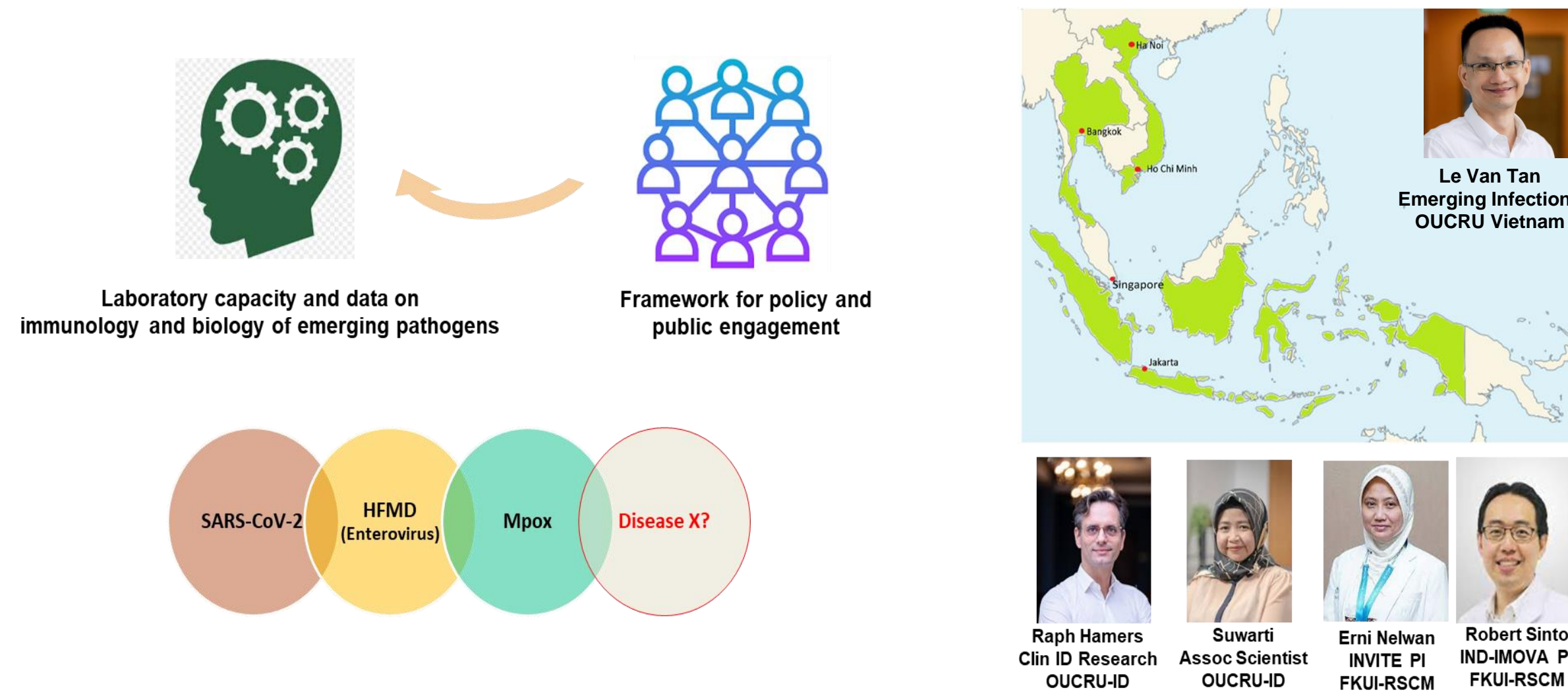


# Southeast Asia Initiative to Combat SARS-CoV-2 Variants (SEACOVARIANTS): The Indonesia Experience

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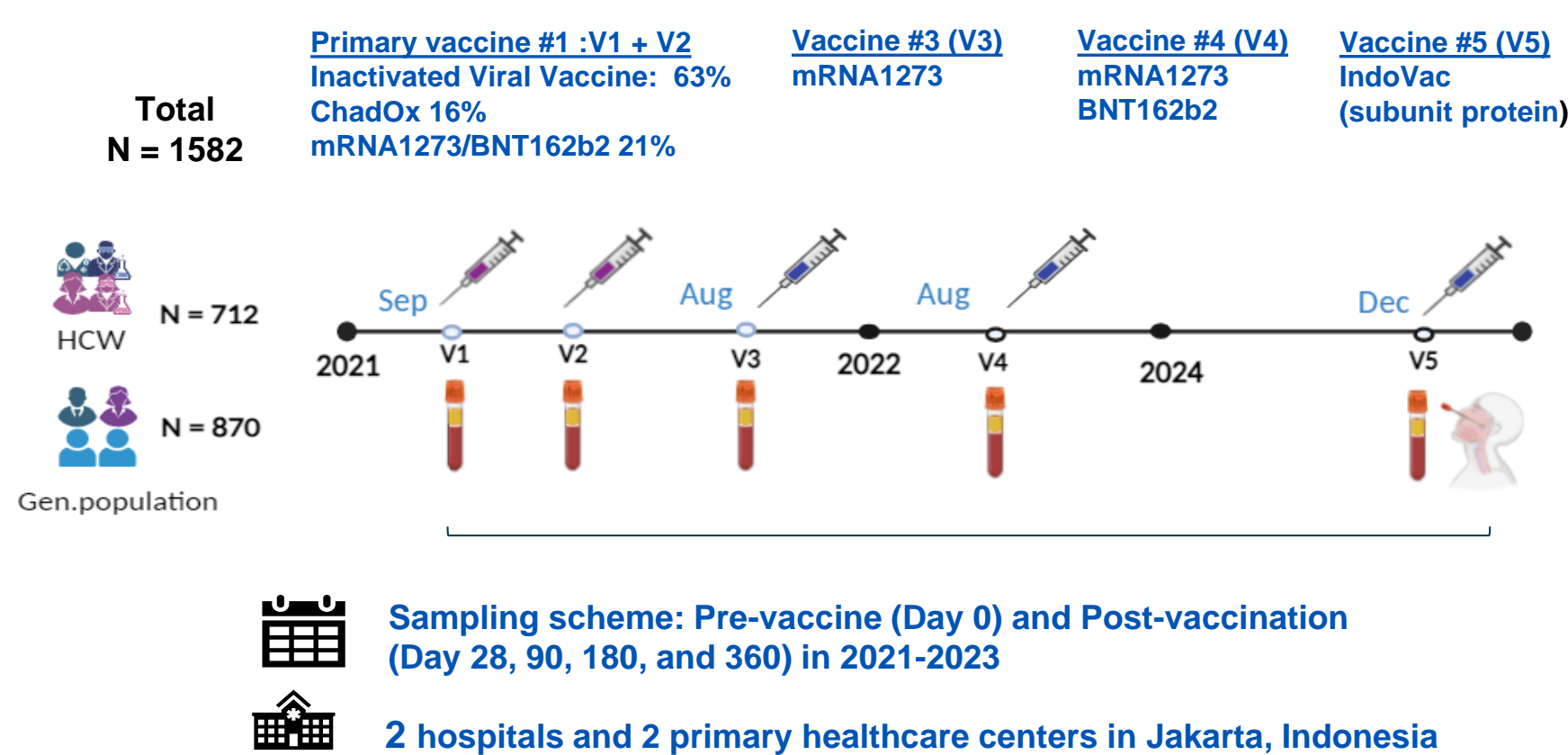


A Wellcome-funded multidisciplinary research platform to strengthen regional scientific capacity to enable the locally-led research response to the COVID-19 pandemic and future outbreaks across Southeast Asia

