OmniAb®

# xPloration®: Simplifying Deep Antibody Mining for Maximum Impact

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*VP, Discovery Systems*

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# OmniAb Enables Innovative Antibody Therapeutics

AS OF 3/31/2025

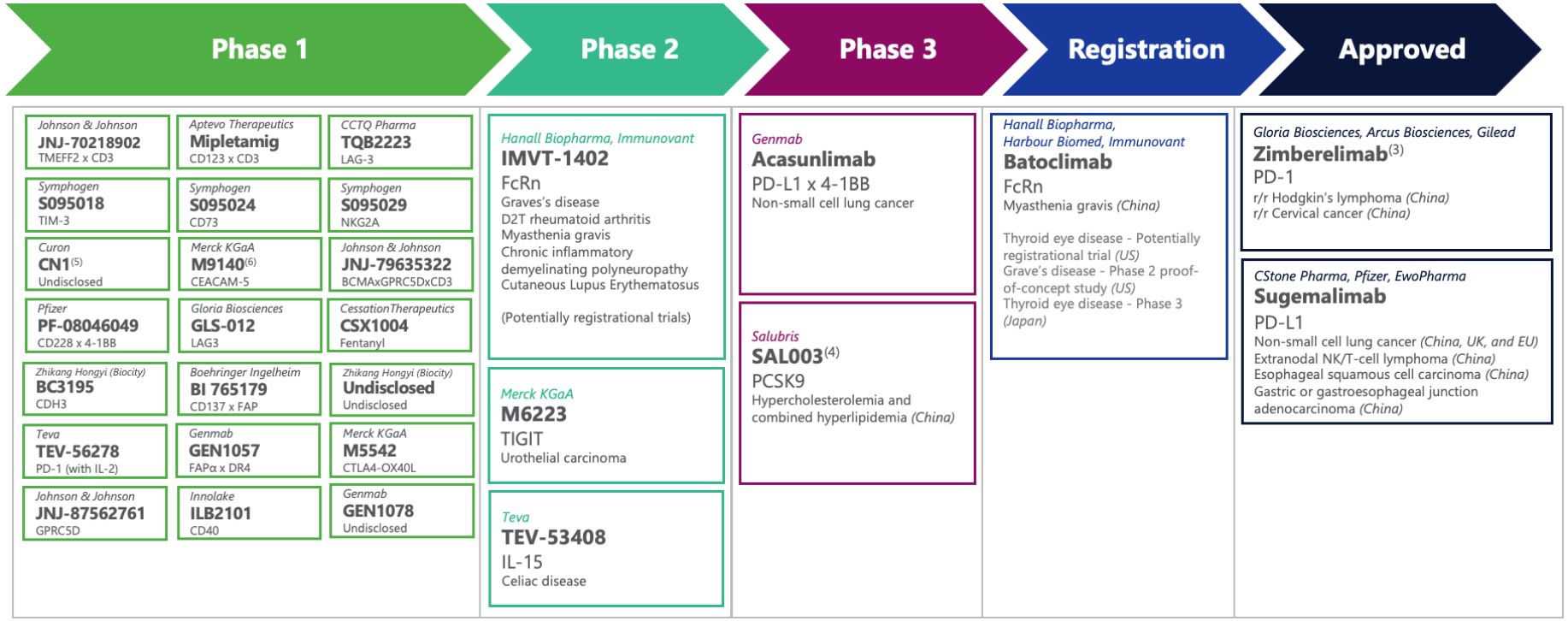
## Overview

**95**
Active Partners

**378**
Active Programs

**33**
Active Clinical Programs and Approved Products

## Clinical and Commercial-Stage Partner Pipeline(1)(2)




Only programs with downstream economics are shown

(1) Program placement is based on most advanced status
(2) Excludes any Clinical and Commercial-Stage Partner programs that do not have future or remaining economics to OmniAb (*e.g.*, Teclistamab, Tiragolumab, ABBV-383, AZD0486)
(3) Arcus Biosciences and Gilead are conducting multiple studies using zimberelimab in various oncology therapeutic settings and combinations in the US (see www.arcus.com)
(4) https://salubris.com/ProductPipeline/index_lcid_1024.html
(5) CN1 transferred to WuXi from Curon subsequent to Q1 2025
(6) M9140 is also referred to as Precemtabart tocentecan by Merck KGaA

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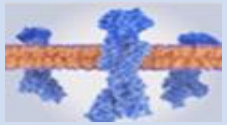
# OmniAb Technologies

## TECHNOLOGY OFFERINGS ADDRESS THE MOST CRITICAL CHALLENGES OF ANTIBODY DISCOVERY

### Create

***Create Diverse Repertoires of High-Quality Antibodies***



*Computational Antigen Design & Proprietary Reagents*

OmniRat™ OmniChicken™ OmniMouse™

*Robust Antibodies for Any Target*

OmniFlic™ OmniClic™

*Bispecific Antibody Generation*

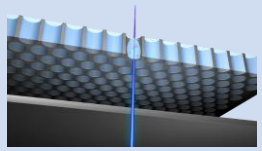
OmnidAb™ OmniTaur™

*Novel Scaffolds*

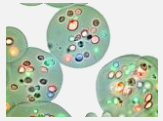
### Screen

***Screen Millions of Cells to Find Potential Therapeutic Candidates***

xPloration®



*High-Throughput Single Cell Screening*

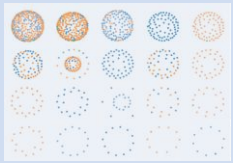


*Gel Encapsulated Microenvironment (GEM) Single Cell Screening*

### Deliver

***Further Characterize, Select and Optimize the Right Therapeutic Candidate***

- *Custom Bioinformatics*
- *Next Generation Sequencing (NGS) Hit Expansion*



- *Comprehensive Functional Characterization*
- *Proprietary Ion Channel Assays*

- *STR: FC-Silencing Technology**

STR

OmniDeep® *Suite of in silico tools for discovery and optimization that are woven throughout our various technologies and capabilities. Includes structural modeling, large multi-species antibody databases, molecular dynamics simulations, AI, and machine and deep learning sequence models, and more*

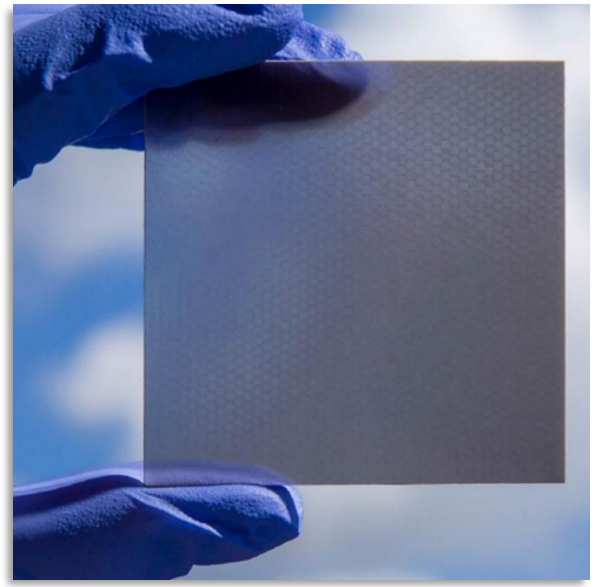
*OmniAb entered into an agreement with mAbsolve Ltd. for STR, mAbsolve's Fc-silencing platform technology, which provides OmniAb with non-exclusive, sublicensable right to incorporate the STR technology with antibodies that have been generated using OmniAb's antibody discovery platform.

