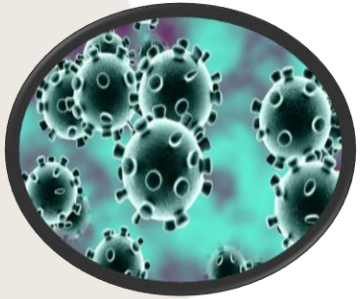

Omicron Assay and Animal data summary

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Acknowledgements: +250 experts worldwide, 25 countries, 65 entities

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Summary of Omicron Immune Evasion

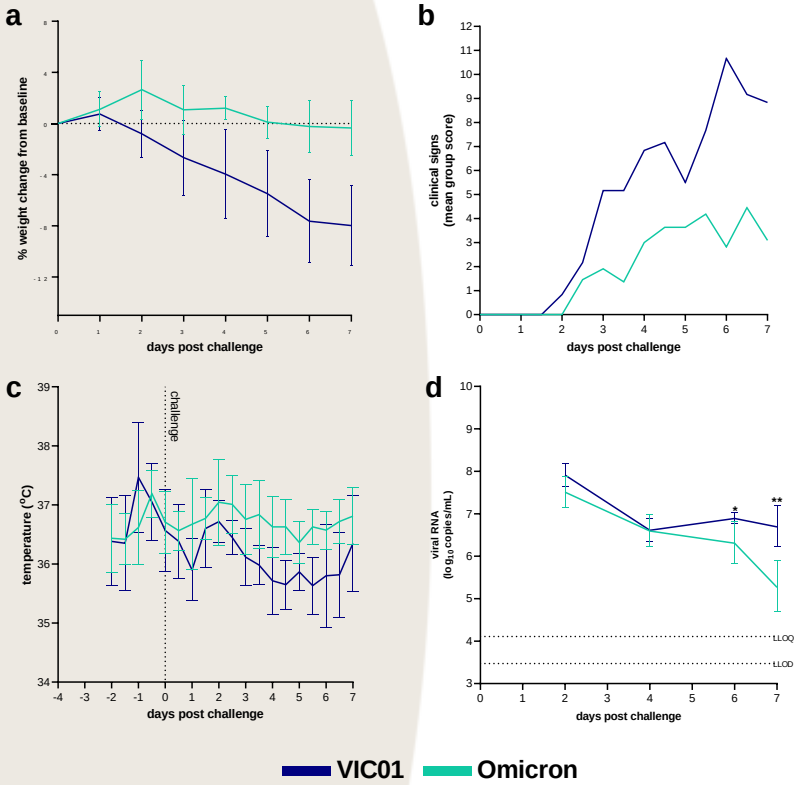
- There is a significant reduction in neutralization of the Omicron variant when compared to the prototype strain or other VOCs in convalescent and vaccinated individuals, across all reported vaccine platforms. Multiple mAb therapeutics completely lost their neutralizing activity. Pan-sarbecovirus mAb still neutralizes Omicron.
- Most CD4 and CD8 epitopes are fully conserved across all variants including Omicron. Recognition is preserved in fully vaccinated subjects irrespective of vaccine platform, as measured by multiple groups and assays.

Animal models for Omicron

Studies have been performed in standard laboratory mice, hACE Tg mice and hamsters

The disease in mice and hamsters resulting from Omicron infection is milder compared to prototype strains and other variants,

- ⬇ clinical signs, weight changes, levels of virus or viral RNA in the lungs, and lung pathology



UKHSA

https://www.biorxiv.org/content/10.1101/2021.12.24.474081v1

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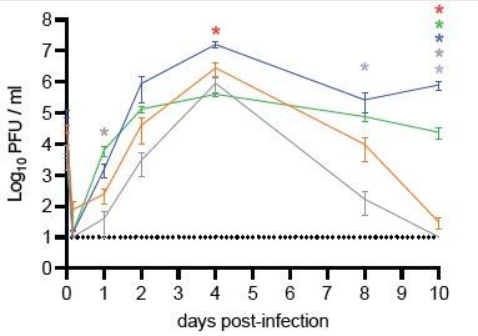
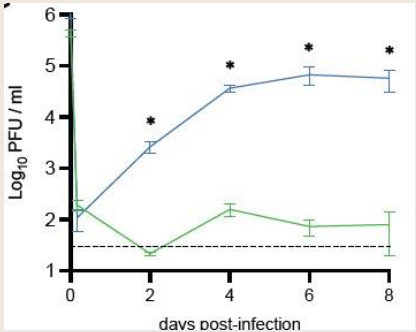
Viral replication in airways vs. lung organoids

