Activity of convalescent and vaccine serum against SARS-CoV-2 Omicron BA.1 and BA.1.1

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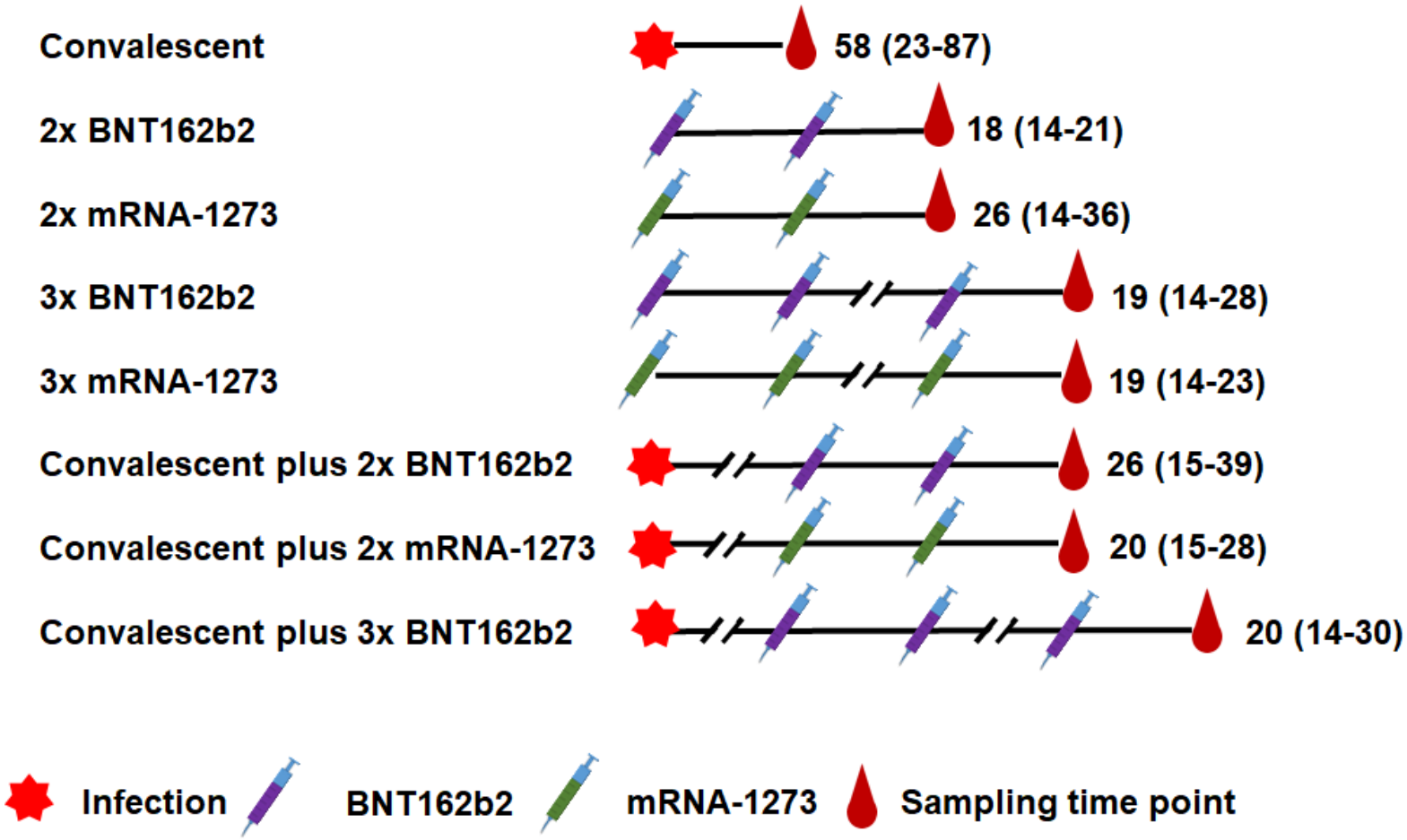
WHO Global Consultation – What recent evidence do we have that omicron is evading immunity and what are the implications?