# xPloration®: AI-Driven Deep Functional Screening

HIGH THROUGHPUT, SIMPLE, AND ROBUST PLATFORM TECHNOLOGY

Evaluate millions of variants and isolate thousands of positives in minutes





Microcapillary Array

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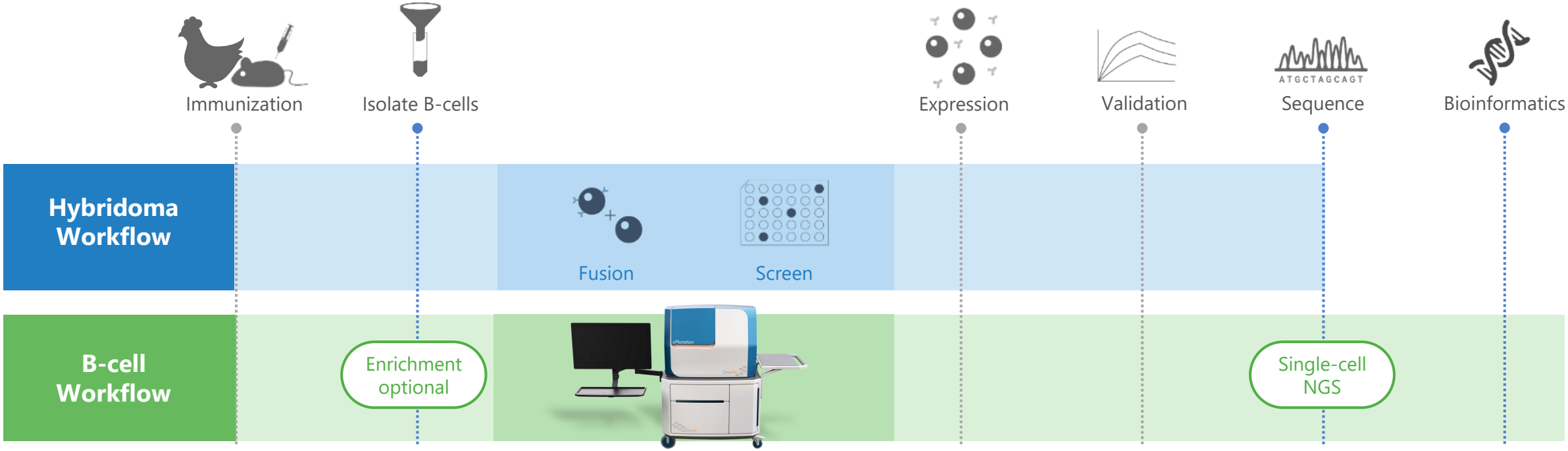
# xPloration®: Simplifying Antibody Screening




Our powerful single B-cell screening platform ***xPloration®*** **bypasses bottlenecks of hybridoma workflows**

AI-driven multi-parameter screening of **millions** of cells in **hours instead of weeks**

Technology enable **screening against difficult targets**: GPCRs, ion channels and surface antigens

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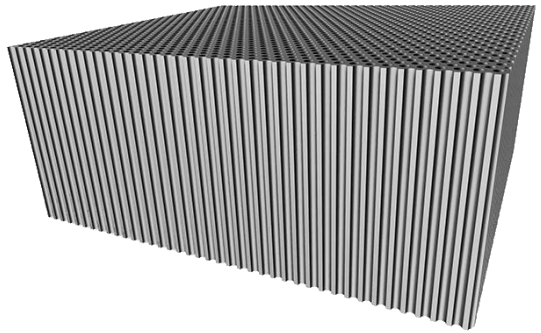
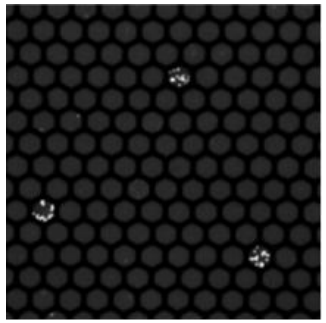
# 1. Load Cells into >1 Million Microcapillaries

## Microcapillary array



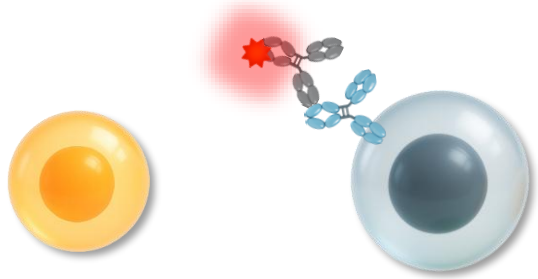
Unique through-hole format



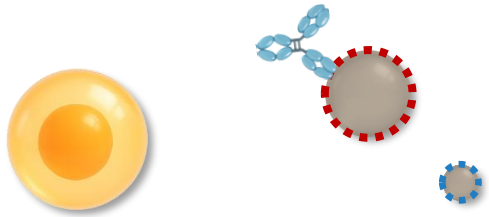
1.5 million,
40 µm diameter
microcapillaries

## Assays

### Cell binding

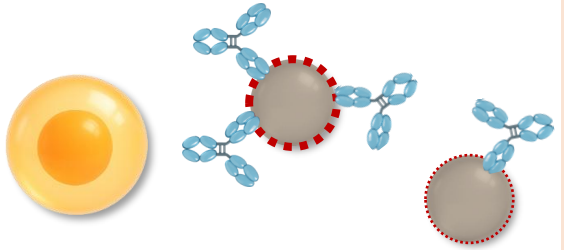



### Selective binding




### Epitope blocking


### Affinity

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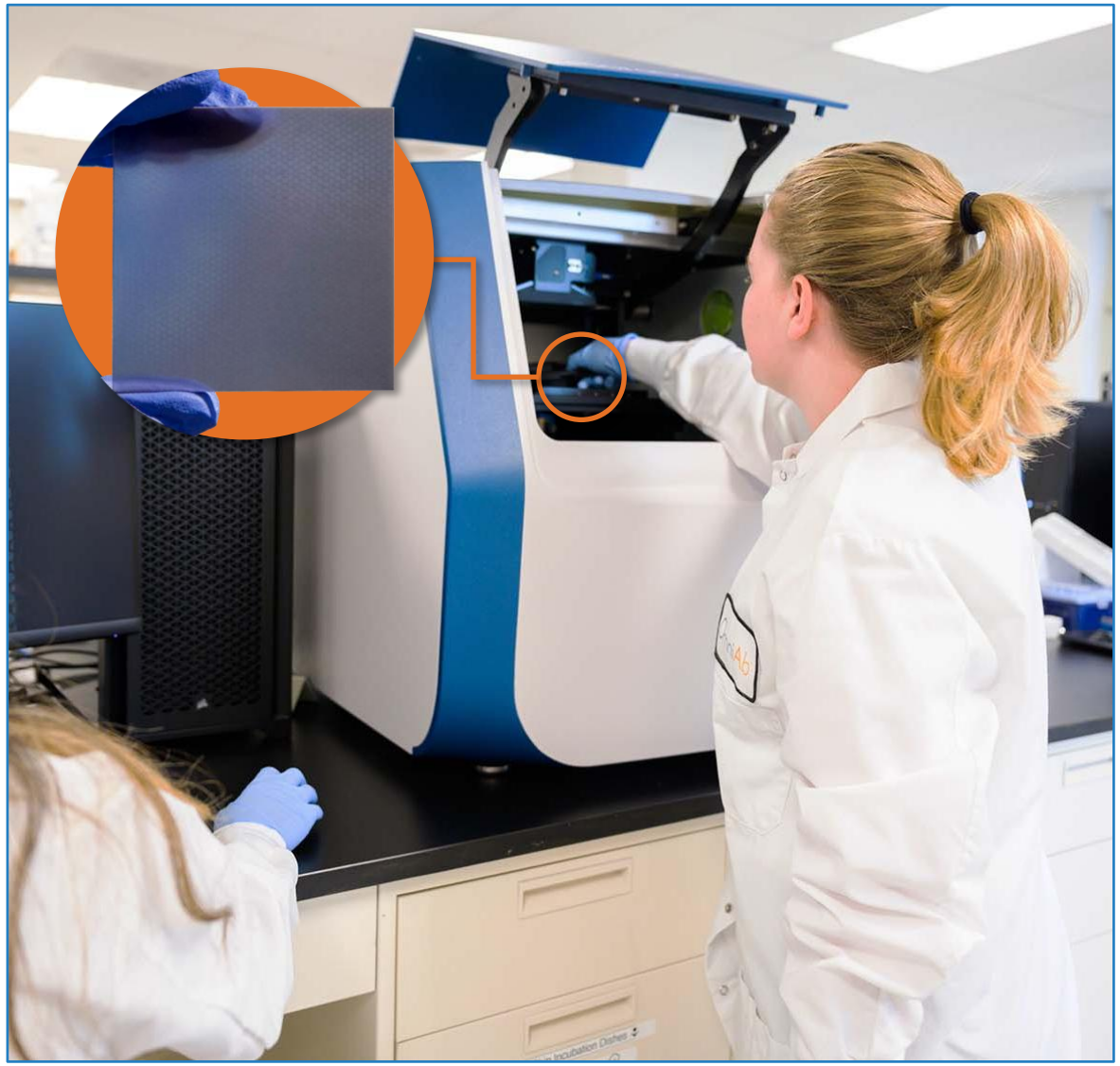
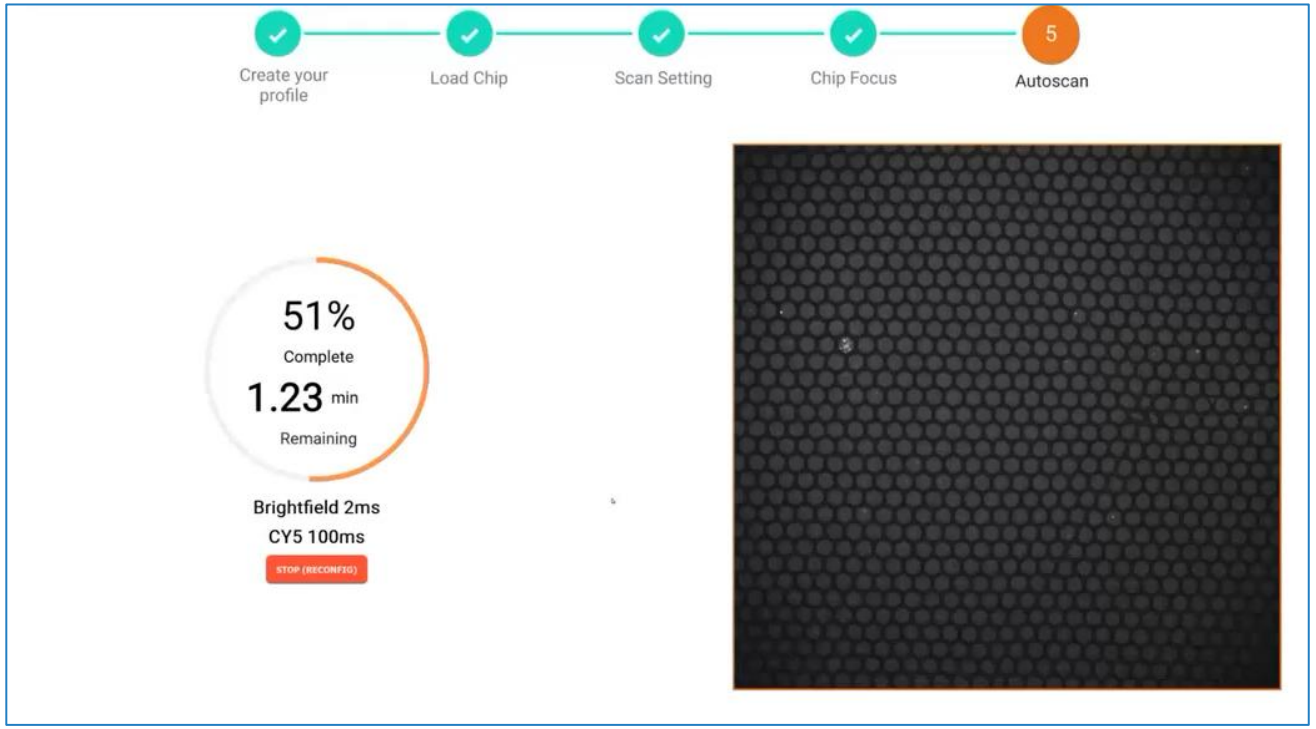
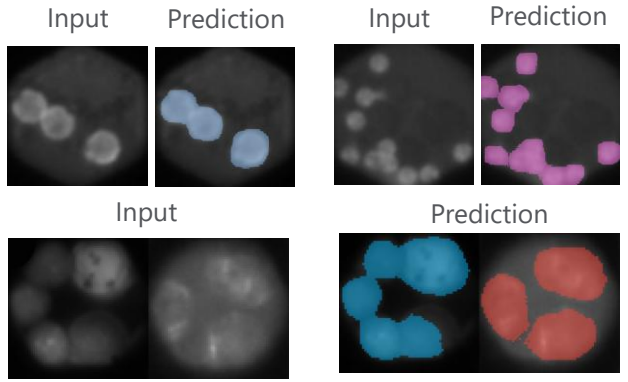
# 2. Analyze Each Microcapillary






