

## New England Biolabs Certificate of Analysis

**Product Name:** *Ph.D.<sup>™</sup>-12 Phage Display Peptide Library*  
**Catalog Number:** *E8111L*  
**Packaging Lot Number:** *10088013*  
**Expiration Date:** *10/2022*  
**Storage Temperature:** *-20°C*  
**Storage Conditions:** *25 mM Tris-HCl, 75 mM NaCl, 50% Glycerol, (pH 7.5 @ 25°C)*  
**Specification Version:** *PS-E8111L v2.0*

Ph.D. <sup>™</sup> -12 Phage Display Peptide Library Component List			
NEB Part Number	Component Description	Lot Number	Individual QC Result
E8111LVIAL	Ph.D. <sup>™</sup> -12 Phage Display Peptide Library	10085514	Pass

Assay Name/Specification	Lot # 10088013
<p><b>Phage Contamination (Environmental)</b>            A 1:100 dilution of an overnight culture of E. coli ER2738 was made in 20 ml LB, to which 10<sup>3</sup> pfu of Ph.D.<sup>™</sup>-12 Phage Display Peptide Library was added. The flask was incubated at 37°C on a rotating shaker for 5 hours. A 1 ml volume of culture was removed and centrifuged. A volume of culture supernatant equivalent to the initial PFU input was added to a second, 20 ml culture like the first. The final culture supernatant was plated on three LB/IPTG/Xgal plates and then titered. Fewer than 20% clear or white plaques were observed in a minimum of 100 total plaques counted on each plate.</p>	Pass
<p><b>Sequence Verification (DNA)</b>            The Ph.D.<sup>™</sup>-12 Phage Display Peptide Library was sequenced using 5'-CCCATGTACCGTAACACTGAGTTTC-3' as a primer to confirm the correct form of the cloned insert on the displayed peptide, X12-GGG.</p>	Pass
<p><b>Functional Testing (Panning)</b>            A 100-fold representation of the Ph.D.<sup>™</sup>-12 Phage Display Peptide Library containing approximately 10<sup>11</sup> pfu is diluted in 200 µl TBS and panned against 300 ng β-endorphin monoclonal antibody. The bound phage is affinity captured using magnetic beads and eluted with 1 ml of 0.2M Glycine-HCl, pH 2.2. After three rounds of selection, ≥75% of sequences contain a motif related to the known epitope for the antibody.</p>	Pass
<p><b>Absolute Phage Titer</b>            Infection of a mid-log culture of E. coli ER2738 with Ph.D.<sup>™</sup>-12 Phage Display</p>	Pass

Assay Name/Specification	Lot # 10088013
Peptide Library followed by plating, yields $\geq 1 \times 10^{13}$ pfu/ml.	

This product has been tested and shown to be in compliance with all specifications.

One or more products referenced in this document may be covered by a 3rd-party trademark. Please visit [www.neb.com/trademarks](http://www.neb.com/trademarks) for additional information.



Alicia Bielik  
Production Scientist  
10 Dec 2020



Michael Tonello  
Packaging Quality Control Inspector  
10 Dec 2020