nature research

https://doi.org/10.1038/s41586-020-2608-y

Supplementary information

ChAdOx1 nCoV-19 vaccine prevents SARS-CoV-2 pneumonia in rhesus macaques

In the format provided by the authors and unedited

Figure S1. Gating strategy to determine percentage of CD3+ cells that express cytokines of interest.

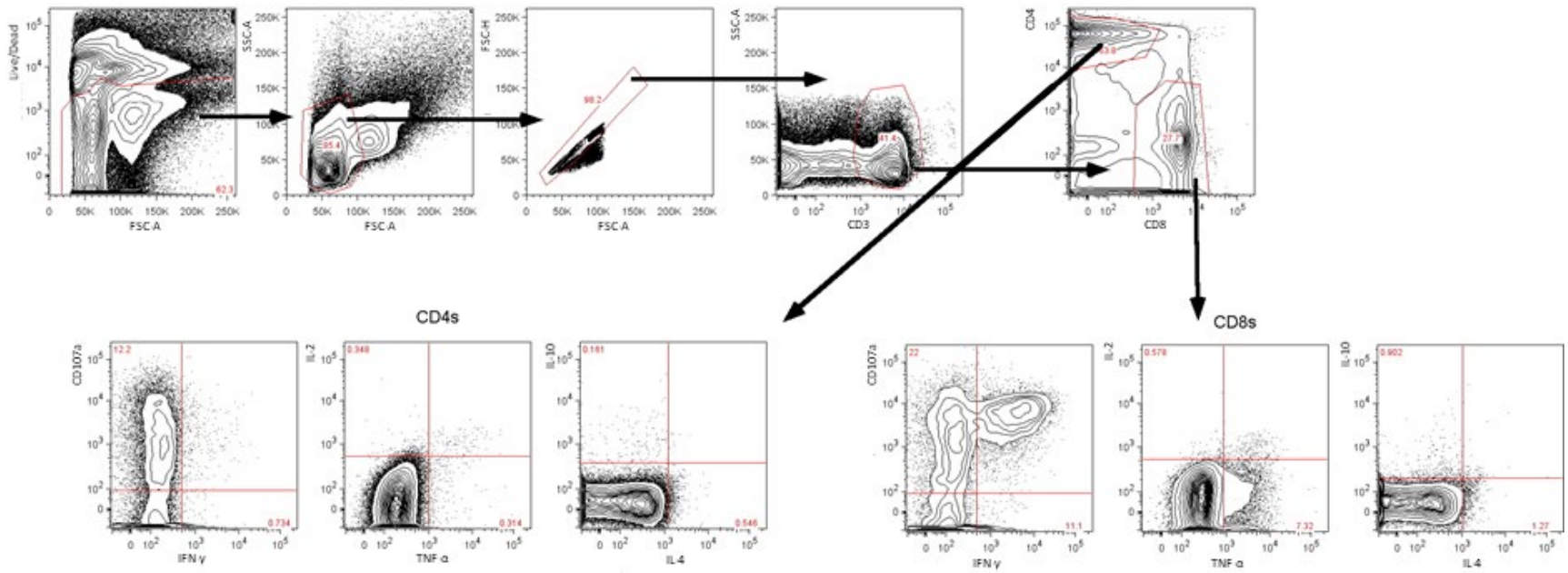

Table S1. Serum biochemistry Analytes Prime ChAdOx1 nCoV-19

Animal ID	Study Day	BUN (mg/dL)	Creatinine (mg/dL)	ALT (U/L)	ALP (U/L)	AST (U/L)	T Bilirubin (mg/dL)	Glucose (mg/dL)	Calcium (mg/dL)	T Protein (g/dL)	Albumin (g/dL)	Glob (g/dL)	Na+ (mmol/L)	K+ (mmol/L)	CL- (mmol/L)	tC02 (mmol/L)	Hem	Lip	Ict
1	D-28	18	<0.2	32	414	44	0.3	66	9.9	6.2	4.2	2.0	143	3.8	107	21	0	0	0
	D-14	20	0.4	33	464	46	0.3	70	10.0	6.3	4.5	1.8	146	3.5	108	21	0	0	0
	D0	16	0.4	36	494	45	0.3	71	10.2	5.9	4.4	1.5	140	3.8	107	21	0	0	0
	D1	9	0.3	32	421	37	0.4	77	9.7	5.7	4.2	1.6	145	4.1	110	27	0	0	0
	D3	17	0.5	35	420	57	0.3	73	10.1	6.4	4.6	1.8	145	3.6	111	18	2	0	0
	D5	18	0.6	36	388	51	0.4	62	10.3	6.1	4.5	1.6	141	4.4	115	27	0	0	0
	D7	17	0.6	34	431	44	0.4	66	10.1	6.1	4.5	1.6	145	3.6	110	27	0	0	0
2	D-28	21	0.8	32	731	38	0.4	72	10.8	6.5	4.7	1.8	146	4.5	108	25	0	0	0
	D-14	19	0.5	29	664	41	0.4	71	10.6	6.2	4.4	1.8	148	3.9	108	25	0	0	0
	D0	20	0.7	26	771	32	0.3	73	10.8	6.4	4.5	1.9	144	3.5	108	20	0	0	0
	D1	20	0.3	43	757	39	0.4	88	11.1	6.6	4.5	2.1	147	3.8	118	16	0	0	0
	D3	19	0.4	37	661	38	0.3	74	10.6	6.6	4.4	2.1	147	4.5	112	26	0	0	0
	D5	19	0.7	38	675	42	0.2	70	11.1	6.6	4.7	2.0	142	5.1	110	27	0	0	0
	D7	15	0.6	34	692	43	0.3	63	10.9	6.4	4.4	1.9	147	4.7	113	24	0	0	0
3	D-28	17	0.6	28	524	55	0.4	76	10.6	6.7	4.5	2.2	144	4.2	108	24	0	0	0
	D-14	20	0.3	29	601	46	0.5	64	10.6	6.2	4.4	1.8	144	3.8	107	25	0	0	0