## Computer vision hit detection

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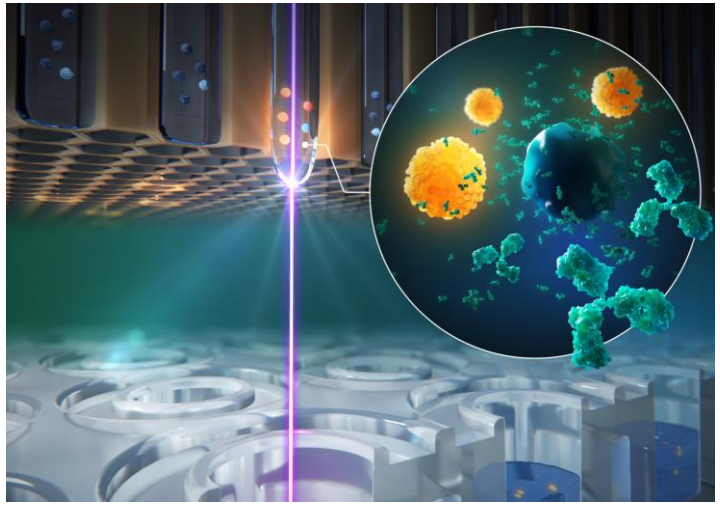
# 3. Rapidly Recover the Best Hits

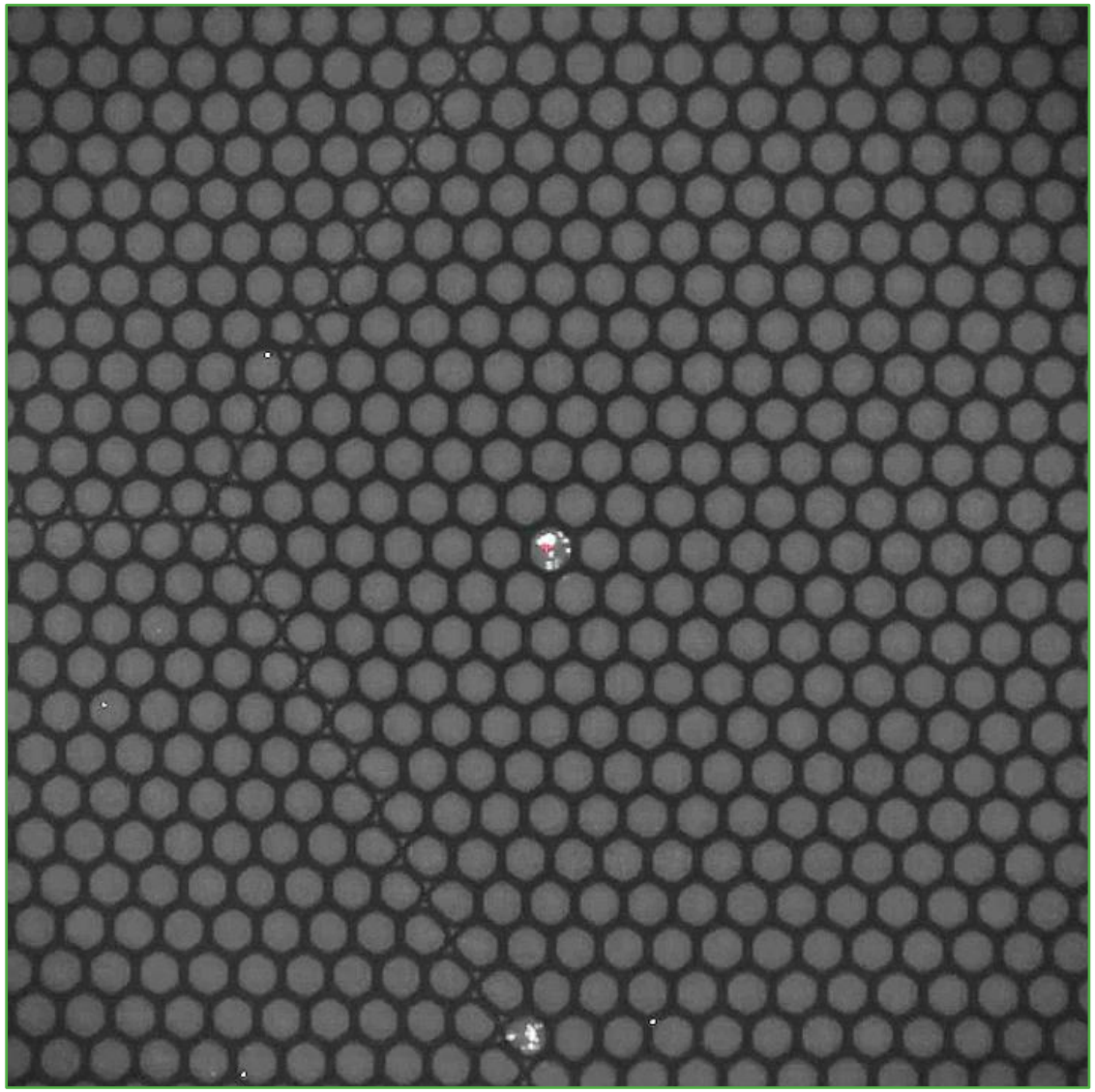
## Laser extraction



Rapid, precise, touchless recovery

Single cell barcoding for **VH + VL** pairing

Extract up to **10,000** pooled cells



**1x speed video of laser recovery**

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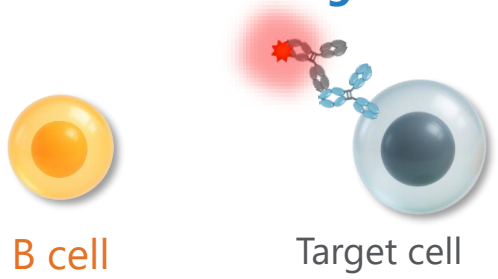
# Flexible Assays Unlock Desired Activity Profile

