FUJIFILM
Value from Innovation

in collaboration with Reconstituted cell-free protein synthesis kit PURE*frex*®

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Cyclic Peptide Discovery Service

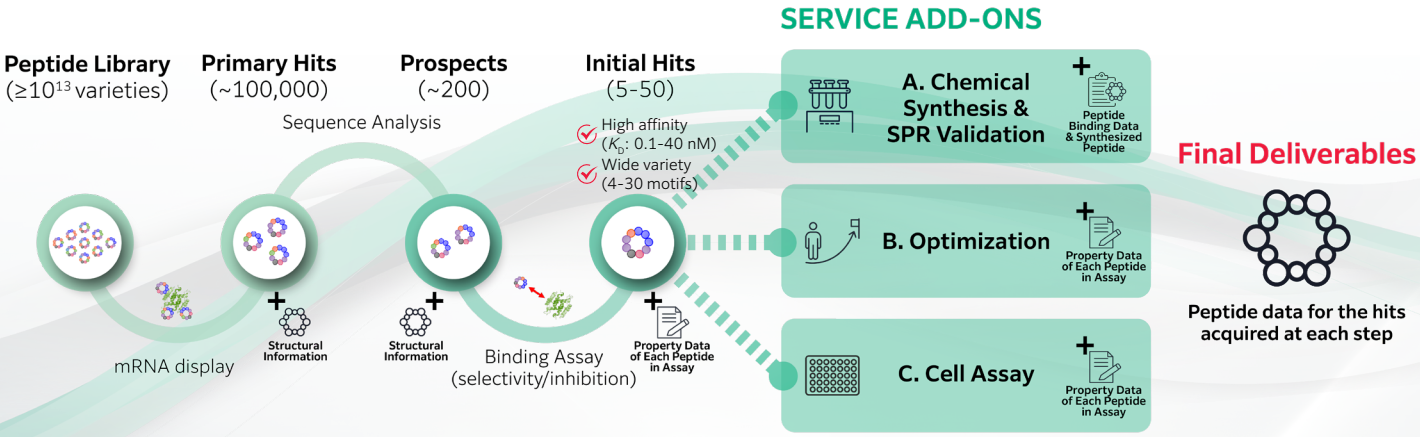
Diverse, high-affinity cyclic peptides using mRNA display technology

Cyclic peptides have emerged as a Goldilocks drug class, showcasing their remarkable potential as therapeutics due to their unique balance of properties. Fujifilm's patented mRNA display technology enables the rapid discovery of diverse, high-affinity cyclic peptides. Our independently developed platform allows for the exploration of cyclic structures incorporating unnatural amino acids, leveraging the industry's largest peptide library that is encoded by our mRNA display technology without requiring target information.

KEY FEATURES

- Swift identification of lead peptides/binders with desired properties
- mRNA display technology enables high efficiency of target identification
- Our efficient biosynthesis & assays systems enable high throughput selection and cell activity characterization

Service Contents

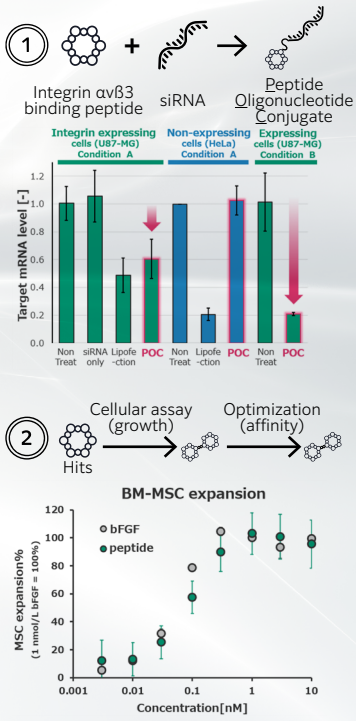


Our Track Record

In-House Projects

Targets	Binding Affinity (K_D) of initial hit in the first screening			After hit acquisition
	<1nM	1-10nM	10-40nM	
Integrin αvß3		●		siRNA delivery ①
FGFR-1	●			Full-agonist ②
FGFR-a	●			Full-agonist
Receptor b (TGFß Family)		●		Agonist*
Receptor c (TGFß Family)	●			Agonist*
Receptor d (TGFß Family)		(under measurement)		Agonist*
CD e (T/NK-cell marker)		●		(undisclosed)
CD f (T/NK-cell marker)			●	Agonist*
KRAS			●	-
Protein (intracellular)			●	Inhibitor
AAV			●	Affinity purification

