



VIRAL ESCAPE MAPS

Mapping of Viral Epitopes for Therapeutic Antibody and Vaccine Design

Brief Description of Technology

Functional mapping of viral genome epitopes for antibody and vaccine development using barcoded lentiviral libraries.

BUSINESS OPPORTUNITY

Exclusive license
Non-exclusive license
Sponsored research
Start-up

TECHNOLOGY TYPE

Bioinformatics
Method
Lentiviral

STAGE OF DEVELOPMENT

Preclinical *in vitro*

PATENT INFORMATION

Patent pending

INVESTIGATOR

Jesse Bloom, PhD

Basic Science and Public Health
Divisions

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Tech ID: 18-078
partnering@fredhutch.org
206-667-4304

Technology Overview

The development of vaccines and antibodies for HIV has been challenged by the poor immunogenicity of HIV and ineffective binding of antibodies to the surface protein Env. Dr. Bloom has developed a method to map and quantify how all possible amino-acid mutations to Env affect antibody neutralization. By leveraging barcoded lentiviral libraries and deep sequencing, this allows complete mapping of the functional interface between virus and antibody. Information derived from these mapping methods can inform which epitopes to best target for development of antibodies and vaccines to HIV.

Applications

- Development of therapeutic and prophylactic vaccines
- Engineering of neutralizing antibodies to viruses
- Novel computational and visualization platforms to study virus-antibody interactions

Advantages

- High-throughput, cost-efficient method to collect and assess functional data
- Comprehensive, unbiased functional mapping to inform epitope targeting and antibody/vaccine design
- Use to engineer multiple generations of antibodies against constantly evolving viruses not limited to HIV

Market Overview

Approximately 37 million people worldwide are currently living with HIV/AIDS, with an estimated 1.8 million new cases in 2016. Alternatives to traditional antiretroviral therapy are a highly active area of research, including vaccines, synthetic peptides, and antibodies. Understanding virus-antibody interactions will be critical for successful development of such therapies against HIV and other viruses.