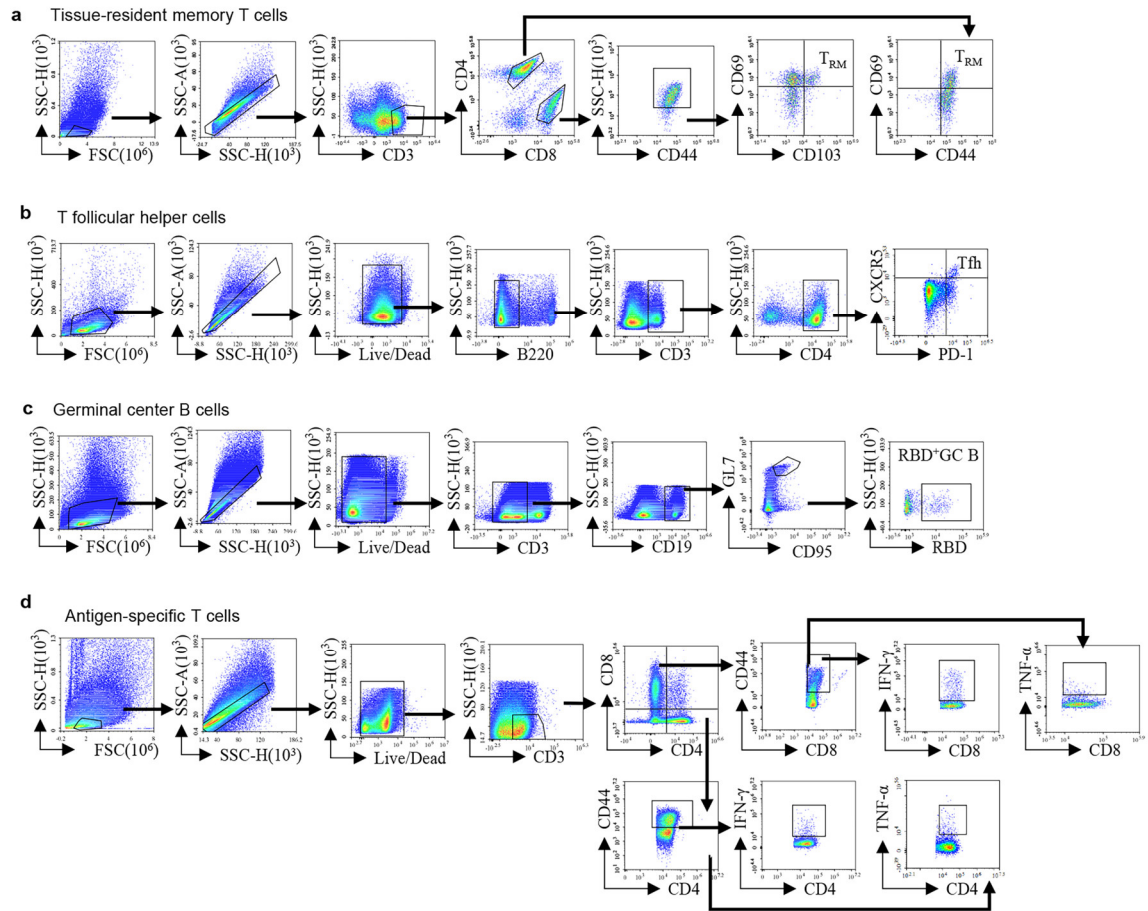


Intranasal vaccine combining adenovirus and trimeric subunit protein provides superior immunity against SARS-CoV-2 Omicron variant

In the format provided by the
authors and unedited



Supplementary Figure 1. Gating strategy and flow cytometry analysis of immune cells in vivo.

a, Tissue-resident memory T cells (T_{RM}) were identified as CD3⁺CD8⁺CD44⁺CD69⁺CD103⁺ cells/CD3⁺CD4⁺CD44⁺CD69⁺ cells. **b**, T follicular helper (T_{fh}) cells were identified as B220⁻CD3⁺CD4⁺CXCR5⁺PD-1⁺ cells. **c**, RBD-specific germinal center B (GC B) cells were identified as CD3⁻CD19⁺CD95⁺GL-7⁺RBD⁺ cells. **d**, Antigen-specific T cells were identified as CD3⁺CD8⁺/CD4⁺CD44⁺IFN-γ⁺ or TNF-α⁺ cells after stimulation with peptide pools covering spike proteins.