- Omicron efficiently infects organoids of the human airway, but not alveolar epithelium

– Delta
– Omicron
– 614D
– 614G



Airway organoids

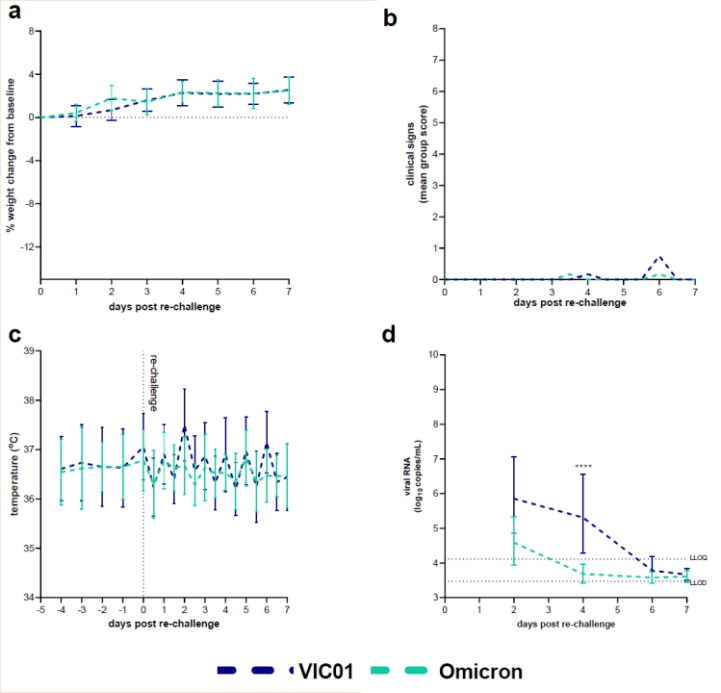


Alveolar Type 2 cells

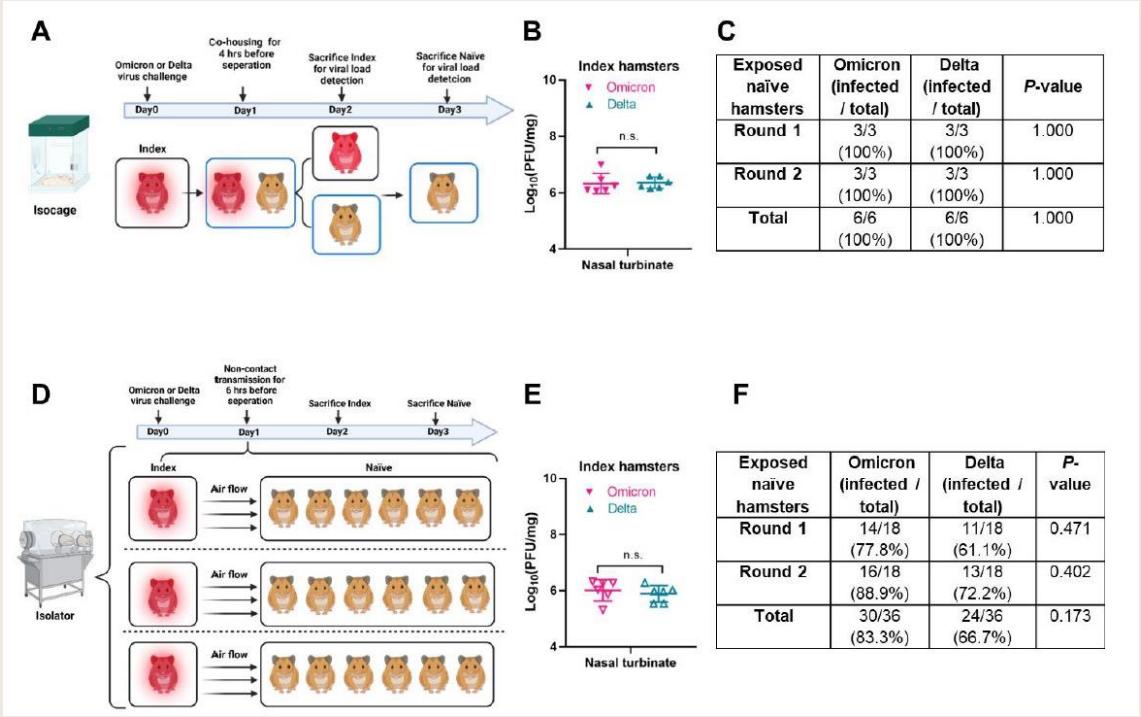
Erasmus MC. https://www.biorxiv.org/content/10.1101/2022.01.19.476898v1