## Patient cohorts

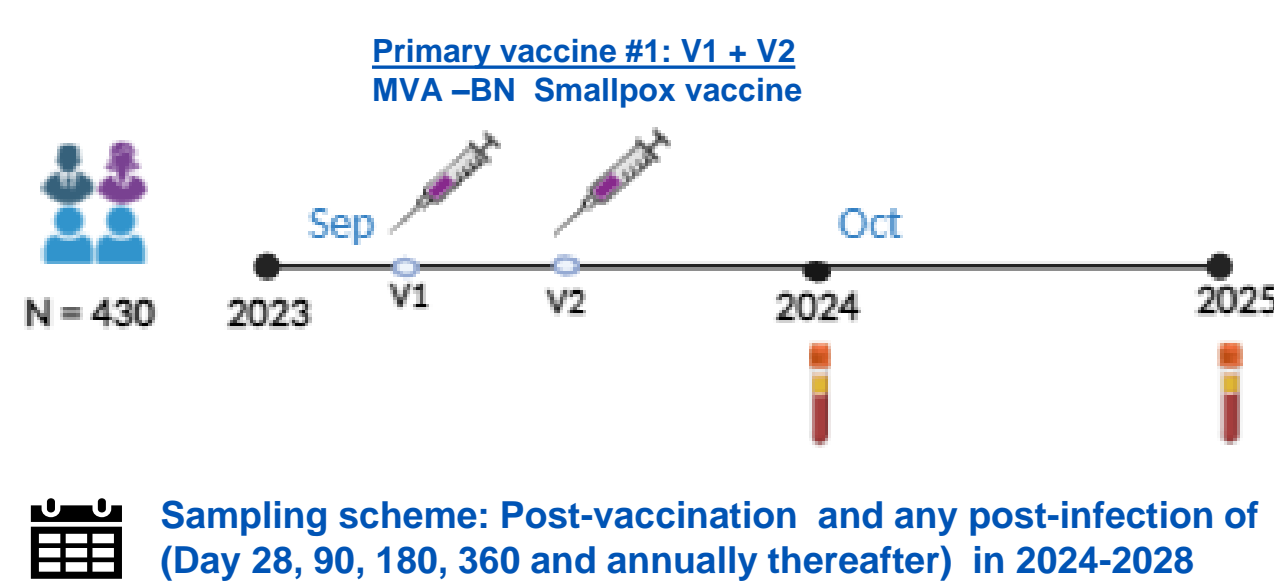
### Real-world assessment of the immunogenicity and effectiveness of COVID-19 vaccines in Indonesia (INVITE cohort)

- To assess humoral and cellular immune responses following 1<sup>st</sup>, 2<sup>nd</sup>, and subsequent vaccine dose, in individuals with and without pre-existing immunity
- To characterize SARS-CoV-2 breakthrough infections post-vaccination



### Immune responses to Modified Vaccinia Ankara vaccine and natural Mpox infection in Indonesia (IND-IMOVA)

To describe the serological immune response to MVA-BN vaccination and natural Mpox infection



## Laboratory capacity building at OUCRU Indonesia

### Four assays established at OUCRU-ID

- Multiplex Surrogate Virus Neutralization test



Tan Chee Wah



Yap Wee Chee

- Enzyme-linked Immunosorbent spot (Elispot)
- Intracellular Cytokine Staining Flowcytometry



Susanna Dunachie



Barbara Kronsteiner-Dobramysl



Martha Zewdie



Isanawidya Paramita

- Pseudovirus Neutralization Test



Juthathip Mongkolsapaya



Wanwisa Dejnirattisai

### Expert support and technical assistance

- Remote support and exchange visits
- SOPs and reagents sharing



## Scientific outputs to date

Full-dose mRNA-1273 (Moderna) heterologous booster after inactivated-vaccine (CoronaVac) priming in Indonesian HCWs was well tolerated and induced total and neutralizing antibodies after 28 days, including in those with very low antibody levels (Sinto *et al.* AJTMH 2022)

