,706)	(63,518)
Other current liabilities (Note 20)	(43,810)	(40,635)
Total current liabilities	**(135,218)**	**(122,902)**
Total liabilities	**(163,019)**	**(159,576)**
Total net assets	**756,529**	**692,897**
Equity:		
Capital and reserves attributable to Chugai shareholders (Note 21)	755,864	691,924
Equity attributable to non-controlling interests (Note 22)	664	973
Total equity	**756,529**	**692,897**

3. **Consolidated statement of cash flows** in millions of yen

	Year ended December 31	
	2018	2017
Cash flows from operating activities		
Cash generated from operations (Note 27)	151,857	124,776
(Increase) decrease in working capital	4,486	14,465
Payments made for defined benefit plans	(2,652)	(2,483)
Utilization of provisions (Note 17)	(29)	(34)
Other operating cash flows	(3,022)	(6,447)
Cash flows from operating activities, before income taxes paid	**150,639**	**130,278**
Income taxes paid	(31,565)	(22,655)
Total cash flows from operating activities	**119,074**	**107,623**
Cash flows from investing activities		
Purchase of property, plant and equipment	(71,785)	(32,881)
Purchase of intangible assets	(5,886)	(11,645)
Disposal of property, plant and equipment	49	64
Disposal of intangible assets	-	452
Interest and dividends received (Note 27)	200	271
Purchases of marketable securities	(263,503)	(208,480)
Sales of marketable securities	264,711	215,510
Purchases of investment securities	(709)	-
Sales of investment securities	2,863	-
Other investing cash flows	(0)	(8)
Total cash flows from investing activities	**(74,060)**	**(36,718)**
Cash flows from financing activities		
Interest paid	(5)	(5)
Dividends paid to Chugai shareholders	(35,010)	(30,054)
Dividends paid to non-controlling shareholders	(791)	(944)
Exercises as part of equity compensation plans (Note 25)	996	922
(Increase) decrease in own equity instruments	(19)	(20)
Other financing cash flows	(187)	538
Total cash flows from financing activities	**(35,014)**	**(29,563)**
Net effect of currency translation on cash and cash equivalents	(2,215)	2,363
Increase (decrease) in cash and cash equivalents	**7,785**	**43,706**
Cash and cash equivalents at January 1	139,074	95,368
Cash and cash equivalents at December 31 (Note 14)	**146,860**	**139,074**

4. **Consolidated statement of changes in equity** in millions of yen

	Attributable to Chugai shareholders						
	Share capital	Capital surplus	Retained earnings	Other reserves	Subtotal	Non-controlling interests	Total equity
Year ended December 31, 2017							
At January 1, 2017	**72,967**	**63,500**	**507,399**	**1,642**	**645,508**	**989**	**646,497**
Net income	-	-	72,713	-	72,713	827	73,541
Available-for-sale financial assets (Notes 6 and 21)	-	-	-	1,204	1,204	-	1,204
Cash flow hedges (Notes 6 and 21)	-	-	-	(3,293)	(3,293)	-	(3,293)
Currency translation of foreign operations (Notes 6, 21 and 22)	-	-	-	3,613	3,613	100	3,713
Remeasurements of defined benefit plans (Notes 6 and 21)	-	-	916	-	916	-	916
Total comprehensive income	-	-	**73,630**	**1,524**	**75,154**	**927**	**76,081**
Dividends (Notes 21 and 22)	-	-	(30,055)	-	(30,055)	(944)	(30,998)
Equity compensation plans (Note 21)	3	102	-	-	105	-	105
Own equity instruments (Note 21)	-	1,213	-	-	1,213	-	1,213
At December 31, 2017	**72,970**	**64,815**	**550,974**	**3,166**	**691,924**	**973**	**692,897**
Year ended December 31, 2018							
At January 1, 2018	**72,970**	**64,815**	**550,974**	**3,166**	**691,924**	**973**	**692,897**
Impact of changes in accounting policies	**-**	**-**	**10,606**	**-**	**10,606**	**-**	**10,606**
At January 1, 2018 (revised)	**72,970**	**64,815**	**561,580**	**3,166**	**702,530**	**973**	**703,503**
Net income	-	-	92,488	-	92,488	591	93,079
Financial assets measured at fair value through OCI (Notes 6 and 21)	-	-	-	363	363	-	363
Cash flow hedges (Notes 6 and 21)	-	-	-	(225)	(225)	-	(225)
Currency translation of foreign operations (Notes 6, 21 and 22)	-	-	-	(3,077)	(3,077)	(82)	(3,158)
Remeasurements of defined benefit plans (Notes 6 and 21)	-	-	(2,472)	-	(2,472)	-	(2,472)
Total comprehensive income	**-**	**-**	**90,016**	**(2,938)**	**87,078**	**509**	**87,587**
Dividends (Notes 21 and 22)	-	-	(35,003)	-	(35,003)	(817)	(35,820)
Equity compensation plans (Note 21)	31	(97)	-	-	(66)	-	(66)
Own equity instruments (Note 21)	-	1,325	-	-	1,325	-	1,325
Transfer from other reserves to retained earnings	-	-	1,498	(1,498)	-	-	-
At December 31, 2018	**73,000**	**66,043**	**618,091**	**(1,270)**	**755,864**	**664**	**756,529**

Notes to Consolidated Financial Statements

1. General accounting principles and significant accounting policies

(1) Basis of preparation of the consolidated financial statements
These financial statements are the annual consolidated financial statements of Chugai Pharmaceutical Co., Ltd., ("Chugai") a company registered in Japan, and its subsidiaries ("the Group"). The common stock of Chugai is publicly traded and is listed on the Tokyo Stock Exchange under the stock code "TSE: 4519". The consolidated financial statements were approved by Tatsuro Kosaka, President & CEO, and Toshiaki Itagaki, Executive Vice President & CFO on March 28, 2019.

Roche Holding Ltd. is a public company registered in Switzerland and the parent company of the Roche Group, which discloses its results in accordance with International Financial Reporting Standards ("IFRS"). The shareholding percentage of Roche Holding Ltd. in Chugai is 59.89% (61.25% of the total number of shares issued excluding own equity instruments). The Group became a principal member of the Roche Group after entering into a strategic alliance in October 2002.

The Group meets all of the requirements for a "Specified Company under Designated International Financial Reporting Standards" as stipulated under Article 1-2 of the "Regulations Concerning Terminology, Forms, and Preparation Methods of Consolidated Financial Statements" (Ministry of Finance of Japan Regulation No. 28, 1976). Hence, in accordance with Article 93 of the Regulation, the Consolidated Financial Statements have been prepared in accordance with IFRS.

The consolidated financial statements are presented in Japanese yen, which is Chugai's functional currency and amounts are rounded to the nearest ¥1 million. As a result, the totals shown in the consolidated financial statements do not necessarily agree with the sum of the individual amounts. They have been prepared using the historical cost convention except for items that are required to be accounted for at fair value.

(2) Key accounting judgments, estimates and assumptions
The preparation of the consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets, liabilities and contingent amounts. Actual outcomes could differ from those management estimates. The estimates and underlying assumptions are reviewed on an ongoing basis and are based on historical experience and various other factors. Revisions to estimates are recognized in the period in which the estimate is revised. The following are considered to be the key accounting judgments, estimates and assumptions made and are believed to be appropriate based upon currently available information.

Revenues.
Policy applicable from 1 January 2018
Sales are recorded net of allowances for estimated rebates, cash discounts and estimates of product returns, all of which are established at the time of sale. The estimated rebates, chargebacks, cash discounts and estimates of product returns are recorded as current liabilities. The Group makes accruals for expected sales rebates, which are estimated based on analyses of existing contractual or legislatively-mandated obligations, historical trends and the Group's experience. As these deductions are based on management estimates, they may be subject to change as better information becomes available. Such changes that arise could impact the accruals recognized in the balance sheet in future periods and consequently the level of sales recognized in the income statement in future periods.

Out-licensing agreements may be entered into with no further obligation or may include commitments to conduct research, late-stage development, regulatory approval, co-marketing or manufacturing. These may be settled by a combination of upfront payments, milestone payments, and reimbursements for services provided. Whether to consider these commitments as a single performance obligation or separate ones, or even being in scope of IFRS 15 'Revenues from Contracts with Customers', is not straightforward and requires some judgement. Depending on the conclusion, this may result in all revenue being calculated at inception and either being recognized at once or spread over the term of a longer performance obligation.

As a practical expedient, the Group does not adjust the promised amount of consideration for the effects of a significant financing component, if the group expects, at contract inception, that the period between when the group transfers a promised good or service to a customer and when the customer pays for that good or service will be one year or less.

Policy applicable before 1 January 2018
Revenues are only recognized when, in management's judgment, the significant risks and rewards of ownership have been transferred and when the Group does not retain continuing managerial involvement or effective control over the goods sold or when the obligation has been fulfilled. The Group is party to out-licensing agreements which involve upfront and milestone payments occurring over several years and which may also involve certain future obligations. Therefore, for some transactions this can result in cash receipts being initially recognized as deferred income and then released to income over subsequent periods on the basis of the performance of the conditions specified in the agreement.

The Group makes accruals for expected sales rebates, which are estimated based on analyses of existing contractual or legislatively-mandated obligations, historical trends and the Group's experience.

As these deductions are based on management estimates, they may be subject to change as better information becomes available.

Such changes that arise could impact the accruals recognized in the balance sheet in future periods and consequently the level of sales recognized in the income statement in future periods.

Impairment. Intangible assets not yet available for use are reviewed annually for impairment. Property, plant and equipment and intangible assets in use are assessed for impairment when there is a triggering event that provides evidence that an asset may be impaired. To assess whether any impairment exists estimates of expected future cash flows are used. Actual outcomes could vary significantly from such estimates of discounted future cash flows. Factors such as changes in discount rates, the planned use of buildings, machinery or equipment, closure of facilities, the presence or absence of competition, technical obsolescence and lower than anticipated product sales could lead to shorter useful lives or impairment.

Post-employment benefits. The Group operates a number of defined benefit plans and the fair values of the recognized plan assets and liabilities are based upon statistical and actuarial calculations. The measurement of the net defined benefit obligation is particularly sensitive to changes in the discount rate and expected mortality. The actuarial assumptions used may differ materially from actual results due to changes in market and economic conditions, longer or shorter life spans of participants, and other changes in the factors being assessed. These differences could impact on the defined benefit plan assets or liabilities recognized in the balance sheet in future periods.

Legal. The Group provides for anticipated legal settlement costs when there is a probable outflow of resources that can be reliably estimated. Where no reliable estimate can be made, no provision is recorded and contingent liabilities are disclosed where material. The status of significant legal cases is disclosed in Additional Information. These estimates consider the specific circumstances of each legal case and relevant legal advice, and are inherently judgmental due to the highly complex nature of legal cases. The estimates could change substantially over time as new facts emerge and each legal case progresses.

Environmental. The Group provides for anticipated environmental remediation costs when there is a probable outflow of resources that can be reasonably estimated. Environmental provisions consist primarily of costs to fully clean and refurbish contaminated sites, including landfills, and to treat and contain contamination at certain other sites. These estimates are inherently judgmental due to uncertainties related to the detection of previously unknown contaminated sites, the method and extent of remediation, the percentage of the problematic materials attributable to the Group at the remediation sites, and the financial capabilities of the other potentially responsible parties. The estimates could change substantially over time as new facts emerge and each environmental remediation progresses.

Income taxes. Significant estimates are required to determine the current and deferred tax assets and liabilities. Some of these estimates are based on interpretations of existing tax laws or regulations. Where tax positions are uncertain, accruals are recorded within income tax liabilities for management's best estimate of the ultimate liability that is expected to arise based on the specific circumstances and the Group's historical experience. Factors that may have an impact on current and deferred taxes include changes in tax laws, regulations or rates, changing interpretations of existing tax laws or regulations, future levels of research and development spending and changes in pre-tax earnings.

Leases. The treatment of leasing transactions is mainly determined by whether the lease is considered to be an operating or finance lease. In making this assessment, management looks at the substance of the lease, as well as the legal form, and makes a judgment about whether substantially all of the risks and rewards of ownership are transferred. Arrangements which do not take the legal form of a lease but that nevertheless convey the right to use an asset are also covered by such assessments.

(3) Accounting policies

Consolidation policy

Subsidiaries are all companies over which the Group has control. Chugai controls an entity when the Group is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. Companies acquired during the year are consolidated from the date on which control is transferred to the Group, and subsidiaries to be divested are included up to the date on which control passes from the Group. Inter-company balances, transactions and resulting unrealized income are eliminated in full. Changes in ownership interests in subsidiaries are accounted for as equity transactions if they occur after control has already been obtained and if they do not result in a loss of control. Associates are companies over which the Group exercises, or has the power to exercise, significant influence, but which it does not control and they are accounted for using the equity method.

Foreign currency translation

Most foreign subsidiaries of the Group use their local currency as their functional currency. Certain foreign subsidiaries use other currencies (such as the euro) as their functional currency where this is the currency of the primary economic environment in which the entity operates. Local transactions in other currencies are initially reported using the exchange rate at the date of the transaction. Gains and losses from the settlement of such transactions and gains and losses on translation of monetary assets and liabilities denominated in other currencies are included in income, except when they are qualifying cash flow hedges. In such cases the gains and losses are deferred into other comprehensive income.

Upon consolidation, assets and liabilities of foreign subsidiaries using functional currencies other than Japanese yen are translated into Japanese yen using year-end rates of exchange. The income statement and statement of cash flows are translated at the average rates of exchange for the year. Translation differences due to the changes in exchange rates between the beginning and the end of the year and the difference between net income translated at the average and year-end exchange rates are taken directly to other comprehensive income.

Revenue

Policy applicable from 1 January 2018

Sales. Revenue from the sale of goods supplied is recorded as 'Sales'.

Sales are recognized when a promise in a customer contract (performance obligation) has been satisfied by transferring control over the promised goods to the customer. Control over a promised good refers to the ability to direct the use of, and obtain substantially all of the remaining benefits from, those goods. Control is usually transferred upon shipment or delivery to or upon receipt of goods by the customer, in accordance with the delivery and acceptance terms agreed with the customers.

The amount of sales to be recognized (transaction price) is based on the consideration the Group expects to receive in exchange for its goods, excluding amounts collected on behalf of third parties such as consumption tax or other taxes directly linked to sales. The Group recognises a deferred income (contract liability) if consideration has been received (or has become receivable) before the Group transfers the promised goods to the customer.

Royalty and other operating income. 'Royalty and other operating income' includes royalty income, income from out-licensing agreements and income from disposal of products and other items.

Revenue for a sales-based or usage-based royalty promised in exchange for a license of intellectual property is recognized when the subsequent sale or usage occurs.

Income from out-licensing agreements typically arises from the receipt of upfront, milestone and other similar payments from third parties for granting a license to product or technology related intellectual property (IP). Out-licensing agreements may be entered into with no further obligation or may include commitments to conduct research, late-stage development, regulatory approval, co-marketing or manufacturing. Licenses granted are usually rights to use IP and generally unique. Therefore the basis of allocating revenue to performance obligations makes use of the residual approach. Upfront payments and other licensing fees are usually recognized upon granting the license unless some of the income shall be deferred for other performance obligations using the residual approach. Such deferred income is released and recognized as revenue when other performance obligations are satisfied. Milestone income is recognized at the point in time when it is highly probable that the respective milestone event criteria is achieved, and the risk of revenue reversal is considered remote.

Payments received for the disposal of product and similar rights are recognized as revenue upon transfer of control over such rights. To the extent that some of these payments relate to other performance obligations, a portion is deferred using the residual approach and recognized as revenue when performance obligations are satisfied.

Income from profit-sharing arrangements with collaboration partners is recognized as underlying sales and cost of sales are recorded by the collaboration partners.

Policy applicable before 1 January 2018
Sales represent amounts received and receivable for goods supplied to customers after deducting trade discounts, cash discounts and volume rebates, and exclude consumption taxes and other taxes directly linked to sales. Revenues from the sale of products are recognized upon transfer to the customer of significant risks and rewards. Trade discounts, cash discounts and volume rebates are recorded on an accrual basis consistent with the recognition of the related sales. Sales returns, charge-backs and other rebates are also deducted from sales and recorded as accrued liabilities or as a deduction from accounts receivable.

Royalties and other operating income are recorded as earned or as the services are performed. Single transactions are split into separately identifiable components to reflect the substance of the transaction, where necessary. Conversely, two or more transactions may be considered together for revenue recognition purposes, where the commercial effect cannot be understood without reference to the series of transactions as a whole.

Royalty income is recognized on an accrual basis in accordance with the substance of the respective licensing agreements. If the collectability of a royalty amount is not reasonably assured, those royalties are recognized as revenues when the cash is received. The Group receives upfront, milestone and other similar payments from third parties relating to the sale or licensing of products or technology. Revenues associated with performance milestones are recognized based on achievement of the deliverables as defined in the respective agreements. Upfront payments and license fees for which there are subsequent deliverables are initially reported as deferred income and are recognized in income as earned over the period of the development collaboration or the manufacturing obligation.

Cost of sales
Cost of sales includes the corresponding direct production costs and related production overheads of goods sold and services rendered. Royalties, alliance and collaboration expenses, including all collaboration profit-sharing arrangements are also reported as part of cost of sales. Start-up costs between validation and the achievement of normal production capacity are expensed as incurred.

Research and development
Internal research and development activities are expensed as incurred for the following:
- Internal research costs incurred for the purpose of gaining new scientific or technical knowledge and understanding.
- Internal development costs incurred for the application of research findings or other knowledge to plan and develop new products for commercial production. The development projects undertaken by the Group are subject to technical, regulatory and other uncertainties, such that, in the opinion of management, the criteria for capitalization as intangible assets are not met prior to obtaining marketing approval by the regulatory authorities in major markets.
- Post-marketing studies after regulatory approval, such as phase IV costs in the pharmaceuticals business, generally involve safety surveillance and on-going technical support of a drug after it receives marketing approval to be sold. They may be required by regulatory authorities or may be undertaken for safety or commercial reasons. The costs of such post-marketing studies are not capitalized as intangible assets, as in the opinion of management, they do not generate separately identifiable incremental future economic benefits that can be reliably measured.

