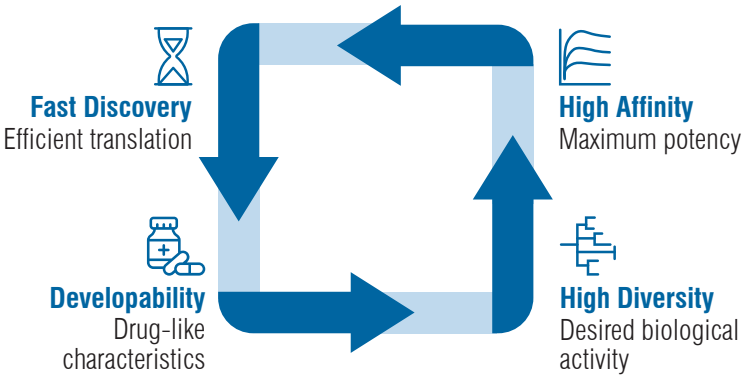
SPECIFICA
a Q² Solutions Company

Turning Hope
Into Help™

Antibody discovery campaigns using Specifica's Generation 3 library platform

Specifica, a Q² Solutions company, has a distinct goal: to generate as many different target-specific antibodies as possible to your specifications.

Discovery of antibody therapeutics remains challenging despite technological advances in both *in vitro* and *in vivo* discovery platforms, particularly as specificity requirements become more complex. Specifica's Generation 3 library platform has been uniquely designed to address the four main challenges of antibody discovery: speed, affinity, developability and diversity.



Specifica's Approach

Three powerful coordinating technologies are used to carry out selections from Specifica's Generation 3 antibody phage display libraries:

1

First, two to three rounds of phage display are carried out to reduce antibody diversity from greater than 10 billion to about a million.

2

Next, yeast display narrows this pool to a diverse, high-affinity binding population, reflecting requirements for species or target cross-reactivity, ligand inhibition or not, and additional specificity needs.

3

Finally, selection outputs are evaluated with next-generation sequencing and AbXtract®, Specifica's proprietary NGS analysis software.

Why Choose the Specifica Platform?

Drug-Like Antibodies

High-affinity antibodies with excellent developability and high diversity directly from Specifica's libraries save time and money during development

Affinity

60% of antibodies selected directly from Specifica's platform have affinities below 10nM; 20% have affinities in the sub-nanomolar range, with 75% of campaigns (excluding pMHC) yielding at least one subnanomolar antibody; and the lowest affinity antibody to date is 13pM

Diversity

After selection, the AbXtract machine learning module groups selected antibodies into ten to 1,000 distinctive clusters, providing antibodies against a wide variety of target epitopes with the potential for differential biology

Developability

Sequence liabilities are purged from all CDRs except HCDR3. More than 80% of antibodies from the Generation 3 Platform have no measurable biophysical liabilities, behaving as well as the best therapeutic antibodies

Different formats

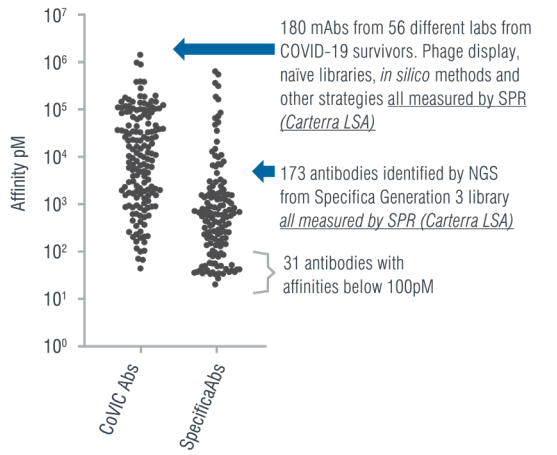
scFvs, IgGs or VHHs

Straightforward Terms

Specifica's terms eliminate complexities typically seen in platform transfers, with no royalty or milestone-based fees. This approach allows tailored structures to meet each partner's needs

The Specifica platform compared to other platforms

It has been difficult to compare different antibody discovery platforms in the past, as antibodies were generated against different targets using different formats and tested using different biological assays. That changed with the SARS-CoV-2 pandemic when all groups with antibody expertise generated antibodies against the same target (the receptor binding domain of the spike protein) and tested them in the same format (IgG) in the same biological assays (affinity and viral neutralization). The Specifica platform generated antibodies with far higher affinities and neutralization properties than the antibodies described in CoVIC and comparable to approved antibodies.



Data adapted from *Science*. 2021;374(6566):472-478 and *Nat Commun*. 2022 Jan 24;13(1):462

Specifica also offers:

Full-Platform Transfer

To empower discovery at your site, Specifica builds exclusive Generation 3 antibody libraries using a donor set never used for any other platform, providing you with our integrated, state-of-the-art antibody discovery platform, including vectors, affinity maturation module, protocols, and extensive training.

Affinity Maturation and Developability Improvement

Specifica has adapted the Generation 3 library platform to affinity mature antibodies from any source. As sequence liabilities are purged from the CDRs used, developability improvement occurs simultaneously with affinity maturation, which ranges from 10- to 400-fold over the starting antibody affinity.

References

1. Ferrara F, Erasmus MF, D'Angelo S, et al. A pandemic-enabled comparison of discovery platforms demonstrates a naïve antibody library can match the best immune-sourced antibodies. *Nat Commun*. 2022 Jan 24;13(1): 462. doi: 10.1038/s41467-021-27799-z.
2. Kathryn M Hastie KM, Li H, Bedinger D, et al. Defining variant-resistant epitopes targeted by SARS-CoV-2 antibodies: A global consortium study. *Science*. 2021 Oct 22;374(6566):472-478. doi: 10.1126/science.abh2315.
3. Teixeira AAR, Erasmus MF, D'Angelo S, et al. Drug-like antibodies with high affinity, diversity and developability directly from next-generation antibody libraries. *mAbs*. 2021 Jan-Dec;13(1):1980942. doi: 10.1080/19420862.2021.1980942.

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