Infection with an ancestral strain protected against re-challenge with Omicron

- Hamsters were infected with an ancestral strain, VIC01, allowed to recover, and then challenged with Omicron 50 days later
- Animals were solidly protected from Omicron rechallenge
- Clinical disease was not observed and virus rapidly cleared



Omicron is more Transmissible than Delta in non-contact transmission studies

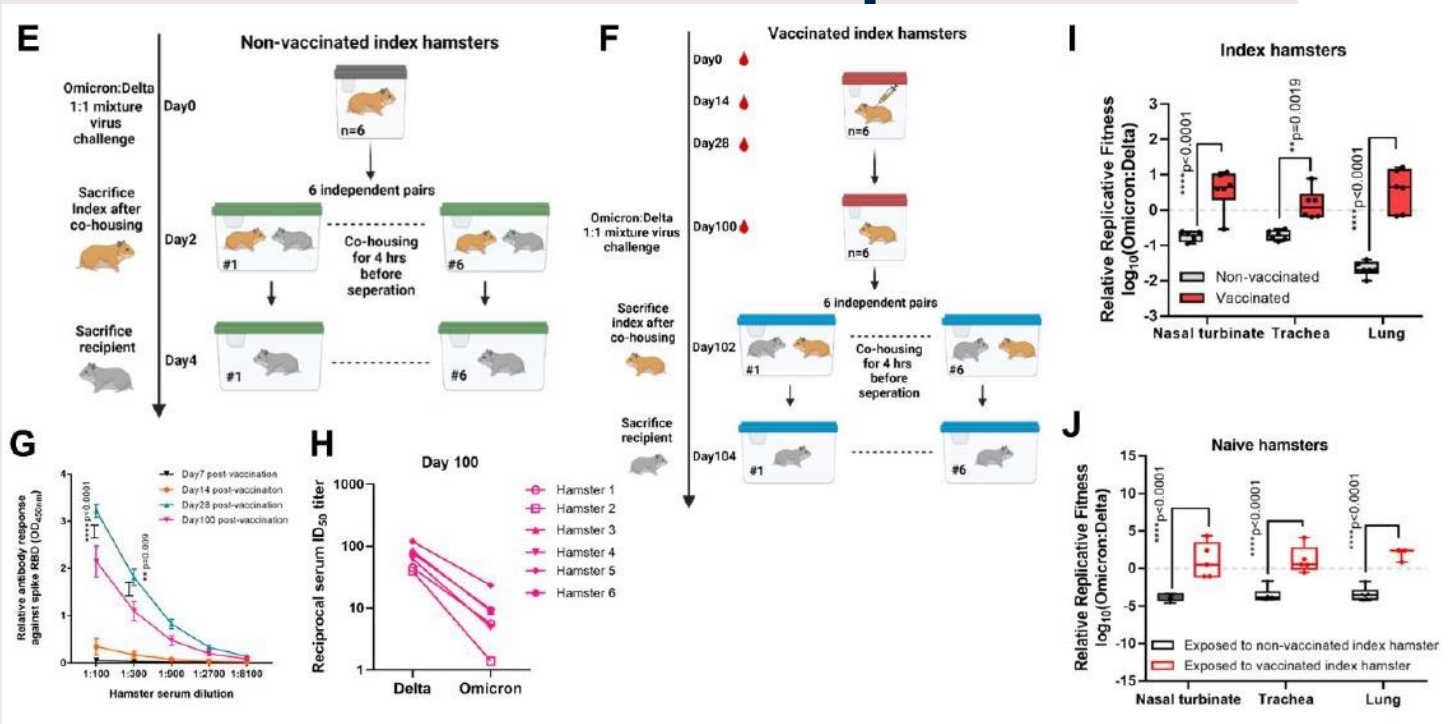


Exposed naïve hamsters	Omicron (infected / total)	Delta (infected / total)	*P*-value
Round 1	3/3 (100%)	3/3 (100%)	1.000
Round 2	3/3 (100%)	3/3 (100%)	1.000
Total	6/6 (100%)	6/6 (100%)	1.000