Acquired in-process research and development resources obtained through in-licensing arrangements, business combinations or separate asset purchases are capitalized as intangible assets. The acquired asset must be controlled by the Group, be separately identifiable and expected to generate future economic benefits, even if uncertainty exists as to whether the research and development will ultimately result in a marketable product. Consequently, upfront and milestone payments to third parties for pharmaceutical products or compounds before regulatory marketing approval are recognized as intangible assets. Assets acquired through such arrangements are measured on the basis set out in the “Intangible assets” policy. Subsequent internal research and development costs incurred post-acquisition are treated in the same way as other internal research and development costs. If research and development are embedded in contracts for strategic alliances, the Group carefully assesses whether upfront or milestone payments constitute funding of research and development work or acquisition of an asset.

Employee benefits
Short-term employee benefits include wages, salaries, social security contributions, paid annual leave and sick leave, profit sharing and bonuses, and non-monetary benefits for current employees. The costs are recognized within the operating results when the employee has rendered the associated service. The Group recognizes a liability for profit sharing and bonuses where contractually obliged or where there is a past practice that has created a constructive obligation.

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. Termination costs are recognized at

the earlier of when the Group can no longer withdraw the offer of the benefits or when the Group recognizes any related restructuring costs.

Post-employment benefits
For defined contribution plans, the Group contributions are recognized within the operating results when the employee has rendered the associated service.

For defined benefit plans the liability or asset recognized in the balance sheet is net amount of the present value of the defined benefit obligation and the fair value of the plan assets. All changes in the net defined benefit liability (asset) are recognized as they occur as follows:

Recognized in the income statement:
- Current service costs are charged to the appropriate income statement heading within the operating results.
- Past service costs, including curtailment gains or losses, are recognized immediately in general and administration within the operating results.
- Settlement gains or losses are recognized in general and administration within the operating results.
- Net interest on the net defined benefit liability (asset) is recognized in financing costs.

Recognized in other comprehensive income:
- Actuarial gains and losses arising from experience adjustments (the difference between previous assumptions and what has actually occurred) and changes in actuarial assumptions.
- The return on plan assets, excluding amounts included in net interest on the net defined benefit liability (asset).

Net interest on the net defined benefit liability (asset) comprises interest income on plan assets and interest costs on the defined benefit obligation. The net interest is calculated using the same discount rate that is used in calculating the defined benefit obligation, applied to the net defined benefit liability (asset) at the start of the period, taking account of any changes from contribution or benefit payments.

Pension assets and liabilities in different defined benefit plans are not offset unless the Group has a legally enforceable right to use the surplus in one plan to settle obligations in the other plan.

Equity compensation plans
The fair value of all equity compensation awards, including restricted stocks, granted to directors and certain employees is estimated at the grant date and recorded as an expense over the vesting period. The expense is charged to the appropriate income statement heading within the operating results. For equity-settled plans, an increase in equity is recorded for this expense and any subsequent cash flows from exercises of vested awards are recorded as changes in equity.

Property, plant and equipment
Property, plant and equipment are initially recorded at cost of purchase or construction, and include all costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. These include items such as costs of site preparation, installation and assembly costs and professional fees. The net costs of testing whether the asset is functioning properly, including validation costs, are also included in the initially recorded cost of construction. Property, plant and equipment are depreciated on a straight-line basis, except for land, which is not depreciated. The estimated useful lives of major classes of depreciable assets are as follows:
- Land improvements: 40 years
- Buildings: 10-50 years
- Machinery and equipment: 3-15 years

Where parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate components. The estimated useful lives of the assets are regularly reviewed, and, if necessary, the future depreciation charges are accelerated. Repairs and maintenance costs are expensed as incurred.

Leases
Where the Group is the lessee, finance leases exist when substantially all of the risks and rewards of ownership are transferred to the Group. Finance leases are capitalized at the start of the lease at fair value, or the present value of the minimum lease payments, if lower. The rental obligation, net of finance charges, is reported within debt. Finance lease assets are depreciated over the shorter of the lease term and its useful life. The interest element of the lease payment is charged against income over the lease term based on the effective interest rate method. Operating leases exist when substantially all of the risks and rewards of ownership are not transferred to the Group. Payments made under operating leases are charged against income on a straight-line basis over the period of the lease.

Intangible assets
Purchased patents, trademarks, licenses and other intangible assets are initially recorded at cost. Assets that have been acquired through a business combination are initially recorded at fair value. Once available for use, intangible assets are amortized on a straight-line basis over their useful lives. The estimated useful life is the lower of the legal duration and the economic useful life. The estimated useful lives of intangible assets are regularly reviewed. Estimated useful lives of major classes of amortizable intangible assets are as follows:

- Product intangibles in use: 10–17 years
- Marketing intangibles in use: 5 years
- Technology intangibles in use: 7–9 years

Impairment of property, plant and equipment and intangible assets
An impairment assessment is carried out at each reporting date when there is evidence that an item of property, plant and equipment or intangible asset in use may be impaired. In addition intangible assets that are not yet available for use are tested for impairment annually. When the recoverable amount of an asset, being the higher of its fair value less costs to sell and its value in use, is less than its carrying value, then the carrying value is reduced to its recoverable amount. This reduction is reported in the income statement as an impairment loss. Value in use is calculated using estimated cash flows. These are discounted using an appropriate long-term interest rate. When an impairment loss arises, the useful life of the asset is reviewed and, if necessary, the future depreciation/amortization charge is accelerated. If the amount of impairment loss subsequently decreases and the decrease can be related objectively to an event occurring after the impairment was recognized, then the previously recognized impairment loss is reversed through the income statement as an impairment reversal.

Inventories
Inventories are stated at the lower of cost and net realisable value. The cost of finished goods, work in process and intermediates includes raw materials, direct labour and other directly attributable costs and overheads based upon the normal capacity of production facilities. Cost is determined using the weighted average method. Net realisable value is the estimated selling price less cost to completion and selling expenses.

Accounts receivable
Policy applicable from 1 January 2018
Accounts receivable are carried at the original invoice amount less allowances made for doubtful accounts, trade discounts, cash discounts, volume rebates and similar allowances. A receivable represents a right to consideration that is unconditional and excludes contract assets. The Group always measures an allowance for doubtful accounts that result from transactions that are within the scope of IFRS 15 equal to the credit losses expected over the lifetime of the trade receivables. These estimates are based on specific indicators, such as the ageing of customer balances, specific credit circumstances and the Group's historical loss rates for each category of customers, and adjusted for forward looking macroeconomic data. While the Group measures an allowance for doubtful accounts that result from transactions that are not within the scope of IFRS 15 equal to 12-months expected credit losses, when the credit risk for these accounts has not increased significantly since initial recognition.

Expenses for doubtful trade receivables are recognized within marketing and distribution expenses. Trade discounts, cash discounts, volume rebates and similar allowances are recorded on an accrual basis consistent with the recognition of the related sales, using estimates based on existing contractual obligations, historical trends and the Group's experience. Accounts receivable are written off (either partially or in full) when there is no reasonable expectation of recovery. Where receivables have been written off, the Group continues to engage in enforcement activities to attempt to recover the receivable due. Where recoveries are made, these are recognized in profit or loss.

Policy applicable before 1 January 2018
Accounts receivable are carried at the original invoice amount less allowances made for doubtful accounts, trade discounts, cash discounts, volume rebates and similar allowances. An allowance for doubtful accounts is recorded where there is objective evidence that the Group will not be able to collect all amounts due. These estimates are based on specific indicators, such as the aging of customer balances, specific credit circumstances and the Group's historical experience, taking also into account economic conditions.

Expenses for doubtful trade receivables are recognized within marketing and distribution expenses.

Trade discounts, cash discounts, volume rebates and similar allowances are recorded on an accrual basis consistent with the recognition of the related sales, using estimates based on existing contractual obligations, historical trends and the Group's experience.

Cash and cash equivalents
Cash and cash equivalents include cash on hand and time, call and current balances with banks and similar institutions. Such balances are only reported as cash equivalents if they are readily convertible to known amounts of cash, are subject to insignificant risk of changes in their fair value and have a maturity of three months or less from the date of acquisition.

Provisions and contingencies
Provisions are recognized where a legal or constructive obligation has been incurred which will probably lead to an outflow of resources that can be reliably estimated. In particular, restructuring provisions are recognized when the Group has a detailed formal plan that has either commenced implementation or has been announced. Provisions are recorded for the estimated ultimate liability that is expected to arise and are discounted when the time value of money is material. A contingent liability is disclosed where the existence of the obligation will only be confirmed by future events or where the amount of the obligation cannot be measured with reasonable reliability. Contingent assets are not recognized, but are disclosed where an inflow of economic benefits is probable.

Fair values
Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. It is determined by reference to quoted market prices or by the use of established valuation techniques such as option pricing models and the discounted cash flow method if quoted prices in an active market are not available.

Financial instruments
Policy applicable from 1 January 2018
The Group classifies its financial assets, with the exception of derivatives, in the following measurement categories: amortized cost; fair value through OCI; fair value through profit or loss.

The classification depends on the Group's business model for managing the financial assets and the contractual terms of the cash flows. The Group reclassifies debt securities and financial assets measured at amortized cost when and only when its business model for managing those assets changes.

At initial recognition, the Group measures a financial asset at its fair value excluding trade receivables at transaction price if it does not contain a significant financing component. In the case of a financial asset not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition of the financial asset are added to the fair value.

Financial assets measured at amortized cost: Assets that are held for collection of contractual cash flows where those cash flows represent solely payments of principal and interest are measured at amortized cost. A gain or loss on a debt security that is subsequently measured at amortized cost and is not part of a hedging relationship is recognized in profit or loss when the asset is derecognized or impaired. Interest income from these financial assets is included in other financial income using the effective interest rate method. Financial assets measured at amortized cost are mainly comprised of accounts receivable, cash and cash equivalents and time accounts over three months.

Financial assets measured at fair value through other comprehensive income (fair value through OCI): These are financial assets that are held for collection of contractual cash flows and for selling the financial assets, where the assets' cash flows represent solely payments of principal and interest. These assets are initially recorded and subsequently carried at fair value. Changes in the fair value are recorded in other comprehensive income, except for the recognition of impairment gains or losses, interest revenue and foreign exchange gains and losses which are recognized in profit and loss. When the financial asset is derecognized, the cumulative gain or loss previously recognized in OCI is reclassified from equity to profit or loss. Interest income from these financial assets is included in other financial income using the effective interest rate method. Financial assets measured at fair value through other comprehensive income are mainly comprised of money market instruments.

Equity instruments measured at fair value through other comprehensive income (fair value through OCI): These are equity instruments measured at fair value through OCI for which an irrevocable election at initial recognition has been made, to present subsequent changes in fair value in other comprehensive income. Dividends are recognized as other financial income in profit or loss. Other net gains and losses are recognized in OCI and are never reclassified to profit or loss. When the instruments are derecognized, the cumulative amount of other comprehensive income is transferred to retained earnings.

The Group classifies its financial liabilities as measured at amortized cost, except for derivatives. Financial liabilities are initially recorded at fair value, less transaction costs and subsequently carried at amortized cost using the effective interest rate method. Financial liabilities are mainly comprised of trade payables.

Derivative financial instruments that are used to manage the exposures to foreign currency exchange rate fluctuations are initially recorded and subsequently carried at fair value. Apart from those derivatives designated as qualifying cash flow hedging instruments, all changes in fair value are recorded as other financial income (expense).

Policy applicable before 1 January 2018
Financial instruments are classified into the following categories:

Available-for-sale. These are non-derivative financial assets that are either designated as such or are not classified in any other financial asset category. Available-for-sale financial assets are initially recorded and subsequently carried at fair value. Changes in fair value are recorded in other comprehensive income, except for impairments, interest and foreign exchange components. When an investment is derecognized the cumulative gains and losses in equity are reclassified to other financial income (expense). Available-for-sale assets are mainly comprised of marketable securities and financial non-current assets.

Fair value – hedging instruments. These are derivative financial instruments that are used to manage the exposures to foreign currency risk. Derivative financial instruments are initially recorded and subsequently carried at fair value. Apart from those derivatives designated as qualifying cash flow hedging instruments, all changes in fair value are recorded as other financial income (expense).

Fair value – designated. These are non-derivative financial instruments that are designated as fair value through profit or loss on initial recognition. Designated fair value instruments are initially recorded and subsequently carried at fair value. Changes in fair value are recorded in the income statement. Designated fair value instruments mainly comprise of financial assets held for trading.

Loans and receivables. These are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. Loans and receivables are initially recorded at fair value and subsequently carried at amortized cost using the effective interest rate method, less any impairment losses. Loans and receivables are mainly comprised of accounts receivable, cash and cash equivalents and a part of financial non-current assets.

Other financial liabilities. These are non-derivative financial liabilities. Other financial liabilities are initially recorded at fair value and subsequently carried at amortized cost using the effective interest rate method. Other financial liabilities are mainly comprised of accounts payable and debt.

Derecognition of financial instruments
Policy applicable from 1 January 2018
A financial asset is derecognized when the contractual rights to the cash flows from the asset expire or when the Group transfers the rights to receive the contractual cash flows from the financial assets in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred. A financial liability is derecognized when the contractual obligations are discharged, cancelled or expire.

Policy applicable before 1 January 2018
A financial asset is derecognized when the contractual cash flows from the asset expire or when the Group transfers the rights to receive the contractual cash flows from the financial assets in a transaction in which substantially all the risks and rewards of ownership of the financial asset are transferred. A financial liability is derecognized when the contractual obligations are discharged, cancelled or expire.

Impairment of financial assets
Policy applicable from 1 January 2018
The Group recognises loss allowances for expected credit losses ('ECL') for financial assets measured at amortized cost and debt securities measured at fair value through OCI.

The Group always measures loss allowance that result from transactions that are within the scope of IFRS 15 equal to the credit losses expected over the lifetime of the trade receivables.

The Group measures loss allowances at an amount equal to 12-month expected credit losses for its debt securities carried at fair value through OCI and at amortized cost when the credit risk for these accounts has not increased significantly since initial recognition at the reporting date. The Group considers a debt investment to have low credit risk when their credit risk rating is equivalent to the globally understood definition of 'investment grade'. The Group considers this to be at least Baa3 from Moody's and BBB-from S&P.

The Group measures the allowances for doubtful account at an amount equal to lifetime ECL for its debt investments at fair value through OCI and at amortized cost on which credit risk has increased significantly since their initial recognition. The Group assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due.

The Group considers a financial asset to be in default when the counterparty is unlikely to pay its obligations to the Group in full. In assessing whether a counterparty is in default, the Group considers both qualitative and quantitative indicators that are based on data developed internally and for certain financial assets also obtained from external sources.

Financial assets are written off (either partially or in full) when there is no realistic prospect of recovery. This is generally the case when the Group determines that the customer does not have assets or sources of income that could generate sufficient cash flows to repay the amounts subject to the write-off. However, financial assets that are written off are still subject to enforcement activities in order to comply with the Group's policy for recovery of amounts due.

Policy applicable before 1 January 2018
Financial assets are individually assessed for possible impairment at each reporting date. An impairment charge is recorded where there is objective evidence of impairment, such as where the issuer is in bankruptcy, default or other significant financial difficulty. Available-for-sale equity securities that have a market value of more than 25% below their original cost, or have a market value below their original cost for a sustained six-month period will be considered as impaired.

For financial assets carried at amortized cost, any impairment charge is the difference between the carrying value and the recoverable amount, calculated using estimated future cash flows discounted using the original effective interest rate. For available-for-sale financial assets, any impairment charge is the amount currently carried in other comprehensive income for the difference between the original cost, net of any previous impairment, and the fair value.

An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized. For equity securities held as available-for-sale, the reversal is recognized directly in other comprehensive income. For debt securities measured at amortized cost or available-for-sale, the reversal is recognized in other financial income (expense).

Hedge accounting
The Group uses derivatives to manage its exposures to foreign currency risk. The instruments used may include forwards contracts. The Group generally limits the use of hedge accounting to certain significant transactions. To qualify for hedge accounting the hedging relationship must meet several strict conditions on documentation, probability of occurrence, hedge effectiveness and reliability of measurement. While many of these transactions can be considered as hedges in economic terms, if the required conditions are not met, then the relationship does not qualify for hedge accounting. In this case the hedging instrument and the hedged item are reported independently as if there were no hedging relationship, which means that any derivatives are reported at fair value, with changes in fair value included in other financial income (expense).

Cash flow hedge. Is a hedge of the exposure to variability in cash flows that is attributable to a particular risk associated with a recognized asset or liability or a highly probable forecast transaction and could affect profit or loss. The hedging instrument is recorded at fair value. The effective portion of the hedge is included in other comprehensive income and any ineffective portion is reported in other financial income (expense). If the hedging relationship is the hedge of the foreign currency risk of a firm commitment or highly probable transaction, when that transaction results in the recognition of a non-financial item, the cumulative changes in the fair value of the hedging instrument that have been recorded in other comprehensive income are included in the initial carrying value of the non-financial item at the date of recognition, otherwise included in profit or loss when the hedged transaction affects net income.

For other hedged forecasted cash flows, the cumulative changes in the fair value of the hedging instrument that have been recorded in other comprehensive income, are included in other financial income (expense) when the forecasted transaction affects net income.

Taxation
Income taxes include all taxes based upon the taxable profits of the Group. Other taxes not based on income, such as property and capital taxes, are included in the appropriate heading within the operating results.

Liabilities for income taxes, which could arise on the remittance of retained earnings, principally relating to subsidiaries, are only recognized where it is probable that such earnings will be remitted in the foreseeable future. Where the amount of tax liabilities is uncertain, accruals are recorded within income tax liabilities for management's best estimate of the ultimate liability that is expected to arise based on the specific circumstances and the Group's historical experience.

Deferred tax assets and liabilities are recognized on temporary differences between the tax bases of assets and liabilities and their carrying values. Deferred tax assets are recognized to the extent that it is probable that future taxable profit will be available against which the unused tax losses can be utilized.

Current and deferred tax assets and liabilities are offset when the income taxes are levied by the same taxation authority and when there is a legally enforceable right to offset them. Deferred taxes are determined based on the currently enacted tax rates applicable in each tax jurisdiction where the Group operates.

Own equity instruments
The Group's holdings in its own equity instruments are recorded as a deduction from equity. The original purchase cost, consideration received for subsequent resale of these equity instruments and other movements are reported as changes in equity. The exercise of stock acquisition rights granted to directors and certain employees will result in the allotment from own equity instruments.

(4) Significant accounting policies
The Group applies the same significant accounting policies that are used for the previous fiscal year to the Consolidated Financial Statements, except for those stated in (5) Changes in accounting policies below.

