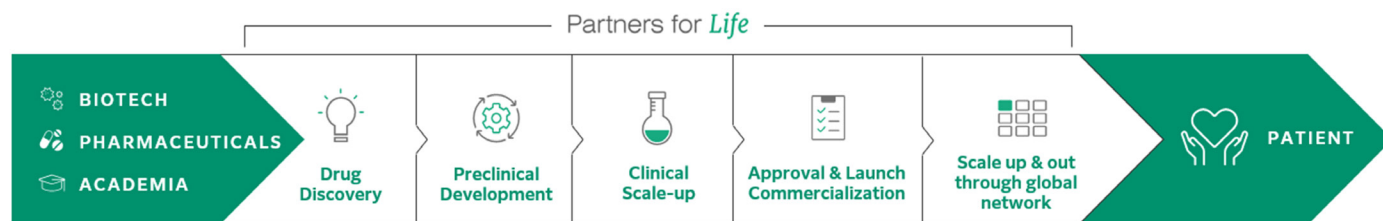


Monoclonal Antibody Discovery Service

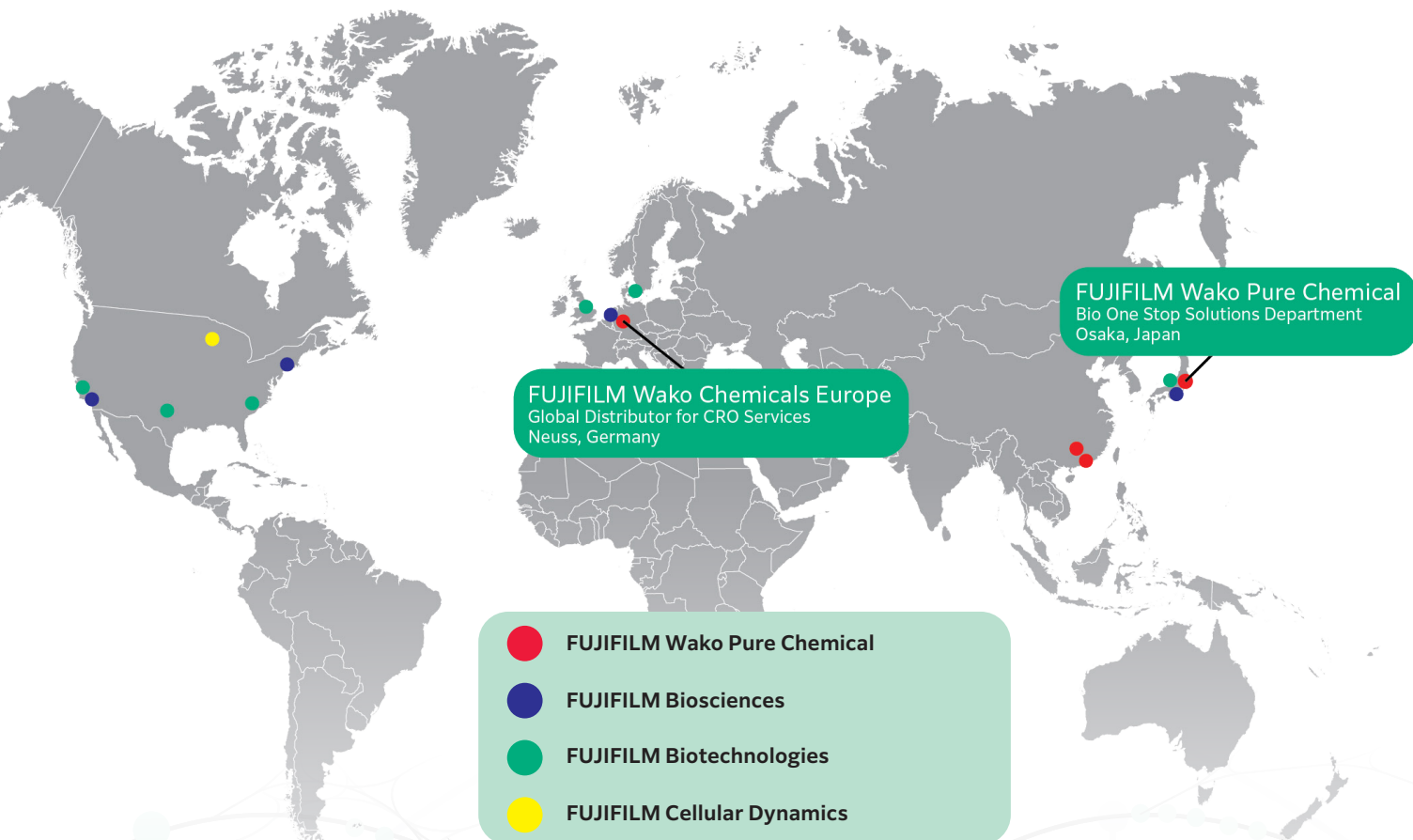
using Rabbit DNA Immunization
and Single B-Cell Cloning