	D0	16	0.7	28	711	45	0.4	75	10.7	6.3	4.5	1.7	142	3.9	108	22	0	0	0
	D1	15	0.6	36	655	46	0.6	88	10.5	6.3	4.5	1.9	143	4.2	108	24	0	0	0
	D3	17	0.3	30	570	40	0.5	78	10.5	6.7	4.5	2.2	145	4.1	111	25	0	0	0
	D5	13	0.5	28	590	40	0.5	76	10.2	6.4	4.6	1.8	141	4.4	108	28	0	0	0
	D7	12	0.7	29	592	46	0.6	71	10.7	6.6	4.7	1.9	145	3.9	109	26	0	0	0
4	D-28	15	0.5	26	448	38	0.3	73	10.7	6.5	4.7	1.8	145	4.2	108	24	0	0	0
	D-14	20	0.8	25	500	48	0.4	58	11.1	6.7	5.0	1.7	148	4.9	109	27	2	0	0
	D0	17	0.8	29	498	41	0.4	65	10.8	6.2	4.7	1.5	144	4.3	106	28	0	0	0
	D1	14	0.6	28	419	31	0.4	70	10.4	5.9	4.5	1.4	144	4.0	110	28	0	0	0
	D3	19	0.7	30	383	36	0.4	69	10.4	6.3	4.5	1.8	149	4.1	113	26	0	0	0
	D5	18	0.6	31	376	34	0.5	69	10.4	6.2	4.5	1.7	143	4.6	110	28	0	0	0
	D7	15	0.7	38	344	40	0.4	59	9.7	5.9	4.4	1.5	148	4.1	112	27	0	0	0
5	D-28	18	0.7	32	440	42	0.4	58	10.2	6.5	4.9	1.6	143	4.2	106	28	0	0	0
	D-14	14	0.6	27	494	43	0.4	57	10.6	6.1	4.8	1.4	144	4.2	110	25	0	0	0
	D0	14	0.8	24	604	41	0.3	52	10.8	6.2	4.9	1.3	144	4.1	107	26	0	0	0
	D1	13	0.6	36	508	46	0.3	72	10.6	5.8	4.5	1.3	145	4.1	111	28	0	0	0
	D3	13	0.7	43	458	49	0.5	64	10.4	6.3	4.8	1.6	147	4.5	112	27	0	0	0
	D5	14	0.7	39	452	40	0.5	67	10.4	6.5	4.9	1.6	142	4.6	106	29	0	0	0
	D7	12	0.7	32	428	43	0.4	60	10.4	6.4	4.9	1.5	145	3.8	107	29	0	0	0
6	D-28	17	0.9	98	232	42	0.3	79	10.0	6.2	4.7	1.5	142	3.8	109	25	0	0	0
	D-14	18	0.5	46	205	40	0.3	66	9.6	5.9	4.2	1.6	146	3.7	108	26	0	0	0
	D0	17	0.9	35	213	37	0.4	76	10.2	6.1	4.5	1.7	144	4.6	112	24	0	0	0
	D1	18	0.9	42	184	47	0.4	86	10.1	5.9	4.3	1.7	140	4.6	111	26	0	0	0
	D3	22	0.6	50	188	42	0.4	84	10.2	6.3	4.4	1.9	146	4.4	113	26	0	0	0
	D5	17	0.8	42	169	41	0.4	88	10.1	6.2	4.2	2.0	141	4.6	113	28	0	0	0
	D7	18	0.7	42	179	40	0.4	64	9.6	6.2	4.3	1.8	145	4.1	114	25	0	0	0