February 14th, 2022

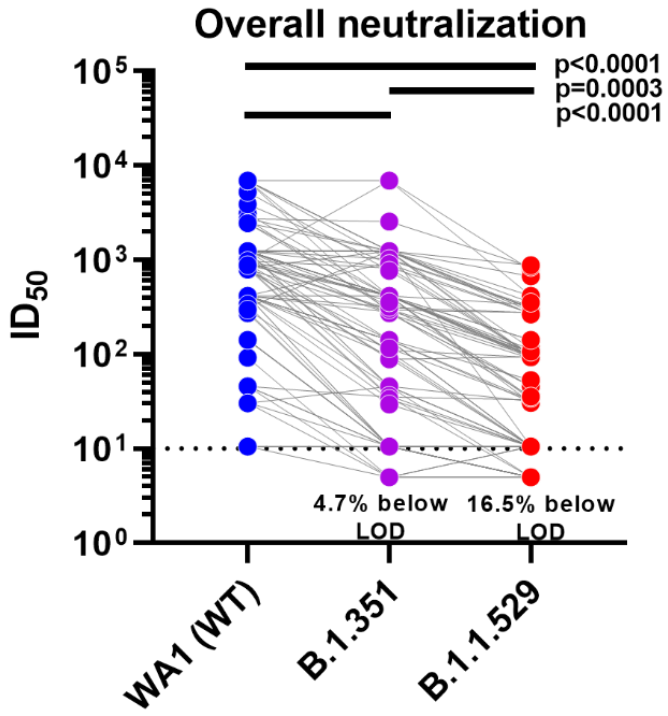
Mount Sinai

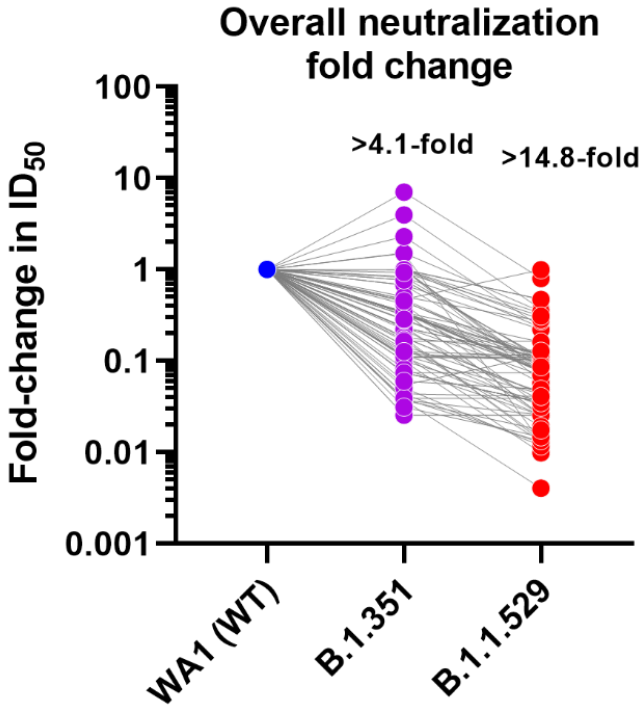
Setup



- Serum samples (from PARIS study)
- Neutralization of B.1.1.529 isolate (R346)
- ELISA against wild type, B.1.351 and B.1.1.529 RBD, NTD and spike

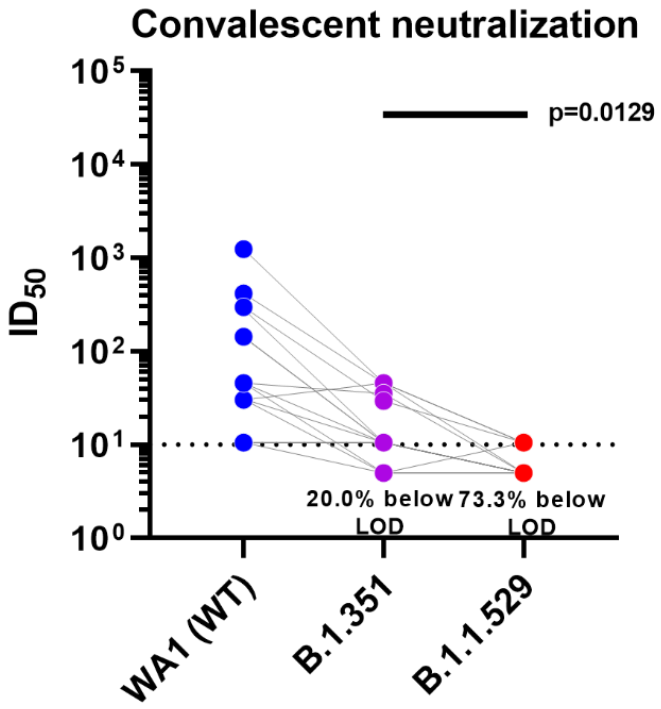
Overall reduction in neutralizing activity