About Us

Fujifilm Life Sciences provides an integrated suite of products, services and solutions backed with deep expertise and a history of innovation to rapidly progress your product to market.



FUJIFILM Wako Pure Chemical is a general life science company from Japan with almost 100 years of history. Based on advanced technological development, we provide highly functional and high-quality laboratory chemicals, specialty chemicals, and clinical diagnostic reagents as our products, in addition to cutting-edge CRO services. With our presence in Japan and our local subsidiaries globally, we strive to contribute to the life science and chemical industry worldwide.



Our CRO Services



Based on solid data and innovative research



Experienced scientists and premium customer service



Highly customizable service based on customers' needs

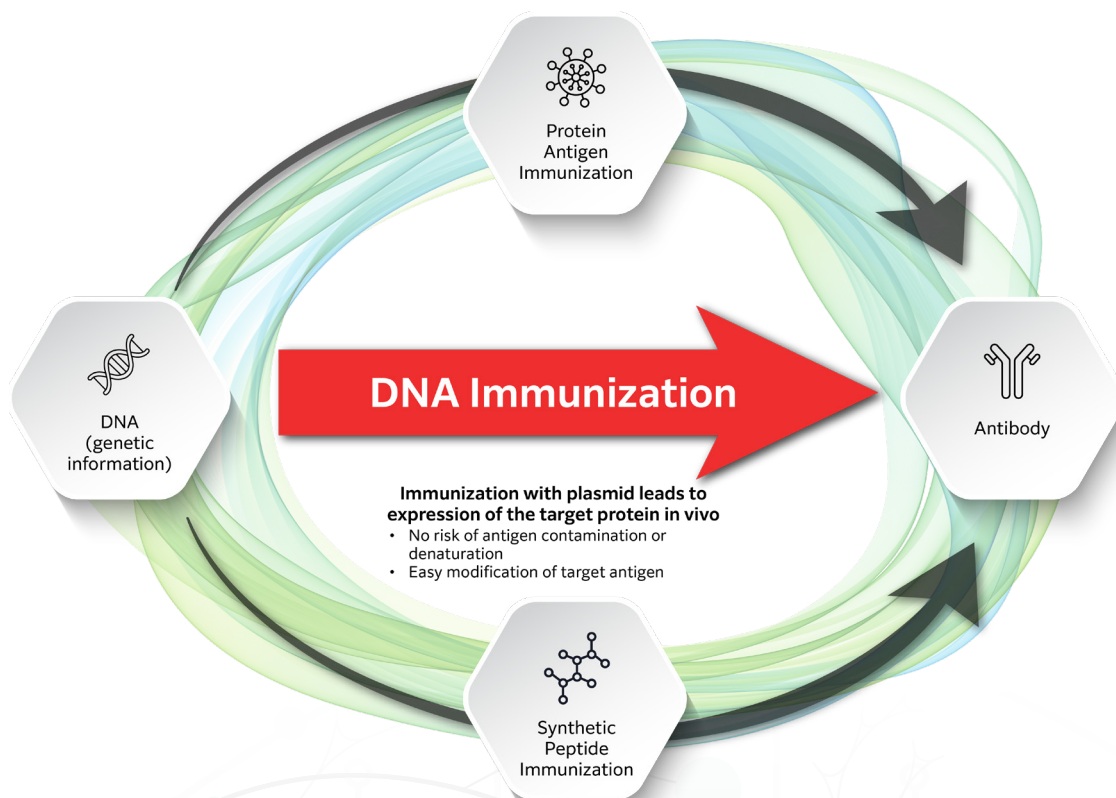
Monoclonal Antibody Discovery

Using Rabbit DNA Immunization and Single B-cell Cloning

Our experienced antibody experts at **Fujifilm Wako** in Japan offer you a tailored milestone-based service for discovering rabbit monoclonals.

Overview

Our Rabbit Monoclonal Antibody Discovery Service leverages the benefits of the DNA Immunization method in combination with Fujifilm's proprietary single B-cell screening technology. Rabbit mAbs boast 10-100x higher binding affinity than those from mice or rats, covering a wider range of epitopes. The DNA Immunization method, which involves immunization of rabbits using plasmid DNA, bypasses the need for immunization using recombinant protein/peptide, and facilitates the in vivo synthesis of proteins, leading to the generation of antibodies that recognize conformational epitopes, including challenging membrane proteins like multipass transmembrane proteins. From the target information, we can provide the antibody gene sequence for the high performance, high affinity antibody discovered through our service. This service is ideal for discovering ADCs, biologics, antibody therapeutics, antibodies for diagnostic uses, and also for research uses requiring antibodies that can recognize conformational epitopes and/or the native form of the antigen is critical (e.g., flow cytometry, immunoprecipitation, immunofluorescence, IHC on non-fixed tissues, therapeutic antibodies, or neutralizing antibodies).



