BIN CITY

WHERE EVERY ANTIBODY FINDS ITS BIN

As our discovery campaign unfolds, each new hit steps into Bin City. Competition mapping sorts them into distinct epitope groups on the spot, giving teams immediate clarity on the landscape ahead.

a single cell TECHNOLOGY and Case Study Cinemas Presentation

Bin City:
Epitope Binning Screen in Action

The Problem

Client wishes to discover a high diversity set of antibodies that bind to a large protein target, and categorize the epitope bin of the hits.

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The Solution

To run the epitope binning screen, 3 proteins were generated for screening: a full-length extra-cellular domain (ECD), a protein fragment of Domains 4 through 7 (D4-7), and a protein fragment of Domains 6 and 7 (D6-7), as outlined in **Figure 1**.

Transgenic mice were immunized with the full-length ECD using a Rapid Protocol and lymph node cells were harvested. Antibody-secreting cells were isolated from lymph node cells and deposited onto a picowell device.

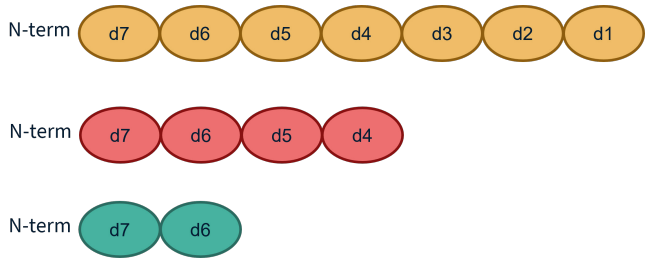

Figure 1. A schematic of the target structure and screening molecules used to screen for Full-length ECD (yellow), Domain 4-7 (pink), and Domain 6-7 (green).

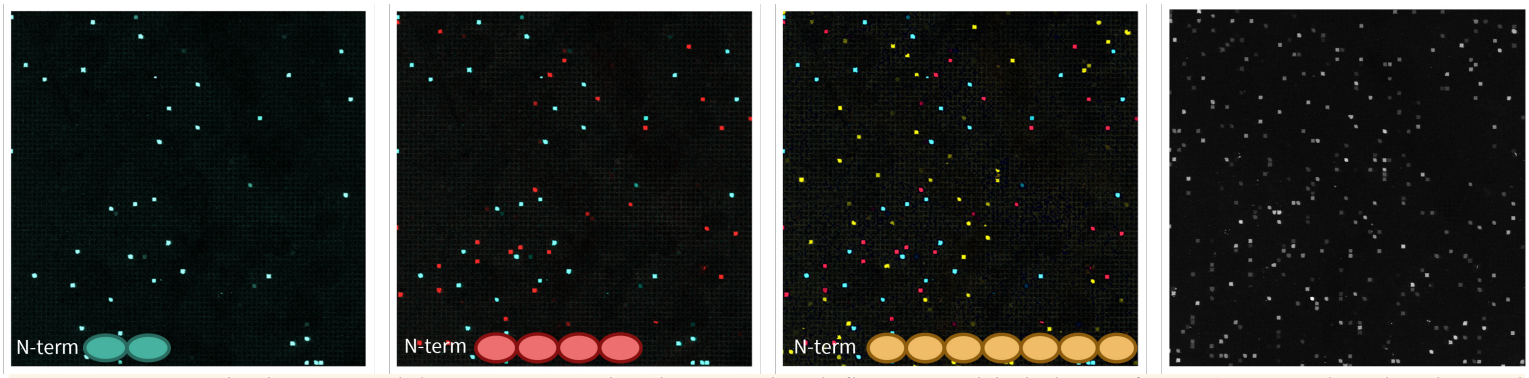

Figure 2. One antibody capture slide was generated and screened with fluorescent labeled D6-7 first, D4-7 second, and FL last and scanned after each screen. The same region from all the scans is displayed and new hits from each screen colored in corresponding colors (D6-7=green, D4-7=pink, FL=yellow). The final screen used labeled secondary antibody to detect all IgGs captured from secreting cells.

Antibodies were captured onto an antibody capture slide by creating a leakproof seal, generating an array of all secreted antibodies. The array was screened with the screening molecules in order from shortest to longest, as outlined in **Figure 2**.

All cells are lysed and mRNA encoding for IgG is captured onto a DNA microarray, and a DNA barcode is incorporated into the cDNA at each capture location. A total of 1,336 antigen-specific hits were delivered with full-length sequences, broken into >100 clonotypes. All hits were profiled and assigned a bin according to the screen. **Figure 3** shows 20 clonotypes assigned to 1 of 3 bins based on the screening data. Antibodies within a clonotype are assigned to the same bin.

This screen can be combined with others in an AbTheneum discovery campaign to enrich the data further.

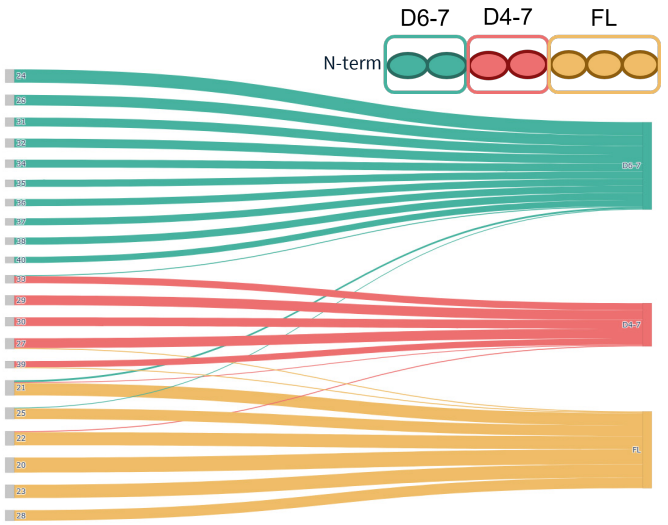

Figure 3. Twenty clonotypes from >100 total clonotypes are grouped on the left and their assigned bin shown on the right.