Exposed naïve hamsters	Omicron (infected / total)	Delta (infected / total)	*P*-value
Round 1	14/18 (77.8%)	11/18 (61.1%)	0.471
Round 2	16/18 (88.9%)	13/18 (72.2%)	0.402
Total	30/36 (83.3%)	24/36 (66.7%)	0.173

HKU
https://www.biorxiv.org/content/10.1101/2022.01.19.476898v1

Omicron outcompetes Delta with immune selection pressure



Summary of Omicron Animal Model data

- Animal model data indicates that Omicron is less pathogenic than previous VOCs. This is associated to reduced virus titers in the LRT
- Transmission studies indicate that Omicron is highly transmissible and can outcompete the highly transmissible delta VOC in the presence of immune pressure.
- So far, animal models faithfully recapitulate pathogenesis and transmission data of VOCs collected in humans

Back up slides

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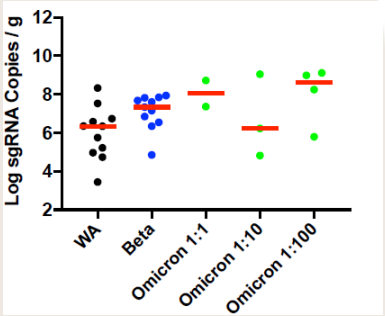
Viral RNA in upper airways

- Different studies in mice and hamsters have shown variable results in Omicron virus or viral RNA levels in the upper airways compared to ancestral strains



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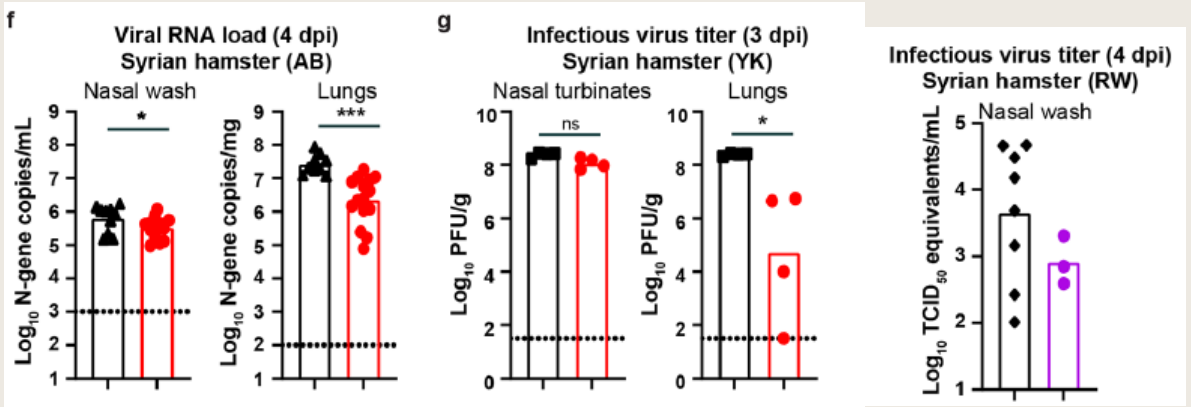
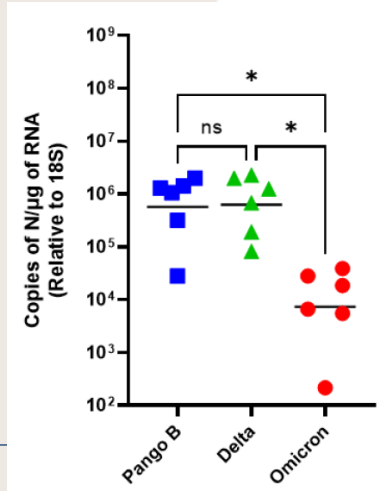


Wash. Univ. https://www.researchsquare.com/article/rs-1211792/v1



Univ. Liverpool
https://www.biorxiv.org/content/10.1101/2021.12.26.474085v2

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