* Under Development

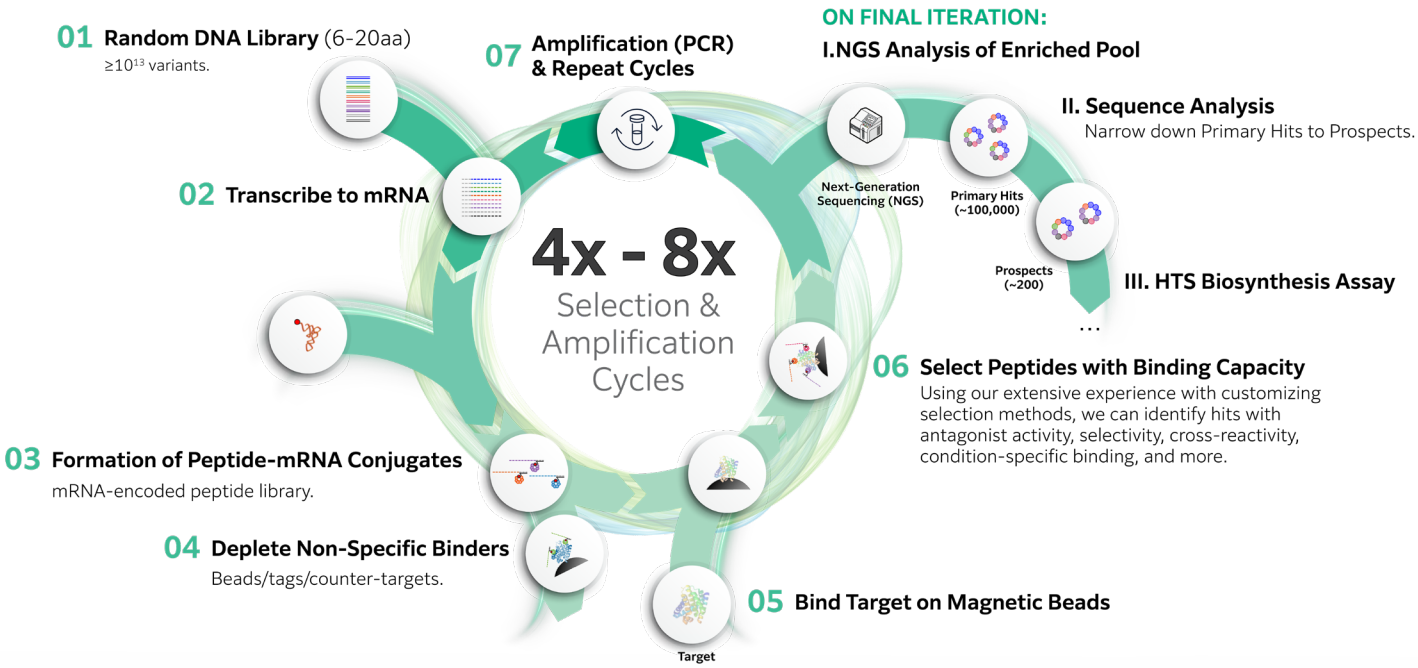


External Projects

We are supporting big pharma and biotech companies worldwide with hit acquisition for cyclic peptide therapeutics.

Core Technology 1: mRNA Display System

Our proprietary mRNA display system allows screening from a huge library of ≥10^{13} uniquely designed mRNA-peptide conjugates, enabling us to acquire peptides with strong, specific binding with target proteins. Up to 48 conditions can be run in parallel.



Core Technology 2: HTS Biosynthesis Assay

Fast, scalable biosynthesis for cyclic peptide evaluation

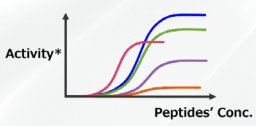
Using cell-free (in vitro) biosynthesis, we can generate assay-ready cyclic peptide panels in 5-7 days, enabling screening of ~1,000 peptides/month per worker. The strengths of this technology are the ability to perform high-throughput, quantitative evaluation using HTS equipment and the access to diverse assay formats (binding, inhibition, and cell-based; KD, IC50/EC50). These capabilities support comprehensive follow-up of mRNA display hits and structural optimization through systematic substitution of AAs and SAR mapping (timelines vary by project scope).

01 Biosynthesis

High throughput enzymatic translation can be done in parallel to rapidly produce diverse cyclic peptides from sequence lists.

02 Quantify

Parallel binding and cellular assays provide KD and IC_{50}/EC_{50} values using ELISA/SPR/reporter systems.



03 Optimize Hits

Using our high-throughput assay platform, we can select hits possessing the desired properties from the prospects acquired through mRNA display. SAR data can be acquired through comprehensive AA scanning, enabling further structure optimization.

Technology Features

- Screening of up to ~1000 peptides/month per worker
- High throughput parallel evaluation with cutting-edge HTS equipment
- Rapid assay-ready panels within 5-7 days
- Diverse assay methods for hit evaluation