(5) Changes in accounting policies
In 2018 the Group implemented the following new standards, including any consequential amendments to other standards, with a date of initial application of January 1, 2018.
- IFRS 9 'Financial Instruments'
- IFRS 15 'Revenue from Contracts with Customers'

The nature and the effects of the changes most relevant to the Group's Consolidated Financial Statements are given below.

IFRS 9 'Financial Instruments'
Effective January 1, 2018 the Group has implemented IFRS 9 'Financial Instruments.' The new standard replaces IAS 39 'Financial Instruments: Recognition and Measurement.' The standard deals with the classification, recognition and measurement (including impairment) of financial instruments and also introduces a new hedge accounting model.

There is no material impact on the Group's performance or financial position from the application of this standard.

Classification and measurement of financial instruments.
In accordance with the transitional provisions of IFRS 9, financial instruments are classified, on the basis of the facts and circumstances that exist at the date of initial application, as follows: Items such as equity securities and debt securities which were previously classified as available-for-sale under IAS 39, with the exception of time accounts over three months, are classified as financial assets measured at fair value through other comprehensive income (OCI), and time accounts over three months as amortized cost. Though the Group takes advantage of the exemption allowing it not to restate comparative information for prior periods with respect to classification and measurement changes, since there were no changes in the carrying amounts, no adjustments were made to retained earnings as of January 1, 2018.

Changes in the fair value of equity instruments designated as financial assets measured at fair value through other comprehensive income are recognized in other comprehensive income, and the cumulative amount of other comprehensive income is transferred to retained earnings when the instruments are derecognized.

Impairment of financial assets.
On January 1, 2018 the Group changed the methodology of assessing impairment of its financial assets from the incurred loss model (used in IAS 39) to the expected credit loss model (used in IFRS 9). The new impairment model is applied to financial assets measured at amortized cost and debt securities measured at fair value through OCI, but not equity securities. In accordance with the transitional provisions of IFRS 9, the Group has not restated prior periods but it has reassessed the impairment allowances under the expected credit loss model as of January 1, 2018.

Hedge accounting.
As the Group may continue to apply the hedge accounting requirements of IAS 39 instead of those in IFRS 9 at the initial application of IFRS 9, the Group has chosen to continue to apply the hedge accounting requirements of IAS 39.

IFRS 15 'Revenue from Contracts with Customers'
Effective January 1, 2018 the Group has implemented IFRS 15 'Revenue from contracts with customers.' The new standard replaces IAS 18 'Revenue' and IAS 11 'Construction Contracts.' IFRS 15 establishes a comprehensive framework for determining whether, how much and when revenue is recognized, and also contains new requirements related to presentation. The core principle in that framework is that revenue should be recognized dependent on the transfer of promised goods or services to the customer for an amount that reflects the consideration which should be received in exchange for those goods or services. The objective of the standard is to provide a five-step approach to revenue recognition that includes identifying contracts with customers, identifying performance obligations, determining transaction prices, allocating transaction prices to performance obligations, and recognizing revenue when or as performance obligations are satisfied. Judgement will need to be applied, including making estimates and assumptions, for multiple-element contracts in identifying performance obligations, in constraining estimates of variable consideration and in allocating the transaction price to each performance obligation. The new standard results in an increased volume of disclosure information in the Annual Financial Statements.

Changes introduced by the standard relevant to the Group.
The new standard provides new requirements and additional guidance that are relevant to the Group, notably on the following areas:

- Revenues from licenses of intellectual property, including sales-based royalties, on constraining estimates of variable consideration such as e.g. development milestones that may be regarded as a separate performance obligation involving variable consideration. There is no material impact from these changes.
- The new standard also clarifies how to allocate sales, including the treatment of discounts, to each element in multiple-elements contracts and when to recognize sales for each of those elements. It requires the use of estimates and assumptions and some judgement to apply this guidance in practice. There is no material impact from this guidance.
- Out-licensing contracts may be entered into with no further obligation or may include commitments to research, late-stage development, regulatory approval, co-marketing or manufacturing. These may be settled by a combination of up-front payments, milestone payments, and reimbursements for services provided. Whether to consider these commitments as a single performance obligation or separate ones is not straight-forward and requires some judgement. Depending on the conclusion, this may result in all revenue being calculated at inception and either being recognized at once or spread over the term of a longer performance obligation. With the application of this standard, upfront payment received, which was formerly recognized over time as deferred income, is recognized as one-time income on out-licensing.

Transition approach.
The Group recognizes the cumulative effect of applying the new standard at the date of initial application, with no restatement of the comparative periods presented. It records the cumulative effect, the amount of ¥10,606 million after tax effect, as an adjustment to the opening balance of retained earnings at the date of initial application. Except for this adjustment, there is no material impact on the Group's performance or financial position from the application of this standard.

(6) Future new and revised standards
Of the new and revised standards that have been issued by the International Accounting Standards Board (IASB) by the date of approval of the Consolidated Financial Statements, the Group will implement the following from 2019.

Although there were other new establishments, minor revisions, etc. to the standards, the Group believes there is no material impact on the Group's performance or financial position.

1) Standards that will be effective from January 1, 2019
IFRS 16 Leases
The main impact of the new standard will be to bring operating leases (lessee) on-balance sheet. In applying this standard, the Group will adopt a method that recognizes the cumulative effect at the date of initial application, which is permitted as a transitional measure.

The Group is assessing the potential impact, but currently anticipates that the new standard will result in the carrying value of leased assets being increased by approximately ¥15.0 billion, with lease liabilities increased by a similar amount at the date of implementation. The application of the new standard will result in part of what are currently reported as operating lease costs being recorded as interest expenses. Given the leases involved and the current low interest rate

environment, the Group does not currently expect this effect to be material. The new standard will also result in an increased volume of disclosure information in the Annual Financial Statements.

2) Standards that will be effective from January 1, 2020 and beyond

The Group is currently assessing the potential impacts of new standards and interpretations that will be effective from January 1, 2020 and beyond.

2. Operating segment information

The Group has a single business of pharmaceuticals and does not have multiple operating segments. The Group's pharmaceuticals business consists of the research and development of new prescription medicines and the subsequent manufacturing, marketing and distribution activities. These functional activities are integrated and managed effectively.

Information on revenues by geographical area in millions of yen

	2018		2017	
	Sales	Royalties and other operating income	Sales	Royalties and other operating income
Japan	399,906	21,569	405,280	5,635
Overseas	127,939	30,374	94,028	29,256
of which Switzerland	109,938	24,250	76,359	28,957
Total	**527,844**	**51,943**	**499,308**	**34,891**

Information on revenues by major customers in millions of yen

	2018	2017
	Revenues	Revenues
F. Hoffmann-La Roche Ltd.	134,188	105,262
Alfresa Corporation	103,959	104,952
Mediceo Corporation	76,004	80,390

3. Revenue

Disaggregated revenue information in millions of yen

	2018		
	Revenue from contracts with customers	Revenue from other sources	**Total**
Sales	525,643	2,202	**527,844**
Japan	399,906	-	**399,906**
Overseas	125,737	2,202	**127,939**
Royalties and other operating income	40,803	11,140	**51,943**
Royalty and profit-sharing income	12,942	11,140	**24,082**
Other operating income	27,861	-	**27,861**

For an explanation of the effects for the revenue from contracts with customers from the application of IFRS 15, please refer to "Changes in accounting policies" on Note1 (4). The Group does not restate the information for the comparative periods, when IFRS 15 is first applied. The revenue from other sources primarily relates to collaboration income for which the counterparty is not considered a customer, such as income from profit-sharing arrangements and the gains or losses from hedge.

Contract balances in millions of yen

	December 31, 2018	January 1, 2018
Receivables-contracts from customers	162,879	155,951
Accounts receivable	150,804	148,495
Other current receivable	12,075	7,456
Contract assets	-	-
Contract liabilities	206	-

In 2018 there was revenue recognized of ¥17,364 million relating to performance obligations that were satisfied in previous periods, mainly due to royalty and milestone revenue.

Transaction price allocated to the remaining performance obligations

There is no material impact for transaction price allocated to the remaining obligations which has an original expected duration of more than one year as of December 31, 2018. As a practical expedient, the Group does not disclose the information for the remaining performance obligations. The performance obligation is part of a contract that has an original expected duration of one year or less.

There is no material amounts which do not include the transaction price in the consideration from the contracts with customers.

4. Financing costs and other financial income (expense)

Financing costs in millions of yen

	2018	2017
Interest expense	(5)	(5)
Net interest cost of defined benefit plans	(53)	(48)
Net other financing costs	(53)	(56)
Total financing costs	(111)	**(110)**

Other financial income (expense) in millions of yen

	2018	2017
Dividend income from available-for-sale financial assets	-	183
Dividend income from equity instruments measured at fair value through OCI	115	-
Write-downs and impairments of equity instruments	-	(97)
Net income from equity securities	**115**	**86**
Interest income from available-for-sale financial assets	-	93
Interest income from debt securities measured at fair value through OCI	9	-
Interest income from financial assets measured at amortized cost	74	-
Net interest income and income from debt securities	**83**	**93**
Foreign exchange gains (losses)	680	140
Gains (losses) on foreign currency derivatives	(429)	(406)
Net foreign exchange gains (losses)	**251**	**(266)**
Total other financial income (expense)	**449**	**(87)**

5. Other expense

Chugai filed an Advance Pricing Arrangement covering certain transactions with F. Hoffmann-La Roche Ltd., to the Japanese and Swiss tax authorities. In the year ended December 31, 2017, Chugai received a notice of agreement from both tax authorities which includes the instruction that the taxable income of Chugai shall be decreased by a certain amount and that of Roche shall be increased by the same amount in each fiscal year from 2016 to 2020, and if necessary, additional adjustments to the accounts shall be made in 2021.

As a result of this agreement, Chugai will transfer a part of the deducted amount of corporate tax etc, to Roche as the estimated tax payable for Roche, in accordance with the license agreement between Chugai and Roche. In addition, it has posted ¥3,212 million of adjustment from transfer pricing taxation.

6. Income taxes

Income tax expenses in millions of yen

	2018	2017
Current income taxes	(32,646)	(29,884)
Deferred taxes	4,276	6,394
Total income tax (expense)	**(28,370)**	**(23,490)**

Reconciliation of the Group's effective tax rate

	2018	2017
Weighted average expected tax rate	30.3%	30.3%
Tax effect of		
- Non-taxable income/non-deductible expenses	0.4%	0.5%
- Effect of changes in applicable tax rates on deferred tax balances	0.0%	-%
- Research and development tax credits	(5.4)%	(5.9)%
- Transfer pricing taxation related	(2.2)%	(4.7)%
- Other differences	0.4%	4.0%
Group's effective tax rate	**23.4%**	**24.2%**

Tax effects of other comprehensive income in millions of yen

	2018			2017		
	Pre-tax amount	Tax benefit	After-tax amount	Pre-tax amount	Tax benefit	After-tax Amount
Remeasurements of defined benefit plans	(3,566)	1,094	(2,472)	1,313	(396)	916
Available-for-sale financial assets	-	-	-	1,734	(530)	1,204
Financial assets measured at fair value through OCI	529	(166)	363	-	-	-
Cash flow hedges	(320)	95	(225)	(4,756)	1,463	(3,293)
Currency translation of foreign operations	(3,158)	-	(3,158)	3,713	-	3,713
Other comprehensive income	**(6,516)**	**1,024**	**(5,492)**	**2,004**	**537**	**2,540**

Income tax assets (liabilities) in millions of yen

	December 31, 2018	December 31, 2017
Current income taxes		
- Assets	3	717
- Liabilities	(19,567)	(18,541)
Net current income tax assets (liabilities)	**(19,564)**	**(17,824)**
Deferred taxes		
- Assets	35,568	34,501
- Liabilities	(9,031)	(9,211)
Net deferred tax assets (liabilities)	**26,537**	**25,290**

Current income taxes: movements in recognized net assets (liabilities) in millions of yen

	2018	2017
Net current income tax assets (liabilities) at January 1	(17,824)	(10,532)
Income taxes paid	31,565	22,655
(Charged) credited to the income statement	(32,646)	(29,884)
Currency translation effects and other	(659)	(62)
Net current income tax assets (liabilities) at December 31	**(19,564)**	**(17,824)**

Deferred taxes: movements in recognized net assets (liabilities) in millions of yen

	Property, plant and equipment	Intangible assets	Provisions	Employee benefits	Other temporary differences	Total
Year ended December 31, 2017						
At January 1, 2017	(18,689)	(2,411)	69	5,568	33,790	18,328
(Charged) credited to the income statement	(306)	(745)	(31)	168	7,308	6,394
(Charged) credited to other comprehensive income	-	-	-	(396)	933	537
Currency translation effects and other	(7)	2	4	6	27	31
At December 31, 2017	**(19,002)**	**(3,155)**	**43**	**5,346**	**42,058**	**25,290**
Year ended December 31, 2018						
At January 1, 2018	(19,002)	(3,155)	43	5,346	42,058	25,290
(Charged) credited to the income statement	(1,227)	32	2	253	5,216	4,276
(Charged) credited to other comprehensive income	-	-	-	1,094	595	1,690
(Charged) credited to Equity	-	-	-	-	(4,677)	(4,677)
Currency translation effects and other	9	(1)	(3)	(4)	(42)	(41)
At December 31, 2018	**(20,219)**	**(3,124)**	**42**	**6,689**	**43,149**	**26,537**

Other temporary differences mainly relate to prepaid expenses, amortization of deferred assets and accrued expenses.

Deferred tax assets are not recognized for deductible temporary differences of ¥1,749 million (2017: ¥1,601 million). Deferred tax assets are recognized for tax losses carried forward only to the extent that realization of the related tax benefit is probable.

Unrecognized tax losses: expiry in millions of yen

	2018	2017
Less than one year	-	-
Over one year and less than five years	242	117
Over five years	0	-
Tax losses not recognized in deferred tax assets	**242**	**117**

Deferred tax assets for unused tax credits are recognized only to the extent that realization of the related tax benefit is probable.

Unrecognized unused tax credits: expiry in millions of yen

	2018	2017
Less than one year	-	-
Over one year and less than five years	-	29
Over five years	111	114
Unused tax credits not recognized in deferred tax assets	**111**	**143**

Deferred tax liabilities have not been established for the withholding tax and other taxes that would be payable on the unremitted earnings of wholly owned foreign subsidiaries of the Group, where such amounts are currently regarded as permanently reinvested. The temporary differences relating to the unremitted earnings were ¥2,107 million (2017: ¥2,042 million).

7. Property, plant and equipment

Property, plant and equipment: movements in carrying value of assets in millions of yen

	Land	Buildings and land improvements	Machinery and equipment	Construction in progress	Total
At January 1, 2017					
Cost	9,141	117,163	175,949	19,459	321,712
Accumulated depreciation and impairment	(28)	(58,470)	(106,133)	-	(164,631)
Net book value	**9,112**	**58,693**	**69,817**	**19,459**	**157,081**
Year ended December 31, 2017					
At January 1, 2017	9,112	58,693	69,817	19,459	157,081
Additions	-	1	368	33,916	34,285
Disposals	-	(115)	(230)	-	(345)
Transfers	-	3,523	17,761	(21,284)	-
Depreciation charge	-	(4,164)	(10,385)	-	(14,549)
Impairment charge	-	1	(5)	-	(4)
Other	-	-	(5,034)	-	(5,034)
Currency translation effects	-	(2)	112	25	136
At December 31, 2017	**9,112**	**57,937**	**72,404**	**32,116**	**171,569**
Cost	9,141	119,981	186,617	32,116	347,854
Accumulated depreciation and impairment	(28)	(62,044)	(114,212)	-	(176,285)
Net book value	**9,112**	**57,937**	**72,404**	**32,116**	**171,569**
Year ended December 31, 2018					
At January 1, 2018	9,112	57,937	72,404	32,116	171,569
Additions	-	13	633	71,197	71,843
Disposals	-	(94)	(299)	-	(394)
Transfers	43,040	16,506	38,938	(98,484)	-
Depreciation charge	-	(4,232)	(10,358)	-	(14,590)
Impairment charge	-	-	(59)	-	(59)
Other	-	-	(5,791)	-	(5,791)
Currency translation effects	-	(45)	(120)	(24)	(189)
At December 31, 2018	**52,152**	**70,085**	**95,347**	**4,804**	**222,388**
Cost	52,169	135,620	211,362	4,804	403,955
Accumulated depreciation and impairment	(16)	(65,535)	(116,015)	-	(181,566)
Net book value	**52,152**	**70,085**	**95,347**	**4,804**	**222,388**

In 2018, no borrowing costs were capitalized as property, plant and equipment (2017: none).

Impairment charge

The carrying value was reduced to the recoverable amount in use as the recoverable amount of certain assets was less than the carrying value.

Classification of impairment of property, plant and equipment in millions of yen

	2018	2017
Cost of sales	59	4
Marketing and distribution	-	-
Research and development	-	-
General and administration	-	-
Total impairment charge	**59**	**4**

Finance leases

The capitalized cost of property, plant and equipment under finance leases was ¥701 million (2017: ¥759 million) and the net book value of these assets was ¥198 million (2017: ¥311 million). The carrying value of the leasing obligation was ¥214 million (2017: ¥336 million), which is reported as part of Debt (see Note 16).

Operating leases

Group companies are party to a number of operating leases, mainly for machinery and equipment, motor vehicles and property rentals. The arrangements do not impose any significant restrictions on the Group. Total operating lease rental expense was ¥7,184 million (2017: ¥7,013 million).

Operating leases: future minimum lease payments under non-cancellable leases in millions of yen

	December 31, 2018	December 31, 2017
Within one year	5,177	4,656
Between one and five years	9,143	9,378
More than five years	91	46
Total minimum payments	**14,411**	**14,081**

Capital commitments

The Group has non-cancellable capital commitments for the purchase or construction of property, plant and equipment totaling ¥6,362 million (2017: ¥13,995 million).

