



Our Proprietary Technologies

[View in Japanese](#)

Chugai successfully created the first therapeutic antibody originating in Japan and has established a consolidated drug discovery platform that utilizes its own innovative antibody engineering technologies such as Recycling Antibody[®] technology (SMART-Ig[®]) and bispecific antibody manufacturing technology (ART-Ig[®]).

In order to continuously create groundbreaking new drugs as an R&D-driven pharmaceutical company, Chugai makes maximum use of its drug discovery technology and research network with academic institutions.

[Chugai's strengths are antibody engineering technologies](#) | [Chugai's Unique Innovative Antibody Technologies](#) |

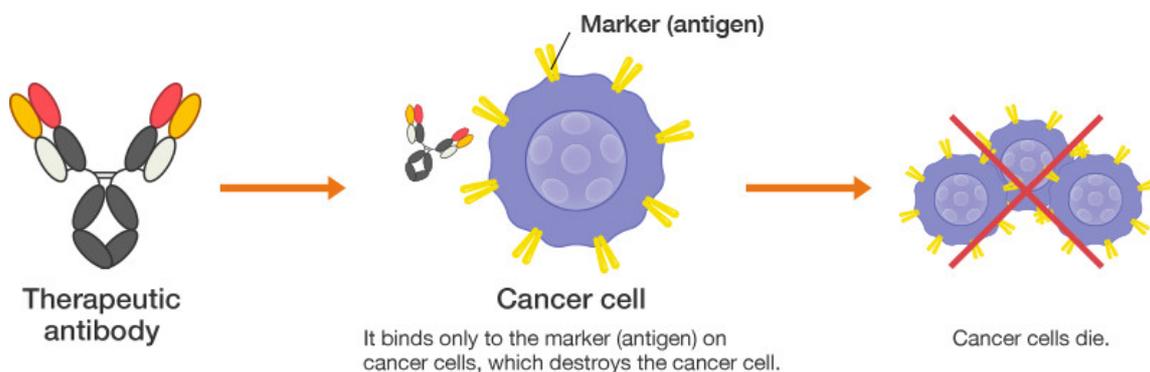
[Mechanism to Continuously Create Groundbreaking New Drugs](#)

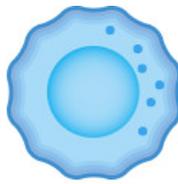
Chugai's strengths are antibody engineering technologies

Therapeutic antibodies are expected to contribute to patients suffering from cancer and other intractable diseases that currently have no effective treatment.

An antibody is a molecule that specifically binds to a marker (antigen) in a specific foreign substance and removes it from the body.

When applying an antibody to the treatment of cancer, the antibody can pinpoint a marker (antigen) on the surface of cancer cells, but it does not bind to normal cells that lack the marker (antigen). Therefore, a high therapeutic effect and a reduction of side effects can be expected.



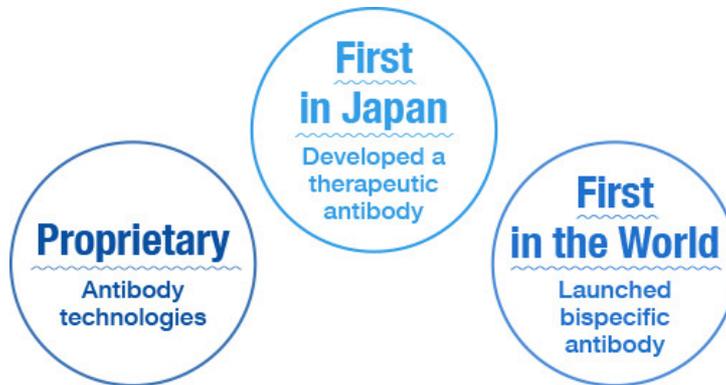


It does not bind to normal cells that lack the marker (antigen); so there is little effect on normal cells.



Chugai is a pioneer in the field of biopharmaceuticals.

Chugai has become a leading biotechnology company in Japan by using its experience and know-how accumulated since the 1980's to create the first therapeutic antibody originating in Japan. Based on this experience, Chugai has continuously succeeded in establishing proprietary antibody technologies that attract world attention. These technologies enabled Chugai to create the first bispecific antibody for hemophilia A and launch that drug for the first time in the world in 2017.