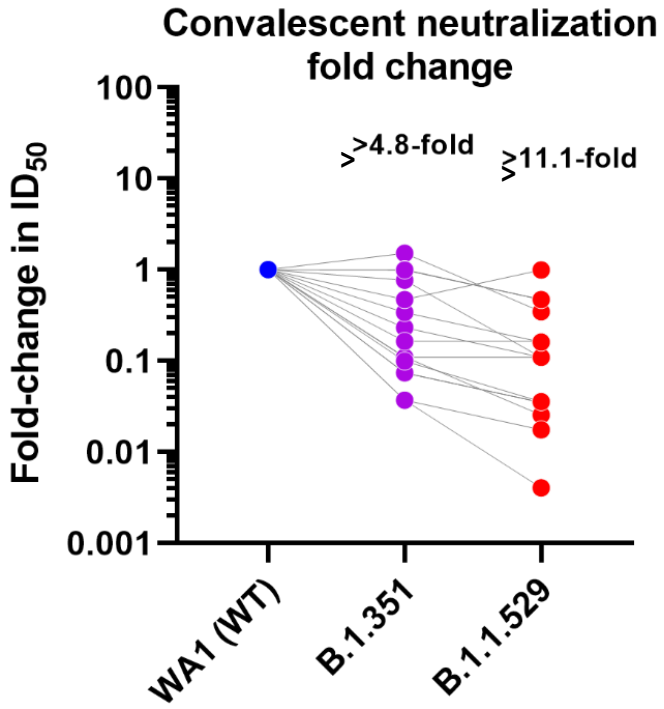




Negative values set to 5 ID_{50}

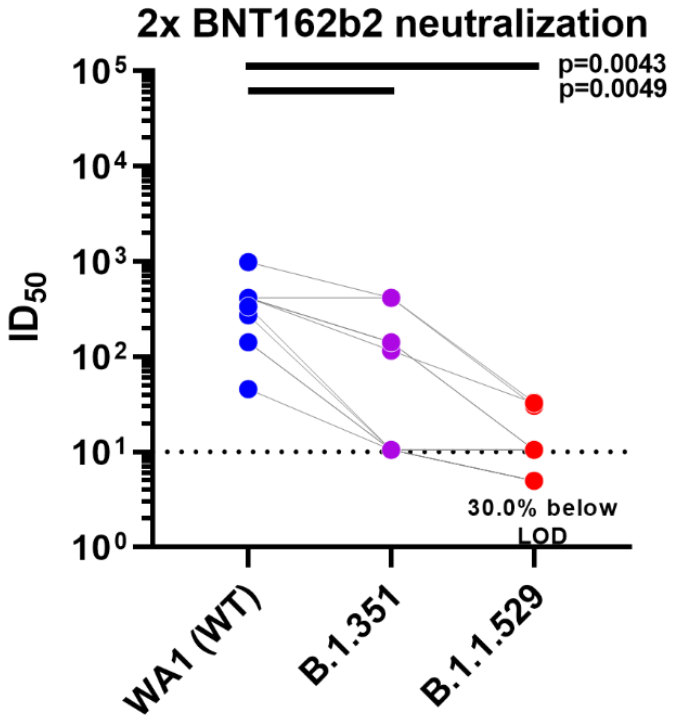
Convalescent individuals

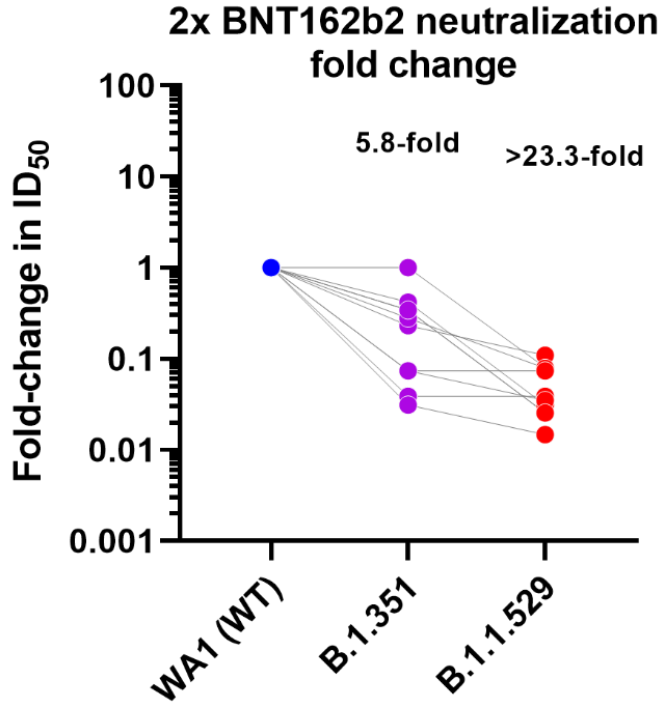




Negative values set to 5 ID_{50}