8. Intangible assets

Intangible assets: movements in carrying value of assets in millions of yen

	Product intangibles: in use	Product intangibles: not available for use	Marketing intangibles: in use	Technology intangibles: in use	Total
At January 1, 2017					
Cost	18,479	15,992	3,035	103	37,608
Accumulated amortization and impairment	(13,074)	(4,492)	(691)	(52)	(18,309)
Net book value	**5,405**	**11,500**	**2,344**	**51**	**19,299**
Year ended December 31, 2017					
At January 1, 2017	5,405	11,500	2,344	51	19,299
Additions	25	6,581	1,348	-	7,953
Disposals	-	(452)	-	-	(452)
Transfers	1,100	(1,100)	-	-	-
Amortization charge	(1,243)	-	(525)	(17)	(1,785)
Impairment charge	-	(3,992)	(44)	-	(4,035)
Currency translation effects	25	72	-	-	97
At December 31, 2017	**5,312**	**12,609**	**3,123**	**33**	**21,078**
Cost	19,916	21,241	4,382	103	45,641
Accumulated amortization and impairment	(14,604)	(8,631)	(1,259)	(69)	(24,564)
Net book value	**5,312**	**12,609**	**3,123**	**33**	**21,078**
Year ended December 31, 2018					
At January 1, 2018	5,312	12,609	3,123	33	21,078
Additions	148	5,178	2,577	564	8,468
Disposals	-	-	-	-	-
Transfers	1,562	(1,562)	-	-	-
Amortization charge	(916)	-	(818)	(254)	(1,988)
Impairment charge	(78)	(4,765)	-	-	(4,844)
Currency translation effects	(13)	(2)	-	-	(15)
At December 31, 2018	**6,015**	**11,457**	**4,883**	**344**	**22,699**
Cost	21,409	20,662	6,887	667	49,625
Accumulated amortization and impairment	(15,394)	(9,205)	(2,004)	(323)	(26,927)
Net book value	**6,015**	**11,457**	**4,883**	**344**	**22,699**

Significant intangible assets

The product intangibles in use and not available for use are mainly acquired through in-licensing agreements of products with related parties. The remaining amortization periods for product intangibles in use are from 3 to 16 years.

Impairment charge

Impairment charge in each year was mainly related to the cessation of R&D projects and the uncertainty regarding expected profits.

Classification of amortization and impairment expenses in millions of yen

	2018		2017	
	Amortization	Impairment	Amortization	Impairment
Cost of sales	1,014	-	1,327	-
Marketing and distribution	133	-	133	-
Research and development	428	4,844	93	4,035
General and administration	413	-	232	-
Total	**1,988**	**4,844**	**1,785**	**4,035**

Internally generated intangible assets
The Group currently has no internally generated intangible assets from development as the criteria for the recognition as an asset are not met.

Intangible assets with indefinite useful lives
The Group currently has no intangible assets with indefinite useful lives.

Product intangibles not available for use
These mostly represent in-process research and development assets acquired either through in-licensing arrangements or separate purchases. Due to the inherent uncertainties in the research and development processes, intangible assets not available for use are particularly at risk of impairment if the project is not expected to result in a commercialized product.

Impairment of intangible assets
Impairment charges arise from changes in the estimates of the future cash flows expected to result from the use of the asset and its eventual disposal. Factors such as the presence or absence of competition, technical obsolescence or lower than anticipated sales for products with capitalized rights could result in shortened useful lives or impairment.

Potential commitments from alliance collaborations
The Group is party to in-licensing and similar arrangements with its alliance partners. These arrangements may require the Group to make certain milestone or other similar payments dependent upon the achievement of agreed objectives or performance targets as defined in the collaboration agreements.

The Group's current estimate of future commitments for such payments is set out in the table below. These figures are undiscounted and are not risk adjusted, meaning that they include all such potential payments that can arise assuming all projects currently in development are successful. The timing is based on the Group's current best estimate.

Potential future collaboration payments at December 31, 2018 in millions of yen

	Third party	Related party	Total
Within one year	581	1,864	2,445
Between one and two years	221	3,031	3,251
Between two and three years	593	7,355	7,948
Total	**1,395**	**12,250**	**13,645**

9. Financial non-current assets

Financial non-current assets in millions of yen

	December 31, 2018	December 31, 2017
Available-for-sale financial assets	-	11,350
Financial assets measured at fair value through OCI	9,723	-
Total financial non-current assets	**9,723**	**11,350**

Financial non-current assets are equity instruments held not for pure investment purposes, but for the Group's business purposes to maintain and strengthen the relationship with business partners. Therefore, the Group has designated all equity instruments as measured at fair value through OCI (classified as available-for-sale in 2017).

10. Other non-current assets

Other non-current assets in millions of yen

	December 31, 2018	December 31, 2017
Long-term prepaid expenses	23,654	10,064
Other assets	5,422	4,772
Total other non-current assets	**29,077**	**14,836**

Long-term prepaid expenses are mainly payments to related parties for start-up and validation costs at plants used for outsourcing to the related parties.

11. Inventories

Inventories in millions of yen

	December 31, 2018	December 31, 2017
Raw materials and supplies	42,199	55,239
Work in process	118	30
Intermediates	53,682	42,963
Finished goods	65,037	72,904
Provision for slow-moving and obsolete inventory	(1,676)	(2,080)
Total inventories	**159,360**	**169,056**

Inventories expensed through cost of sales totalled ¥245,919 million (2017: ¥241,487 million). Inventory write-downs during the year resulted in an expense of ¥1,051 million (2017: ¥630 million).

12. Accounts receivable

Accounts receivable in millions of yen

	December 31, 2018	December 31, 2017
Trade receivables – third party	125,478	128,884
Trade receivables – related party	25,307	19,593
Notes receivables	19	18
Other receivables – third party (Contracts with customers)	1,105	-
Other receivables – related party (Contracts with customers)	10,970	-
Other receivables – third party	6,717	5,320
Other receivables – related party	9,967	20,475
Allowances for doubtful accounts	(7)	(6)
Total accounts receivable	**179,556**	**174,284**

13. Marketable securities

Marketable securities in millions of yen

	December 31, 2018	December 31, 2017
Available-for-sale financial assets		
Money market instruments and time accounts over three months	-	99,018
Debt securities	-	5,000
Financial assets measured at fair value through OCI		
Money market instruments	94,000	-
Debt securities	8,001	-
Financial assets measured at amortized cost		
Time accounts over three months	532	-
Total marketable securities	**102,533**	**104,018**

Marketable securities are held for fund management purposes. Money market instruments are mainly certificates of deposit, cash in trust and commercial papers. Debt securities are mainly corporate bonds.

14. Cash and cash equivalents

Cash and cash equivalents in millions of yen

	December 31, 2018	December 31, 2017
Cash - cash in hand and in current or call accounts	140,912	136,219
Cash equivalents - time accounts with a maturity of three months or less	5,948	2,855
Total cash and cash equivalents	**146,860**	**139,074**

15. Other current assets

Other current assets in millions of yen

	December 31, 2018	December 31, 2017
Derivative financial instruments	2,204	2,107
Total financial current assets	**2,204**	**2,107**
Prepaid expenses	9,577	9,883
Total non-financial current assets	**9,577**	**9,883**
Total other current assets	**11,781**	**11,990**

16. Debt

Debt: movements in carrying value of recognized liabilities in millions of yen

	2018	2017
At January 1	336	645
Increase in debt	12	1
Decrease in debt	(134)	(310)
At December 31	**214**	**336**
Finance lease obligations	214	336
Total debt	**214**	**336**
Long-term debt	82	207
Short-term debt	133	129
Total debt	**214**	**336**

17. Provisions and contingent liabilities

Provisions: movements in recognized liabilities in millions of yen

	Environmental provisions	Other provisions	Total
Year ended December 31, 2017			
At January 1, 2017	356	1,859	2,216
Additional provisions created	22	23	45
Unused amounts reversed	(33)	(77)	(110)
Utilized	(34)	-	(34)
Other	-	3	3
At December 31, 2017	**311**	**1,808**	**2,120**
Long-term provisions	283	1,758	2,041
Short-term provisions	29	51	79
At December 31, 2017	**311**	**1,808**	**2,120**
Year ended December 31, 2018			
At January 1, 2018	311	1,808	2,120
Additional provisions created	-	36	36
Unused amounts reversed	-	-	-
Utilized	(29)	(51)	(80)
Other	-	(3)	(3)
At December 31, 2018	**282**	**1,791**	**2,073**
Long-term provisions	281	1,791	2,072
Short-term provisions	1	-	1
At December 31, 2018	**282**	**1,791**	**2,073**
Expected outflow of resources			
Within one year	1	-	1
Between one to two years	-	235	235
Between two to three years	-	-	-
More than three years	281	1,556	1,837
At December 31, 2018	**282**	**1,791**	**2,073**

Environmental provisions

Provisions for environmental matters include various separate environmental issues. By their nature the amounts and timings of any outflows are difficult to predict. Significant provisions are discounted where the time value of money is material.

Other provisions

Other provisions arise mainly from asset retirement obligations. The timings of cash outflows are by their nature uncertain. Significant provisions are discounted where the time value of money is material.

Contingent liabilities

The operations and earnings of the Group continue, from time to time and in varying degrees, to be affected by political, legislative, fiscal and regulatory developments, including those relating to environmental protection. The industries in which the Group operates are also subject to other risks of various kinds. The nature and frequency of these developments and events, not all of which are covered by insurance, as well as their effect on future operations and earnings, are not predictable.

The Group has entered into strategic alliances with various companies in order to gain access to potential new products or to utilize other companies to help develop the Group's own potential new products. Potential future payments may become due to certain collaboration partners achieving certain milestones as defined in the collaboration agreements. The Group's best estimates for future commitment payments are given in Note 8.

18. Other non-current liabilities

Other non-current liabilities in millions of yen

	December 31, 2018	December 31, 2017
Deferred income	727	14,127
Other long-term liabilities	1,219	1,796
Total other non-current liabilities	**1,946**	**15,923**

19. Accounts payable

Accounts payable in millions of yen

	December 31, 2018	December 31, 2017
Trade payables – third party	5,991	9,761
Trade payables – related party	29,943	28,673
Other taxes payable	6,600	4,438
Accounts payable - purchase of property, plant and equipment	5,637	5,642
Other payables – third party	4,909	2,967
Other payables – related party	18,626	12,037
Total accounts payable	**71,706**	**63,518**

20. Other current liabilities

Other current liabilities in millions of yen

	December 31, 2018	December 31, 2017
Deferred income	239	1,598
Accrued bonus and related items	14,024	12,480
Derivative financial instruments	2,096	1,652
Other accrued liabilities	27,451	24,905
Total other current liabilities	**43,810**	**40,635**

21. Equity attributable to Chugai shareholders

Changes in equity attributable to Chugai shareholders in millions of yen

	Share capital	Capital surplus	Retained earnings	Other reserves			Total
				Fair value reserve	Hedging reserve	Translation reserve	
Year ended December 31, 2017							
At January 1, 2017	72,967	63,500	507,399	4,864	3,574	(6,796)	645,508
Net income attributable to Chugai shareholders	-	-	72,713	-	-	-	72,713
Available-for-sale financial assets							
- Fair value gains (losses) taken to equity	-	-	-	1,639	-	-	1,639
- Transferred to income statement on sale or impairment	-	-	-	95	-	-	95
- Income taxes	-	-	-	(530)	-	-	(530)
Cash flow hedges							
- Effective portion of fair value gains (losses) taken to equity	-	-	-	-	(1,415)	-	(1,415)
- Transferred to income statement	-	-	-	-	(114)	-	(114)
- Transferred to initial carrying amount of hedged items	-	-	-	-	(3,228)	-	(3,228)
- Income taxes	-	-	-	-	1,463	-	1,463
Currency translation of foreign Operations							
- Exchange differences	-	-	-	-	-	3,713	3,713
- Non-controlling interests	-	-	-	-	-	(100)	(100)
Defined benefit plans							
- Remeasurement gains (losses)	-	-	1,313	-	-	-	1,313
- Income taxes	-	-	(396)	-	-	-	(396)
Other comprehensive income, net of tax	**-**	**-**	**916**	**1,204**	**(3,293)**	**3,613**	**2,440**
Total comprehensive income	**-**	**-**	**73,630**	**1,204**	**(3,293)**	**3,613**	**75,154**
Dividends	-	-	(30,055)	-	-	-	(30,055)
Equity compensation plans	3	102	-	-	-	-	105
Own equity instruments	-	1,213	-	-	-	-	1,213
At December 31, 2017	**72,970**	**64,815**	**550,974**	**6,068**	**281**	**(3,183)**	**691,924**

Changes in equity attributable to Chugai shareholders in millions of yen

	Share capital	Capital surplus	Retained earnings	Other reserves			Total
				Fair value reserve	Hedging reserve	Translation reserve	
Year ended December 31, 2018							
At January 1, 2018	72,970	64,815	550,974	6,068	281	(3,183)	691,924
Impact of changes in accounting policies	-	-	10,606	-	-	-	10,606
At January 1, 2018 (revised)	72,970	64,815	561,580	6,068	281	(3,183)	702,530
Net income attributable to Chugai shareholders	-	-	92,488	-	-	-	92,488
Financial assets measured at fair value through OCI							
- Equity instruments measured at fair value through OCI	-	-	-	528	-	-	528
- Debt securities at fair value through OCI	-	-	-	1	-	-	1
- Income taxes	-	-	-	(166)	-	-	(166)
Cash flow hedges							
- Effective portion of fair value gains (losses) taken to equity	-	-	-	-	(441)	-	(441)
- Transferred to income statement	-	-	-	-	42	-	42
- Transferred to initial carrying amount of hedged items	-	-	-	-	79	-	79
- Income taxes	-	-	-	-	95	-	95
Currency translation of foreign Operations							
- Exchange differences	-	-	-	-	-	(3,158)	(3,158)
- Non-controlling interests	-	-	-	-	-	82	82
Defined benefit plans							
- Remeasurement gains (losses)	-	-	(3,566)	-	-	-	(3,566)
- Income taxes	-	-	1,094	-	-	-	1,094
Other comprehensive income, net of tax	**-**	**-**	**(2,472)**	**363**	**(225)**	**(3,077)**	**(5,410)**
Total comprehensive income	-	-	**90,016**	**363**	**(225)**	**(3,077)**	**87,078**
Dividends	-	-	(35,003)	-	-	-	(35,003)
Equity compensation plans	31	(97)	-	-	-	-	(66)
Own equity instruments	-	1,325	-	-	-	-	1,325
Transfer from other reserves to retained earnings	-	-	1,498	(1,498)	-	-	-
At December 31, 2018	**73,000**	**66,043**	**618,091**	**4,933**	**57**	**(6,260)**	**755,864**

Share capital (Number of shares)

	December 31, 2018	December 31, 2017
Authorized shares	799,805,050	799,805,050
Issued shares (Non-par value common stock)	559,685,889	559,685,889

Dividends

Date of resolution	Type of shares	Total dividends (millions of yen)	Dividend per share (yen)	Record date	Effective date
March 23, 2017 (Resolution of the Annual General Meeting of shareholders)	Common stock	14,203	26	December 31, 2016	March 24, 2017
July 27, 2017 (Board resolution)	Common stock	15,852	29	June 30, 2017	September 1, 2017
March 22, 2018 (Resolution of the Annual General Meeting of shareholders)	Common stock	18,044	33	December 31, 2017	March 23, 2018
July 26, 2018 (Board resolution)	Common stock	16,960	31	June 30, 2018	August 31, 2018
March 28, 2019 (Resolution of the Annual General Meeting of shareholders)	Common stock	30,097	55	December 31, 2018	March 29, 2019

Own equity instruments

	Number of shares	
	2018	2017
At January 1	12,909,947	13,417,953
Issue of common stocks	-	-
Exercises of equity compensation plans	(393,800)	(389,600)
Purchase/Disposal of own equity instruments	3,566	4,594
Retirement of own equity instruments	-	(123,000)
Grant of restricted stock	(60,300)	-
At December 31	**12,459,413**	**12,909,947**
Book value (millions of yen)	**29,190**	**30,233**

Other reserves

Fair value reserve: The fair value reserve represents the cumulative net change in the fair value of financial assets measured at fair value through OCI (previously available-for-sale financial assets) until the asset is sold. Impaired or otherwise disposed of.

Hedging reserve: The hedging reserve represents the effective portion of the cumulative net change in the fair value of cash flow hedging instruments related to hedged transactions that have not yet occurred.

Translation reserve: The translation reserve represents the cumulative currency translation differences relating to the consolidation of foreign subsidiaries of the Group that use functional currencies other than the Japanese yen.

22. Non-controlling interests

Changes in equity attributable to non-controlling interests in millions of yen

	2018	2017
At January 1	973	989
Net income attributable to non-controlling interests	591	827
Currency translation of foreign operations	(82)	100
Other comprehensive income, net of tax	**(82)**	**100**
Total comprehensive income	**509**	**927**
Dividends to non-controlling shareholders	(817)	(944)
At December 31	**664**	**973**

Non-controlling interests are attributable to the minority shareholders of Chugai sanofi-aventis S.N.C.

23. Employee benefits

Employee benefits expense in millions of yen

	2018	2017
Wages and salaries	74,551	70,595
Social security costs	9,064	9,046
Defined contribution plans	973	1,029
Operating expenses for defined benefit plans	4,427	4,231
Equity compensation plans	286	415
Other employee benefits	4,235	4,143
Employee benefits expense included in operating results	**93,535**	**89,459**
Net interest cost of defined benefit plans	53	48
Total employee benefits expense	**93,588**	**89,507**

Other employee benefits consist mainly of welfare costs.

24. Post-employment benefits plans

Post-employment benefits plans are classified as “defined contribution plans” if the Group pays fixed contributions into third-party financial institutions and will have no further legal or constructive obligation to pay further contributions. All other plans are classified as “defined benefit plans”, even if Chugai’s potential obligation is relatively minor or has a relatively remote possibility of arising.

Employees are covered by defined contribution and defined benefit plans sponsored by Group companies, most of which are classified as defined benefit plans.

A resolution was passed in the 98th Annual General Meeting of shareholders held in March 2009 to abolish the retirement benefits system for directors. In addition, a resolution was passed in the 95th Annual General Meeting of shareholders held in March 2006 to abolish the retirement benefits system for outside directors and audit & supervisory board members (including outside audit & supervisory board members).

Defined contribution plans
Defined contribution plans are funded through payments by the Group to funds administered by third parties. The Group’s expenses for these plans were ¥973 million (2017: ¥1,029 million).

Defined benefit plans
The Group has defined benefit plans mainly comprising a corporate pension fund and a lump-sum retirement benefit plan. Under the corporate pension fund, employees can receive a lump-sum payment based on the number of accumulated points received during their years of service. Employees with over a certain period of service can receive part of or all of the payment as certain annuity or life annuity. Under the lump-sum retirement benefit plan, employees

can receive a lump-sum payment based on the number of accumulated points received during their years of service. A retirement benefit trust has been established for the lump-sum retirement benefit plan. Certain employees may be entitled to additional special retirement benefits apart from the defined benefit plans based on the conditions under which termination occurs.