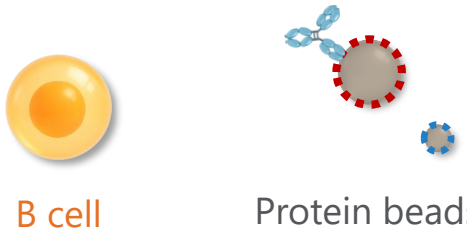
## Case study 1

Deep mining of common light chain platform

### Cell binding



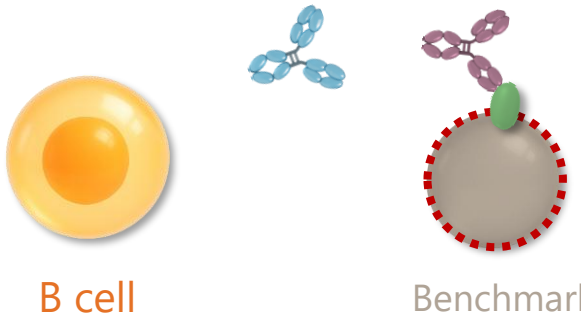

### Selective binding




## Case study 2

Discovering a competitor for a benchmark antibody

### Epitope blocking

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# Case Study 1

## Discovering NK cell engager arm for bispecific antibody

# Project Background

## Target

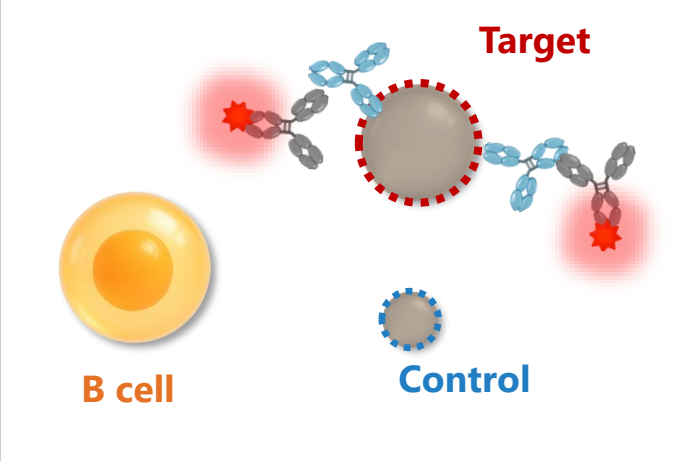
- NKp46 (NCR1, CD335) is a 46-kDa glycoprotein
- No statistically significant downregulation of NKp46 on both NK and T cells has been observed in many cancers
- Potential target for a NK cell engager

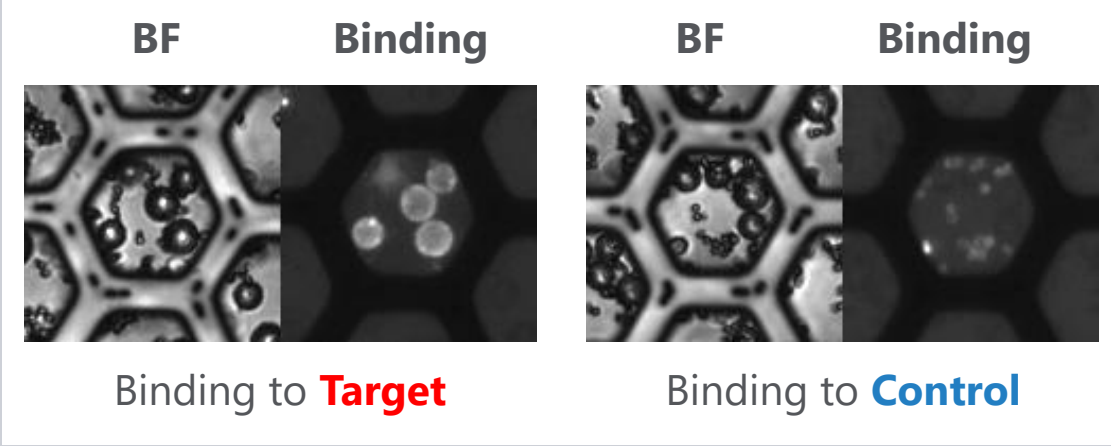
From PDB 1OLL

Discover antibodies using OmniFlic for bispecific antibody

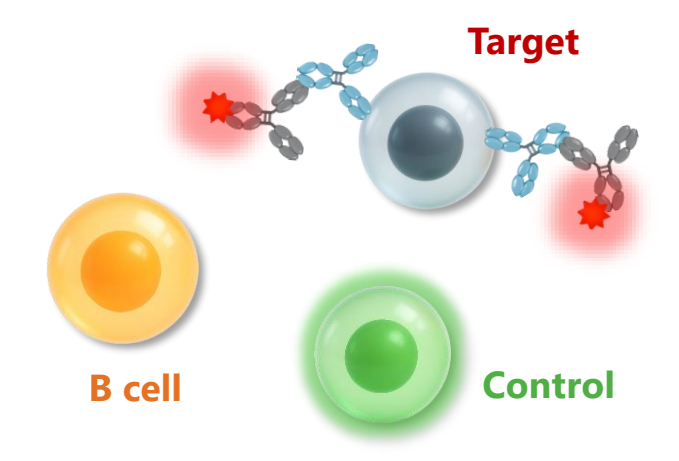
# Multi-Parameter Screening: Multiplex Phenotypic Data