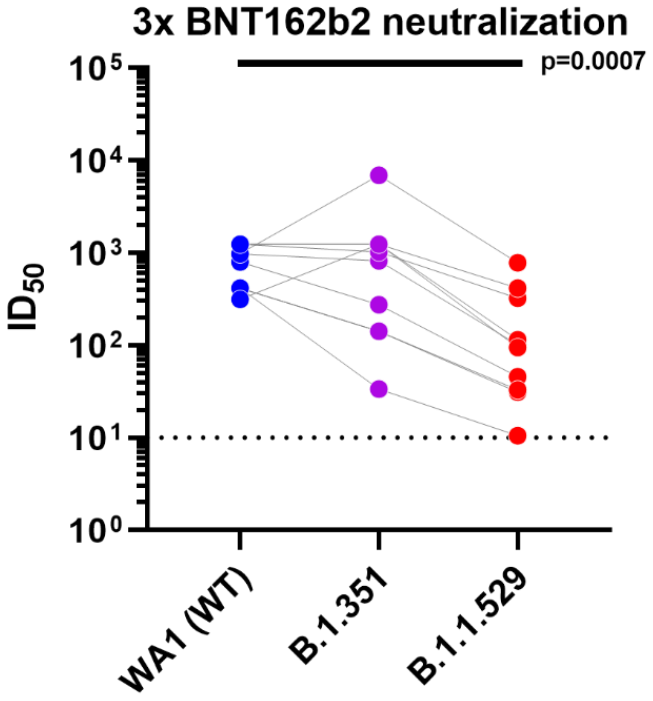
2x Pfizer in previously naive individuals

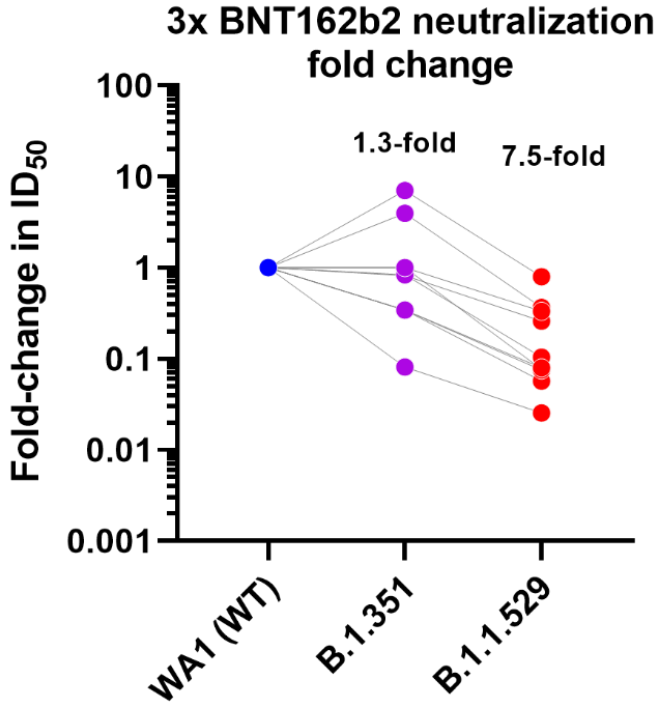




Negative values set to 5 ID_{50}

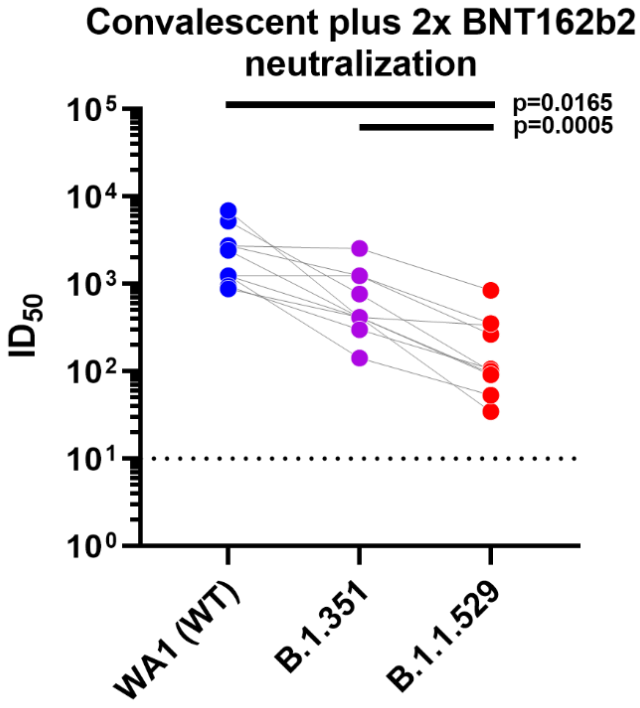
3x Pfizer in previously naive individuals