The corporate pension fund and retirement benefit plan trust are independent of the Group and are funded only by payments from the Group.

A pension asset management strategy is developed to optimize expected returns and to manage risks through adopting investment strategies from a long-term perspective. For this purpose, the Group focusses on long-term objectives which are not influenced by fluctuations in short-term yields, and maintains a well-diversified portfolio.

The funding status is closely monitored at the corporate level and valuations at the balance sheet date are carried out annually.

The defined benefit obligation is calculated using the projected unit credit method. If potential assets arise since defined benefit plans are over-funded, the recognition of pension assets is limited to the present value of any economic benefits available from refunds from the plans or reductions in future contributions to the plan.

Defined benefit plans: income statement in millions of yen

	2018	2017
Current service cost	4,427	4,231
Total operating expenses	**4,427**	**4,231**
Net interest cost of defined benefit plans	53	48
Total expense recognized in income statement	**4,479**	**4,279**

Defined benefit plans: funding status in millions of yen

	December 31, 2018	December 31, 2017
Fair value of plan assets	76,157	78,516
Defined benefit obligation	(90,829)	(87,809)
Over (under) funding	**(14,671)**	**(9,292)**
Defined benefit plan assets	-	-
Defined benefit plan liabilities	(14,671)	(9,292)
Net recognized asset (liability)	**(14,671)**	**(9,292)**

Defined benefit plans: fair value of plan assets in millions of yen

	2018	2017
At January 1	78,516	76,551
Interest income on plan assets	545	538
Remeasurements on plan assets	(2,227)	2,336
Currency translation effects	(8)	10
Employer contributions	2,442	2,243
Benefits paid – funded plans	(3,112)	(3,162)
At December 31	**76,157**	**78,516**
Composition of plan assets		
- Equity securities	10,640	13,426
- Debt securities	49,035	47,112
- Cash and cash equivalents	7,114	7,685
- Other investments	9,368	10,293
Total plan assets	**76,157**	**78,516**

Equity securities and debt securities have quoted market prices (Level 1 of fair value hierarchy)

Defined benefit plans: present value of defined benefit obligation in millions of yen

	2018	2017
At January 1	87,809	85,341
Current service cost	4,427	4,231
Interest cost	597	586
Remeasurements – demographic assumption	991	513
Remeasurements – financial assumptions	153	76
Remeasurements – experience adjustments	197	434
Currency translation effects	(23)	30
Benefits paid – funded plans	(3,322)	(3,403)
At December 31	**90,829**	**87,809**
Duration in years	15	15.2

Actuarial assumptions

Actuarial assumptions are unbiased and mutually compatible estimates of variables that determine the ultimate cost of providing post-employment benefits. They are set on an annual basis by the responsible departments of the Group based on advice from actuaries. Actuarial assumptions consist of demographic assumptions on matters such as mortality and employee turnover, and financial assumptions on matters such as interest rates.

Demographic assumptions: Demographic assumptions relate to mortality and employee turnover rates. Mortality rates are based on the standard mortality rate stated in the Ordinance for Enforcement of the Defined-Benefit Corporate Pension Act. Rates of employee turnover are based on historical behavior within the Group companies.

Financial assumptions: Discount rates are determined mainly with reference to interest rates on high-quality corporate bonds and reflect the period over which the obligations are to be settled.

	December 31, 2018	December 31, 2017
Discount rates (%)	0.69	0.70

Defined benefit plans: sensitivity of defined benefit obligation to actuarial assumption in millions of yen

The impact resulting from changes of actuarial assumption on the defined benefit obligation is shown in the table below. It is based on the assumption that variables other than the stated assumption used for the calculation are held constant.

	2018
Discount rates	
- 0.25% increase	(3,385)
- 0.25% decrease	3,607
Life expectancy	
- 1 year increase	1,614

Future cash flows

Based on the most recent actuarial valuations, the Group expects that employer contributions for defined benefit plans in 2019 will be approximately ¥2,443 million.

25. Equity compensation plans

The Group operates equity-settled equity compensation plans for directors and certain employees. IFRS 2 “Share-based Payment” requires that the value be estimated by fair value at grant date and recorded as an expense over the vesting period. Effective since 2017, for the purpose of further promoting shared value with shareholders and providing an incentive to sustainably increase the Group’s corporate value, strengthening linkage between their compensation and mid- to long-term business performance, a restricted stock compensation plan (the “Compensation Plan”) was introduced in place of the existing stock option compensation plans.

Expenses for equity compensation plans in millions of yen

	2018	2017
Cost of sales	1	3
Marketing and distribution	29	42
Research and development	60	70
General and administration	192	300
Total	**282**	**415**
Equity-settled plans		
- Chugai common stock options	52	212
- Chugai stock options as stock-based compensation	-	34
- Tenure-based restricted stock	158	134
- Performance-based restricted stock	72	35

Cash inflow from equity compensation plans in millions of yen

	2018	2017
Equity-settled plans		
- Exercises of Chugai common stock options	996	922
- Exercises of Chugai stock options as stock-based compensation	0	0

(1) Stock options

Chugai common stock options

The Group has issued stock acquisition rights to directors and certain employees as common stock options since 2003. Each right entitles the holder to purchase 100 Chugai shares at a specified exercise price. The rights are non-tradable and have an exercise period of around ten years after receiving the rights under the condition of approximately two years of continuous service of the holder after the grant date.

Chugai common stock options – movement in number of rights outstanding

	2018		2017	
	Number of rights	Weighted average exercise price (yen)	Number of rights	Weighted average exercise price (yen)
Outstanding at January 1	11,727	288,337	15,966	278,016
Granted	-	-	-	-
Forfeited	-	-	(40)	381,125
Exercised	(3,736)	266,623	(3,803)	242,506
Expired	-	-	(396)	302,978
Outstanding at December 31	**7,991**	**298,489**	**11,727**	**288,337**
- of which exercisable	7,991	298,489	9,013	262,362

Chugai common stock options – terms of rights outstanding at December 31, 2018

Year of grant	Rights outstanding			Rights exercisable	
	Number outstanding	Weighted average years remaining contractual life	Weighted average exercise price (yen)	Number exercisable	Weighted average exercise price (yen)
2009	20	0.23	169,600	20	169,600
2010	290	1.31	188,100	290	188,100
2011	213	2.40	139,700	213	139,700
2012	1,251	3.31	152,800	1,251	152,800
2013	1,108	4.32	250,000	1,108	250,000
2014	1,293	5.31	267,400	1,293	267,400
2015	2,075	6.31	400,700	2,075	400,700
2016	1,741	7.31	374,600	1,741	374,600
Total	**7,991**	**5.32**	**298,489**	**7,991**	**298,489**

Chugai stock options as stock-based compensation

The Group has issued stock acquisition rights to directors as stock options as stock-based compensation since 2009 in lieu of the retirement benefit system for directors which was abolished. Each right entitles the holder to purchase 100 Chugai shares at an exercise price of ¥100. The rights are non-tradable and have an exercise period of 30 years after receiving the rights, which may be vested upon the holder's retirement as a director of Chugai.

Chugai stock options as stock-based compensation – movement in number of rights outstanding

	2018		2017	
	Number of rights	Weighted average exercise price (yen)	Number of rights	Weighted average exercise price (yen)
Outstanding at January 1	3,985	100	4,078	100
Granted	-	-	-	-
Forfeited	-	-	-	-
Exercised	(202)	100	(93)	100
Expired	-	-	-	-
Outstanding at December 31	**3,783**	**100**	**3,985**	**100**
- of which exercisable	-	-	-	-

Chugai stock options as stock-based compensation – terms of rights outstanding at December 31, 2018

Year of grant	Rights outstanding			Rights exercisable	
	Number outstanding	Weighted average years remaining contractual life	Weighted average exercise price (yen)	Number exercisable	Weighted average exercise price (yen)
2009	519	20.31	100	-	-
2010	579	21.31	100	-	-
2011	672	22.40	100	-	-
2012	659	23.31	100	-	-
2013	414	24.32	100	-	-
2014	383	25.31	100	-	-
2015	261	26.31	100	-	-
2016	296	27.31	100	-	-
Total	**3,783**	**23.27**	**100**	**-**	**-**

Exercise of stock acquisition rights

	2018		2017	
	Number of rights	Weighted average share price (yen)	Number of rights	Weighted average share price (yen)
Chugai common stock options	3,736	6,158	3,803	4,512
Chugai stock options as stock-based compensation	202	5,380	93	3,950

(2) Restricted stock compensation plan

Under the Compensation Plan, the restricted stocks to be provided consist of "tenure-based restricted stock" for Eligible Directors, as well as certain employees, which requires continuous service for a certain period for Chugai, and "performance-based restricted stock" for only Eligible Directors which requires the attainment of Chugai's mid- to long-term business performance target in addition to the aforementioned continuous service. The Eligible Directors and employees, shall make in-kind contribution of all monetary compensation claims or monetary claims to be provided by Chugai according to the Compensation Plan, and shall, in return, receive shares of common stock of Chugai that will be issued or disposed of by Chugai.

For the disposal of shares of common stocks of Chugai under the Compensation Plan, Chugai and each Eligible Directors and employees, shall make an agreement on allotment of restricted stocks including that (1) The Eligible Directors and employees, shall not transfer, create a security interest on, or otherwise dispose of the allotted shares during a certain restriction period, and (2) Chugai shall take back all or part of the allotted shares without cost in case where certain events happen.

Number of shares allotted and fair value at the grant date by year

Year		Tenure-based restricted stock	Performance-based restricted stock
2017	Number of shares allotted	74,900 shares	48,100 shares
	Fair value at the grant date	3,820 yen	2,910 yen
2018	Number of shares allotted	40,600 shares	19,700 shares
	Fair value at the grant date	5,400 yen	5,788 yen

Overview of the Compensation Plan

	Tenure-based restricted stock	Performance-based restricted stock
Evaluation method	Market price	Monte Carlo simulation
Allottees	Directors of Chugai Employees of Chugai Directors of Chugai's subsidiaries Employees of Chugai's subsidiaries	Directors of Chugai
Settlement method	Equity settlement	
Transfer restriction period	3 years	
Conditions for releasing transfer restriction	On the condition that the Eligible Directors, Vice presidents and Employees maintain their positions continuously during the transfer restriction period, Chugai shall release the transfer restriction for all of the allotted shares at the expiration of the transfer restriction period.	On the condition that the Eligible Directors maintain their positions continuously during the transfer restriction period, Chugai shall release the transfer restriction for the number of allotted shares, which is calculated by multiplying the number of shares that the Eligible Directors obtain at the expiration of the transfer restriction period by the release rate that is determined by the growth rate on the three-year (the "Evaluation Period") Total Shareholders Return (TSR) for a peer group as a performance goal decided by the Board of Directors in advance. The release rate is applied against the number of shares that is provided at the beginning of the restriction period by multiplying the maximum coefficient of 150%, ranging from 0% to 150% separately set by Chugai's Board, and is set from 0% to 100%.

The TSR calculation formula is as follows:

TSR=(Increase in the stock price during the Evaluation Period (B-A) + Dividends during the Evaluation Period) ÷ Initial stock price (A)

A: Initial stock price (Average closing price for the three months prior to the start of the Evaluation Period)
B: Final stock price (Average closing price for the three months prior to the end of the Evaluation Period)

26. Earnings per share

Basic earnings per share

	2018	2017
Net income attributable to Chugai shareholders (millions of yen)	**92,488**	**72,713**
Weighted average number of common stock	559,685,889	559,685,889
Weighted average number of own equity instruments	(12,662,197)	(13,147,406)
Weighted average number of shares in issue	**547,023,692**	**546,538,483**
Basic earnings per share (yen)	**169.08**	**133.04**

Diluted earnings per share

	2018	2017
Net income attributable to Chugai shareholders (millions of yen)	**92,488**	**72,713**
Weighted average number of shares in issue	547,023,692	546,538,483
Adjustment for assumed exercise of equity compensation plans, where dilutive	892,227	886,414
Weighted average number of shares in issue used to calculate diluted earnings per share	**547,915,919**	**547,424,897**
Diluted earnings per share (yen)	**168.80**	**132.83**

There were no rights in equity compensation plans, which are anti-dilutive, and therefore excluded from the calculation of diluted earnings per share (2017: none).

27. Statement of cash flows

Cash flows from operating activities

Cash flows from operating activities arise from the Group's primary activities including research and development, manufacturing and sales in the Pharmaceuticals business. These are calculated by the indirect method by adjusting the Group's operating profit for any operating income and expenses that are not cash flows (for example depreciation, amortization and impairment) in order to derive the cash generated from operations. Operating cash flows also include income taxes paid on all activities.

Cash generated from operations in millions of yen

	2018	2017
Net income	93,079	73,541
Financing costs	111	110
Other financial income (expense)	(449)	87
Other expense	3,212	1,706
Income taxes	28,370	23,490
Operating profit	**124,323**	**98,934**
Depreciation of property, plant and equipment	14,590	14,549
Amortization of intangible assets	1,988	1,785
Impairment of property, plant and equipment	59	4
Impairment of intangible assets	4,844	4,035
Operating expense for defined benefit plans	4,427	4,231
Operating expense for equity-settled equity compensation plans	282	415
Net (income) expense for provisions	-	(11)
Inventories write-down	1,051	630
Other adjustments	294	205
Cash generated from operations	**151,857**	**124,776**

Cash flows from investing activities
Cash flows from investing activities are principally those arising from the Group's investments in property, plant and equipment and intangible assets. Cash flows connected with the Group's portfolio of marketable securities and other investments are also included, as are any interest and dividend payments received in respect of these securities and investments.

Interest and dividends received in millions of yen

	2018	2017
Interest received	85	88
Dividends received	115	183
Total	**200**	**271**

Cash flows from financing activities
Cash flows from financing activities are primarily dividend payments to Chugai shareholders.

Significant non-cash transactions
There were no significant non-cash transactions (2017: none).

28. Risk management

(1) Financial risk management
The Group is exposed to various financial risks arising from its underlying operations and corporate finance activities. The Group's financial risk exposures are predominantly related to changes in foreign exchange rates, interest rates and equity prices as well as the creditworthiness and the solvency of the Group's counterparties.

Financial risk management within the Group is governed by policies approved by the board of directors of Chugai. These policies cover credit risk, liquidity risk and market risk. The policies provide guidance on risk limits, type of authorized financial instruments and monitoring procedures. Policy implementation and day-to-day risk management are carried out by the relevant functions and regular reporting on these risks is performed by the relevant finance & accounting and controlling functions within Chugai.

1) Credit risk
Accounts receivable are exposed to customer credit risk. The main accounts receivable are trade receivables. The management of trade receivables is focused on the assessment of country risk, setting of credit limits, ongoing credit evaluation and account monitoring procedures. As part of the credit risk management, sales administration departments regularly monitor the financial position of major customers by checking payment term and balances of trade receivables for each customer according to the accounting manuals to ensure early identification and mitigation of overdue balances and potential bad debts associated with the deterioration of customers' financial position.

The objective of the management of trade receivables is to sustain the growth and profitability of the Group by optimizing asset utilization while maintaining risks at an acceptable level. The Group obtains credit insurance and similar enhancements when appropriate to protect the collection of trade receivables. No material collateral was held for trade receivables (2017: none).

Of the Group's accounts receivable, trade receivables from third parties are mainly to Japanese customers, of which major customers account for 70% as of December 31, 2018.

Trade receivables: major customers in millions of yen

	December 31, 2018	December 31, 2017
Alfresa Corporation	32,483	31,492
Mediceo Corporation	22,585	24,656
Suzuken Co., Ltd.	19,998	22,192
Toho Pharmaceutical Co., Ltd.	13,171	13,592
Total	**88,237**	**91,932**

Customer credit risk exposure based on accounts receivable days overdue that are within the scope of IFRS15 in millions of yen

	Current	Overdue 1-3 months	Overdue 4-12 months	Overdue more than 1 year	Credit Impaired	Total
At December 31, 2018						
Gross carrying amount	162,742	137	-	0	-	162,879
- Expected credit loss rate (%)	0	0	-	100	-	0
Allowance for doubtful accounts	(7)	(0)	-	(0)	-	(7)

The expected credit loss ('ECL') rate is based on the Group's historical experience and the Group's expectation of economic conditions over the period until receivables are expected to be paid.

Aging of accounts receivable that are not impaired in millions of yen

	December 31, 2017
Neither overdue nor impaired	174,215
Overdue less than 1 month	64
Overdue 1-3 months	4
Overdue 4-6 months	1
Overdue 7-12 months	-
Overdue more than 1 year	-
Total	**174,284**

Derivative transactions and money market instruments are restricted to financial institutions with high credit ratings in an effort to mitigate the counterparty risks.

The maximum exposure to credit risk resulting from financial activities, without taking into account any collateral held or other credit enhancements, is equal to the carrying value of the Group's financial assets.

Financial assets with credit risks (excluding accounts receivables that result from transactions that are within the scope of IFRS 15)
Cash and cash equivalents are held with banks and financial institutions, which are predominantly rated investment grade, based on Moody's and S&P Ratings. Cash and short-term time deposits are subject to rules which limit the Group's exposure to individual financial institutions.

Investments in marketable securities (excluding equity securities) are entered into on the basis of guidelines with regard to liquidity, quality and maximum amount. As a general rule, the Group invests only in high-quality securities with adequate liquidity and with counterparties that have a credit rating of at least Baa3 from Moody's and BBB- from S&P.

Credit risk on accounts receivables that result from transactions that are not within the scope of IFRS 15, are managed based on data obtained from external sources and historical experience.

The credit risk of the counterparties with external ratings below investment grade or non-rated is closely monitored and reviewed on an individual basis.

Rating analysis (excluding accounts receivables that result from transactions that are within the scope of IFRS 15) in millions of yen

	2018		
	Total	Fair value through OCI (12-month ECL)	Amortized costs (12-month ECL)
AAA~BBB- range	263,010	102,001	161,009
Total investment grade	**263,010**	**102,001**	**161,009**
Below BBB- range (below investment grade)	-	-	-
Unrated	3,067	-	3,067
Total gross carrying amounts	**266,076**	**102,001**	**164,076**
Loss allowance	**-**	**-**	**-**

Financial assets measured at amortized cost and those at fair value through OCI (excluding equity securities) are investment grade and therefore considered to be low risk, and thus the impairment allowance is determined at 12 months expected credit losses ('ECL') with a reference to external credit ratings of the counterparties. There were no financial assets for which the Group observed a significant increase in the credit risk which would require the application of the lifetime expected credit losses impairment model. There was no material impact resulting from the revised impairment approach under IFRS 9. In addition, there were no material movements in the loss allowance in 2018.