Benefits at a Glance

Antibodies that recognize the native form of antigen of interest and challenging membrane proteins

Consult with antibody experts with decades of experience

Premium, custom antibodies specific to the customer's target

CUTTING-EDGE: Single B-Cell Screening Technology

In Stage 3, we unlock the full potential of the rabbit immune system by leveraging FUJIFILM's proprietary single B-cell screening technology (PAT.P: WO2024071374), which preserves native heavy/light chain pairing and maximizes the recovery of high-affinity clones.



Harvesting Splenocytes

Splenocytes from rabbits with sufficiently high antibody titer are collected.



Primary Screening

Cells are seeded into 196,000 well plates pretreated with exosomes carrying antigens expressed from plasmids. Positive cells which exhibit binding to the target antigen are picked.



Single-Cell PCR

RNA is collected from the cells, and RT-PCR is performed to amplify the antibody gene.



Secondary Screening

Amplified H- and L-chain antibody gene fragments are transfected into cultured cells, and the antibodies are produced in the supernatant. Flow cytometry is performed to determine specificity.



Cloning

Gene fragments that are determined to be specific antibodies are cloned.



Antibody Gene Sequencing

Sequencing analysis is performed to obtain the nucleotide sequence of the specific antibody.



TECH HIGHLIGHT

Exosome Technology for Single B-Cell Screening

Our proprietary single B-cell screening method enables precise, high-throughput identification of antibody-producing cells.



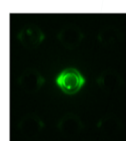
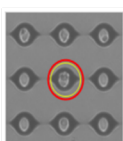
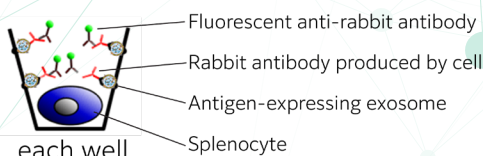
STEP 1 >

STEP 1 >

Antigen-expressing exosomes are generated by transfecting cultured cells with antigen-encoding plasmids, followed by purification from the culture supernatant using the phosphatidylserine (PS) affinity method via Tim4.

