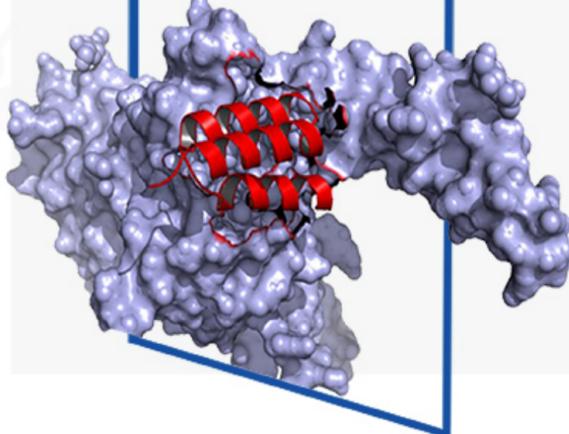
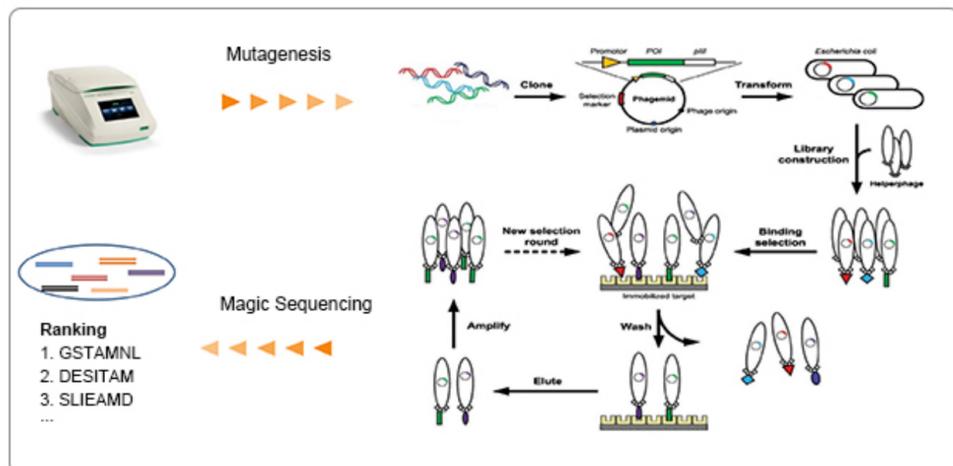


Phage Display Technology in Creative Biolabs



Creative Biolabs is a leading service provider of [phage display library construction and screening](#). In a phage display library, a variety of peptides, small antibodies [e.g. scFv and Fab] or proteins are displayed on the surface of filamentous phage [M13, fd, and f1 strains] as fusion proteins with one of the coat proteins of the phage virions, while the genetic materials encoding the peptides/proteins are housed within the virions. Using a binding-based process called biopanning, a small number of phages that display proteins/peptides specifically binding to a target of interest can be rescued from a phage library that usually displays a repertoire of many billions of unique peptides/proteins. Finally, the peptides/proteins displayed by the selected phages can be identified by phage amplification and DNA sequencing.

Phage Display Technology



Phage Display Systems in Creative Biolabs

- ⦿ **M13 Phage Display**
 - pVIII-fusion display: major coat protein fusion, display up to 2700 copies of foreign protein
 - pIII-fusion display: minor protein, display 1-5 copies of foreign protein
 - Most popular option for phage display, has been applied in many different research areas.
- ⦿ **T4 Phage Display**
 - Larger genome DNA which enables larger insertions
 - Dual display: two different molecules can be displayed separately on HOC and SOC
 - Both N- and C-terminal insertion available
- ⦿ **T7 Phage Display**
 - Time saving: T7 phages have a shorter lifecycle than filamentous phages and lambda phages.
 - Optimized biopanning: as T7 phages are resistant to extreme conditions, a variety of agents can be applied in screening procedure in contrast to alternative phages.
 - Complementary to M13 phage, widely used for cDNA library.