Table S2. Serum biochemistry Analytes Prime-boost ChAdOx1 nCoV-19

Animal ID	Study Day	BUN (mg/dL)	Creatinine (mg/dL)	ALT (U/L)	ALP (U/L)	AST (U/L)	T Bilirubin (mg/dL)	Glucose (mg/dL)	Calcium (mg/dL)	T Protein (g/dL)	Albumin (g/dL)	Glob (g/dL)	Na+ (mmol/L)	K+ (mmol/L)	CL- (mmol/L)	tC02 (mmol/L)	Hem	Lip	Ict
7	D-56	18	0.8	32	386	52	0.3	65	10.7	6.9	4.8	2.1	146	3.9	104	24	0	0	0
	D-42	16	0.7	35	471	41	0.4	57	10.5	6.6	4.8	1.8	150	4.1	110	26	0	0	0
	D-28	18	0.6	39	514	36	0.4	68	10.9	7.0	5.0	1.9	148	4.1	112	27	0	0	0
	D-14	19	0.8	30	508	40	0.3	66	10.5	6.6	4.9	1.7	149	3.9	114	26	0	0	0
	D0	14	0.5	36	522	40	0.4	77	10.4	6.5	4.9	1.6	145	4.3	112	26	0	0	0
	D1	11	0.5	37	498	35	0.4	91	10.3	6.6	4.9	1.7	143	4.4	119	25	0	0	0
	D3	15	0.7	42	485	35	0.4	83	10.3	6.7	5.0	1.7	144	4.6	114	28	0	0	0
	D5	16	0.4	36	456	34	0.4	83	10.2	6.6	4.9	1.7	141	4.5	114	26	0	0	0
	D7	12	0.7	33	524	39	0.4	72	10.6	6.4	4.8	1.6	147	4.1	112	20	0	0	0
8	D-56	21	<0.2	76	253	54	0.3	55	10.7	7.3	4.3	3.1	145	5.2	105	22	0	0	0
	D-42	17	0.6	57	277	42	0.4	53	9.6	7.4	4.3	3.1	147	4.7	109	24	0	0	0
	D-28	17	0.5	49	317	36	0.4	64	10.0	7.7	4.5	3.1	142	4.1	108	15	0	0	0
	D-14	21	0.5	51	238	40	0.4	69	10.9	7.8	4.4	3.4	146	4.7	110	14	0	0	0
	D0	16	0.6	37	335	36	0.4	60	10.7	8.5	4.7	3.8	141	4.7	111	16	0	0	0
	D1	12	0.6	38	325	32	0.4	78	10.3	8.5	4.7	3.9	141	4.8	113	20	0	0	0
	D3	15	0.7	41	345	33	0.4	67	10.1	8.6	4.7	4.0	140	4.5	111	17	0	0	0
	D5	17	0.7	38	321	35	0.4	75	10.1	8.5	4.7	3.8	142	4.8	111	16	0	0	0
	D7	10	0.5	33	414	43	0.4	42	10.2	7.6	4.3	3.3	144	4.2	110	21	0	0	0
9	D-56	21	0.8	48	716	47	0.3	71	11.3	6.3	4.4	1.8	146	4.4	106	27	0	0	0
	D-42	16	0.7	32	812	38	0.4	63	10.7	6.5	4.6	1.9	145	3.9	110	26	0	0	0
	D-28	18	0.8	43	882	41	0.4	70	11.4	6.7	4.9	1.8	147	4.2	109	26	0	0	0
	D-14	24	0.5	42	797	43	0.4	77	10.9	6.3	4.7	1.7	149	4.5	113	26	0	0	0
	D0	18	0.8	40	880	40	0.4	73	10.8	6.5	4.6	1.9	146	4.0	110	28	0	0	0
	D1	12	0.5	46	864	43	0.5	76	10.5	6.3	4.5	1.8	146	4.5	116	28	0	0	0
	D3	13	0.8	49	933	39	0.5	81	10.3	6.9	4.8	2.1	145	4.4	111	26	0	0	0