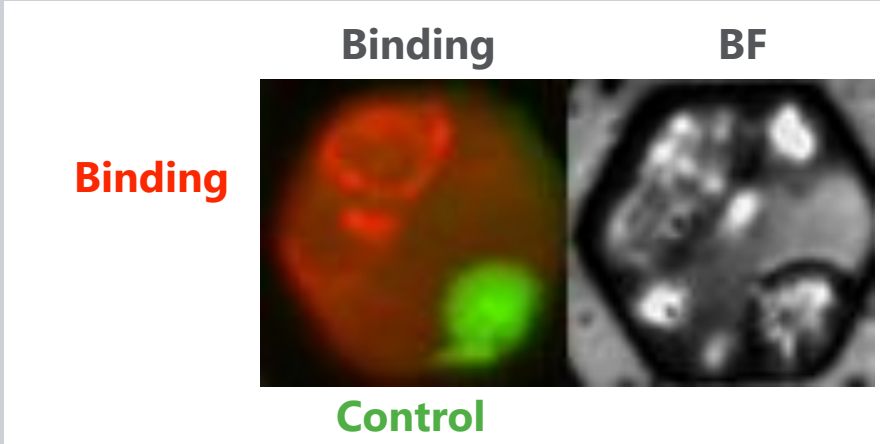
## Selective binding of target on beads




## Selective binding of target cell

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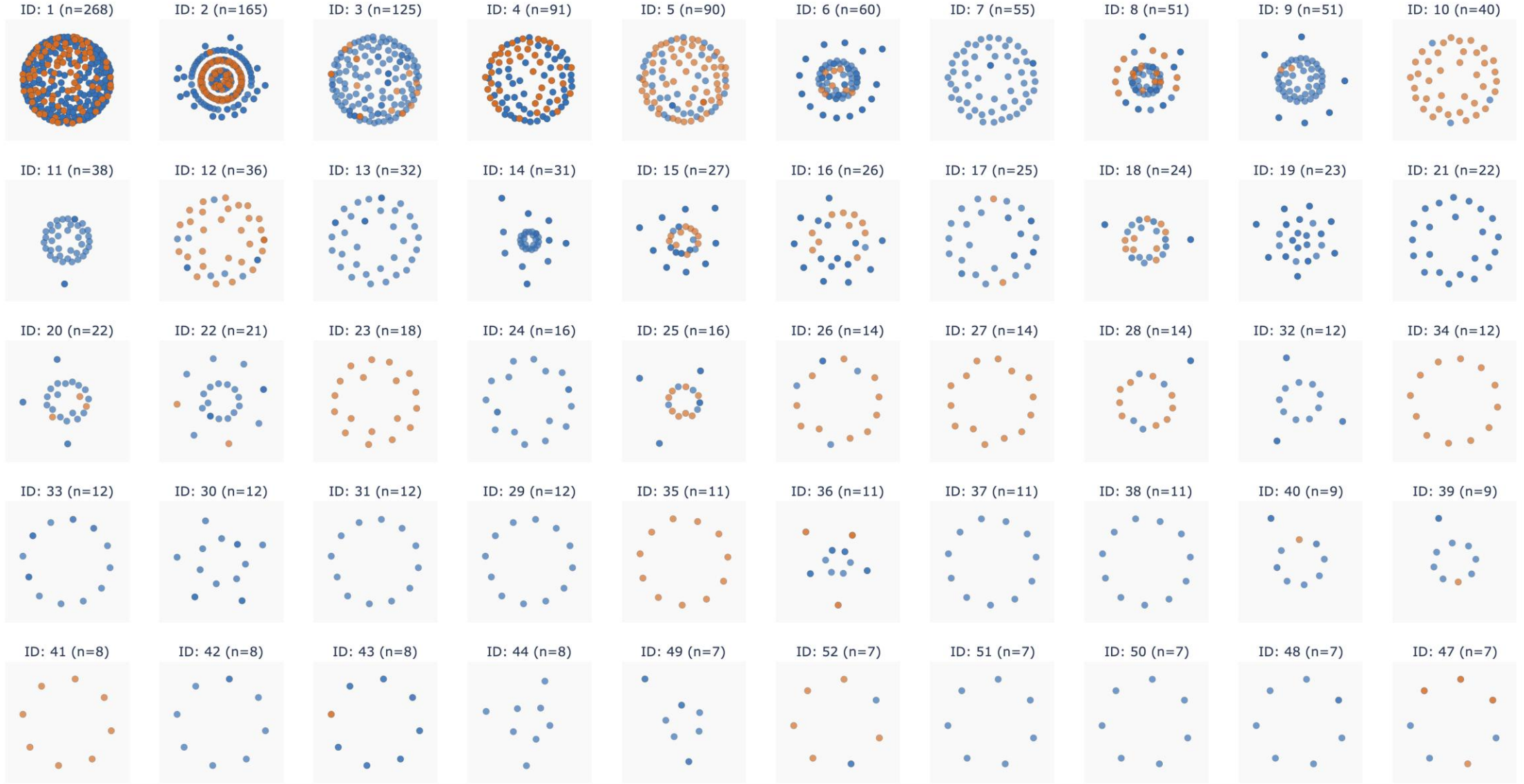
# OmniFlic® Screening Summary

| | Screen Type | # Cells Screened | # Hits |
|---|---|---|---|
| 1 | Antigen on beads | 5 M | 1429 |
| | Cells | 7.7 M | 345 |
| 2 | Antigen on beads | 3.7 M | 751 |
| | Cells | 3.7 M | 158 |
| 3 | Antigen on beads | 3.7 M | 308 |
| | Cells | 3.7 M | 33 |
| | **Total** | **27.5 M** | **3024** |

Processed with pooled NGS for **1375 unique sequences**

Synergy between OmniFlic, xPloration® and NGS enables large-scale repertoire mining

# OmniFlic® Repertoire Space




● Bead screen ● Cell screen

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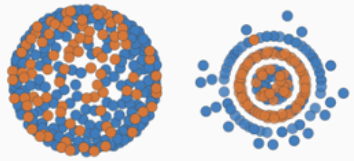
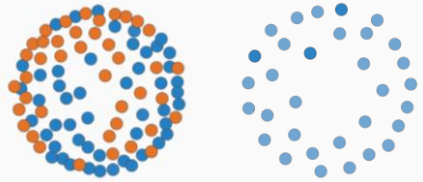
# Bioinformatics-Aided Antibody Selection

## Post-sort selection of activity profile

### Cell + Protein binder

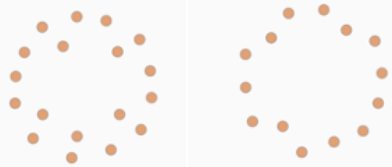


### All Cell binder



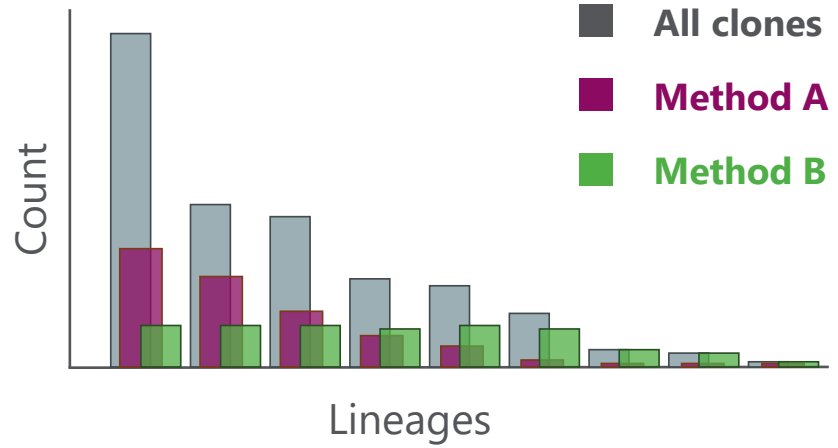
### Cell binder only

### Protein binder only



Simple parallel screens provide greater flexibility compared to sequential screening funnel

## Diversity




Clone selection considerations:

- Maximize coverage of sequence diversity
- Bias towards or away lineage distribution

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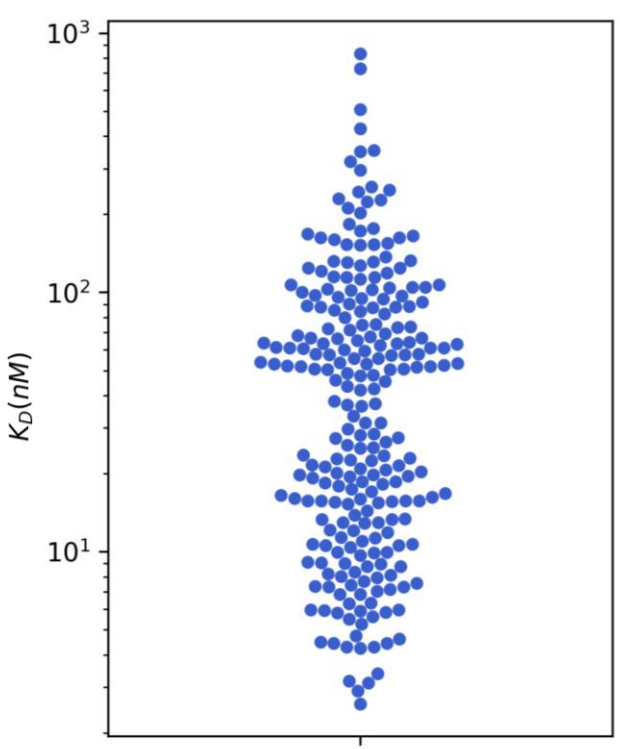
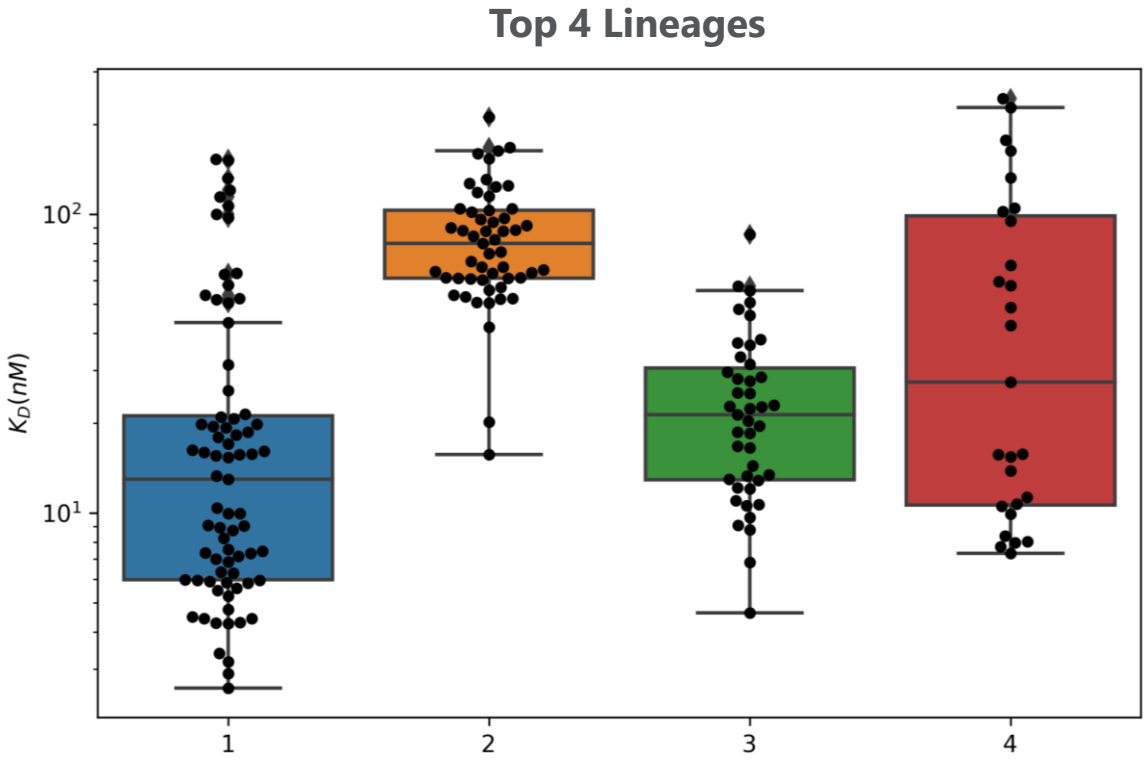
# Discovery of Large Panel of NKp46 Binders

