## **4 Supplementary Tables and Figures**

### 5 **Table S1.** Risk of bias for included non-RCTs.

	Selection			Comparability	F	Exposure				
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Total score	Quality
K. Khong, (2022)	0	1	0	1	1	1	1	1	6	Moderate
J. Sammartino (2022)	1	1	1	0	0	1	1	1	6	Moderate
S. Assawakosri (2022)	1	1	1	1	2	1	1	1	9	Good
N. Leung (2023)	1	1	1	1	2	1	1	1	9	Good
N. Angkasekwinai (2023)	1	1	1	0	2	1	1	1	8	Good
Y. Chen (2022)	1	1	1	1	1	1	1	1	8	Good
W. Chen (2022)	1	1	1	0	2	1	1	1	8	Good
W. Sheng (2023)	1	1	1	0	2	1	1	1	8	Good
S. Assawakosri (2022)	1	1	0	1	0	0	1	1	5	Moderate
X. Liu (2023)	1	1	1	0	1	1	1	1	7	Good
P. Assantachai (2023)	1	1	1	0	1	1	1	1	7	Good
D. Sieghart (2024)	1	1	1	0	1	1	1	1	7	Good
H. Xia (2022)	1	1	1	0	2	1	1	1	8	Good
H. Xie (2022)	1	1	1	1	1	1	1	1	8	Good
R. Atmar (2022)	1	1	1	0	2	1	1	1	8	Good
J. Ai (2022)	1	1	1	1	2	1	1	1	9	Good

<sup>6</sup> Item 1: Representativeness of the exposed cohort.

<sup>7</sup> Item 2: Selection of the non-exposed cohort.

<sup>8</sup> Item 3: Ascertainment of exposure.

<sup>9</sup> Item 4: Demonstration that outcome of interest was not present at the start of the study.

- 10 Item 5: Comparability of cohorts based on the design or analysis.
- 11 Item 6: Assessment of outcome.
- 12 Item 7: Was follow-up long enough for outcomes to occur.
- 13 Item 8: Adequacy of follow-up of cohorts.

### 15 **Table S2.** Risk of bias of the included studies, assessed using the Cochrane RoB-2 tool.

Study (First author)	Randomization			Missing Measurement of		Overall risk of	
	process	intended	outcome data	the outcome	reported result	bias	
		interventions					
L. Jingxin (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
C. Chuang (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Y. Zhang (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
S. Niyomnaitham (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
S. Clemens (2023)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
X. Yong (2023)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Al. Kaabi (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
A. Omma (2022)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
C. Roa Jr (2024)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
Y. Fang (2023)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	
S. Toback (2024)	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	

### 

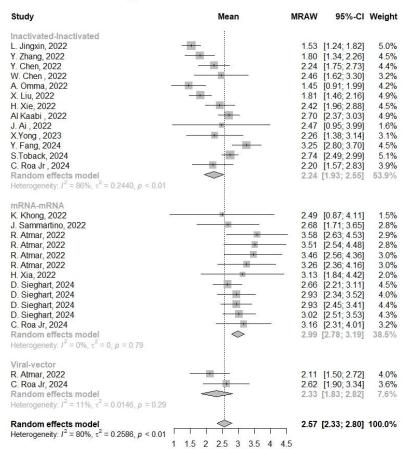
# 

## 

### 

### 

### SARS-CoV-2 wildtype



#### В Beta

Study	Mean	MRAW	95%-CI	Weight
Inactivated-Inactivated W. Chen, 2022 N. Angkasekwinai, 2022 H. Xie, 2022 Random effects model Heterogeneity: $I^2=16\%$ , $\tau^2=0.0338$ , $\rho=0.30$		1.57 2.29	[1.07; 2.37] [0.67; 2.47] [1.68; 2.90] [1.47; 2.37]	11.7% 8.1% 12.4% 32.2%
mRNA-mRNA K. Khong, 2022 J. Sammartino, 2022 R. Atmar, 2022 Random effects model Heterogeneity: $I^2 = 0\%$ , $\tau^2 = 0$ , $\rho = 0.98$	***************************************	2.32 2.76 2.77 2.78 2.69	[0.85; 3.63] [1.34; 3.30] [1.54; 3.98] [1.51; 4.03] [1.64; 3.92] [1.55; 3.83] [2.11; 3.06]	4.3% 7.3% 5.3% 5.0% 5.8% 5.9% 33.5%
Viral vector-Viral vector N. Angkasekwinai, 2022 R. Atmar, 2022 C. Roa Jr , 2024 Random effects model Heterogeneity: $I^2=73\%$ , $\tau^2=0.3431$ , $\rho=0.02$		1.40 2.69	[1.01; 2.15] [0.71; 2.09] [1.96; 3.42] [1.11; 2.64]	13.0% 10.9% 10.3% 34.3%
<b>Random effects model</b> Heterogeneity: $I^2 = 37\%$ , $\tau^2 = 0.1200$ , $\rho = 0.10$	1 1.5 2 2.5 3 3.5 4	2.12	[1.80; 2.44]	100.0%