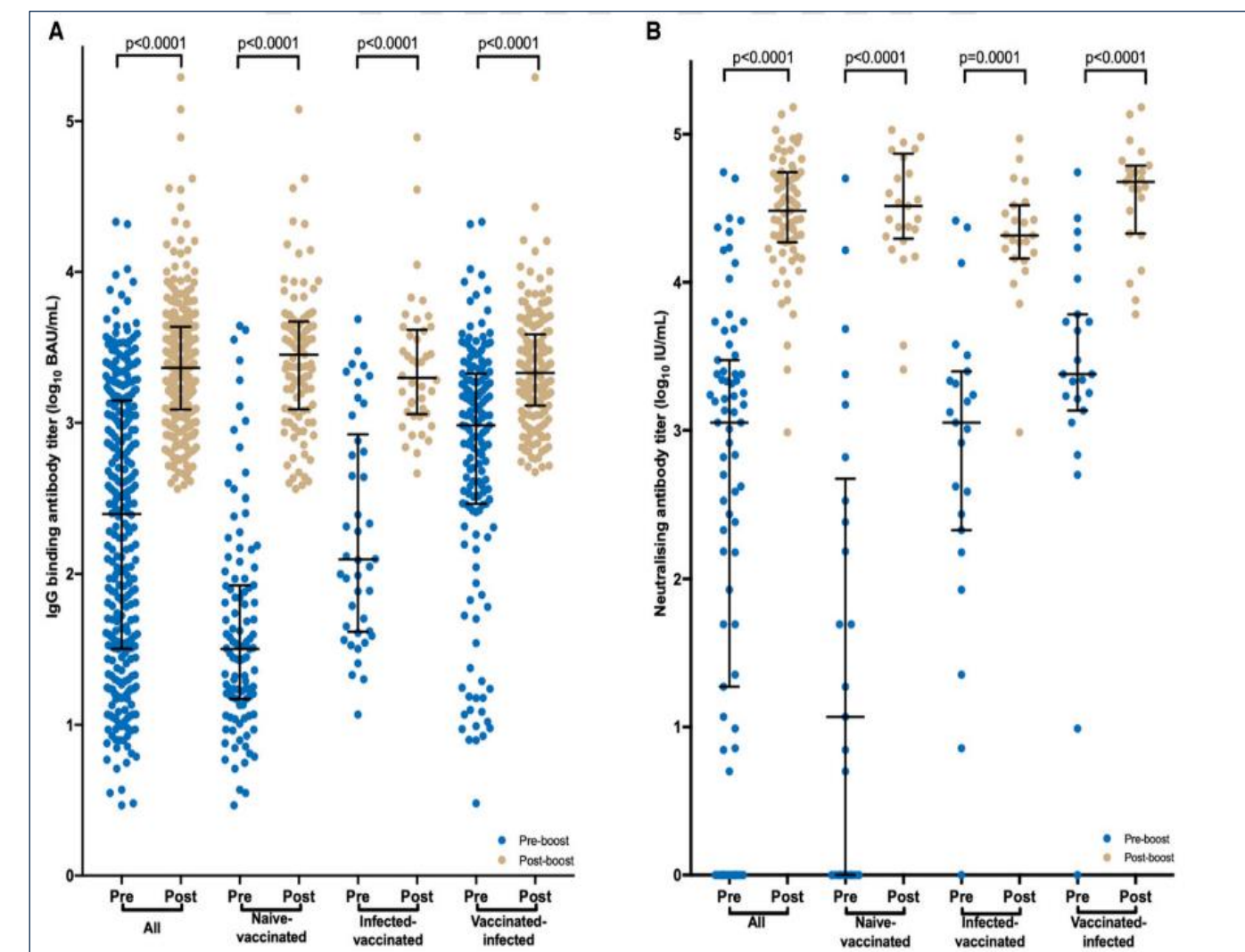


Figure 1. Anti spike binding and neutralizing antibody titers before and after mRNA-1273 booster dot plot showing before and after mRNA-1273 booster binding antibody (A) and neutralizing (B) titers overall and by previous SARS-CoV-2 infection. IgG titers shown as BAU per milliliter (according to the WHO International Standard).