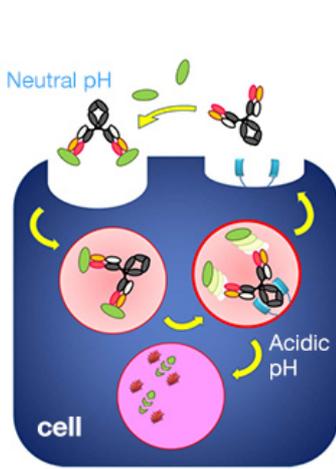


Chugai's Unique Innovative Antibody Technologies

1. SMART-Ig® (“Recycling Antibody” “Sweeping Antibody” Technology)

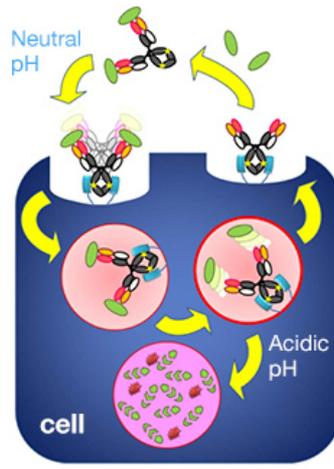
A conventional antibody derived from ordinary technology has two limitations no matter how high its affinity to the target antigen may be: 1) the antibody can bind to the antigen only once; and 2) the antibody can only bind to the antigen, not eliminate it from plasma.

SMART-Ig®, developed by Chugai, is an entirely new technology that overcomes these two limitations. It enables the targeting of previously untargetable antigens and achieves a product profile that could not be realized in the past with a conventional antibody.



Recycling antibody

- Antibody can bind to the antigen multiple times
- Can reduce the antibody clearance



Sweeping antibody

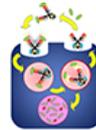
- Antibody can bind to the antigen multiple times
- Antibody can actively degrades antigen
- Antibody can eliminate or sweep antigen from plasma

For details, see below



Recycling Antibody® Technology

Explanation of the Recycling Antibody®, which can bind to the target antigen multiple times and therefore prolong the duration of the antibody's efficacy

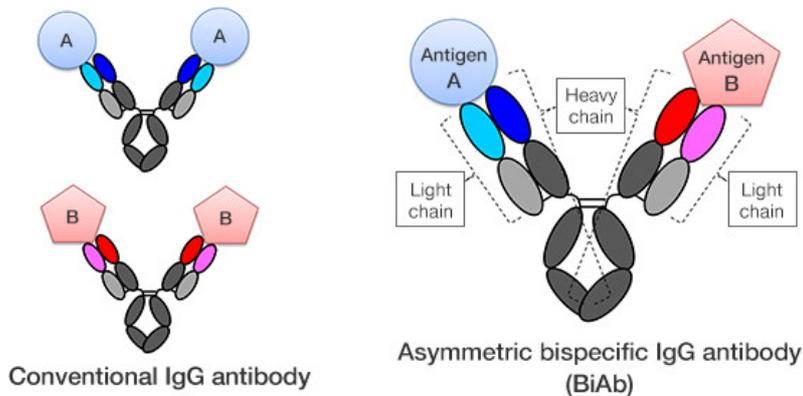


Sweeping Antibody® Technology

Explanation of the Sweeping Antibody®, which can eliminate the disease-causing antigen from plasma

2. ART-Ig® (Bispecific Antibody Manufacturing Technology)

This technology enables commercial production of bispecific antibodies, which is expected to lead to the generation of drugs with a new mode of action that enhances efficacy by simultaneously binding with two types of antigen or provides new pharmacology by bridging two antigens.



For details, see below

ART-Ig® (Bispecific antibody manufacturing technology)



Explanation which enables the manufacture of the Bispecific antibody



[Chugai's Proprietary Technologies \[PDF322KB | 3Pages\]](#)