Impairment losses by asset class
The Group's impairment loss on available-for-sale financial assets was ¥97million in 2017.

2) Liquidity risk
Liquidity risk arises through a surplus of financial obligations over available financial assets due at any point in time. The Group's approach to liquidity risk is to maintain sufficient readily available reserves in order to meet its liquidity requirements at any point in time. The Group manages liquidity risks based on a cash management plan prepared and updated as appropriate by finance and accounting departments based on the reporting from each department.

Chugai is rated as highly creditable by more than one major credit rating agency. The ratings will permit efficient access to the international capital markets in the event of major financing requirements. Chugai has unused committed credit lines with various financial institutions totaling ¥40,000 million (2017: ¥40,000 million).

Contractual maturities of financial liabilities in millions of yen

	Total	0-3 months	4-6 months	7-12 months	Over 1 year
At December 31, 2018					
Accounts payable	71,706	68,178	3,340	28	160
Other current liabilities					
- Derivative financial instruments*	2,096	531	302	890	372
Total financial liabilities	**73,802**	**68,709**	**3,642**	**919**	**532**
At December 31, 2017					
Accounts payable	63,518	61,447	2,029	43	-
Other current liabilities					
- Derivative financial instruments*	1,652	625	324	478	225
Total financial liabilities	**65,170**	**62,072**	**2,353**	**521**	**225**

*Derivative financial instruments are held for risk management purposes and will not be canceled before the maturity date.

3) Market risk
Market risk arises from changing market prices, mainly due to foreign exchange rates and interest rates, of the Group's financial assets or financial liabilities which affect the Group's net income and equity.

Foreign exchange risk: Accounts receivable and accounts payable denominated in foreign currencies are exposed to foreign exchange risk. The objective of the Group's foreign exchange risk management activities is to preserve the economic value of its current and future assets and to minimize the volatility of the Group's financial result. The Group enters into derivative transactions such as foreign exchange forward contracts to reduce the risk of foreign currency exchange fluctuations related to both assets and liabilities denominated in foreign currencies. Some of these transactions qualify as cash flow hedges at the point that the forecast transaction is expected.

When making use of derivatives for hedging foreign exchange risk on assets and liabilities denominated in foreign currencies, Chugai conducts such operations in accordance with its internal regulations and monthly reports are prepared on the balance of such transactions, valuation gains and losses, and other related matters at fair value. Consolidated subsidiaries do not utilize derivative transactions.

Sensitivity analysis: Chugai has financial instruments denominated in currencies other than its functional currency. The table below shows the impact to profit before taxes resulting from a 1% decrease of the Swiss franc, euro and US dollar against the Japanese yen, which is Chugai's functional currency. The effective portion of derivative financial instruments for which hedge accounting is applied is excluded from the calculation. All calculations are based on the assumption that exchange rates for other currencies are constant and there are no changes in other variables such as interest rates.

Foreign currency sensitivity analysis

	2018	2017
Average exchange rate (yen per each currency)		
CHF	112.92	113.90
EUR	130.36	126.39
USD	110.45	112.17
Profit before taxes (millions of yen)		
CHF	12	(256)
EUR	32	9
USD	(289)	(187)

(Note) Positive numbers are the amount of positive impact on profit before taxes resulting from a 1% decrease of each currency against the Japanese yen. The amounts above do not reflect the impact on Chugai's cash flows or forecast result.

The impact resulting from a 1% decrease of each currency against the Japanese yen on the financial instruments denominated in foreign currency is shown in the tables below.

	2018			2017		
	Exposure (m CHF)	Exposure (m YEN)	Impact (m YEN)	Exposure (m CHF)	Exposure (m YEN)	Impact (m YEN)
CHF						
Accounts receivable	324	36,278	(363)	227	26,165	(262)
Accounts payable	(344)	(38,513)	385	(279)	(32,224)	322
Financial non-current assets	-	-	-	-	-	-
Cash and cash equivalents	15	1,667	(17)	40	4,629	(46)
Notional amounts of derivative financial instruments						
- Effective portion of hedge	(5)	(637)	6	230	27,007	(270)
- Other than above	-	-	-	-	-	-
Total	**(10)**	**(1,204)**	**12**	**218**	**25,576**	**(256)**
	Exposure (m EUR)	Exposure (m YEN)	Impact (m YEN)	Exposure (m EUR)	Exposure (m YEN)	Impact (m YEN)
EUR						
Accounts receivable	2	265	(3)	10	1,385	(14)
Accounts payable	(27)	(3,435)	34	(17)	(2,250)	23
Financial non-current assets	-	-	-	-	-	-
Cash and cash equivalents	-	-	-	-	-	-
Notional amounts of derivative financial instruments						
- Effective portion of hedge	-	-	-	-	-	-
- Other than above	-	-	-	-	-	-
Total	**(25)**	**(3,170)**	**32**	**(6)**	**(865)**	**9**
	Exposure (m USD)	Exposure (m YEN)	Impact (m YEN)	Exposure (m USD)	Exposure (m YEN)	Impact (m YEN)
USD						
Accounts receivable	35	3,850	(38)	32	3,636	(36)
Accounts payable	(100)	(11,034)	110	(98)	(11,043)	110
Financial non-current assets	-	-	-	-	-	-
Cash and cash equivalents	-	-	-	-	-	-
Notional amounts of derivative financial instruments						
- Effective portion of hedge	333	36,061	(361)	240	26,139	(261)
- Other than above	-	-	-	-	-	-
Total	**267**	**28,877**	**(289)**	**174**	**18,732**	**(187)**

Interest rate risk: The amounts of debt and loans were insignificant and therefore the Group is not exposed to material interest rate risk.

(2) Financial instruments

Carrying value and fair value of financial instruments

The Group's financial instruments are mainly comprised of financial non-current assets, accounts receivable, marketable securities, cash and cash equivalents, derivative financial instruments included in other current assets, accounts payable, derivative financial instruments included in other current liabilities and debt. The carrying values of these financial instruments are equal to or reasonably approximate fair values.

Accounting classifications and fair values in millions of yen

	Financial assets measured at fair value through OCI	Fair value -hedging instruments	Fair value through profit or loss (mandatorily)-other	Financial assets at amortized cost	Financial liabilities at amortized cost	Total
At December 31, 2018						
Non-current financial assets						
- Equity instrument	9,723	-	-	-	-	9,723
Accounts receivable	-	-	-	179,556	-	179,556
Marketable securities						
- Debt instrument	8,001	-	-	-	-	8,001
- Money market instruments	94,000	-	-	-	-	94,000
- Time accounts over 3 months	-	-	-	532	-	532
Cash and cash equivalents	-	-	-	146,860	-	146,860
Other current assets						
- Derivative financial instruments	-	2,204	-	-	-	2,204
Total financial assets	**111,724**	**2,204**	**-**	**326,948**	**-**	**440,876**
Accounts payable	-	-	-	-	71,706	71,706
Other current liabilities						
- Derivative financial instruments	-	2,096	-	-	-	2,096
Total financial liabilities	**-**	**2,096**	**-**	**-**	**71,706**	**73,801**

Fair value hierarchy

The table below analyses financial instruments carried at fair value, by valuation method. The different levels have been defined as follows:

- Level 1 – quoted prices (unadjusted) in active markets for identical assets and liabilities.
- Level 2 – observable inputs directly or indirectly other than quoted prices in active markets for identical assets and liabilities.
- Level 3 – fair value determined using valuation method which includes unobservable inputs.

Fair value hierarchy of financial instruments in millions of yen

	Level 1	Level 2	Level 3	Total
At December 31, 2018				
Marketable securities:				
- Money market instruments	-	94,000	-	94,000
- Debt securities	8,001	-	-	8,001
Other current assets				
- Derivative financial instruments	-	2,204	-	2,204
Financial non-current assets				
- Equity instruments measured at fair value through OCI	7,330	-	2,394	9,723
Financial assets recognized at fair value	**15,331**	**96,204**	**2,394**	**113,928**
Other current liabilities				
- Derivative financial instruments	-	(2,096)	-	(2,096)
Financial liabilities recognized at fair value	**-**	**(2,096)**	**-**	**(2,096)**

	Level 1	Level 2	Level 3	Total
At December 31, 2017				
Marketable securities:				
- Money market instruments and time accounts over 3 months	-	99,018	-	99,018
- Debt securities	5,000	-	-	5,000
Other current assets				
- Derivative financial instruments	-	2,107	-	2,107
Financial non-current assets				
- Available-for-sale financial assets	9,734	-	1,616	11,350
Financial assets recognized at fair value	**14,735**	**101,125**	**1,616**	**117,476**
Other current liabilities				
- Derivative financial instruments	-	(1,652)	-	(1,652)
Financial liabilities recognized at fair value	**-**	**(1,652)**	**-**	**(1,652)**

The fair value hierarchy has been adjusted to reflect the presentational changes required as a result from implementing IFRS 9 'Financial Instruments. Time accounts over three months are accounted for at amortized cost under IFRS 9 and as a result are no longer included in the fair value hierarchy analysis for 2018 (they were accounted for as available-for-sale under IAS 39 and therefore were included in the fair value hierarchy in 2017).

Level 1 financial assets consist of corporate bonds and quoted shares. Level 2 financial assets consist primarily of certificates of deposit, cash in trust, commercial paper and derivative financial instruments.

Fair values Level 2 financial assets are determined as follows:
・Marketable securities and derivative financial instruments are based on valuation models that use observable market data for interest rates, yield curves, foreign exchange rates and implied volatilities for similar instruments at the measurement date.

The Group recognizes transfers between levels of the fair value hierarchy as of the end of the reporting period during which the transfer has occurred. There were no significant transfers between Level 1 and Level 2 and vice versa.

Level 3 financial assets consist of unquoted shares. Valuation is based on valuation method which includes unobservable inputs.

Reconciliation of financial instruments classified into level 3 in millions of yen

	Fair value through other comprehensive income	Fair value through income statement	Total
At January 1, 2017	1,552	-	1,552
Gains or losses	64	-	64
Purchases	-	-	-
Disposals	-	-	-
Transfers	-	-	-
Currency translation effects	(1)	-	(1)
At December 31, 2017	**1,616**	**-**	**1,616**
At January 1, 2018	1,616	-	1,616
Gains or losses	72	-	72
Purchases	706	-	706
Disposals	-	-	-
Transfers	-	-	-
Currency translation effects	(1)	-	(1)
At December 31, 2018	**2,394**	**-**	**2,394**

(3) Derivative financial instruments

Derivative financial instruments in millions of yen

Assets	December 31, 2018	December 31, 2017
Forward exchange contracts	2,204	2,107
Total	**2,204**	**2,107**

Liabilities	December 31, 2018	December 31, 2017
Forward exchange contracts	(2,096)	(1,652)
Total	**(2,096)**	**(1,652)**

Hedge accounting

Hedge effectiveness is determined at the inception of the hedge relationship, and through periodic prospective effectiveness assessments at each reporting date to ensure that an economic relationship exists between the hedged item and hedging instrument. The Group performs a qualitative assessment of the hedge effectiveness, and the Group concludes that risks being hedged for the hedged items and the hedging instruments are sufficiently aligned.

The Group manages foreign exchange rate fluctuation risks by applying cash flow hedge, and an ineffective portion may occur when the volume of hedged items is lower than the hedged amount. The ineffective portion of the hedge accounting is recognized in the income statement and included in other financial income (expense). It is measured using the hypothetical derivative method for cash flow hedges. In 2018 there were no actual ineffectiveness being reported for any hedge accounting relationships, or hedging relationships for which hedge accounting is no longer applied (2017: None).

The table below shows fair values and nominal amounts of derivative financial instruments, including a range of the timing of the nominal amounts of the hedging instruments, which are designated as hedging instruments in a cash flow hedge. At 31 December 2018 the Group has the following cash flow hedges which are designated in a qualifying hedge relationship.

Cash flow hedges

	Nominal amount	Fair value in million Yen		Maturity range
		Asset	Liability	
Risk hedged:				
Foreign exchange rate fluctuations				
- Forward exchange contracts	CHF 2,108 million	1,893	(1,863)	2019-2020
	USD 333 million	311	(233)	2019-2020
Total		**2,204**	**(2,096)**	

The Group is exposed to foreign exchange risk from transactions for inventories and others in foreign currencies with foreign related parties. The Group has entered into foreign exchange forward contracts to hedge a part of foreign exchange risk. Such instruments are recorded as fair value assets of ¥109 million (2017: fair value assets of ¥456 million).

Reconciliation of hedging reserves in equity in millions of yen

	Forward exchange contracts
At January 1, 2018	281
Effective portion of fair value gains (losses) taken to equity	(441)
Transferred to income statement	42
Transferred to initial carrying amount of hedged items	79
Income taxes	95
At December 31, 2018	**57**

The present value of expected cash flows from qualifying cash flow hedges is shown in the table below.

Present value of expected cash flows of qualifying cash flow hedges in millions of yen

	Total	0-6 months	7-12 months	Over 1 Year
Year ended December 31, 2018				
Cash inflows	275,004	102,316	119,583	53,105
Cash outflows	(274,895)	(102,221)	(119,610)	(53,065)
Total cash inflow (outflow)	**109**	**95**	**(27)**	**41**
Year ended December 31, 2017				
Cash inflows	242,308	107,794	96,290	38,224
Cash outflows	(241,852)	(107,570)	(96,042)	(38,239)
Total cash inflow (outflow)	**456**	**223**	**248**	**(15)**

(4) Capital management

The Group defines the capital that it manages as the Group's total capitalization, being the sum of debt plus equity including non-controlling interests. The Group's objectives when managing capital are:

- To safeguard the Group's ability to continue as a going concern, so that it can continue to provide benefits for patients and returns to investors.
- To provide an adequate return to investors based on the level of risk undertaken.
- To have available the necessary financial resources to allow the Group to invest in areas that may deliver future benefits for patients and returns to investors.
- To maintain sufficient financial resources to mitigate against risks and unforeseen events.

Capitalization is monitored and reported to the Chief Financial Officer as part of the Group's regular internal management reporting.

The Group is not subject to regulatory capital adequacy requirements.

Capital in millions of yen

	December 31, 2018	December 31, 2017
Capital and reserves attributable to Chugai shareholders	755,864	691,924
Equity attributable to non-controlling interests	664	973
Total equity	756,529	692,897
Total debt	214	336
Capitalization	**756,743**	**693,233**

29. Related parties

(1) Controlling shareholder

Effective October 1, 2002, Roche and Chugai completed an alliance to create a leading research-driven Japanese pharmaceutical company, which was formed by the merger of Chugai and Roche's Japanese pharmaceuticals subsidiary, Nippon Roche. Through the merger, Chugai became a member of the Roche Group as the surviving company.

Chugai has entered into certain agreements with Roche, which are discussed below:

Basic Alliance Agreement: As part of the Basic Alliance Agreement signed in December 2001, Roche and Chugai entered into certain arrangements covering the future operation and governance of Chugai. Amongst other matters these cover the following areas:

- The structuring of the alliance.
- Roche's rights as a shareholder.
- Roche's rights to nominate members of Chugai's Board of Directors.
- Certain limitations to Roche's ability to buy or sell Chugai's common stock.

Chugai issues additional shares of common stock in connection with its convertible debt and equity compensation plans, and may issue additional shares for other purposes, which affects Roche's percentage ownership interest. The Basic Alliance Agreement provides, amongst other matters, that Chugai will guarantee Roche's right to maintain its shareholding percentage in Chugai at not less than 50.1%.

Licensing Agreements: Under the Japan Umbrella Rights Agreement signed in December 2001, Chugai has exclusive rights to market Roche's pharmaceutical products in Japan. Chugai also has right of first refusal on the development and marketing in Japan of all development compounds advanced by Roche.

The Rest of the World Umbrella Rights Agreement (excluding Japan and South Korea) signed in May 2002 was revised and the Amended and Restated Rest of the World Umbrella Rights Agreement (excluding Japan, South Korea and Taiwan) was signed in August 2014. Under this Agreement, Roche has the right of first refusal on the development and marketing of Chugai's development compounds in markets outside Japan, excluding South Korea and Taiwan.

Further to these agreements, Roche and Chugai have signed a series of separate agreements for certain specific products. Depending on the specific circumstances and the terms of the agreement, this may result in payments on an arm's length basis between Roche and Chugai, for any or all of the following matters:

- Upfront payments, if a right of first refusal to license a product is exercised.
- Milestone payments, dependent upon the achievement of agreed performance targets.
- Royalties on future product sales.

These specific product agreements may also cover the manufacture and supply etc. of the respective products to meet the other party's clinical and/or commercial requirements on an arm's length basis.

Research Collaboration Agreements: Roche and Chugai have entered into research collaboration agreements in the areas of small-molecule synthetic drug research and biotechnology-based drug discovery.

Dividends: The dividends distributed to Roche by Chugai in respect to its holdings of Chugai shares totalled ¥21,454 million (2017: ¥18,437 million).

(2) Material transactions and balances with related parties

Transactions with F. Hoffmann-La Roche in millions of yen

	2018	2017
Sales	109,938	76,359
Purchases of inventory and other materials	125,657	124,792

Balances with F. Hoffmann-La Roche in millions of yen

	December 31, 2018	December 31, 2017
Trade accounts receivable	25,307	19,593
Trade accounts payable	(29,567)	(24,805)

(3) Remuneration of key management personnel

Remuneration of members of the board and audit & supervisory board members in millions of yen

	2018	2017
Board of Directors		
- Regular remuneration	304	333
- Bonuses	120	234
- Tenure-based restricted stock compensation plan	57	92
- Performance-based restricted stock compensation plan	72	35
- Chugai common stock options	21	83
- Chugai stock options as stock-based compensation	-	34
Total	**573**	**811**
Audit & supervisory board members		
- Regular remuneration	87	85
Total	**87**	**85**

Effective from the previous fiscal year, for the purpose of further promoting shared value with shareholders and providing an incentive to sustainably increase the Group's corporate value, strengthening linkage between their compensation and mid- to long-term business performance, a restricted stock compensation plan was introduced in place of the existing stock option compensation plans.