	D5	19	0.9	43	824	35	0.5	75	10.8	6.8	4.8	2.0	144	4.5	111	28	0	0	0
	D7	10	0.7	58	969	106	0.4	60	10.7	6.6	4.8	1.7	148	4.1	111	26	0	0	0
10	D-56	21	0.5	81	457	83	0.3	57	10.6	6.9	4.1	2.8	148	4.8	108	21	0	0	0
	D-42	15	0.4	75	418	61	0.4	64	10.4	6.5	4.0	2.5	145	4.4	110	24	2	0	0
	D-28	18	0.6	54	464	52	0.4	69	10.9	7.3	4.4	2.9	148	3.9	109	19	1	0	0
	D-14	22	0.4	56	342	55	0.4	69	10.2	6.7	4.0	2.6	149	4.1	110	24	0	0	0
	D0	17	0.7	66	365	56	0.4	69	10.1	6.8	4.1	2.7	143	4.3	112	25	0	0	0
	D1	16	0.6	67	361	50	0.4	78	10.3	6.9	4.0	2.8	145	4.8	115	24	0	0	0
	D3	15	0.5	69	367	49	0.4	77	10.4	7.1	4.2	2.9	146	4.6	115	28	0	0	0
	D5	21	0.3	64	347	53	0.4	72	9.9	7.1	4.2	2.9	143	4.8	113	24	0	0	0
	D7	14	0.8	63	418	57	0.2	56	10.1	6.5	3.9	2.7	146	4.2	111	24	0	0	0
11	D-56	16	0.5	17	256	33	0.3	60	10.6	6.6	4.3	2.3	146	4.0	108	31	0	0	0
	D-42	12	0.6	18	359	32	0.5	65	10.8	6.7	4.7	1.9	144	3.5	110	29	0	0	0
	D-28	12	0.7	28	507	32	0.3	79	11.1	6.8	4.8	2.0	144	3.6	108	27	0	0	0
	D-14	15	0.7	24	533	30	0.5	63	10.8	6.6	4.6	1.9	145	3.6	110	28	0	0	0
	D0	11	0.5	19	541	31	0.5	73	10.6	6.4	4.6	1.8	142	3.7	112	28	0	0	0
	D1	8	0.5	28	529	34	0.5	81	10.4	6.6	4.7	1.8	142	4.2	114	29	0	0	0
	D3	9	0.6	33	487	26	0.5	84	10.7	6.7	4.8	1.9	143	4.2	118	28	0	0	0
	D5	9	0.4	27	427	27	0.4	87	10.8	6.7	4.5	2.1	142	4.2	112	29	0	0	0
	D7	8	0.6	28	475	105	0.4	78	10.6	6.6	4.5	2.1	146	4.0	110	27	0	0	0
12	D-56	29	0.9	83	432	83	0.4	67	10.2	6.3	4.5	1.7	140	4.1	106	13	0	0	0
	D-42	26	0.7	78	454	60	0.5	68	10.4	6.1	4.4	1.7	145	5.2	110	22	2	0	0
	D-28	23	0.8	62	438	47	0.6	77	10.5	6.8	4.9	2.0	141	3.8	105	13	0	0	0
	D-14	27	1.1	92	425	68	0.6	64	10.3	6.6	4.8	1.8	146	4.1	114	21	0	0	0
	D0	26	0.6	93	401	52	0.5	69	10.4	6.5	4.7	1.8	142	4.0	113	20	0	0	0
	D1	21	0.7	98	396	68	0.4	87	10.1	6.4	4.6	1.8	142	4.6	111	16	0	0	0
	D3	21	0.7	91	337	46	0.5	66	9.8	6.6	4.6	2.0	142	4.2	112	19	0	0	0
	D5	25	0.7	78	336	41	0.5	60	10.1	6.6	4.6	2.0	139	4.3	111	19	0	0	0
	D7	15	0.7	70	400	42	0.4	63	10.3	6.5	4.6	1.9	143	4.2	112	19	0	0	0