Mechanism to Continuously Create Groundbreaking New Drugs

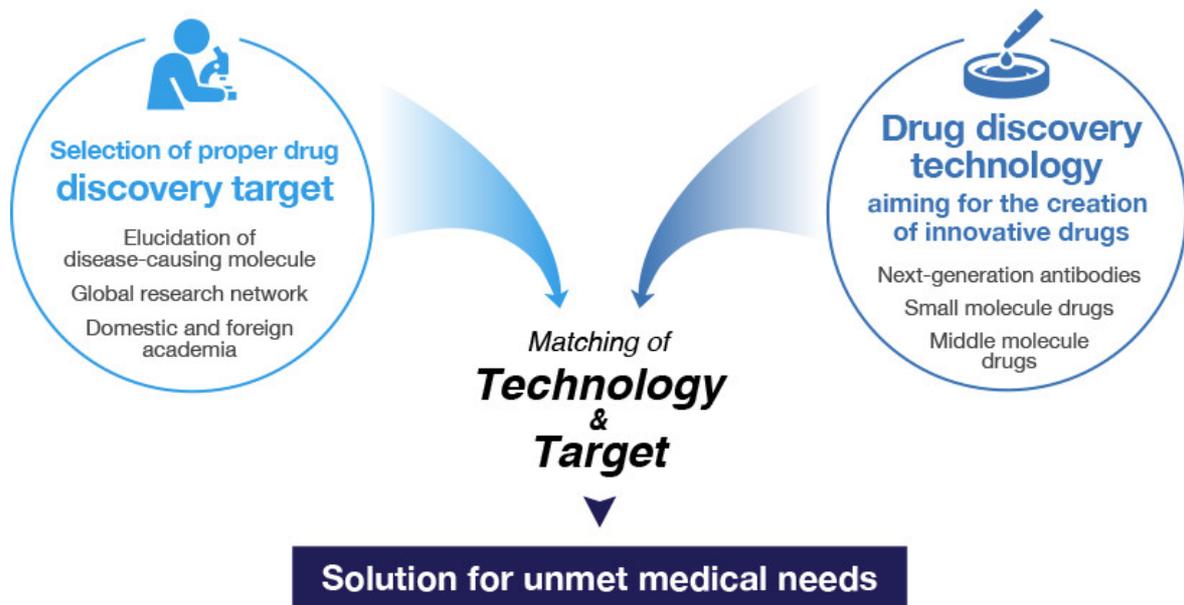
Matching drug discovery technologies and drug creation targets

At Chugai, we first develop proprietary technologies that are applicable to drug discovery, and then apply them to drugs that target disease-causing molecules. With this approach, we aim to create first-in-class^{*1}, best-in-class^{*2} new drugs that can be differentiated from the drugs of other companies.

As for the proprietary technology needed for this technology-driven approach, we are establishing not only antibody technologies but also a research base for drug discovery technology that can deal with small and middle molecules. In addition, we are selecting drug discovery targets by uncovering disease-causing molecules and utilizing global research networks such as academic institutions in both Japan and overseas. Chugai will continue to develop its own innovative drug discovery technologies based on this "technology-driven approach".

*1 An original drug that is highly novel and useful, and will significantly change the therapeutic system.

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



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Chugai's Five Strengths



- [Home](#)
- [About Chugai](#)
- [R&D](#)
- [Our Proprietary Technologies](#)

R&D

- [Overview of Chugai's Research Activities](#)
- [R&D Strategy](#)
- [Features of Research Platform](#)
- [Research Structure](#)
- [Our Proprietary Technologies](#)
- [Clinical Development](#)
- [Intellectual Property](#)
- [Other Guidelines](#)
- [Chugai R&D Glossary](#)

About Chugai

- [Message from the CEO](#)
- [Corporate Governance](#)
- [Chugai's Five Strengths](#)
- [Company Outline](#)
- [Our Vision](#)
- [Our Strategy](#)
- [R&D](#)
- [Videos & Advertisements](#)
- [90 Years History of Chugai Pharmaceutical](#)
- [Chugai Group](#)
- [Media Conference](#)
- [News](#)

Investor Relations

- [Management Policy](#)
- [Financial Results](#)
- [Reports & Downloads](#)
- [Shareholder Information](#)
- [R&D](#)
- [Company Outline](#)
- [90 Years History of Chugai Pharmaceutical](#)
- [ESG at Chugai](#)
- [See how Chugai compares to other companies](#)
- [Strategic Alliance with Roche](#)
- [Chugai's Five Strengths](#)
- [Events & Presentations](#)
- [Contacts & Information](#)
- [FAQs](#)

Recruitment

- [CAREERS AT CHUGAI](#)
- [Mid-career Recruitment](#)
- [Recruitment of the Disabled](#)

Sustainability

- [Basic Policy \(Creation of Shared Value\)](#)
- [Sustainability and Business Strategy](#)
- [Our Contribution to Sustainable Patient-Centric Healthcare](#)
- [Global Health](#)
- [Human Resources and Diversity & Inclusion](#)
- [Ethics and Compliance](#)
- [Supply chain Management](#)
- [Human Rights](#)
- [Social Contribution](#)
- [Environment](#)
- [Occupational Safety and Health](#)
- [Corporate Governance](#)
- [Reports](#)
- [Data](#)
- [Chugai's Transparency Guidelines](#)

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