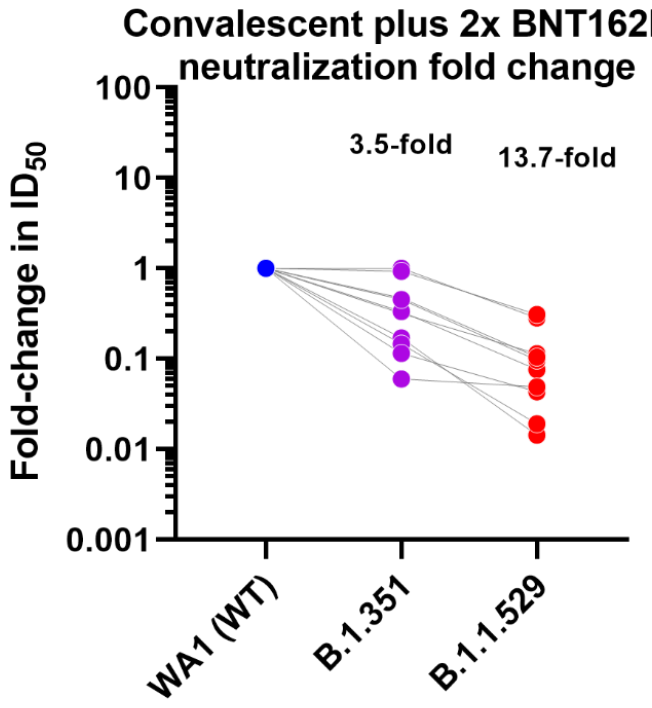




Negative values set to 5 ID_{50}

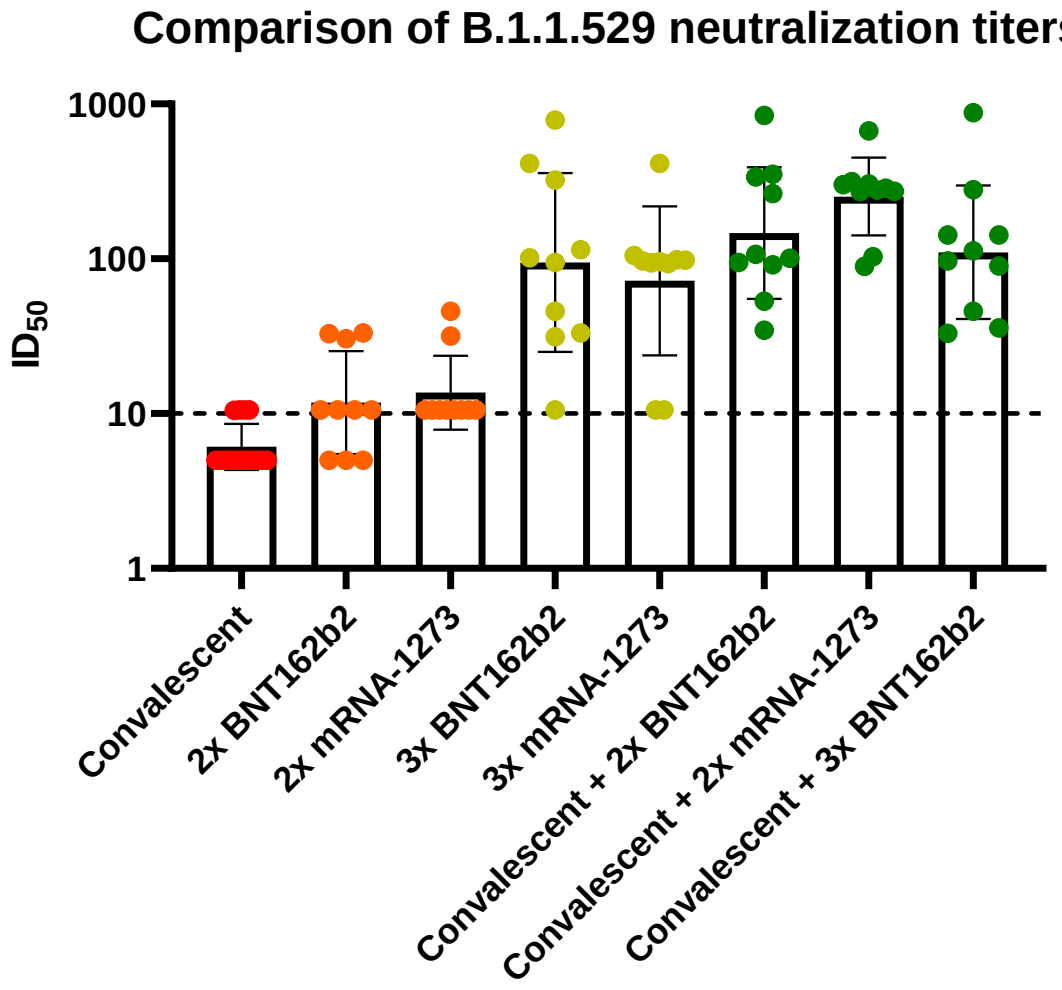
2x Pfizer in previously infected individuals