| # Selected Clones | Expression (%) | Binding (%) | <10 nM (%) |
|---|---|---|---|
| 301 | 95.7 | 84.7 | 20.1 |




xPloration® deep mining leads to diverse antibodies

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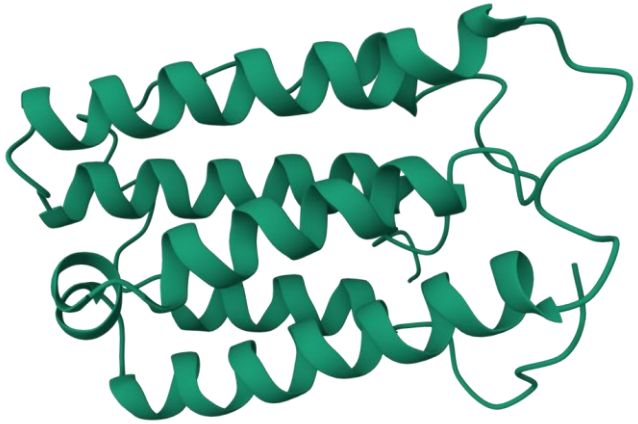
# Case Study 2

## Discovering antibodies that block clinical benchmark

# Project Background

## Target

- Interferon alpha-2 (IFNα2) is an inflammatory cytokine
- Target for lupus and other autoimmune diseases
- Known clinical benchmark targeting proven epitope

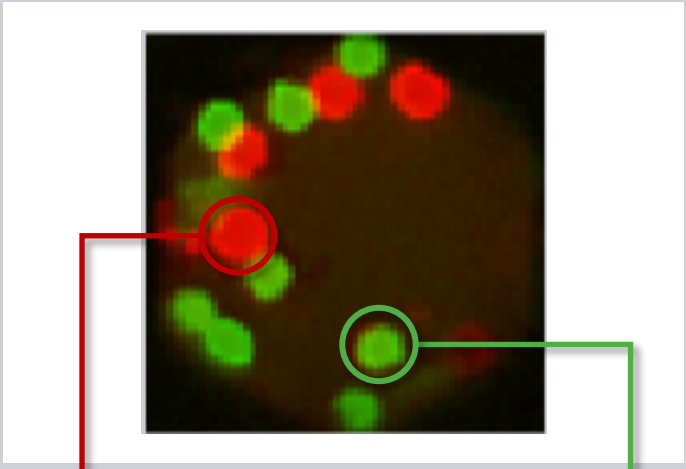


From PDB 1ITF

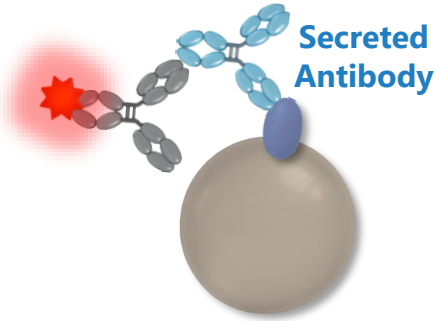
Discover antibodies that compete with known clinical benchmark