Table S3. Serum biochemistry Analytes ChAdOx1 GFP

Animal ID	Study Day	BUN (mg/dL)	Creatinine (mg/dL)	ALT (U/L)	ALP (U/L)	AST (U/L)	T Bilirubin (mg/dL)	Glucose (mg/dL)	Calcium (mg/dL)	T Protein (g/dL)	Albumin (g/dL)	Glob (g/dL)	Na+ (mmol/L)	K+ (mmol/L)	CL- (mmol/L)	tC02 (mmol/L)	Hem	Lip	Ict
13	D-28	13	0.6	48	563	45	0.4	75	10.4	6.4	4.1	2.3	145	3.8	109	23	2	0	0
	D-14	16	0.3	67	609	44	0.4	71	10.1	6.7	4.4	2.2	145	3.7	109	23	0	0	0
	D0	15	0.6	49	753	40	0.4	88	10.1	6.6	4.5	2.1	146	4.1	111	14	0	0	0
	D1	12	0.7	50	651	39	0.4	77	10.2	6.4	4.3	2.1	146	4.2	112	18	0	0	0
	D3	15	0.7	52	590	39	0.4	84	10.1	6.8	4.4	2.4	148	4.1	110	22	0	0	0
	D5	12	0.8	46	565	34	0.4	80	10.1	6.3	4.4	2.0	147	4.2	112	25	0	0	0
	D7	11	0.8	47	671	38	0.4	67	10.0	6.3	4.4	1.9	143	4.1	111	29	0	0	0
14	D-29	20	0.7	30	580	38	0.4	66	11.5	6.6	5.0	1.6	147	4.2	107	25	0	0	0
	D-15	16	0.5	27	585	39	0.5	59	11.3	6.6	5.0	1.6	148	4.5	109	23	1	0	0
	D0	15	0.8	29	639	27	0.4	72	11.0	6.6	5.2	1.4	144	4.0	111	25	0	0	0
	D1	17	0.8	22	548	29	0.5	82	10.8	6.2	4.9	1.3	142	3.9	110	25	0	0	0
	D3	13	0.8	41	506	51	0.4	75	10.4	6.6	4.9	1.7	149	4.5	114	26	0	0	0
	D5	15	0.7	33	417	32	0.4	68	10.6	6.4	4.8	1.6	146	4.1	112	27	0	0	0
	D7	14	0.8	32	425	30	0.4	56	10.2	6.2	4.6	1.6	144	3.7	112	25	0	0	0
15	D-29	26	0.9	35	454	51	0.3	60	11.1	6.3	4.4	1.9	153	3.9	108	24	0	0	0
	D-15	21	0.7	32	578	42	0.5	87	10.8	6.7	4.7	2.1	147	3.6	109	19	0	0	0
	D0	20	1.0	33	647	35	0.4	82	10.7	6.6	4.7	1.8	141	4.0	111	21	0	0	0
	D1	16	0.6	35	546	39	0.5	99	10.6	5.9	4.3	1.6	149	3.9	116	26	0	0	0
	D3	19	0.9	41	510	42	0.5	90	10.4	6.4	4.4	1.9	148	3.9	113	21	0	0	0
	D5	18	0.8	31	417	30	0.5	79	10.1	6.1	4.3	1.7	144	4.0	112	26	0	0	0