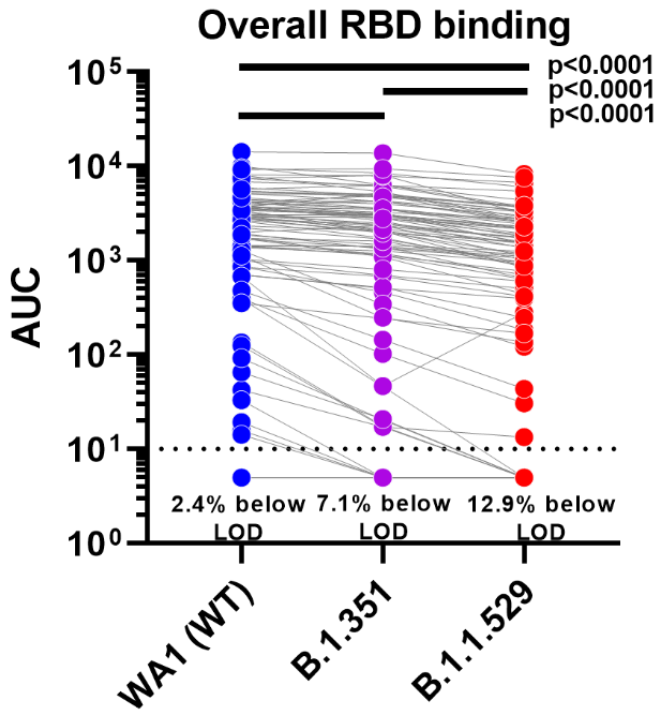
Negative values set to 5 ID_{50}

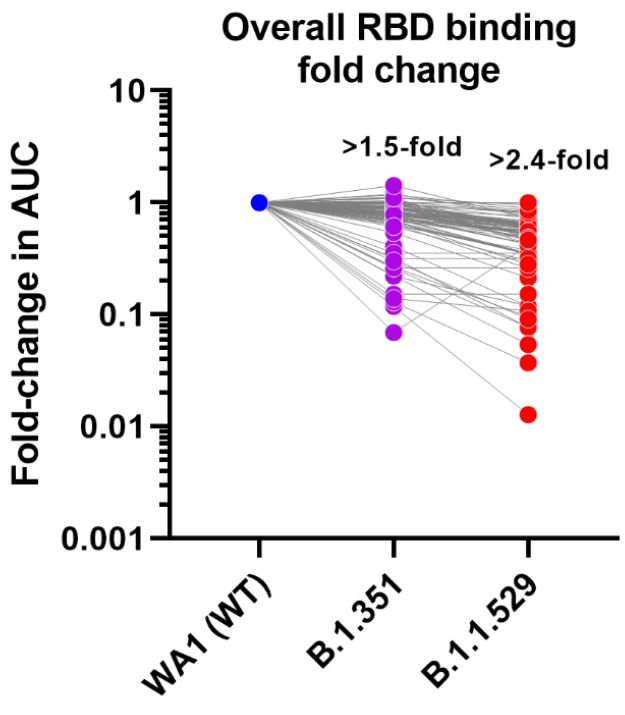
Overall comparison of residual titers to BA.1