Ancestral-strain mRNA-1273 (Moderna) vaccine boost after inactivated-vaccine (CoronaVac) priming did not prevent Omicron BA.1/BA.2 breakthrough infections in Indonesian healthcare workers, and was associated with declined anti-spike and neutralizing antibodies within 90 days (Suwarti *et al.*, BMC Infectious Disease 2024)

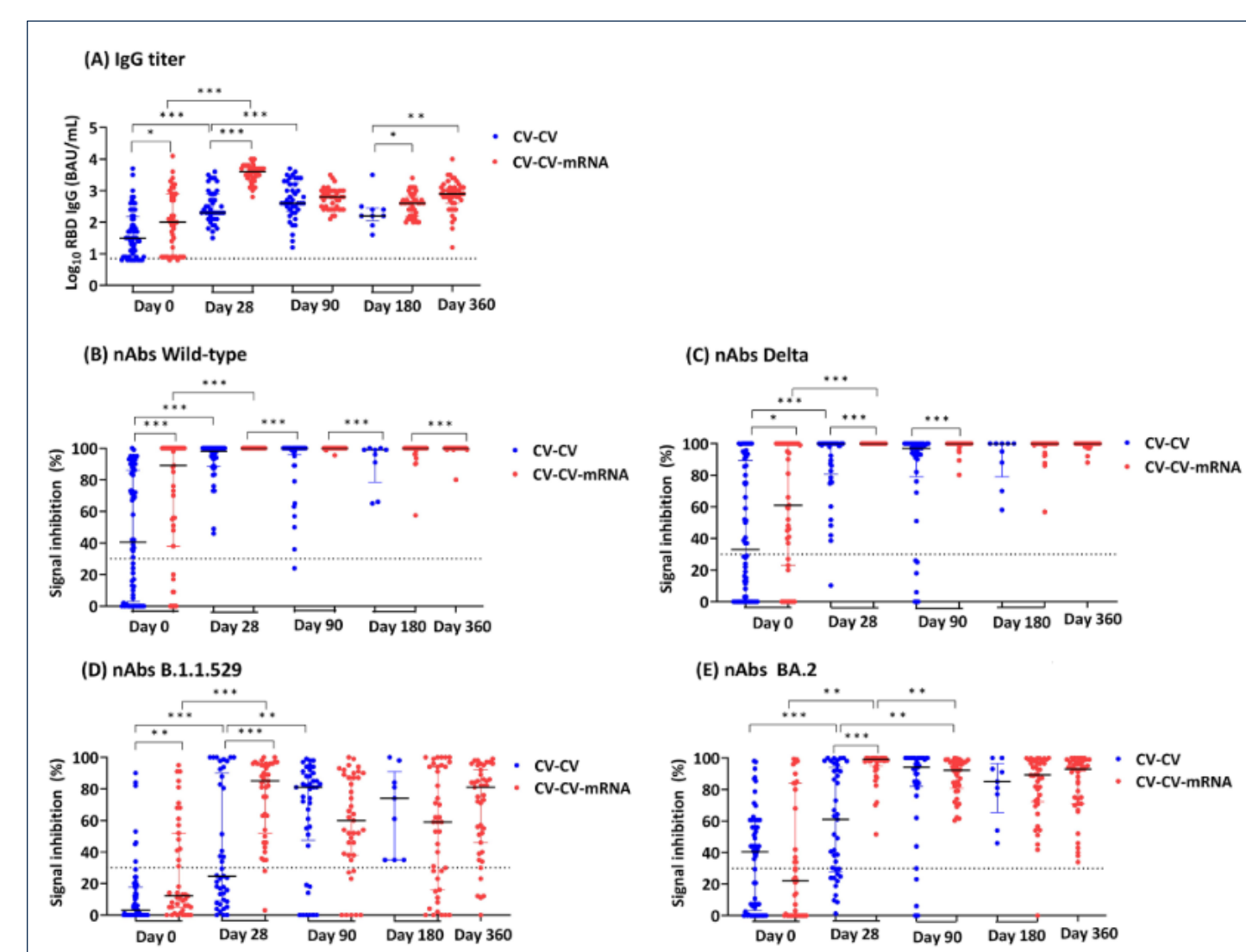


Figure 2. Serum anti-spike IgG titers (A) and neutralizing antibodies (nAbs) against SARS CoV-2 wild-type (B), Delta (C), Omicron B.1.1.529 (D) and BA.2 (E) were measured: i) Pre-vaccination (Day 0), i.e. before the first dose in CV-CV vaccinees (n=60) and before third dose in CV-CV-mRNA vaccinees (n=42) ii) Post-vaccination day 28 (CV-CV n=41 and CV-CV-mRNA n=40), day 90 (CV-CV n=41 and CV-CV-mRNA n=40), day 180 (CV-CV n=9 and CV-CV-mRNA n=40), and day 360 (CV-CV-mRNA n=43)