Supplementary Table 1. Summary of participant vaccination and infection history

Vaccination group	Gender	Age	Number of Previous COVID-19 Vaccinations	First dose	Second dose	Third dose	Time of the last vaccination	Vaccination Interval (months)	SARS-CoV-2 Infection	Infection Interval (months)
Ad5 _{XBB.1.5} (2×10 ¹⁰ VPs) +RBD _{XBB.1.5} - HR (40 µg) (n=50 participants)	Female	67	3	IV	IV	IV	Jan 2022	16	NO	/
	Female	58	3	IV	IV	IV	Jun 2022	11	NO	/
	Female	60	3	IV	IV	IV	Dec 2021	17	YES	6
	Male	34	3	IV	IV	IV	Mar 2022	15	YES	6
	Female	25	3	IV	IV	IV	May 2022	13	YES	6
	Female	41	3	IV	IV	IV	Dec 2021	18	NO	/
	Female	26	3	IV	IV	IV	Feb 2022	16	YES	6
	Female	26	3	IV	IV	IV	Oct 2021	19	YES	6
	Female	61	3	IV	IV	IV	Apr 2022	14	YES	6
	Female	28	2	IV	IV	/	Sep 2021	21	YES	6
	Female	32	2	IV	IV	/	Aug 2021	22	NO	/
	Female	25	3	IV	IV	IV	Jan 2022	17	YES	6
	Female	28	3	IV	IV	IV	Dec 2021	18	NO	/
	Female	27	3	IV	IV	IV	Jan 2022	17	YES	6
	Female	35	3	IV	IV	IV	Nov 2021	19	YES	6
	Female	61	3	IV	IV	IV	Jan 2022	17	YES	6
	Male	26	2	IV	IV	/	Feb 2021	28	NO	/
	Female	25	2	IV	IV	/	Jun 2021	24	YES	6
	Female	30	3	IV	IV	IV	Mar 2022	15	YES	6
	Female	27	3	SP	SP	SP	Jul 2021	23	YES	6
	Female	28	2	IV	IV	/	Jul 2021	23	YES	6

Female	23	2	IV	IV	/	Jul 2021	23	YES	16
Female	35	2	IV	IV	/	Feb 2022	16	YES	6
Female	26	3	IV	IV	IV	Jan 2022	17	YES	6
Female	24	2	IV	IV	/	Jun 2021	24	NO	/
Female	29	3	IV	IV	IV	Apr 2022	14	YES	6
Male	27	2	IV	IV	/	Jul 2021	23	YES	6
Female	27	3	IV	IV	IV	Nov 2021	19	YES	6
Female	24	2	IV	IV	/	Jun 2021	24	YES	6
Female	31	2	IV	IV	/	Jun 2021	24	YES	6
Male	26	2	IV	IV	/	May 2021	25	YES	6
Female	38	3	SP	SP	SP	Nov 2021	19	NO	/
Female	26	3	IV	IV	IV	Mar 2022	15	YES	9
Female	27	2	IV	IV	/	Jul 2021	23	YES	6
Male	28	3	IV	IV	IV	Dec 2021	18	NO	/
Female	23	3	SP	SP	SP	Jan 2022	17	NO	/
Female	26	2	IV	IV	/	Jul 2021	23	YES	6
Female	24	3	IV	IV	IV	Mar 2022	15	YES	6
Female	26	2	IV	IV	/	Jul 2021	22	YES	6
Female	29	3	IV	IV	IV	Jun 2022	12	YES	6
Female	30	3	IV	IV	IV	Feb 2022	16	NO	/
Female	23	3	IV	IV	IV	Oct 2021	20	YES	6
Female	39	3	IV	IV	IV	Dec 2021	18	YES	6
Female	26	3	IV	IV	IV	Feb 2022	16	YES	6
Female	38	3	IV	IV	IV	Oct 2021	19	YES	6
Female	28	2	IV	IV	/	Jul 2021	22	YES	6
Female	38	2	mRNA	mRNA	/	Jun 2021	24	NO	/
Female	34	2	IV	IV	/	Jun 2021	24	NO	/

	Female	30	2	IV	IV	/	Aug 2021	22	YES	6
	Male	38	2	mRNA	mRNA	/	May 2021	25	NO	/
Ad5 _{XBB.1.5} (1×10 ¹⁰ VPs) +RBD _{XBB.1.5} - HR (20 µg) (n=20 participants)	Female	28	2	IV	IV	/	Aug 2021	22	NO	/
	Male	29	2	IV	IV	/	Jul 2021	23	NO	/
	Female	29	2	IV	IV	/	Sep 2021	21	NO	/
	Male	26	2	IV	IV	/	Aug 2021	21	YES	6
	Female	25	3	IV	IV	IV	Oct 2021	19	NO	/
	Female	24	2	IV	IV	/	Aug 2021	22	YES	6
	Female	33	2	IV	IV	/	Aug 2021	21	YES	6
	Female	40	3	IV	IV	IV	Jan 2022	16	YES	6
	Male	59	3	IV	IV	IV	Dec 2021	17	NO	/
	Female	39	3	IV	IV	SP	Apr 2022	13	YES	6
	Female	46	3	IV	IV	IV	Mar 2022	15	NO	/
	Female	64	3	IV	IV	IV	Dec 2021	17	NO	/
	Male	26	2	IV	IV	/	Jul 2021	23	YES	6
	Female	26	3	SP	SP	SP	Sep 2021	21	YES	6
	Male	26	3	IV	IV	IV	Mar 2022	15	YES	6
	Male	27	3	IV	IV	IV	Dec 2021	17	YES	6
	Male	25	3	IV	IV	IV	Dec 2021	17	YES	6
	Male	59	3	IV	IV	IV	Dec 2021	17	YES	6
	Female	56	3	SP	SP	SP	Jul 2021	22	YES	6
	Female	33	3	IV	IV	IV	Jan 2022	17	YES	6