Negative values set to 5 ID_{50}

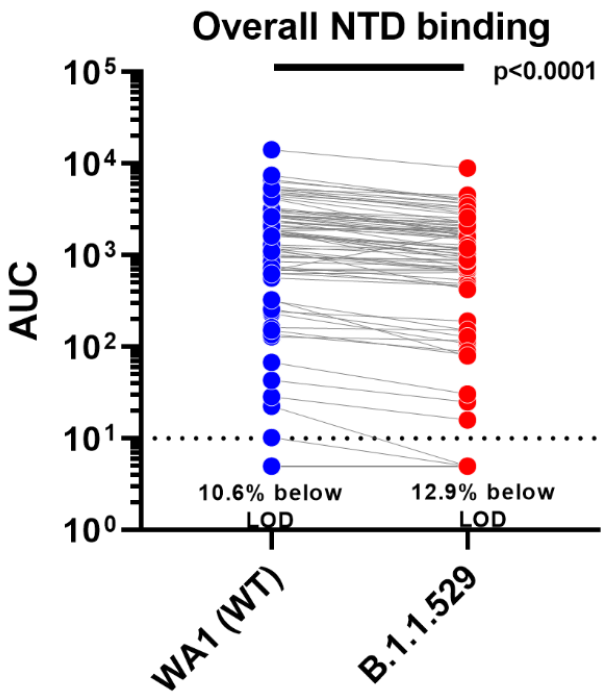
RBD binding

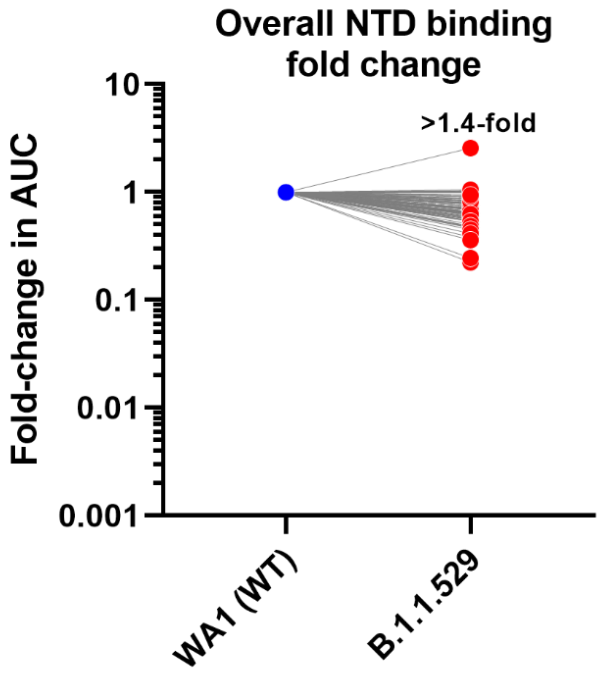




Negative values set to 5 AUC

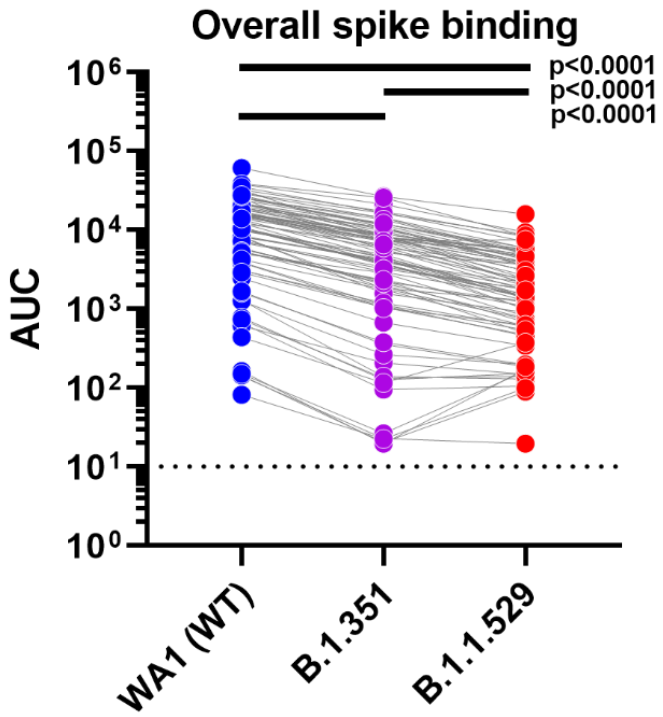
NTD binding

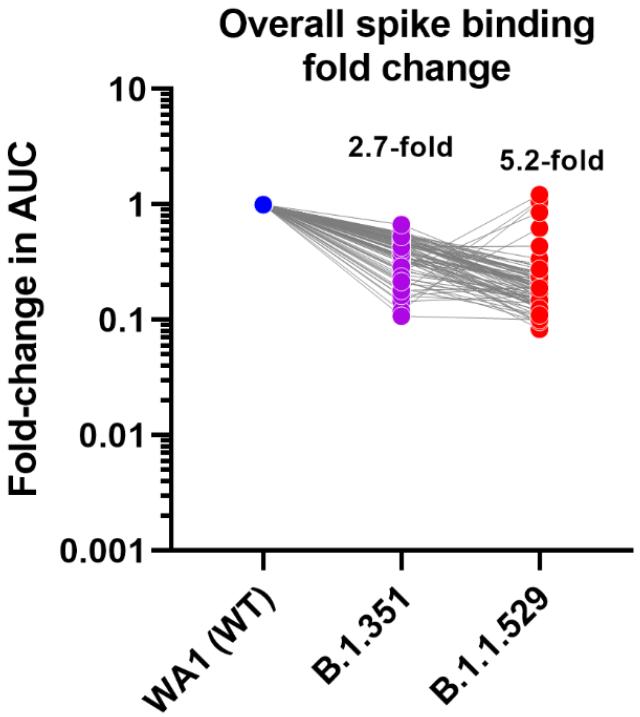




Negative values set to 5 AUC

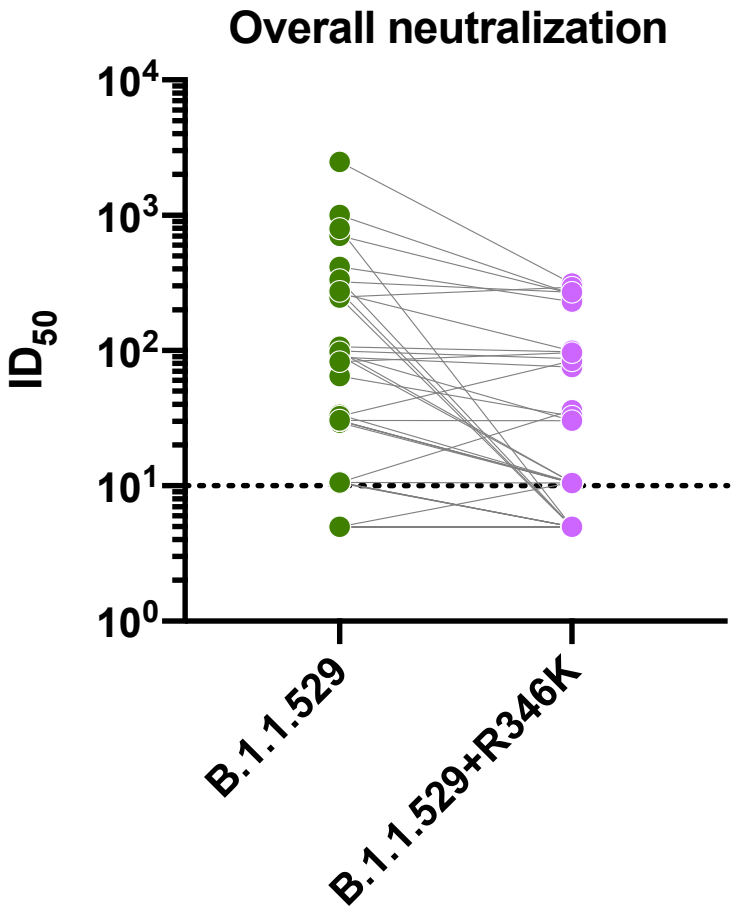
Spike binding

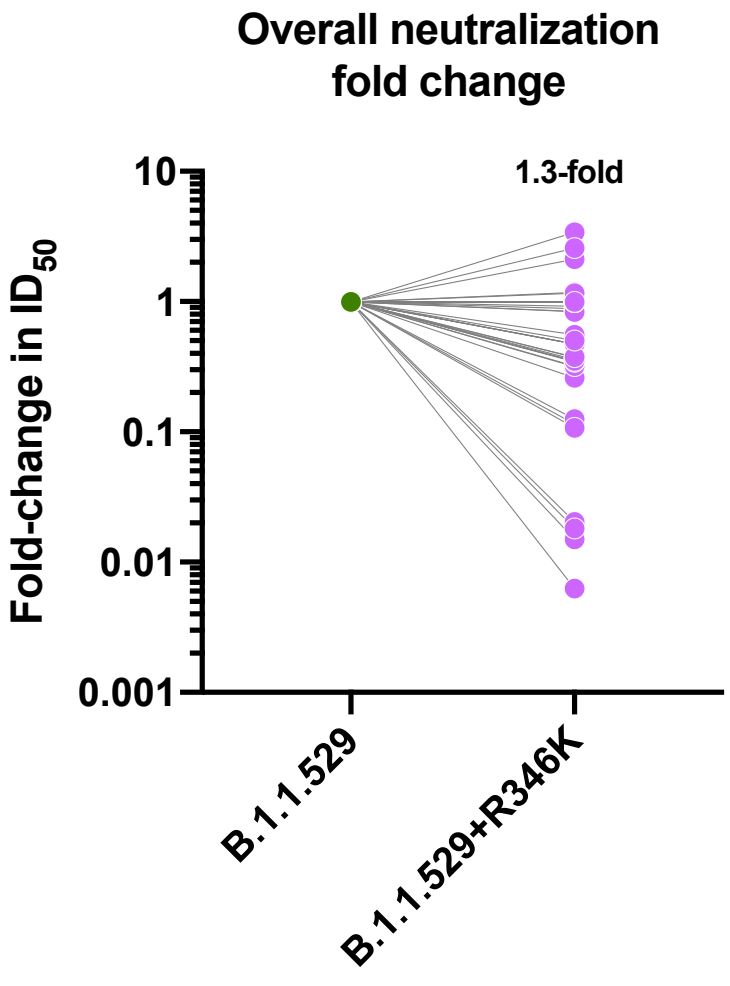




Negative values set to 5 AUC

The impact of R346K (BA.1 vs BA.1.1)





Negative values set to 5 AUC

Conclusions

- **Neutralizing activity drops sharply**
- **Convalescent individuals are most affected, followed by double vaccinated individuals**
- **Triple vaccinated and convalescent vaccinated individuals have most residual neutralizing activity**
- **This aligns well with clinical observations and vaccine effectiveness data against symptomatic infection**
- **R346K can cause additional drops in neutralizing activity of polyclonal serum**

Acknowledgements

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