

## A Complete Pentapeptide Library

### Overview

<b>Description</b>	<p>A complete pentapeptide library containing over 0.5 billion peptide sequences is an invaluable platform to screen for potential candidates during the process of drug discovery. The cyclic peptide bound to the target is screened out first, and then reducing the range of peptide fragment to find the target peptide sequence by continuously decompressing the cyclic peptide. It was verified that the peptides screened by this platform are highly stable and specific.</p> <p>The uniqueness of this peptide library is that a large amount of peptide sequence information is compressed into cyclic peptides for screening. The cyclic peptides and selected peptides are affinity purified, instead of mixtures found in other peptide libraries on the market.</p>
<b>Key technology</b>	A proprietary cyclic peptide information technology
<b>Application</b>	Peptide therapeutics discovery
<b>Feature</b>	<ul style="list-style-type: none"><li>• Innovative cyclic peptide library encoding 0.5 billion peptide sequence information</li><li>• Affinity purified 75,000 cyclic peptides can bind to desired targets for high-throughput screening</li><li>• Increased efficiency and lowered cost for drug development</li></ul>

### Collaboration Opportunity

Protheragen Inc. is actively seeking acquirers for this platform. If you are interested in acquiring the complete pentapeptide library or the service, please feel free to contact us.

### Key technology

#### Proprietary Peptide Information Technology

Construction of a cyclic peptide library is a revolutionary technology. As illustrated below, the design of an 80-mer cyclic peptide can contain 80 different dipeptides, 80 different tripeptides, 80 different tetrapeptides, so on and so forth, all the way up to 80 different 80-mer peptides. Finally, one 8-mer cyclic peptide can contain amino acid sequence information of about 6,000 different peptides. The result is that large amount of peptide sequence information is significantly compressed into much smaller numbers of cyclic peptides. A library of ~75,000 cyclic 80-mer peptides encode ~500,000,000 peptide sequence data including all sequence information of tripeptide, tetrapeptide and pentapeptide. With this technique, more cyclic peptides are being constructed and the sequence information is gradually expanded to encode all the different peptide sequences of higher molecular weight peptides.



**An 80-mer cyclic peptide**



## Application

### Peptide Therapeutics Discovery

The advantages of peptides as therapeutics products include high specificity, high predictability of side effects, low toxicity, predictable metabolic pathway, and are effectively curative. Lately, peptide therapeutics have proved to be effective for a wide range of indications, such as cancers, cardiovascular diseases, endocrine and

metabolic disorders, and many other diseases. In the process of new drug development, discovering lead candidates with high efficiency and low cost is the key to a decisive victory. • Screening  
Through binding to desired target, candidate peptides can be quickly found from the cyclic peptide library. • Optimization

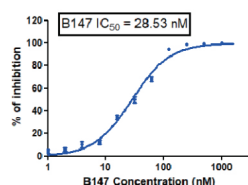
Candidate peptides can undergo extensive optimization to select a lead candidate. • Partnership  
The value of the technology and services can be maximized based on milestone agreements, should our clients be interested. Phage display peptide libraries and peptide combinatorial libraries on the market generally contain a mixture of peptides to bind to the targets for screening. Our complete pentapeptide library provides affinity purified cyclic peptides to find the peptide candidates through continuously decompressing the cyclic peptide.

## Status

### Development Status

The technology used to build the pentapeptide library has applied for patents in China, the United States, Europe, Canada, Australia, Japan and other countries. European patent has been granted by the EPO. The completed pentapeptide library has been used commercially and achieved expected results. The peptides under screening showed excellent characteristics in the validation test.

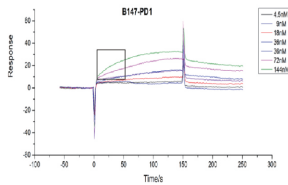
## Usage



### Effect of B147 on PD-1/PD-L1 Interaction

Peptide B147 was identified as a PD-1/PD-L1 inhibitor after screened from the complete pentapeptide library. The plotted inhibition curve and the IC<sub>50</sub> value showed that B147 efficiently interrupted PD-1/PD-L1 binding.

### SPR Assay Using PD-1 as Probe



After the two-fold dilution method, different concentrations of B147 bound to PD-1 on the chip, and the affinity constant was determined in the SPR assay.