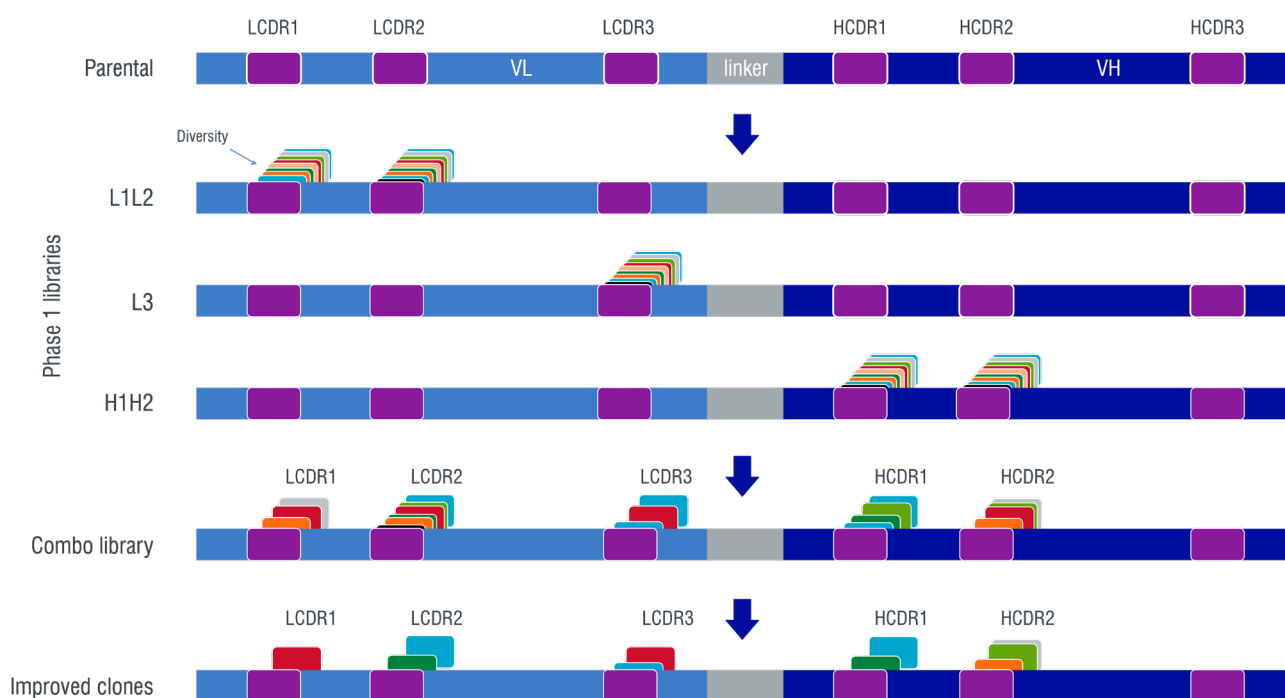


Turning Hope  
**Into Help™**

## Affinity maturation and developability optimization using Specifica's Generation 3 platform

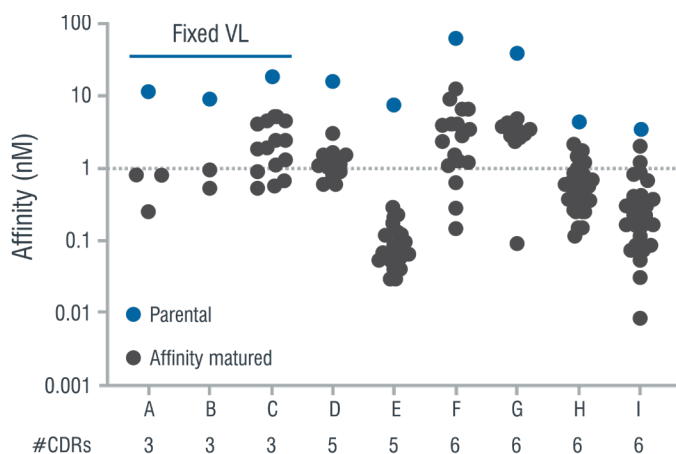
Specifica, a Q<sup>2</sup> Solutions company, improves the affinity and developability of client-supplied antibodies — *guaranteeing at least ten-fold affinity increases* — while simultaneously improving developability.

Antibodies generated using *in vitro* or *in vivo* techniques may have desired biological activity but be deficient in other properties. Low affinity is the most frequently required improvement, but optimization of developability, cross-reactivity and pH modulation are also frequently desired and can be carried out at Specifica.



Inspired by the Generation 3 library, Specifica improves these properties in a two-phase process. In phase one, three libraries are created in CDRs L1 + L2, L3, and H1 + H2. The parental HCDR3 is retained to preserve epitope binding, although exploration is possible using scanning mutagenesis. The diversity in phase one libraries is based on defined replicated natural CDRs and/or targeted scanning mutagenesis, purged of sequence liabilities. Selection from these libraries is low stringency and designed to identify mutations compatible with binding. The outputs of phase one libraries are combined to create combination libraries, which undergo high stringency selection for desired properties.

Generally, the more CDRs targeted for improvement, the greater the affinity improvement obtained.



The advantages of using the Specifica Generation 3 platform for affinity maturation and developability optimization include:



### Natural Diversity

Natural CDRs from Specifica's in-house database are used in antibody improvement protocols, each matched to the framework of your antibody, improving the quality of your natural diversity.



### Deliverables

For affinity maturation services, Specifica guarantees to improve the affinity of your antibodies by at least 10-fold, with preserved or improved developability properties.



### All-Human Sequences

The use of only natural human CDRs matched to the germline of your antibody maintains or increases humanness.



### Straightforward Terms

Specifica's payment terms add no royalties or milestone fees, with full payment only occurring upon the successful completion of a project.



### No Sequence Liabilities

By eliminating all CDRs containing sequence liabilities from the diversity, Specifica simultaneously improves both developability and affinity.



### Collaborate and Customize

In addition to the in-house approach, Specifica also offers custom solutions based on customer input or structural knowledge. The parental HCDR3 sequence is typically retained but can also be mutated by scanning mutagenesis.



### Two-Stage Procedure

This ensures the exploration of a diversity of up to  $10^{18}$  CDR combinations while preserving epitope recognition.

## 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.



### Antibody Discovery Campaigns

Using the in-house Generation 3 antibody or VHH libraries, Specifica can select antibodies for you against any target while meeting demanding specificity requirements. Selected antibodies have high affinities, excellent developability properties, and broad diversity.

#### References

1. Teixeira AAR, D'Angelo S, Erasmus MF, et al. Simultaneous affinity maturation and developability enhancement using natural liability-free CDRs. *mAbs*. 2022;14(1). DOI: 10.1080/19420862.2022.2115200.