# Multi-Parameter Screening: Cross-Blocking Assay

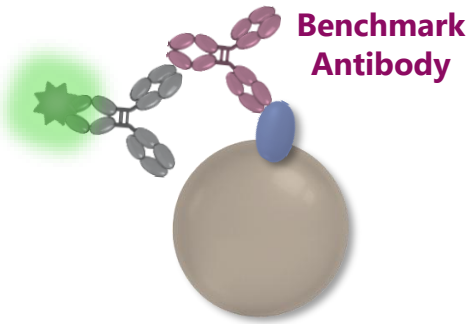
## Blocking Hit



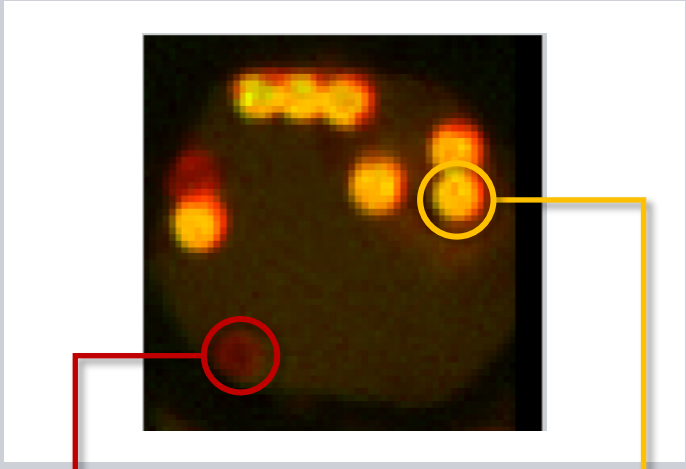
**Binder**



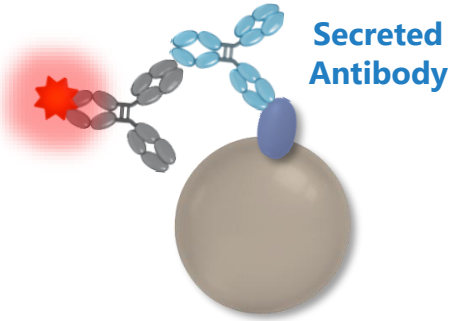

**Blocker**



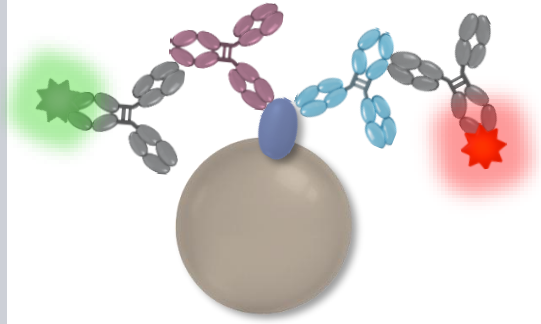

## Non-blocking hit



**Binder**




**Non-blocker**



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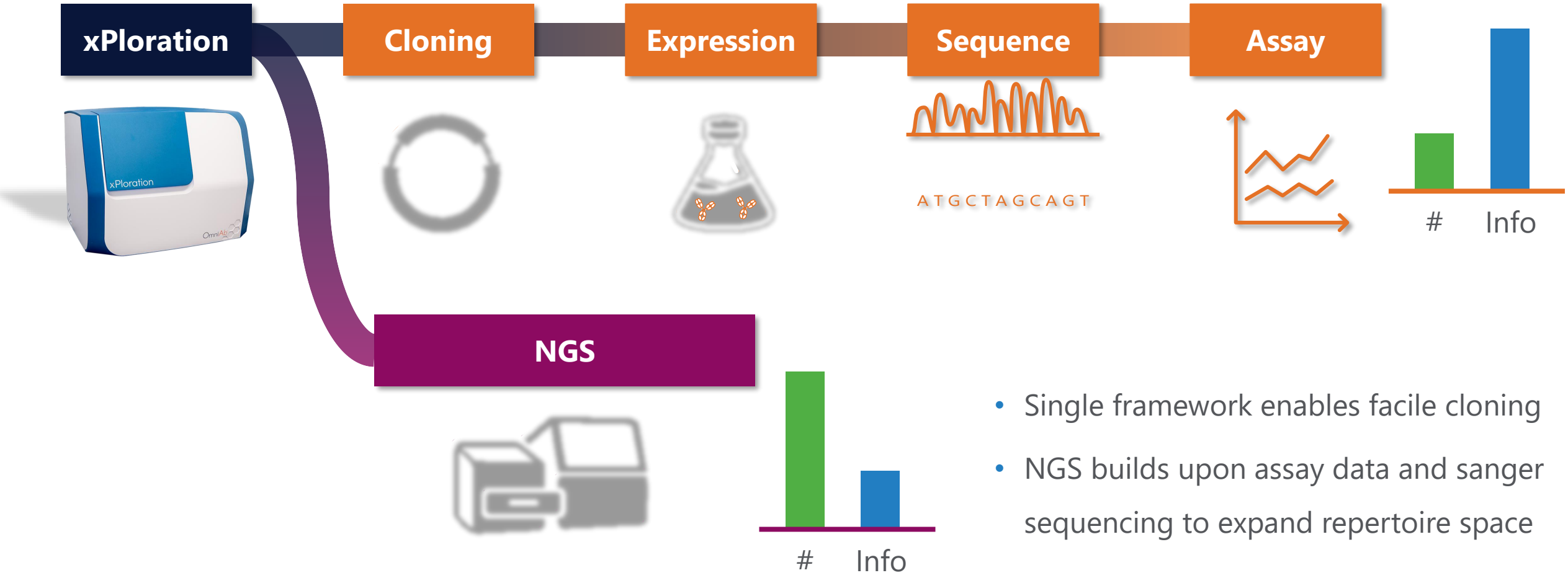
# Cloning and NGS Synergy

OmniChicken®




- Single framework enables facile cloning
- NGS builds upon assay data and sanger sequencing to expand repertoire space

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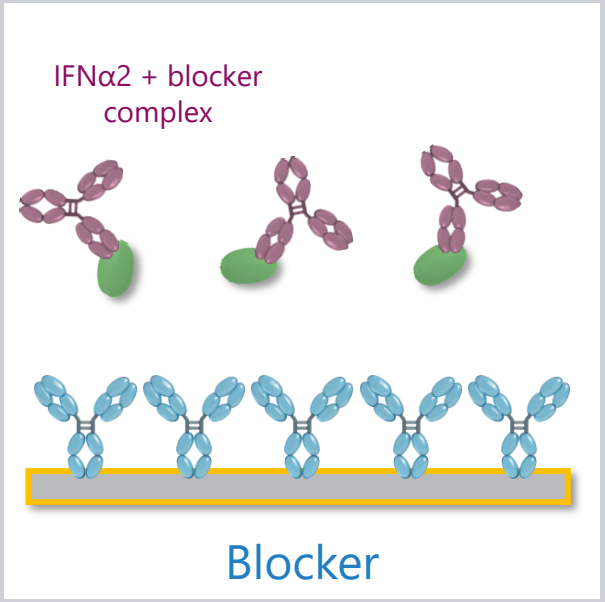
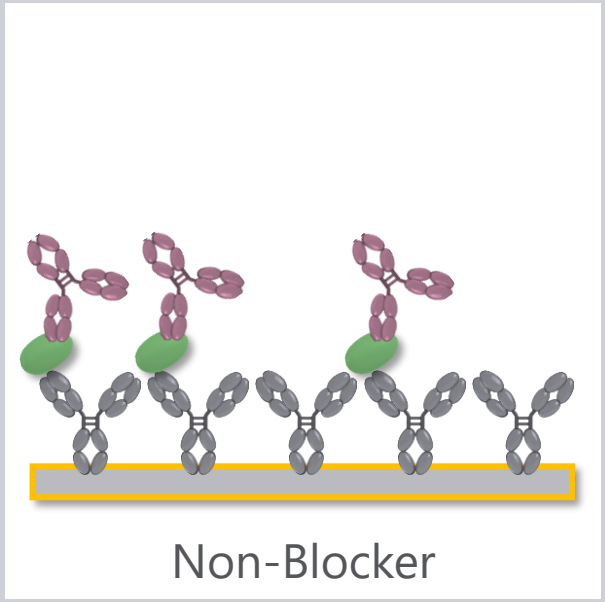
# SPR Validates Screening Activity

## Pre-complex assay on Carterra LSA




## Summary

From xPloration to SPR Validation

**83%**

Accuracy

**77**

Antibodies

Up to

**3**

Bead types

xPloration® blocking assay enables focused epitope targeting

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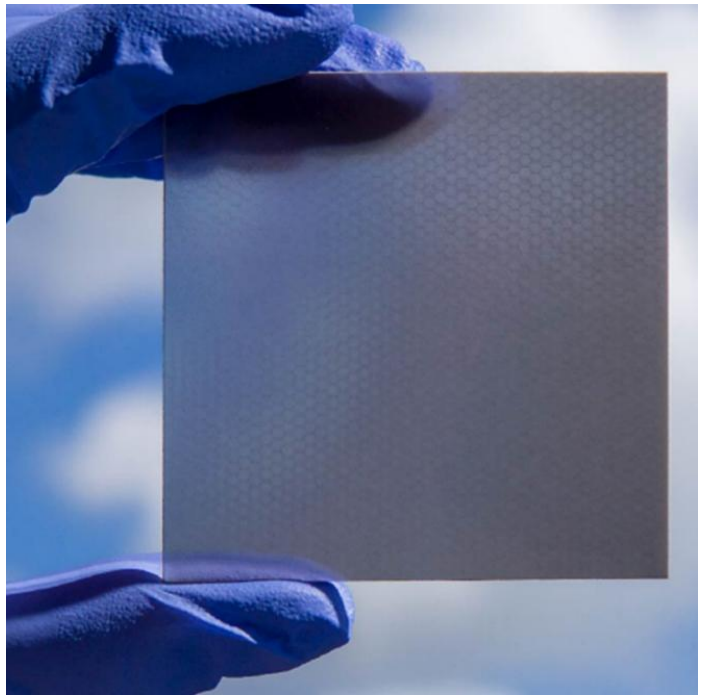
# Differentiated advantages

## xPloration

# xPloration Offers Precision Discovery at Scale

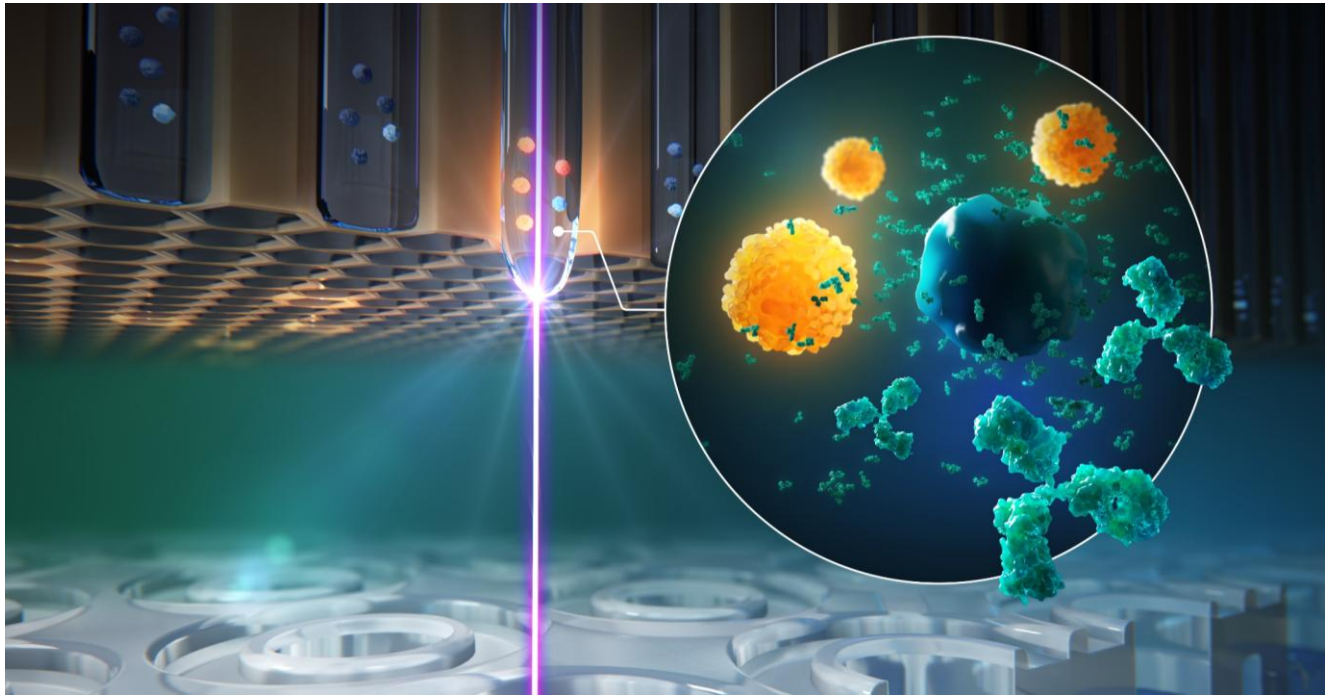
POWERFUL SCREENING AND FAST RECOVERY RATE

