SpaceBD

Drug Discovery x Space

One-stop service for Protein Structural Analysis

Structure-Based Drug Discovery support

Ultra-precise structural data obtained from space experiments enables to identify the binding modes of target proteins and new drug candidate compounds at the atomic level, and to streamline the narrowing down of new drugs.

Why are space experiments useful for drug discovery?

EARTH

Low-quality

Density-driven convection disturbs the concentration gradient in the solution.

SPACE

High-quality

The concentration gradient is maintained without density-driven convection.

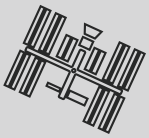
Earth

Space BD can utilize JAXA's 10+ years of protein space experiment know-how as their private sector partner.

1 **Purification of samples and study of crystallization conditions on the ground.**

2 **Crystallization testing and optimization in a space experiment container.**

Space



3 **Space experiments on ISS and return to the ground.**

Earth

4 **X-ray crystal structure diffraction and 3D structural analysis**

6 months at the shortest

Request for customers

Protein sample solution

50µl

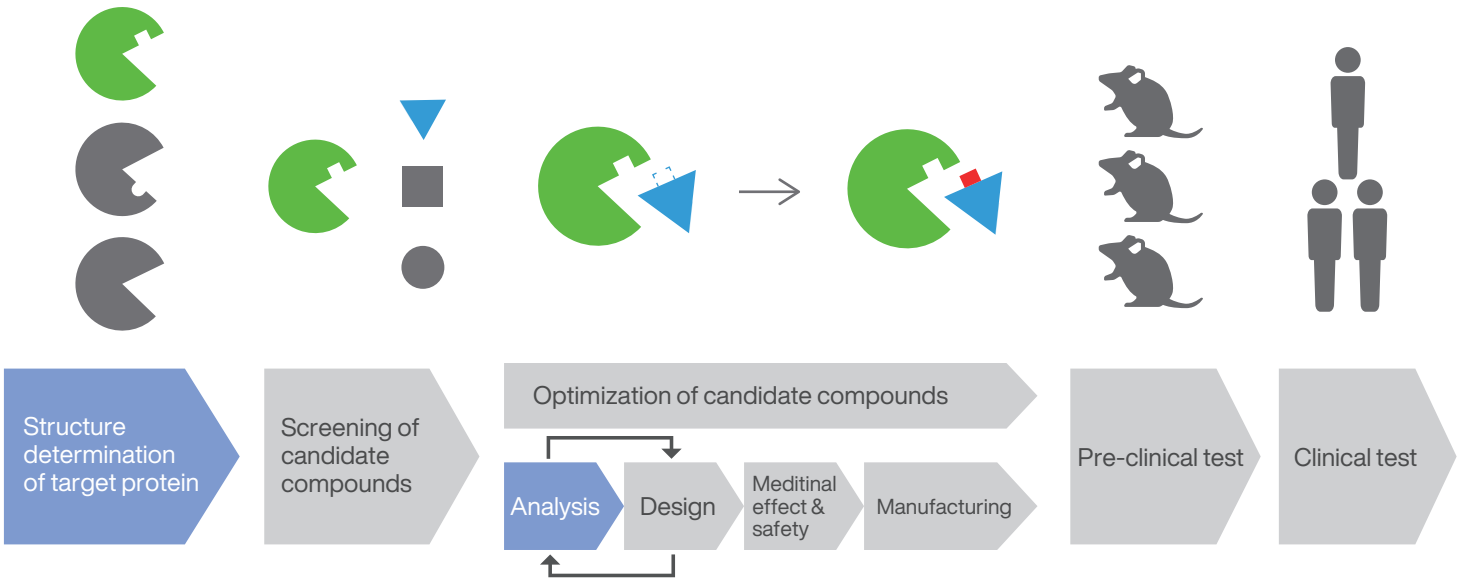
(Total 1mg)

Sample data sheet

1 sheet

30 minutes-done

Our contribution in drug discovery research.



Numbers related to JAXA's achievements over 10 years of in-space protein crystal growth experiments

20
Samples for whitch protein and compound bindingsates were determined by space experiments

11
Samples for which the structure was successfully determined

5
Samples whitch have progressed to the application stage

source：JAXA. https://cbi-society.org/taikai/taikai20/SP/SP-01_JAXA_CBI2020.pdf. JAXA 2020年CBIAcademic materials, JAXA. https://humans-in-space.jaxa.jp/protein/ . JAXA Website

Examples of crystal quality improvement through JAXA space experiments (partial)

Affiliation	Protein Name	Max Resolution before space experiment（Å）	Max Resolution after space experiment（Å）
Iwate Medical University	DPP11-N	3.50	**1.49**
Osaka Prefectural University	MAP2K7	2.10	**1.30**
Kagawa University	L-Rhl	1.97	**1.35**
Kyoto University	ER-60	2.20	**1.40**
Kyoto Prefectural University	AM-1 peptidase	1.80	**1.38**
Kumamoto University	hMTH1	1.80	**0.97**
University of Tsukuba	TcOYE-1	1.70	**1.10**
University of Tokyo	PcCel6A	1.11	**0.85**
Tohoku University	PPL3B	1.80	**1.20**
Hyogo University of Health Sciences	Pz peptidase A	2.00	**1.48**
Hyogo Prefectural University	NYLCM1	2.00	**1.03**
Meijo University	AoMan 134A	2.30	**1.48**

（ source：JAXA. https://iss.jaxa.jp/kiboresults/utilization/protein_crystals/.JAXA Website ）

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