Alicanto®

Functional antibody discovery from human serum

Functional Antibodies

Serum antibodies have been selected for secretion in response to disease and are relevant to the phenotype

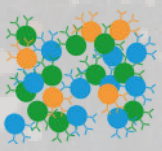
Verified Diversity

Alicanto performs in silico antibody selection with full knowledge of each antibody sequence, ensuring comprehensive analysis of the natural diversity

Fully Human

Alicanto delivers antibodies mined directly from the superior maturation and selection process of the human immune system

Project Launch
Sample Selection and Assessment

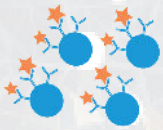


PBMCs, DTCs, Tissue

Serum, Plasma

Stage 1
Antibody Sequencing

Next gen sequencing

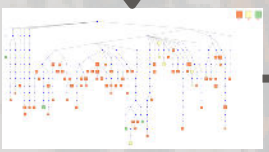


B cell sorting

Affinity purification

Mass spectrometry

Stage 2
Alicanto In Silico Analysis



Repertoire analysis

Alicanto machine learning analysis

Proteomic analysis

Deliverables

- **Interactive report** showing repertoire analysis and candidate diversity
- **Sequence** information for all candidates
- **Hit expansion** on all candidates to discover relatives of hits
- **Binding** analysis for candidates

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Abterra bio

Alicanto®

Alicanto® is a platform to identify high affinity antibodies present in patient serum. In this study, we use Alicanto to identify SARS-CoV-2 antibodies from three donors who were vaccinated and naturally infected with SARS-CoV-2. Selected antibodies were analyzed for

- Spike domain binding - receptor binding domain (RBD) or N-terminal domain (NTD)
- virus variant binding
- ACE2 blocking.

AB2
Vaccinated, Infected with **wildtype** virus

AB5
Vaccinated, Infected with **Omicron** virus

AB6
Vaccinated, Infected with **Omicron** virus

B Cell Repertoire Sequencing

Total B cell isolation from whole blood

Spike Omicron B.1.1.529-reactive B cell enrichment

Single B cell sequencing

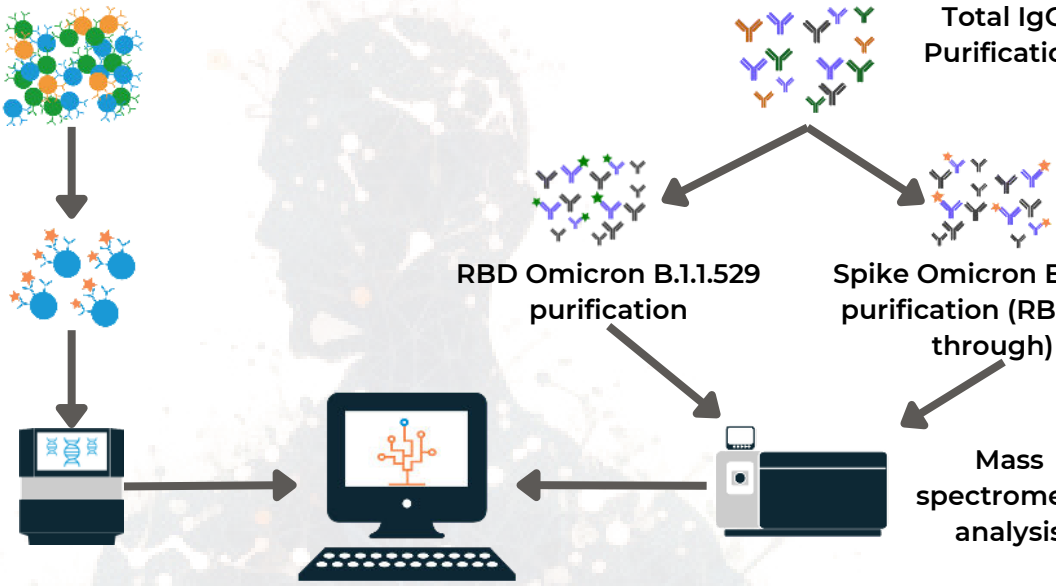
Serum Antibody Analysis

Total IgG Purification

RBD Omicron B.1.1.529 purification

Spike Omicron B.1.1.529 purification (RBD flow through)

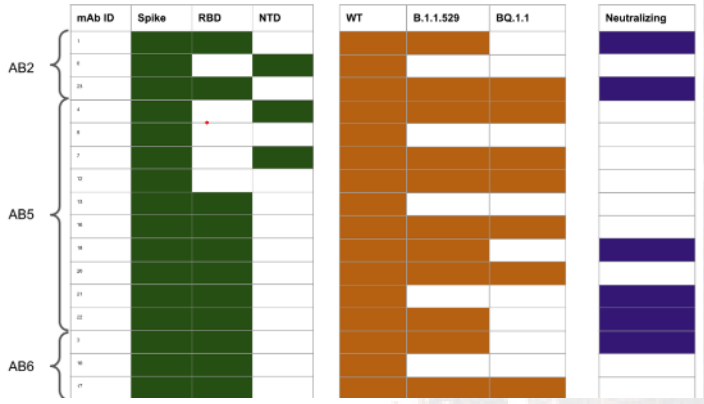
Mass spectrometry analysis



Antibodies were independently identified across the different serum purification workflows.

- AB2 had the lowest diversity of clones detected in serum likely due to their exposure only to earlier variants of the virus.
- Antibodies to RBD and non-RBD Spike epitopes were identified.

ID	HC clones in repertoire	RBD HC clones in serum	Spike HC clones in serum
AB2	29,756	2	0
AB5	44,613	59	22
AB6	31,549	13	3



Selected antibodies were recombinantly expressed and tested for binding to Spike domains, for binding to three SARS-CoV-2 variants, and for inhibition of ACE2 binding to RBD (a proxy for neutralization).

- Most antibodies bound to RBD, while 3 were found to bind NTD.
- 16 antibodies bound the wild-type virus protein, while 7 showed binding to a new Omicron variant.
- 6 of the antibodies blocked ACE2 binding to RBD.

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