STEP 2 >

Tim4 coating is applied to the 196,000-well chamber. The exosomes, which preserve antigens in their native conformation, are added and immobilized by Ca^{2+} -dependent binding with Tim4.



Example: Green fluorescence results when the cell seeded in the well produces antibodies specific to the antigen, allowing for identification of a high number of positive clones.

①

Tim4 coating

②

Antigen-expressing exosomes

③

Splenocytes

STEP 3 >

Antibody-producing cells are added to the wells, and single cells producing specific antibodies are detected through fluorescence imaging.



Using this screening method, we can reliably identify a high number of positive clones, which increases the likelihood of identifying mAbs with exceptional specificity, affinity, and diversity.



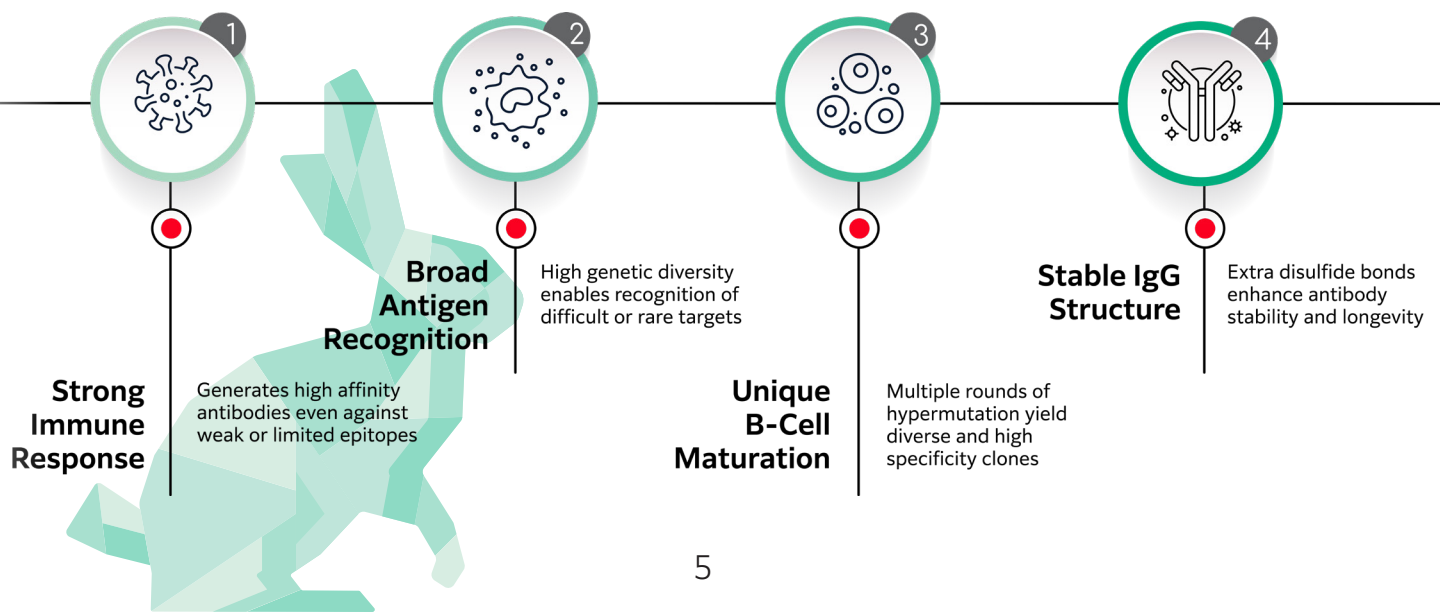
Scan to learn more about the PS Affinity Method for EV Isolation!