30. Subsidiaries

Subsidiaries	Country of incorporation	Equity interest %	
		2018	2017
Consolidated subsidiaries			
Chugai Research Institute for Medical Science, Inc.	Japan	100	100 %
Chugai Clinical Research Center Co., Ltd.	Japan	100	100 %
Chugai Business Support Co., Ltd.	Japan	100	100 %
Medical Culture, Inc.	Japan	100	100 %
Chugai Distribution Co., Ltd.	Japan	100	100 %
Chugai Pharma Manufacturing Co., Ltd.	Japan	100	100 %
Forerunner Pharma Research Co., Ltd.	Japan	100	100 %
Chugai Pharma USA, Inc.	United States	100	100 %
Chugai Pharma Europe Ltd.	United Kingdom	100	100 %
Chugai Pharma U.K. Ltd.	United Kingdom	100	100 %
Chugai Pharma France S.A.S.	France	100	100 %
Chugai sanofi-aventis S.N.C.	France	55	55 %
Chugai Pharma Taiwan Ltd.	Taiwan	100	100 %
Chugai Pharma Science (Beijing) Co., Ltd.	China	100	100 %
Chugai Pharma China Co., Ltd.	China	100	100 %
Chugai Pharma Technology Taizhou Co., Ltd.	China	100	100 %
Chugai Pharmabody Research Pte. Ltd.	Singapore	100	100 %

(Note) Chugai sanofi-aventis S.N.C. became a wholly-owned subsidiary of Chugai Pharma Europe Ltd., through the additional acquisition of its shares in January 2019, and changed its name to Chugai Pharma Europe Logistics S.A.S. In addition, Chugai Pharma Germany GmbH was established as a subsidiary of Chugai Pharma Europe Ltd. in February 2019.

31. Subsequent events

There were no material subsequent events.

Additional information

This Additional information is provided for the information of readers and does not form part of the consolidated financial statements.

1. Significant legal cases

At December 31, 2018, the Group is involved in the following significant legal cases for which the outcome cannot be determined at this time, but for which the Group assesses that the possibility of any settlement to be remote:

(1) Arbitration in United Kingdom regarding Actemra
In May 2017 Medical Research Council and LifeArc (formerly Medical Research Council Technology) ('Claimants') requested arbitration against Chugai Pharmaceutical Co., Ltd. with an arbitrator being appointed on 9 August 2017. In April 2018 United Kingdom Research and Innovation ('UKRI') was established and became the successor in title to the Medical Research Council, and the current claimants in the arbitration are LifeArc and UKRI. Sums are sought from Chugai for alleged breach of obligations under a collaboration agreement dated 15 August 1990 in connection with the development of the humanized anti-human IL-6 receptor monoclonal antibody, Actemra. It is claimed that Chugai is obliged to pay royalties to the Claimants pursuant to the collaboration agreement.

(2) Patent infringement lawsuit regarding emicizumab in Japan
Baxalta (Baxalta Incorporated and Baxalta GmbH) filed a lawsuit against Chugai at the Tokyo District Court on 6 May 2016 requesting an injunction against the manufacture, usage, transfer, exportation and offer of any transfer regarding emicizumab alleging emicizumab is infringing its Japanese patent (patent number 4313531). With regard to this action, Tokyo District Court rendered a decision in favor of Chugai's claim. Given this ruling, Baxalta appealed to the Intellectual Property High Court on 29 June 2018.

(3) Patent infringement lawsuit regarding emicizumab in the United States
Baxalta (Baxalta Incorporated and Baxalta GmbH) filed a lawsuit against Chugai and Genentech Inc., at the United States District Court for the District of Delaware on 4 May 2017 requesting relief including an injunction against manufacturing, using, offering to sell, or selling of emicizumab within the United States, or importing emicizumab into the United States. Baxalta filed a stipulation of dismissal with prejudice regarding Baxalta's claims against Chugai with the Court on 13 September 2018, and the Court issued an Order Dismissing Chugai from this lawsuit on 19 September 2018.

(4) Patent infringement lawsuit against Alexion in the United States
Chugai alleges that the anti-C5 antibody ALXN1210 (ravulizumab) product, an investigational drug developed by Alexion Pharmaceuticals, Inc., infringes one of its U.S. patents (U.S. Patent No. 9,890,377) relating to its proprietary antibody engineering technology. Thus, Chugai filed a patent infringement lawsuit against Alexion at the United States District Court for the District of Delaware on 15 November 2018 requesting a judgment that the ALXN1210 product infringes Chugai's U.S. patent and injunctive relief precluding manufacturing and selling of the ALXN1210 product within the United States.

(5) Patent infringement lawsuit against Alexion in Japan
Chugai alleges that the anti-C5 antibody ALXN1210 (ravulizumab) product, an investigational drug developed by Alexion Pharma Godo Kaisha (Japan Regional Headquarters), infringes some of its Japan patents (Patent No. 4954326 and No. 6417431) relating to its proprietary antibody engineering technology. Thus, Chugai filed a patent infringement lawsuit against Alexion at the Tokyo District Court on 5 December 2018 requesting a judgment that the ALXN1210 product infringes Chugai's Japan patent and injunctive relief precluding manufacturing and selling of the ALXN1210 product in Japan.

Independent Auditor's Report

Independent Auditor's Report

To the Board of Directors of Chugai Pharmaceutical Co., Ltd.:

We have audited the accompanying consolidated financial statements of Chugai Pharamaceutical Co., Ltd. and its consolidated subsidiaries, which comprise the consolidated balance sheet as at December 31, 2018, and the consolidated income statement, statement of comprehensive income ,statement of changes in equity and statement of cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in Japan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgement, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, while the objective of the financial statement audit is not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Chugai Pharmaceutical Co., Ltd. and its consolidated subsidiaries as at December 31, 2018, and their financial performance and cash flows for the year then ended in accordance with International Financial Reporting Standards.

KPMG AZSA LLC

March 28, 2019
Tokyo, Japan

Glossary

Terms Related to Chugai's Business

Unmet medical need
Medical need that is not adequately met due to a lack of effective treatments.

First-in-class
An original drug that is highly novel and useful, and will significantly change the therapeutic system.

Best-in-class
A drug that offers clear advantages over other existing drugs in the same category, such as those with the same molecular target.

Development pipeline
At pharmaceutical companies, refers to drug candidates that are being developed.

Proof of Concept (PoC)/Early PoC
Proof of concept (PoC) is confirmation that the therapeutic effect conceived in the research stage is effective in humans. Early PoC means that in addition to safety, signs of efficacy or pharmacological effect have been confirmed in a limited number of cases.

Clinical trial
A study to verify the safety, efficacy and other characteristics of a drug in human subjects. Studies conducted for the purpose of filing an application for approval are called clinical trials.

Phase I: Performed on a small number of healthy volunteers (or, for certain disease areas and diseases, on patients) to assess the drug's safety and the process by which it is absorbed, distributed, metabolized and eliminated by the body.

Phase II: Performed on a small number of consenting patients to determine the safest and most effective dosage and the dosing regimen.

Phase III: Performed on a large number of consenting patients to verify the efficacy and safety of the new drug in comparison with existing drugs or placebo.

Phase IV: Post-marketing clinical surveillance. Performed on a larger number of consenting patients than in phase III studies to verify the drug's safety and efficacy for its approved indication(s).

Application for approval
An application submitted by a pharmaceutical company to a regulatory agency to obtain approval for manufacturing and marketing of a new drug after its efficacy and safety have been verified in clinical trials. In Japan, the Minister of Health, Labour and Welfare (MHLW) grants manufacturing and marketing approval to substances deemed appropriate as pharmaceuticals based on reviews by the Pharmaceutical Affairs and Medical Devices Agency as well as academic and other experts in the Pharmaceutical Affairs and Food Sanitation Council.

Additional indication
A new indication for a previously approved drug.

Lifecycle management
The various measures taken to maximize the potential value of a drug, including shortening development time, expanding sales, extending the product's life, and conducting appropriate cost control.

Terms Related to Drug Discovery

Personalized Healthcare
Even when a particular disease is treated with the same drug, there may be differences in the efficacy and side effects of that drug depending on the patient. One of the causes is thought to be that the genetic information related to the disease is different in each patient. Personalized healthcare (PHC) is an approach that focuses on these genetic-level differences to provide treatment tailored to the characteristics of each patient's disease. It therefore brings significant benefits in term of efficiency, safety and cost effectiveness.

Cancer Genomic Medicine
One example of personalized healthcare. Medical treatment that measures multiple cancer-related genes in a single operation using gene panel examination and performs optimal treatment according to each patient's genomic profile.

Biopharmaceuticals
Drugs created by applying biotechnology such as genetic recombination. In the 1980s, when rapid advances were made in genetic engineering, Chugai decided to shift to research and development of biopharmaceuticals and made related large-scale capital investments.

Therapeutic antibody
A type of biopharmaceutical, it is an artificially created antibody used as a medicine to prevent or treat diseases. Therapeutic antibodies are designed to act only on the specific molecule (antigen) that causes the disease, and therefore can be expected to provide high therapeutic efficacy and reduce side effects. Chugai launched the first therapeutic antibody created in Japan in 2005, and is leading the world with its proprietary antibody engineering technologies.

Modality
In the pharmaceutical industry, refers to the material classification of a medicine. Until the 1990s, small molecule drugs were virtually the only modality, but the options are now increasing. New modalities enable new approaches to diseases that have no effective treatment methods. Chugai is focusing on establishing middle molecules as a third modality, in addition to its biologics and small molecules.

Open innovation
Generating innovative value by utilizing the technologies and development capabilities of external research networks such as with universities, research institutions and other organizations.

Translational Research
Research that builds a bridge between the findings of basic research by academia and the development of new medicines by pharmaceutical companies.

Terms Related to Human Resources

Work-life synergy (Work-life balance)
Chugai's work-life synergy aims to generate a synergistic effect that brings forth motivation, vitality and innovation by enhancing both work and the lives of individuals. Work-life synergy, an advancement of the concept of work-life balance, is necessary for a fulfilling personal life, as well as for becoming the top innovator in the healthcare industry.

Diversity and Inclusion
At Chugai, diversity refers to a diversity of attributes such as gender, age and nationality, as well as ways of thinking, values and experience. Inclusion refers to the state of respecting each other's differences and the ability of everyone to contribute and perform at his or her full potential. When people with various backgrounds work together, they become aware of diverse perspectives and ideas. Companies promote diversity to create new value, which leads to innovation. Using this awareness for business innovation, companies promote diversity to create better-quality products and services. Also called "diversity and inclusion (D&I)," which refers to receptivity to diversity and incorporating diverse opinions and ideas rather than the simple pursuit of variety, and also encompasses the concept of raising organizational value.

Talent management
Talent management is the human resource strategy by which we identify and develop leaders and highly skilled specialists at an early stage. It is also the means by which we improve the skills and enhance the motivation of employees throughout the Company, with the aim of realizing our corporate strategy and catalyzing the creation of innovation. Each organization at Chugai has formulated a long-term human resource development plan and is building a talent pool of leaders.

Terms Related to the Roche Group

Roche
A pharmaceutical company established in 1896 and headquartered in Basel, Switzerland. With business operations in more than 100 countries, the Roche Group contributes to medicine in a wide range of fields through its two business segments: pharmaceuticals and diagnostics. Central to the Roche Group's strategy is personalized healthcare, the approach of selecting the most appropriate treatment by using biomarkers and diagnostic tests to identify patients most likely to show a significant response to a particular drug. The Roche Group's sales in 2018 were 56.8 billion Swiss francs.

Roche Diagnostics K.K.
The Japanese subsidiary of the Roche Group's diagnostics division. Established in 1998, Roche Diagnostics K.K. provides a wide range of innovative diagnostic solutions, including in-vitro diagnostics and diagnostic equipment and research reagents and related equipment.

Genentech Inc.
A leading biotechnology company headquartered in South San Francisco, California. Genentech has been a member of the Roche Group since 1990.

Foundation Medicine Inc. (FMI)
FMI was established in Massachusetts, U.S.A. in 2010. In 2015, Roche took a majority stake, and then acquired the remaining outstanding shares in 2018 to make FMI a wholly-owned subsidiary. Chugai established the FMI business as a specialized unit in October 2018 to carry out commercialization and product value maximization of FMI's "Comprehensive Genomic Profiling Service" in Japan.

Network (As of April 1, 2019)

Chugai Pharmaceutical

Head Office

Nihonbashi Mitsui Tower (Reception 15F)
2-1-1 Nihonbashi-Muromachi,
Chuo-ku, Tokyo 103-8324 Japan
Tel +81-(0)3-3281-6611 (main switchboard)
URL: https://www.chugai-pharm.co.jp/english/

Research Laboratories

Fuji Gotemba Research Laboratories
1-135 Komakado, Gotemba City,
Shizuoka Pref. 412-8513 Japan
Tel +81-(0)550-87-3411

Kamakura Research Laboratories
200 Kajiwara, Kamakura City,
Kanagawa Pref. 247-8530 Japan
Tel +81-(0)467-47-2260

Ukima Research Laboratories
5-5-1 Ukima, Kita-ku,
Tokyo 115-8543 Japan
Tel +81-(0)3-3968-6111

Plants (Chugai Pharma Manufacturing Co., Ltd.)

Ukima Plant
5-5-1 Ukima, Kita-ku, Tokyo 115-8543 Japan
Tel +81-(0)3-3968-6200

Fujieda Plant
2500 Takayanagi, Fujieda City,
Shizuoka Pref. 426-0041 Japan
Tel +81-(0)54-635-2311

Utsunomiya Plant
16-3 Kiyohara-Kogyodanchi, Utsunomiya City,
Tochigi Pref. 321-3231 Japan
Tel +81-(0)28-667-7611

Branches

Hokkaido Branch
8F Nihon Seimei Sapporo Bldg., 4-1-1
Kita-sanjo-Nishi, Chuo-ku, Sapporo City,
Hokkaido 060-0003 Japan
Tel +81-(0)11-271-5311

Miyagi and Yamagata Branch
3F Sankyo Sendai Bldg., 1-12-7 Honcho,
Aoba-ku, Sendai City,
Miyagi Pref. 980-0014 Japan
Tel +81-(0)22-225-8551

Kita-Tohoku Branch (Iwate/Aomori/Akita)
5F Higashi-nihon Fudousan Morioka Ekimae Bldg., 15-20 Morioka-ekimae-dori, Morioka City,
Iwate Pref. 020-0034 Japan
Tel +81-(0)19-625-2811

Fukushima Branch
17F Big-i, 2-11-1 Kouriyamashi Ekimae,
Fukushima Pref. 963-8002 Japan
Tel +81-(0)24-933-6303

Saitama Branch
8F Omiya Center Bldg., 1-9-6 Sakuragicho,
Omiya-ku, Saitama City,
Saitama Pref. 330-0854 Japan
Tel +81-(0)48-642-4771

Ibaraki Branch
8F Nissei Mito Bldg., 2-2-27 Izumi-cho,
Mito City, Ibaraki Pref. 310-0026 Japan
Tel +81-(0)29-227-1951

Gunma and Tochigi Branch
9F East Tower, 16-11 Sakae-cho,
Takasaki City, Gunma Pref. 370-0841 Japan
Tel +81-(0)27-321-6511

Niigata Branch
9F Niigata Ekimae Bldg., 3-2-3 Benten,
Chuo-ku, Niigata City,
Niigata Pref. 950-0901 Japan
Tel +81-(0)25-247-7331

Nagano and Yamanashi Branch
8F Kenshin Matsumoto Fukashi Bldg.,
2-5-2 Fukashi, Matsumoto City,
Nagano Pref. 390-0815 Japan
Tel +81-(0)263-34-1373

Tokyo Branch 1
Tokyo Branch 2
Tokyo Branch 3
17F Osaki Bright Core Bldg.,
5-5-15 Kita-shinagawa, Shinagawa-ku,
Tokyo 141-0001 Japan
Tel +81-(0)3-5449-6760

Tokyo Tama Branch
6F Tachikawa Nishiki-cho Bldg.,
1-8-7 Nishiki-cho, Tachikawa City,
Tokyo 190-0022 Japan
Tel +81-(0)42-523-6661

Chiba Branch
5F Fujimi Hainesu Bldg., 2-7-5 Fujimi, Chuo-ku,
Chiba City, Chiba Pref. 260-0015 Japan
Tel +81-(0)43-224-1511

Yokohama Branch
3F Yokohama East Square, 1-4 Kinkou-cho,
Kanagawa-ku, Yokohama City,
Kanagawa Pref. 221-0056 Japan
Tel +81-(0)45-450-7670

Atsugi Branch
8F Nihon Seimei Hon-atsugi Bldg,
1-2-1 Asahi-cho, Atsugi City,
Kanagawa Pref., 243-0014 Japan
Tel +81-(0)46-229-2700

Aichi Branch
KDX Sakura-dori Bldg., 3-20-17
Marunouchi, Naka-ku, Nagoya City,
Aichi Pref. 460-0002 Japan
Tel +81-(0)52-961-8511

Gifu and Mie Branch
11F Nouhi Nissei Bldg., 2-8 Hashimoto-cho, Gifu City, Gifu Pref. 500-8856 Japan
Tel +81-(0)58-252-7400

Shizuoka Branch
4F Nissei Shizuoka Ekimae Bldg.,
59-7 Kurogane-cho, Aoi-ku, Shizuoka City,
Shizuoka Pref. 420-0851 Japan
Tel +81-(0)54-252-5125

Kyoto and Shiga Branch
7F Karasuma Chuo Bldg., 659 Tearaimizu-cho,
Nishikikoji-agaru, Karasuma-dori, Nakagyo-ku,
Kyoto City, Kyoto 604-8152 Japan
Tel +81-(0)75-212-6090

Hokuriku Branch (Ishikawa/Toyama/Fukui)
13F Visage, 16-1 Showa-cho, Kanazawa City,
Ishikawa Pref. 920-0856 Japan
Tel +81-(0)76-232-6766

Osaka-Kita Branch
13F Uemura Nissei Bldg.,
3-3-31 Miyahara, Yodogawa-ku,
Osaka City, Osaka 532-0003 Japan
Tel +81-(0)6-6350-6355

Osaka-Minami Branch
14F Portas Center Bldg.,
4-45-1 Ebisujima-cho, Sakae-ku,
Sakae City, Osaka 590-0985 Japan
Tel +81-(0)72-223-1575

Nara and Wakayama Branch
5F Nara Center Bldg., 7-1-33 Omiya-cho,
Nara City, Nara Pref. 630-8115 Japan
Tel +81-(0)742-33-6011

Hyogo Branch
9F Meiji Yasuda Seimei Kobe Bldg.,
8-3-5 Isogami-dori, Chuo-ku, Kobe City,
Hyogo Pref. 651-0086 Japan
Tel +81-(0)78-241-6851