**Find the rare clone**



AI-based screen > 1 million

**Mine hits deeply**



Rapidly sort 10,000 of live cells via touchless method

Merging **industry leading** throughput with precision for impactful results

# Technology Matured Through Campaigns

## Campaigns

**400+**

Screens

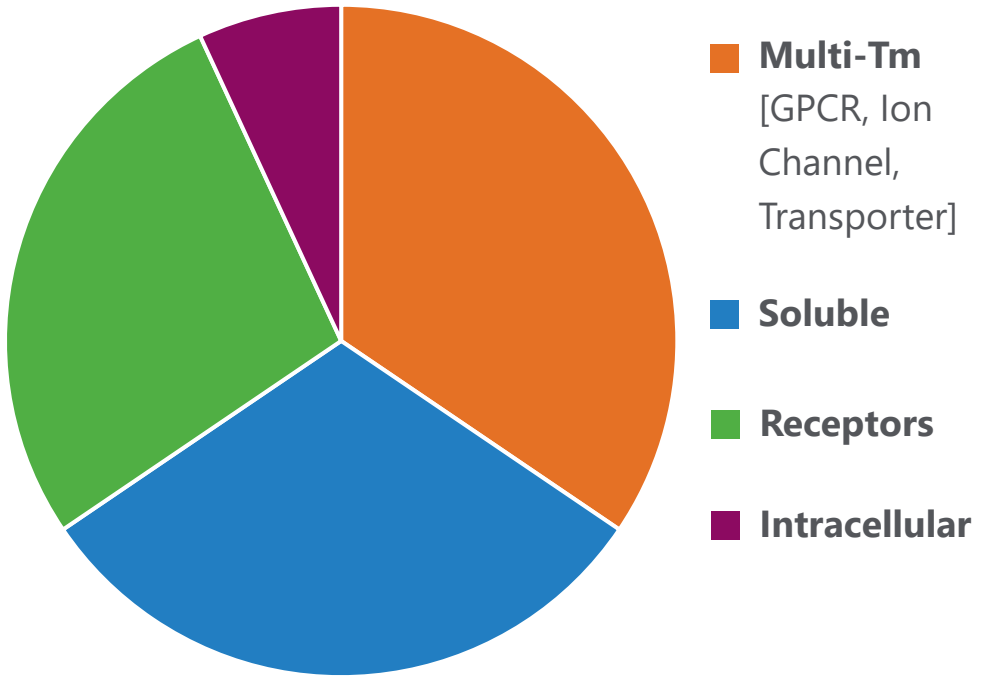
**~3 B**

Cells screened

**~60,000**

Hits extracted

## Types of Targets



# xPloration: Simple and Robust for Maximum Uptime

ROBUST, LOW MAINTENANCE USER EXPERIENCE

**No fluidics**

No clogs or leaks

+

**Robust components**

Proven components

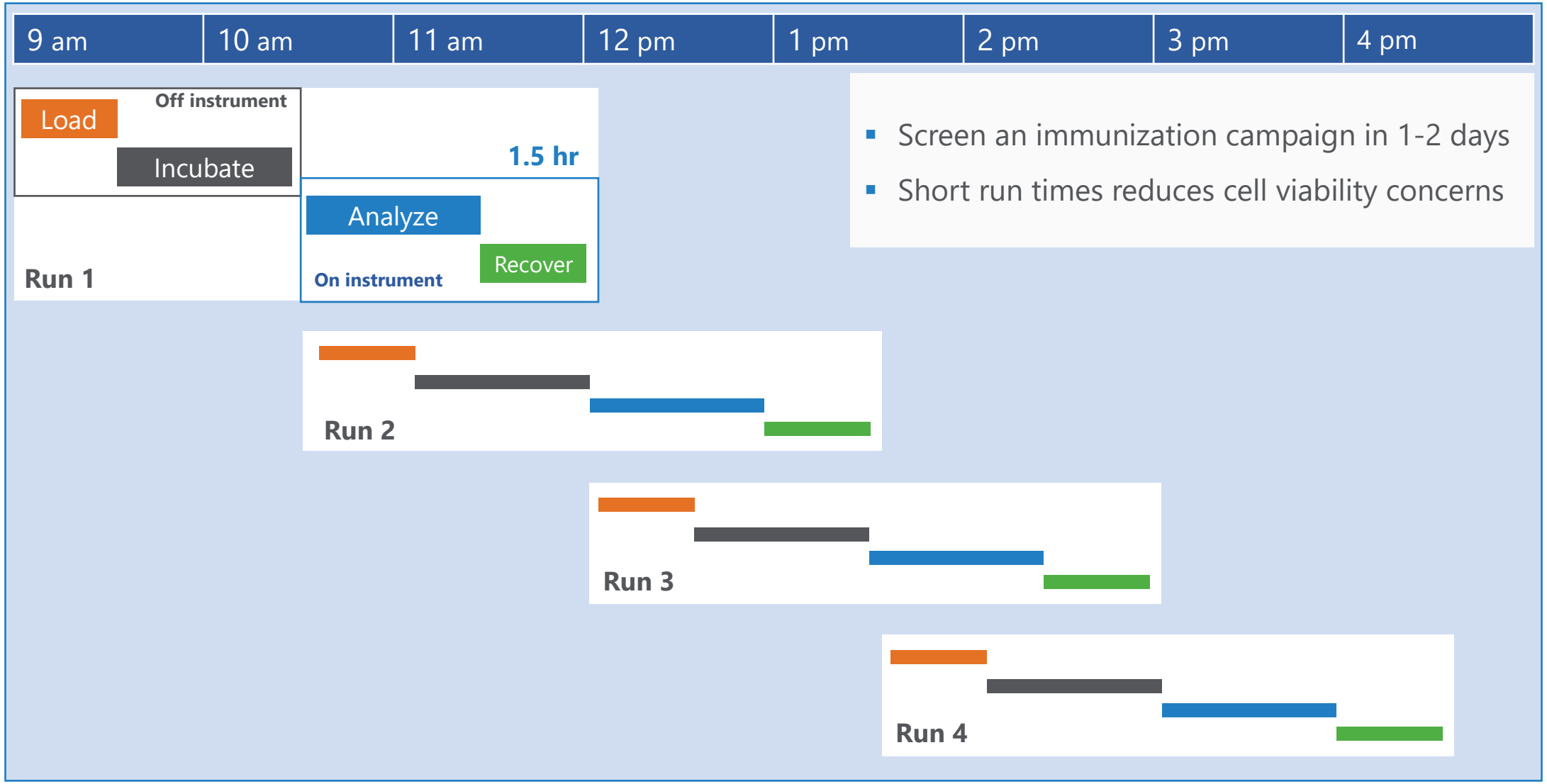
=

**Maximized uptime**

Minimal maintenance

Simplicity and robustness from installation to training to campaigns

# Simplicity Enables 3-5 Runs Daily




- Screen an immunization campaign in 1-2 days
- Short run times reduces cell viability concerns

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Maximize Discovery

Minimize Complexity

# Maximize Diversity

That matches target profile

# Minimize Frustrations

Of users

# Maximize Success

Of each campaign

# Minimize Failure

modes

# xPloration Delivers Maximum Impact For Our Partners

- Enables deep mining of immunized repertoires with flexible assays to find the right antibody
- Excel at rare hit selection, large repertoire analysis, and screening for membrane proteins
- Validated workflows for all OmniAb animals available for partner discovery projects

xPloration®

# Launching Partner Access Program

xPloration®


- Available for purchase by OmniAb partners
- Enhance your capabilities in antibody discovery!
- Demo at Booth #305


OmniAb®