A New Standard in Antibody Generation Methods

Our **single B-cell screening method** pushes the boundaries of monoclonal antibody discovery by combining excellence in antibody quality, adaptability, and yield. Unlike traditional approaches such as hybridoma or phase display, single B-cell cloning delivers a broader pool of positive clones and directly obtains antibody gene sequences, paving the way for unparalleled quality and reproducibility that meets the rigorous demands of modern antibody development.

	 Single B-Cell Screening	 Hybridoma	 Phage Display
Antibody Affinity	High	High	Moderate (Improveable through extra steps)
Number of Positive Clones	Many	Few	Few
Animal Model Flexibility	High (e.g., rabbit, mouse, rat, others)	Limited (Mostly mouse)	Animal-Free (Synthetic)
Speed to Results	Moderate	Slow	Fast
Technological Complexity	High	Moderate	High
Antibody Yield	High	Moderate	Variable

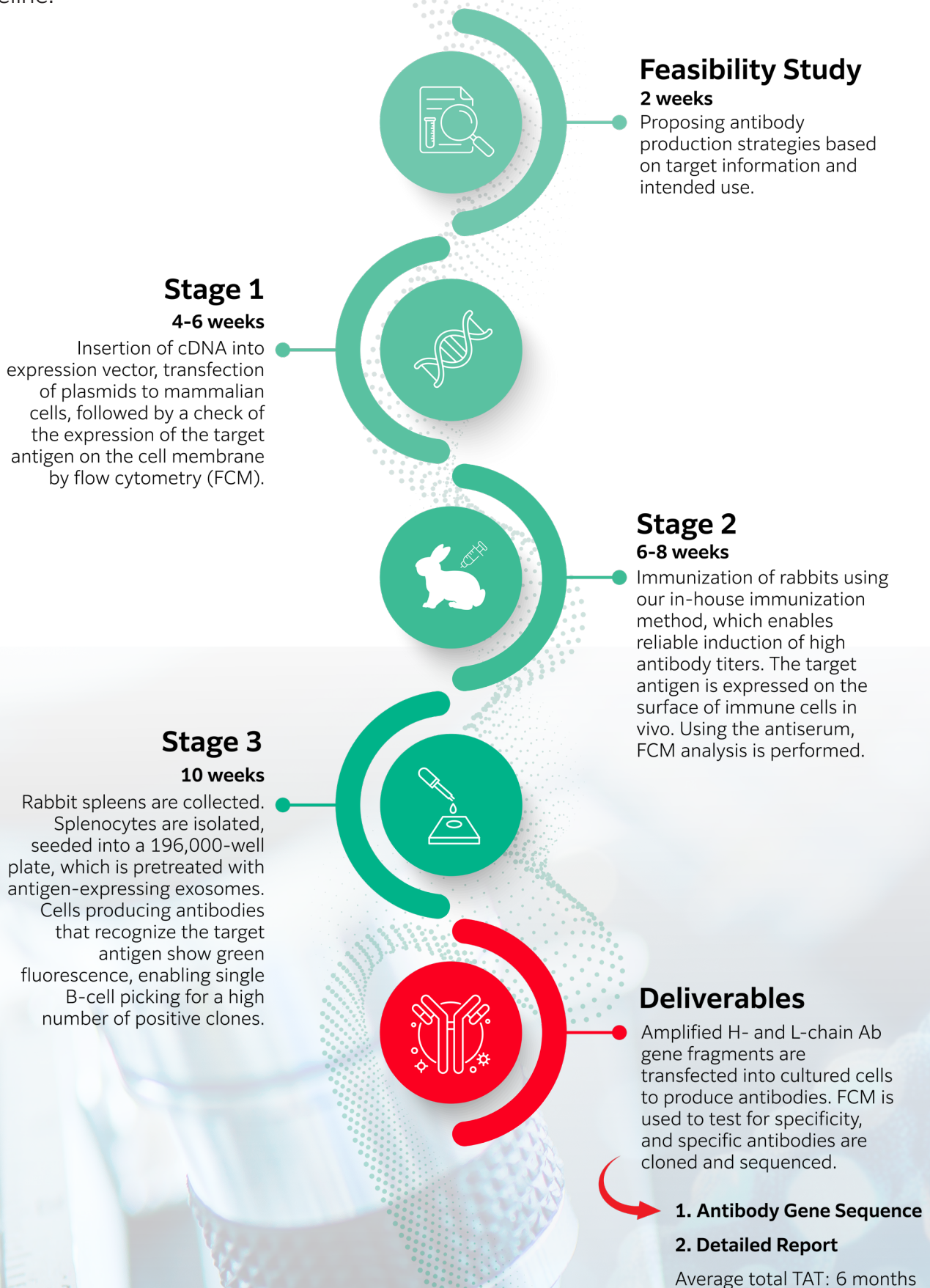
Advantages of Rabbit Monoclonal Antibodies