Library Construction Service in Creative Biolabs

- ⦿ **Phage Display Library Types**
 - Antibody library (immune, naïve, semi-synthetic, synthetic)
 - Peptide library (linear, cyclic)
 - Protein scaffold library
 - cDNA Library

Mutagenesis Strategies for Library Construction

- ⦿ **Trimer codon method**
 - Mutations are introduced at the codon level rather than at individual bases
 - No codon bias, no frame shift, no stop codon
 - Defined AA composition at each position
- ⦿ **Kunkel-like oligonucleotide-directed mutagenesis method**
- ⦿ **Degenerate codon method**

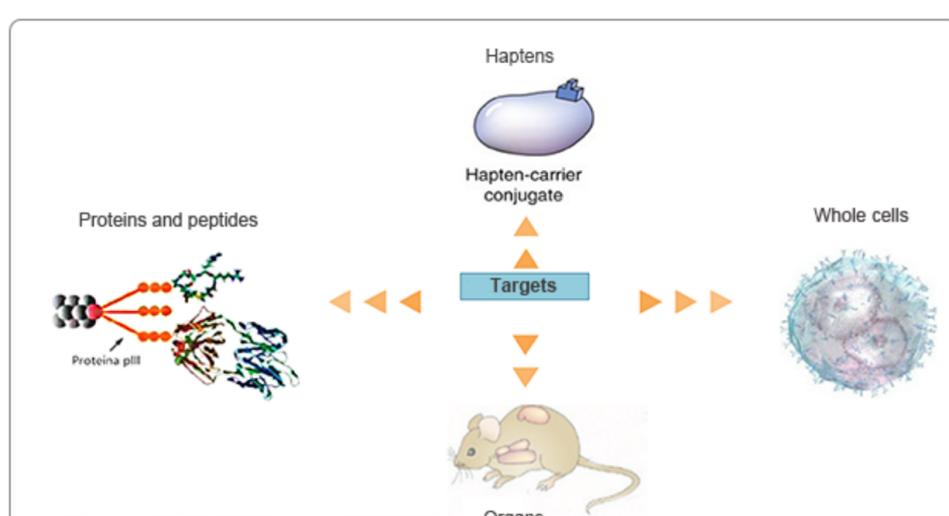
Features

- ⦿ **No system-based out-of-frame mutations**
- ⦿ **No limit on target length**
- ⦿ **Flexible and scalable**
- ⦿ **Large library capacity: from 10⁸ to over 10¹¹**

Premade Antibody Libraries Available!

- ⦿ During the past decades, we have integrated a comprehensive portfolio of premade libraries, including **linear and cyclic peptide** libraries, **monobody** libraries **human scFv** libraries, **human Fab** libraries, **mouse scFv/Fab** libraries, **rabbit Fab** libraries, **chicken scFv** libraries and **single domain antibody** libraries.

Library Screening Service in Creative Biolabs



Tailored Biopanning Strategies:

- ⦿ **Solid-phase screening**
 - Phage libraries are selected by flowing through a solid surface with the immobilized target.
- ⦿ **In-solution screening**
 - Isolating binders recognize naïve targets. The target-binder interaction is carried out in solution with subsequent capture by the appropriate method.
- ⦿ **Cell-based screening**
 - It is suitable to select peptides/antibodies for cell surface receptors, such as GPCR and ion channel-linked receptor.
- ⦿ **In Vivo screening**
 - Isolating novel peptides as the functional markers of new receptors or novel drug target candidates.

Applications of Phage Display Technology

Creative Biolabs offers high-quality phage display library construction and custom phage display library screening services for a broad range of project objectives including but not limited to:

- ⦿ Function peptide discovery
- ⦿ Therapeutic antibody discovery
- ⦿ Monoclonal antibody discovery from a variety of species includes: human, monkey, llama, camel, shark, alligator, mouse, rat, hamster, guinea pig, rabbit, chicken, dog, bovine, goat, sheep, and ferret.
- ⦿ Antibody humanization
- ⦿ Antibody affinity maturation

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