

Table 2. Summary of neutralisation assay results of COVID-19 variant-targeting vaccine studies

Vaccine target	Vaccine regimen	Population	Test target	Result*	Reference
mRNA-1273	2-dose primary series taken 4 weeks apart	Rhesus macaques	Ancestral	Neutralising	69
			Beta	Neutralising	
			Delta	Neutralising	
			BA.1	Neutralising	
Beta			Ancestral	Neutralising	
			Beta	Neutralising	
			Delta	Neutralising	
BA.1			BA.1	Neutralising	
			Ancestral	Neutralising, lower than BA.1 test target	
			Beta	Neutralising, lower than BA.1 test target	
mRNA-1273	First booster taken 35 weeks since last dose of 2-dose primary series mRNA-1273		Delta	Neutralising, lower than BA.1 test target	
			BA.1	Neutralising	
			Ancestral	Successfully boosted	
			Beta	Successfully boosted	
BA.1			Delta	Successfully boosted	
			BA.1	Successfully boosted	
			BA.2	Successfully boosted	
			Ancestral	Successfully boosted	
Ancestral	2-dose primary series taken 2 weeks apart	Mice	BA.1	Successfully boosted	
			Beta	Successfully boosted	
			Delta	Successfully boosted	
			BA.2	Successfully boosted	
Delta			Ancestral	Successfully boosted	
			Beta	Successfully boosted	
			Delta	Successfully boosted	
			BA.1	Successfully boosted	
Omicron			BA.2	Successfully boosted	
			Ancestral	Failed to neutralise	
			Beta	Failed to neutralise	
			Delta	Failed to neutralise	
Delta-Omicron hybrid			Omicron	Neutralising	
			Ancestral	Low neutralisation	

Table 2. Summary of neutralisation assay results of COVID-19 variant-targeting vaccine studies (Cont'd)

Vaccine target	Vaccine regimen	Population	Test target	Result*	Reference
			Beta	Low neutralisation	
			Delta	Low neutralisation	
			Omicron	Neutralising	
Ancestral	2-dose primary series taken 2 weeks apart	Mice	Ancestral	Neutralising	⁷¹
			Alpha	Neutralising	
			Beta	Neutralising	
			Omicron	Failed to neutralise	
Beta			Ancestral	Neutralising	
			Alpha	Neutralising	
			Beta	Neutralising	
			Omicron	Failed to neutralise	
Delta			Ancestral	Neutralising	
			Alpha	Neutralising	
			Beta	Neutralising	
			Delta	Neutralising	
			Omicron	Neutralising	
Omicron			Ancestral	Failed to neutralise	
			Delta	Failed to neutralise	
			Omicron	Neutralising	
Beta	First booster taken 7 weeks after last dose of 2-dose primary series targeting Delta variant		Delta	Failed to boost	
			Omicron	Failed to boost	
Delta			Delta	Successfully boosted	
			Omicron	Successfully boosted	
Omicron			Delta	Failed to boost	
			Omicron	Failed to boost	
Ancestral	2-dose primary series taken 2 weeks apart	Mice	Ancestral	Neutralising	⁷²
			Delta	Neutralising	
			Omicron	Low neutralisation	
Omicron			Ancestral	Failed to neutralise	
			Delta	Failed to neutralise	
			Omicron	Neutralising	
Ancestral	2-dose primary series taken 2 weeks apart	Mice	Ancestral	Neutralising	⁷³
			Alpha	Neutralising	
			Beta	Neutralising	

Table 2. Summary of neutralisation assay results of COVID-19 variant-targeting vaccine studies (Cont'd)

Vaccine target	Vaccine regimen	Population	Test target	Result*	Reference
			Gamma	Neutralising	
			Delta	Neutralising	
			BA.1	Low neutralisation	
BA.1			Ancestral	Failed to neutralise	
			Alpha	Failed to neutralise	
			Beta	Low neutralisation	
			Gamma	Low neutralisation	
			Delta	Failed to neutralise	
			BA.1	Neutralising	
Ancestral	First booster taken 2 weeks after last dose of 2-dose primary series targeting ancestral variant		Ancestral	Neutralising	
			Alpha	Neutralising	
			Beta	Neutralising	
			Gamma	Neutralising	
			Delta	Neutralising	
			BA.1	Low neutralisation	
			BA.2	Low neutralisation	
BA.1			Ancestral	Neutralising	
			Alpha	Neutralising	
			Beta	Neutralising	
			Gamma	Neutralising	
			Delta	Neutralising	
			BA.1	Neutralising	
			BA.2	Neutralising	
BA.1	First booster taken 2 weeks after last dose of 2-dose primary series targeting BA.1 subvariant		Ancestral	Failed to neutralise	
			Alpha	Neutralising	
			Beta	Neutralising	
			Gamma	Neutralising	
			Delta	Low neutralisation	
			BA.1	Neutralising	
			BA.2	Neutralising	
Ancestral	2-dose primary series taken 3 weeks apart	Mice	Ancestral	Neutralising	78
			Beta	Neutralising	
			Delta	Neutralising	

Table 2. Summary of neutralisation assay results of COVID-19 variant-targeting vaccine studies (Cont'd)

Vaccine target	Vaccine regimen	Population	Test target	Result ^a	Reference
			BA.1	Low neutralisation	
			BA.4/5	Low neutralisation	
BA.1			Ancestral	Low neutralisation	
			Beta	Low neutralisation	
			Delta	Low neutralisation	
			BA.1	Neutralising	
			BA.4/5	Neutralising	
Ancestral	First booster taken 104 days since 2-dose primary BNT162b2		Ancestral	Successfully boosted	
			BA.1	Lower boosting	
			BA.2	Lower boosting	
			BA.2.12.1	Lower boosting	
			BA.4/5	Lower boosting	
BA.1			Ancestral	Successfully boosted	
			BA.1	Successfully boosted	
			BA.2	Lower boosting	
			BA.2.12.1	Lower boosting	
			BA.4/5	Lower boosting	
BA.4/BA.5			Ancestral	Successfully boosted	
			BA.1	Successfully boosted	
			BA.2	Successfully boosted	
			BA.2.12.1	Successfully boosted	
			BA.4/5	Successfully boosted	

^a Neutralisation levels refer to ID₅₀ values against target variant. Boosting levels mean neutralisation levels to target variant were compared before and after boosting.

Superscript reference numbers: Refer to REFERENCES