Stage-Gated Service

Our stage-gated antibody discovery process puts you in control. Each stage is clearly defined, independently invoiced, and transparently executed. You get data reports at every stage, enabling reduced risk and informed decision-making at every step.

No surprises. Just flexible, science-forward custom antibody development built for your pipeline.



OUR PARTNERS

for Downstream Antibody Solutions

Partners for *Life*



RevolKa

AI & ML techniques for antibody engineering



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FUJIFILM Wako is collaborating with **RevolKa Ltd.**, a next-gen protein engineering company, to bring you a comprehensive solution combining monoclonal antibody discovery and antibody engineering services. Their technology platform, **aiProtein®**, combines the power of machine learning with directed evolution to achieve rapid, multi-dimensional optimization of proteins.

Key Features of aiProtein®



Integrated ML & Directed Evolution

RevolKa's proprietary ML algorithm enhances the traditional directed evolution process. This allows for the modeling of fitness landscape of proteins and predicting the best mutations for protein engineering.



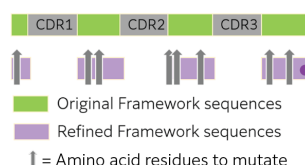
Simultaneous Property Engineering

Multi-dimensional optimization for stability, expression levels, affinity, and solubility with minimal tradeoffs. These improvements are crucial for practical applications such as creating effective and stable biologics.



Efficient Use of Small Datasets

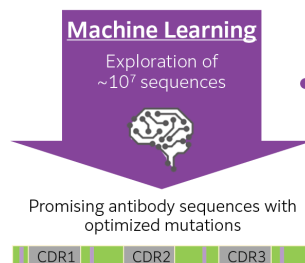
The platform's ability to predict superior protein variants from limited datasets reduces the need for extensive variant screening, conserving resources and time.



Core Technology 1

Framework Engineering Driven by Refined Naturalness Design

To address developability challenges at little cost of affinity



Core Technology 2

Low-n Machine Learning (with as little as n=100 training data)

RevolKa's Efficient Machine Learning model is specifically trained for the antibody of interest to generate promising antibody sequences with improved properties

*** Available in Asia and European regions only**

FUJIFILM Biotechnologies

CDMO manufacturing of antibodies



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FUJIFILM Biotechnologies' kojoX ecosystem aligns and globally harmonizes their facilities for unparalleled supply agility and resilience.

FUJIFILM Biotechnologies provides CDMO services globally for biologics and advanced therapies from pre-clinical development to commercialization, helping to bring life-impacting treatments to patients.

Key Highlights



mAb gene sequence to IND in 12 months



Over 30 years of CDMO experience, proven track record of excellence



Locations in Europe, US, and Japan allow for scaling from process development to GMP from 500L to 20,000L

Supporting Our Partners From Preclinical to Commercial Within One Globally Harmonized Network