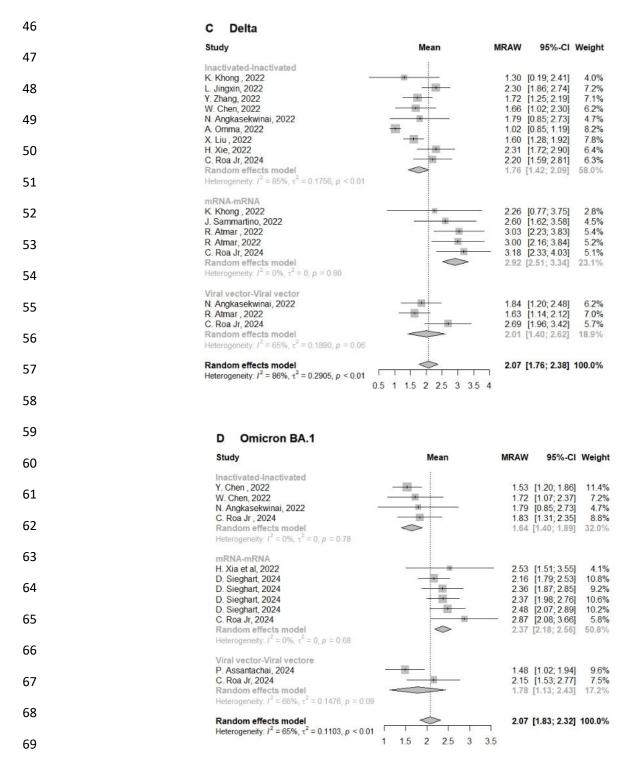
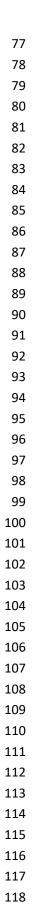
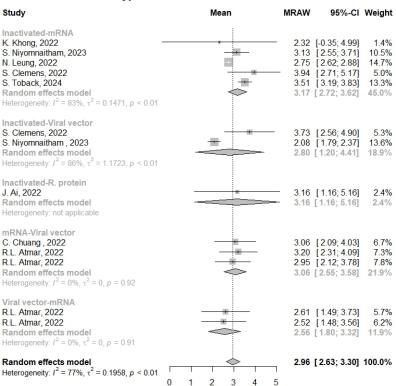


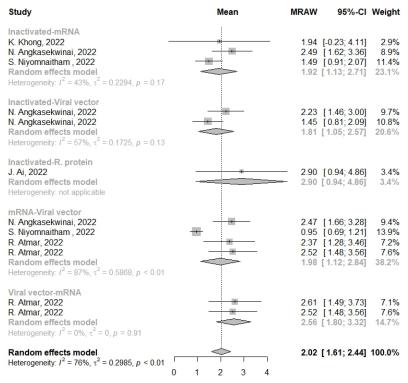
Fig. S1. Forest plot of the pooled log-transformed neutralization titers against (A) SARS-CoV-2 wildtype, (B) Beta, (C)Delta, and (D) Omicron BA.1 after homologous booster vaccination. MRAW, mean raw; 95%-CI, 95% confidence interval;  $I^2$ , index for the degree of heterogeneity between studies.  $\tau^2$ , measure of heterogeneity. Weight is an indicator of the impact of each study on the overall results. Squares represent effect sizes for a single study, and rhombus represent pooled results for all studies.



#### A SARS-CoV-2 wildtype

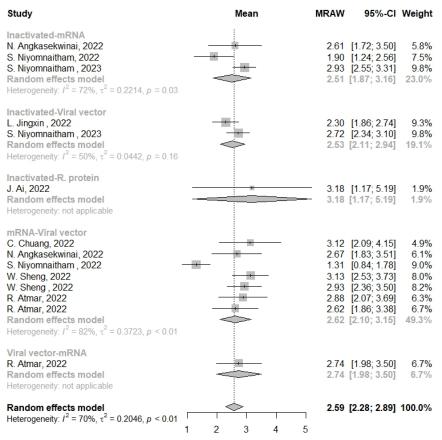


### B Beta

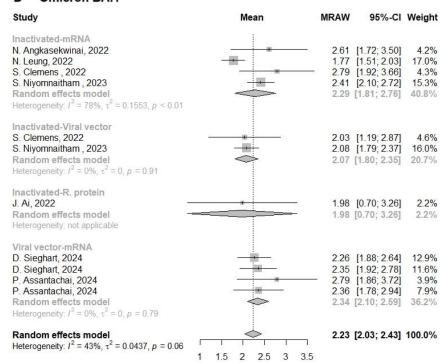


119

#### C Delta



### D Omicron BA.1



121

124	Fig. S2. Forest plot of the pooled log-transformed neutralization titers against the wild
125	type (A) SARS-CoV-2 wild type, (B) Beta, (C)Delta, and (D) Omicron BA. 1 after
126	heterologous booster vaccination. MRAW, mean raw; 95%-CI, 95% confidence interval; I <sup>2</sup> ,
127	index for the degree of heterogeneity between studies. $\tau^2$ , measure of heterogeneity. Weight is
128	an indicator of the impact of each study on the overall results. Squares represent effect sizes
129	for a single study, and rhombus represent pooled results for all studies.
130	