	D7	19	0.6	34	464	35	0.5	72	9.9	6.1	4.4	1.7	144	4.1	110	26	0	0	0
16	D-56	18	0.6	26	567	44	0.2	74	11.1	6.8	4.5	2.2	150	4.7	105	24	2	0	0
	D-42	11	0.6	18	720	39	0.4	67	10.9	6.9	4.8	2.1	150	5.1	110	27	0	0	0
	D-28	14	0.7	22	695	36	0.3	81	11.0	6.7	4.8	1.9	147	4.1	110	25	0	0	0
	D-14	17	0.3	26	606	32	0.4	83	10.4	6.4	4.7	1.7	146	3.8	111	25	0	0	0
	D0	14	0.4	21	730	37	0.4	83	10.4	6.8	4.7	2.0	146	4.2	110	22	0	0	0
	D1	14	0.6	28	662	32	0.4	82	10.2	6.4	4.5	1.9	147	4.3	113	25	0	0	0
	D3	15	0.6	32	739	33	0.3	85	10.2	6.6	4.9	1.8	146	4.5	116	25	0	0	0
	D5	12	0.2	28	605	27	0.4	82	10.5	6.7	4.7	2.0	147	4.3	110	25	0	0	0
	D7	10	0.7	29	636	38	0.3	73	10.3	6.5	4.9	1.7	142	4.8	109	28	0	0	0
17	D-28	21	0.8	26	472	28	0.2	73	10.9	6.4	4.8	1.7	147	4.3	107	28	0	0	0
	D-14	22	0.8	28	517	25	0.4	83	10.8	6.6	4.9	1.7	145	4.4	108	26	0	0	0
	D0	16	0.7	26	610	34	0.4	69	10.6	6.5	4.9	1.6	146	5.0	111	26	2	0	0
	D1	15	0.8	36	582	37	0.4	87	10.3	6.4	4.8	1.6	147	4.1	114	25	0	0	0
	D3	14	1.1	49	529	36	0.5	77	10.0	6.5	4.8	1.7	145	4.5	113	28	0	0	0
	D5	15	0.7	34	508	28	0.4	79	10.2	6.7	4.9	1.8	144	4.5	108	25	0	0	0
	D7	13	1.0	30	618	29	0.4	76	10.6	6.8	5.0	1.8	149	4.8	113	26	0	0	0
18	D-28	19	0.5	20	455	24	0.4	76	11.0	6.4	4.7	1.8	147	4.0	108	28	0	0	0
	D-14	24	0.5	24	453	23	0.4	78	10.7	6.4	4.7	1.7	147	4.0	113	27	0	0	0
	D0	20	0.6	21	512	24	0.4	73	10.8	6.4	4.6	1.8	147	4.1	110	25	0	0	0
	D1	17	0.6	26	463	42	0.4	96	10.5	6.0	4.4	1.6	146	4.7	113	27	1	0	0
	D3	18	0.7	46	407	36	0.4	89	10.4	6.4	4.5	1.9	146	4.2	110	26	1	0	0
	D5	14	0.6	35	377	25	0.4	90	9.5	6.4	4.7	1.8	145	3.9	111	25	0	0	0
	D7	14	0.6	28	484	27	0.4	88	10.8	6.5	4.6	1.9	147	4.7	111	27	0	0	0