Hiroshima Branch
6F Nissei Hiroshima Bldg.,
7-32 Nakamachi, Naka-ku, Hiroshima City,
Hiroshima Pref. 730-0037 Japan
Tel +81-(0)82-543-6100

Yamaguchi Branch
10F Square Shin-yamaguchi,
2-21 Ogori-kogane-machi, Yamaguchi City,
Yamaguchi Pref. 754-0021 Japan
Tel +81-(0)83-972-1666

Tottori and Shimane Branch
6F Yonago Shoko Kaigisho Kaikan,
2-204 Kamo-cho, Yonago City,
Tottori Pref. 683-0823 Japan
Tel +81-(0)859-34-3521

Okayama Branch
4F Lit City Bldg., 15-1 Ekimoto-machi, Kita-ku,
Okayama City, Okayama Pref. 700-0024 Japan
Tel +81-(0)86-214-3760

Kagawa and Tokushima Branch
7F Ichigo Takamatsu Bldg.,
2-2-7 Kotobuki-cho, Takamatsu City,
Kagawa Pref. 760-0023 Japan
Tel +81-(0)87-811-6988

Ehime and Kouchi Branch
8F Taijyu Seimei Matsuyama Bldg.,
4-1-1 Ichiban-cho, Matsuyama City,
Ehime Pref. 790-0001 Japan
Tel +81-(0)89-945-3600

Fukuoka Branch
8F Echo Bldg., 2-13-34 Hakataeki-higashi,
Hakata-ku, Fukuoka City,
Fukuoka Pref. 812-0013 Japan
Tel +81-(0)92-451-8181

Nagasaki and Saga Branch
Nagasaki Ekimae Daiichi Seimei Bldg.,
2-3 Nishizaka-machi, Nagasaki City,
Nagasaki Pref. 850-0051
Tel +81-(0)95-825-4772

Kumamoto and Oita Branch
2F Ichigo Kumamoto Bldg., 6-7 Karashima-cho,
Chuo-ku, Kumamoto City,
Kumamoto Pref. 860-0804 Japan
Tel +81-(0)96-359-6311

Kagoshima and Miyazaki Branch
7F KSC Kamoike Bldg., 2-4-35 Yojiro,
Kagoshima City,
Kagoshima Pref. 890-0062 Japan
Tel +81-(0)99-251-1600

Okinawa Branch
11F JPR Naha Bldg.,
1-1-19 Matsuyama, Naha City,
Okinawa Pref. 900-0032 Japan
Tel +81-(0)98-861-1211

Regional Management Offices (RMO)

Domestic

Hokkaido and Tohoku RMO
3F Sankyo Sendai Bldg., 1-12-7 Honcho,
Aoba-ku, Sendai City,
Miyagi Pref. 980-0014 Japan
Tel +81-(0)22-225-8551

Kanto-Kita and Koshinetsu RMO
8F Omiya Center Bldg., 1-9-6 Sakuragicho,
Omiya-ku, Saitama City,
Saitama Pref. 330-0854 Japan
Tel +81-(0)48-642-4771

Kanto-Minami RMO
17F Osaki Bright Core Bldg.,
5-5-15 Kita-shinagawa, Shinagawa-ku,
Tokyo 141-0001 Japan
Tel +81-(0)3-5449-6760

Tokai and Hokuriku RMO
KDX Sakura-dori Bldg., 3-20-17 Marunouchi,
Naka-ku, Nagoya City,
Aichi Pref. 460-0002 Japan
Tel +81-(0)52-961-8511

Kansai RMO
13F Uemura Nissei Bldg., 3-3-31 Miyahara,
Yodogawa-ku, Osaka City,
Osaka 532-0003 Japan
Tel +81-(0)6-6350-6355

Chugoku and Shikoku RMO
6F Nissei Hiroshima Bldg., 7-32 Nakamachi,
Naka-ku, Hiroshima City,
Hiroshima Pref. 730-0037 Japan
Tel +81-(0)82-543-6100

Kyushu RMO
8F Echo Bldg., 2-13-34 Hakataeki-higashi,
Hakata-ku, Fukuoka City,
Fukuoka Pref. 812-0013 Japan
Tel +81-(0)92-451-8181

Domestic Subsidiaries

Chugai Clinical Research Center Co., Ltd.
2-1-1 Nihonbashi-Muromachi,
Chuo-ku, Tokyo 103-8324 Japan
(within the Chugai Pharmaceutical Head Office)
Tel+81-(0)3-3273-1173

Chugai Research Institute
for Medical Science, Inc.
1-135 Komakado, Gotemba City,
Shizuoka Pref. 412-8513 Japan
(within the Fuji Gotemba Research Laboratories)
Tel +81-(0)550-87-5425

Chugai Business Support Co., Ltd.
5-5-1 Ukima, Kita-ku,
Tokyo 115-8543 Japan
(within the Ukima Representative Office)
Tel +81-(0)3-3968-8760

Medical Culture Inc.
Muromachi CS Bldg.,
4-6-5 Nihonbashi-Muromachi,
Chuo-ku, Tokyo 103-0022 Japan
Tel +81-(0)3-5202-8270

Chugai Distribution Co., Ltd.
1-20, Okuwa, Kazo City,
Saitama Pref. 347-0010 Japan
(within the Kazo Distribution Center)
Tel +81-(0)480-76-0381

Chugai Pharma Manufacturing Co., Ltd.
5-5-1 Ukima, Kita-ku,
Tokyo 115-8543 Japan
(within the Ukima Representative Office)
Tel +81-(0)3-3968-6200

Forerunner Pharma Research Co., Ltd.
Komaba Open Laboratory, The University
of Tokyo, 4-6-1 Komaba, Meguro-ku,
Tokyo 153-8904 Japan
Tel +81-(0)3-5452-5726

Overseas Subsidiaries, Affiliates and R&D Partners

Europe

Chugai Pharma U.K. Ltd.
Mulliner House, Flanders Road,
Turnham Green, London W4 1NN U.K.
Tel +44-(0)20-8987-5680

Chugai Pharma Europe Ltd.
Mulliner House, Flanders Road,
Turnham Green, London W4 1NN U.K.
Tel +44-(0)20-8987-5600

Chugai Pharma Germany GmbH
Lyoner Strasse 15, 60528
Frankfurt am Main, Germany
Tel +49-(0)69-663000-0

Chugai Pharma France SAS
Tour Franklin, La Défense 8,
100/101 Quartier Boieldieu,
92042 Paris La Défense cedex, France
Tel +33-(0)1-56-37-05-20

Chugai Pharma Europe Logistics S.A.S.
Tour Franklin, Arche Sud,
100/101 Quartier Boieldieu,
92042 Paris La Défense cedex, France
Tel: +33-(0)1-56-37-05-20

United States

Chugai Pharma USA, Inc.
300 Connell Drive, Suite 3100
Berkeley Heights, NJ 07922 U.S.A.
Tel +1-908-516-1350

Asia

Chugai Pharma China Co., Ltd.
Building G31, No. 801 Jiankang Dadao,
Medical City, Taizhou, Jiangsu 225300 China
Tel +86-(0)523-8681-9823

Shanghai Branch
Unit 2901, Central Plaza,
No. 381 Central Huaihai Road,
Shanghai 200020 China
Tel +86-(0)21-6319-0388

Beijing Branch
1118 Beijing Fortune Bldg.
No. 5, Dong San Huan Bei Lu,
Chao Yang District,
Beijing 100004, China
Tel +86-(0)10-6590-8066

Guangzhou Branch
Unit 1508, Pearl River Tower, No. 15,
Zhujiang West Road,
Guangzhou 510623 China
Tel +86-(0)20-8363-3468

Chugai Pharma Science (Beijing) Co., Ltd.
1108 Beijing Fortune Bldg.
No. 5, Dong San Huan Bei Lu,
Chao Yang District, Beijing 100004, China
Tel +86-(0)10-6590-9556

Chugai Pharma Taiwan Ltd.
3F., No. 260, Dunhua N. Rd., Songshan District,
Taipei 10548 Taiwan, R.O.C.
Tel +886-(0)2-2715-2000

Chugai Pharmabody Research Pte. Ltd.
3 Biopolis Drive, #07-11 to 16 Synapse,
Singapore 138623
Tel +65-(0)6933-4888

C&C Research Laboratories
DRC, Sungkyunkwan University, 2066,
Seobu-ro, Jangan-gu, Suwon-si, Gyeonggi-do
16419 Korea
Tel +82-(0)31-8014-6606

Discovery Research Center
DRC, Sungkyunkwan University, 2066,
Seobu-ro, Jangan-gu, Suwon-si,
Gyeonggi-do 16419 Korea
Tel +82-(0)31-8014-6606

Clinical Research Center
#903 E&C Venture Dream Tower 3, 38-21,
Digital-ro 31-gil, Guro-gu,
Seoul 08376 Korea
Tel +82-(0)2-858-6226

Shareholder Information (As of December 31, 2018)

Major Shareholders

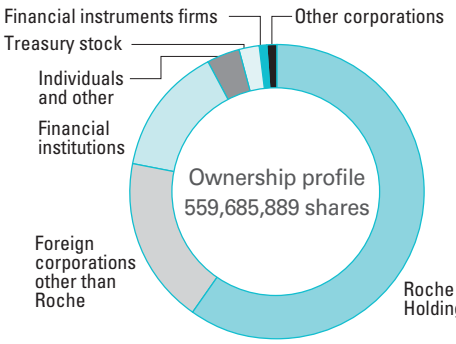
Name	Number of Shares Held (Thousands)	Percentage of Voting Rights (%)
Roche Holding Ltd	335,223	61.27
The Master Trust Bank of Japan, Ltd. (Trust Account)	29,342	5.36
Japan Trustee Services Bank, Ltd. (Trust Account)	16,320	2.98
STATE STREET BANK AND TRUST COMPANY 505001	15,614	2.85
JP MORGAN CHASE BANK 380055	13,924	2.54
STATE STREET BANK WEST CLIENT - TREATY 505234	4,231	0.77
Japan Trustee Services Bank, Ltd. (Trust Account 5)	4,091	0.74
Trust & Custody Services Bank, Ltd. (Securities Investment Trust Account)	3,829	0.70
Japan Trustee Services Bank, Ltd. (Trust Account 7)	3,748	0.68
SSBTC CLIENT OMNIBUS ACCOUNT	3,651	0.66

Note: 12,459,413 shares of treasury stock held by the Company are not included in the above breakdown of major shareholders.

Stock Price Information (From January 1, 2018 to December 31, 2018)

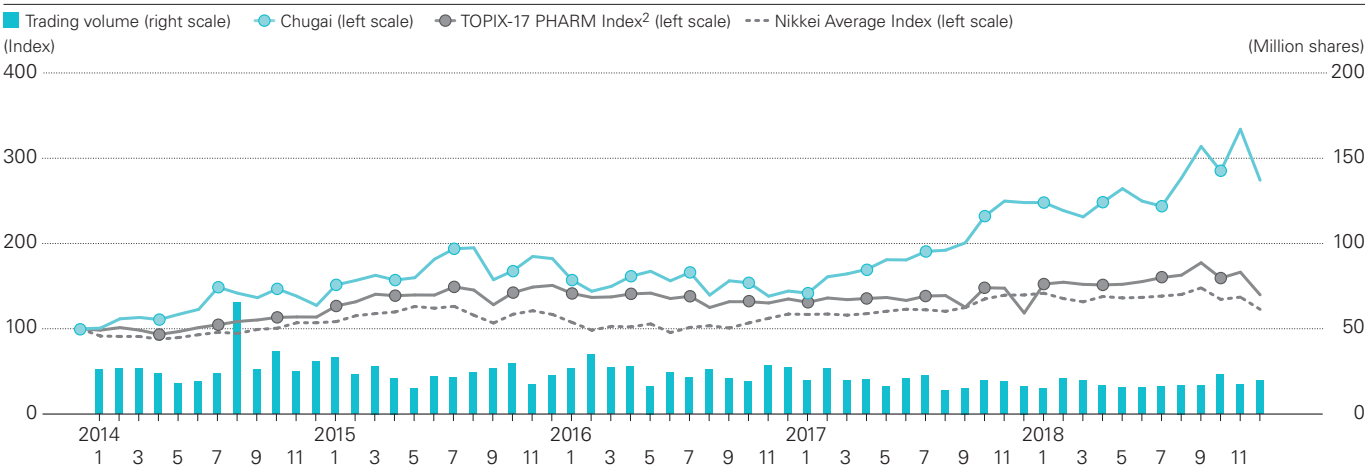
	Stock Price	
	Low	High
First Quarter	¥5,080	¥6,080
Second Quarter	5,310	6,210
Third Quarter	5,430	7,370
Fourth Quarter	6,230	7,850

Classification of Shareholders



- Roche Holding Ltd. — Shares: 335,223,645 — 59.89% — (Shareholder: 1)
- Foreign corporations other than Roche — Shares: 101,646,649 — 18.16% — (Shareholders: 751)
- Financial institutions — Shares: 79,685,192 — 14.23% — (Shareholders: 64)
- Individuals and other — Shares: 19,865,429 — 3.54% — (Shareholders: 18,941)
- Treasury stock — Shares: 12,459,413 — 2.22% — (Shareholder: 1)
- Financial instruments firms — Shares: 5,751,170 — 1.02% — (Shareholders: 39)
- Other corporations — Shares: 5,054,391 — 0.90% — (Shareholders: 150)

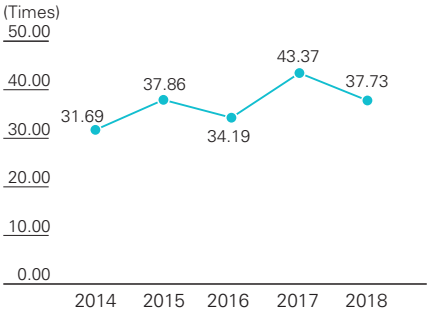
Share Performance[1] with Stock Indices



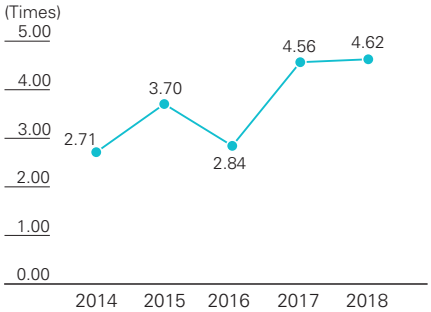
1. Closing price on December 30, 2013 = 100
2. A capitalization-weighted index that consists of pharmaceutical companies on the Tokyo Stock Exchange, First Section.

Share Price Indicators

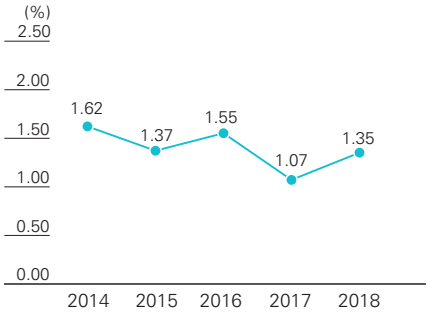
Price/Earnings Ratio
Year-end share price / Basic net income per share



Price/Book Ratio
Year-end share price / Equity per share attributable to Chugai shareholders



Dividend Yield
Dividends per share / Year-end share price



Corporate Overview (As of December 31, 2018)

Company Name
Chugai Pharmaceutical Co., Ltd.

Year of Foundation
1925

Year of Establishment
1943

Address
2-1-1, Nihonbashi-Muromachi, Chuo-ku,
Tokyo 103-8324 Japan

Stated Capital
¥73,202 million

Number of Employees
7,432 (Consolidated)

Number of Shares Issued of Common Stock
559,685,889

Number of Shareholders
19,947

Stock Listing
Tokyo Stock Exchange, First Section

Fiscal Year-End
December 31

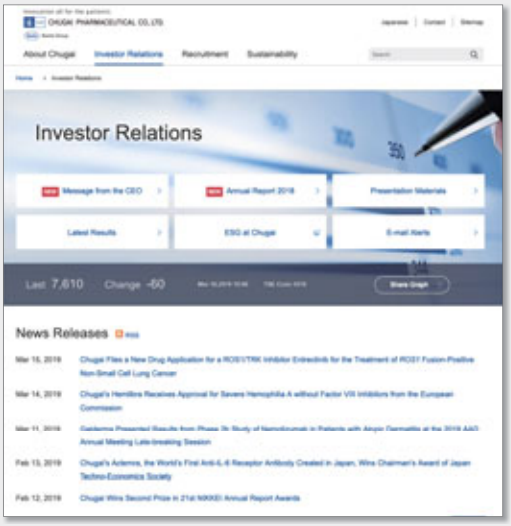
General Meeting of Shareholders
March

Transfer Agent
Mitsubishi UFJ Trust and Banking Corporation

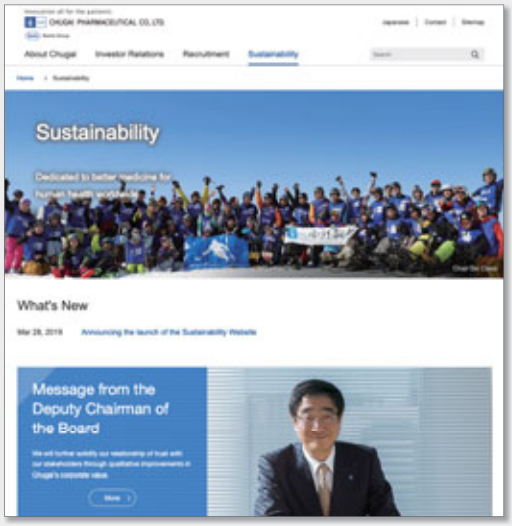
Public Notices
Public notices are made electronically on the Chugai website (https://www.chugai-pharm.co.jp/ir/) in Japanese. In case electronic communications are unavailable, public notices will be made in the newspaper *Nihon Keizai Shimbun*.

For further information, please contact:
Corporate Communications Dept.
Tel: +81-(0)3-3273-3313
Fax: +81-(0)3-3281-6607
E-mail: ir@chugai-pharm.co.jp

IR website
https://www.chugai-pharm.co.jp/english/ir/



Sustainability website
https://www.chugai-pharm.co.jp/english/csr/



Innovation all for the patients

CHUGAI PHARMACEUTICAL CO., LTD.

A member of the Roche group

2-1-1 Nihonbashi-Muromachi, Chuo-ku, Tokyo 103-8324 Japan URL: https://www.chugai-pharm.co.jp/english/