Neutralizing antibody levels before and after vaccination show significant differences between 3<sup>rd</sup> and 4<sup>th</sup> doses, but not between 4<sup>th</sup> and 5<sup>th</sup> dose, against 15 SARS-CoV-2 variants (preliminary data, 2024)

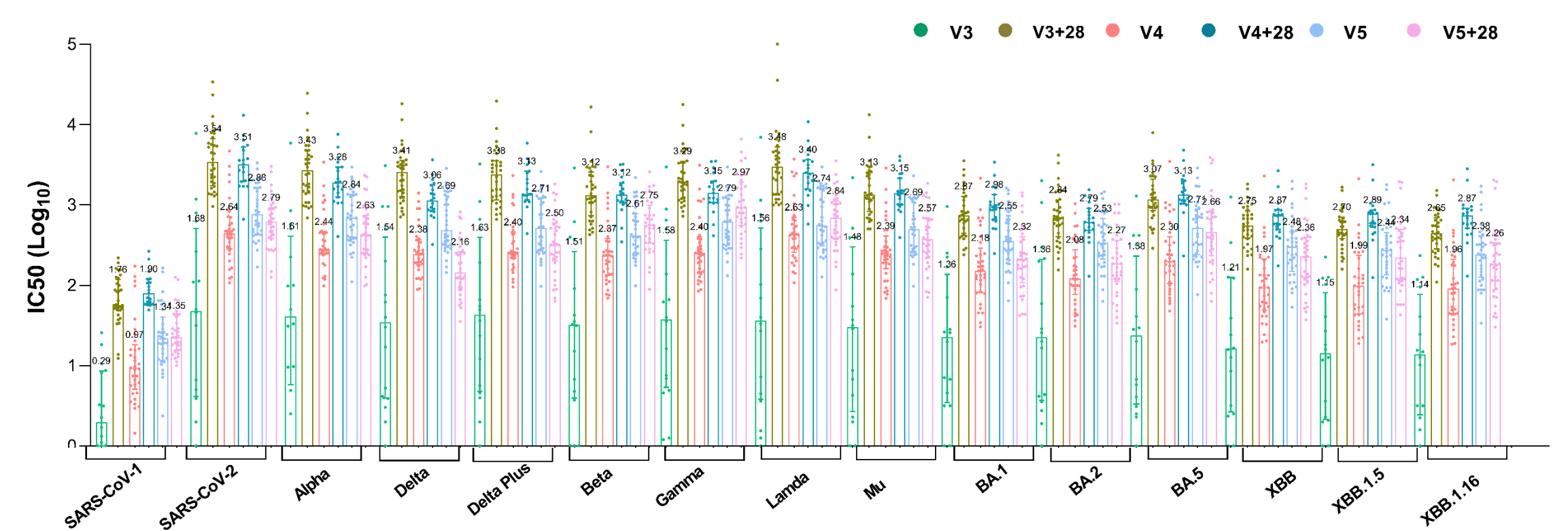


Figure 3. Neutralizing antibodies (Nabs) titer (log IC50) against 15 SARS-CoV-2 variants in 33 HCW participants cohort who received third and fourth doses of mRNA vaccines and fifth dose of S-protein subunit vaccine at pre-vaccination (V3, V4, and V5), and 28 day post-vaccination (V3+28, V4+28, V5+28)

### Academic training programmes

- DPhil, University of Oxford: Yanie Tayipto
- MBiomed, Faculty of Medicine, Universitas Indonesia: Sabighoh Z.



## Lessons learned and future directions

- SEACOVARIANTS have strengthened local capacities and collaborative networks with scientists and stakeholders at OUCRU Indonesia, including policy makers
- A sustainable platform for surveillance, research and policy engagement, thus enabling effective localized responses and outbreak preparedness
- Target areas expanding from SARS-CoV-2 to Mpox and other emerging respiratory viruses

