

**Table S1.** Antigen-specific antibody titers from mice immunized with co-administered, combination or *Ov*-FUS-1 and the adjuvant Advax-CpG. Serum was collected from immunized mice at the time of recovery following one-, two- and three-week challenge periods. IgG1 and IgG2ab specific for either *Ov*-103 or *Ov*-RAL-2 were measured in the serum using ELISA. Data shown are mean titers  $\pm$  standard deviations. \*  $p$  value  $\leq$  0.05 when compared to Advax-CpG-only controls at the same time point.

Weeks post-challenge	Anti- <i>Ov</i> -103			
	IgG1			
	Control	Co-administered	Combination	<i>Ov</i> -FUS-1
1 Week	7 $\pm$ 18	61,757 $\pm$ 91,652 *	4395 $\pm$ 7822 *	49,911 $\pm$ 41,184 *
2 Week	3 $\pm$ 5	58,848 $\pm$ 116,527 *	32,058 $\pm$ 134,823 *	41,584 $\pm$ 51,714 *
3 Week	34 $\pm$ 64	49,441 $\pm$ 50,380 *	25,949 $\pm$ 70,617 *	171,425 $\pm$ 438,341 *
	IgG2ab			
	Control	Co-administered	Combination	<i>Ov</i> -FUS-1
	1 Week	1 $\pm$ 1	14,627 $\pm$ 21,521 *	1475 $\pm$ 3196 *
2 Week	6 $\pm$ 23	7,347 $\pm$ 16,382 *	7200 $\pm$ 23,080 *	1251 $\pm$ 1725 *
3 Week	1,305 $\pm$ 2,382	21,024 $\pm$ 36,046 *	3378 $\pm$ 6562 *	7275 $\pm$ 12,906*
	Anti- <i>Ov</i> -RAL-2			
	IgG1			
	Control	Co-administered	Combination	<i>Ov</i> -FUS-1
1 Week	171 $\pm$ 287	255,598 $\pm$ 243,842 *	165,257 $\pm$ 240,264 *	510,494 $\pm$ 398,289 *
2 Week	329 $\pm$ 795	254,904 $\pm$ 195,507 *	100,479 $\pm$ 155,982 *	364,215 $\pm$ 319,403 *
3 Week	809 $\pm$ 1,226	437,048 $\pm$ 443,877 *	86,816 $\pm$ 97,463 *	342,764 $\pm$ 263,447 *
	IgG2ab			
	Control	Co-administered	Combination	<i>Ov</i> -FUS-1
	1 Week	28 $\pm$ 49	20,956 $\pm$ 19,661 *	9884 $\pm$ 11,713 *
2 Week	53 $\pm$ 107	107,379 $\pm$ 188,258 *	33,664 $\pm$ 81,982 *	52,093 $\pm$ 102,644 *
3 Week	116 $\pm$ 259	4,862,067 $\pm$ 16,569,576 *	12,375 $\pm$ 13,917 *	96,311 $\pm$ 169,425 *

**Table S2. Splenic cytokine responses from mice immunized with *Ov*-FUS-1 and either Advax-CpG, alum or Alt4 as the adjuvant.** Spleens were collected from mice at the early and late recovery time points and restimulated with either *Ov*-103 (top) or *Ov*-RAL-2 (bottom) antigens. Supernatants from restimulated spleens were analyzed using a multiplex Luminex assay. Data are shown as mean concentrations (pg/mL)  $\pm$  standard deviations. Fold differences depicted in red below values from control and immune mice for each cytokine at each time point. \*  $p$  value  $\leq$  0.05 when compared to appropriate adjuvant-only controls at the same time point.

	<i>Ov</i> -103	IFN- $\gamma$	IL-2	IL-4	IL-5	IL-6	IL-10	IL-13	IL-17A	IL-17F	IL-33
early	Advax-CpG Control	498 $\pm$ 1036	103 $\pm$ 70	108 $\pm$ 136	43 $\pm$ 37	209 $\pm$ 256	28 $\pm$ 2	198 $\pm$ 75	161 $\pm$ 75	77 $\pm$ 87	111 $\pm$ 30
	Advax-CpG Immune	4840 $\pm$ 1852	89 $\pm$ 39	425 $\pm$ 160	494 $\pm$ 473	1381 $\pm$ 1787	188 $\pm$ 142	313 $\pm$ 173	744 $\pm$ 791	352 $\pm$ 363	87 $\pm$ 9
		10*	1	4	12*	7	7*	2*	5	5	1
	Alum Control	1473 $\pm$ 2078	272 $\pm$ 246	136 $\pm$ 102	75 $\pm$ 53	469 $\pm$ 469	51 $\pm$ 25	130 $\pm$ 101	385 $\pm$ 281	200 $\pm$ 192	394 $\pm$ 85
	Alum Immune	1178 $\pm$ 900	313 $\pm$ 276	871 $\pm$ 521	792 $\pm$ 736	5513 $\pm$ 3750	301 $\pm$ 374	676 $\pm$ 827	464 $\pm$ 438	186 $\pm$ 141	464 $\pm$ 133
		1	1	6*	11*	12*	6*	5*	1*	1*	1
	Alt4 Control	1416 $\pm$ 2051	173 $\pm$ 140	296 $\pm$ 281	112 $\pm$ 81	497 $\pm$ 507	33 $\pm$ 12	164 $\pm$ 89	195 $\pm$ 201	111 $\pm$ 207	178 $\pm$ 175
	Alt4 Immune	1737 $\pm$ 2359	149 $\pm$ 127	355 $\pm$ 208	876 $\pm$ 1319	2570 $\pm$ 2615	387 $\pm$ 431	836 $\pm$ 1047	565 $\pm$ 823	284 $\pm$ 597	415 $\pm$ 246
		1	1	1	8*	5*	12*	5	3	3	2
	late	Advax-CpG Control	364 $\pm$ 638	121 $\pm$ 78	95 $\pm$ 120	44 $\pm$ 82	203 $\pm$ 357	ND	48 $\pm$ 20	ND	ND
Advax-CpG Immune		798 $\pm$ 833	198 $\pm$ 103	226 $\pm$ 178	64 $\pm$ 50	489 $\pm$ 634	33 $\pm$ 12	89 $\pm$ 78	53 $\pm$ 9	67 $\pm$ 15	ND
		2	2	2	1	2	x	2	x	x	x
Alum Control		711 $\pm$ 1141	155 $\pm$ 87	282 $\pm$ 450	94 $\pm$ 186	1845 $\pm$ 3620	253 $\pm$ 254	557 $\pm$ 620	71 $\pm$ 47	ND	ND
Alum Immune		1360 $\pm$ 1641	189 $\pm$ 64	383 $\pm$ 256	298 $\pm$ 295	793 $\pm$ 533	68 $\pm$ 93	283 $\pm$ 592	60 $\pm$ 65	58 $\pm$ 55	ND
		2	1	1	3*	-2	-4*	-2	1	x	x
early	<i>Ov</i> -RAL-2	IFN- $\gamma$	IL-2	IL-4	IL-5	IL-6	IL-10	IL-13	IL-17A	IL-17F	IL-33
	Advax-CpG Control	594 $\pm$ 1135	316 $\pm$ 349	253 $\pm$ 369	85 $\pm$ 114	480 $\pm$ 636	47 $\pm$ 19	252 $\pm$ 205	227 $\pm$ 157	104 $\pm$ 34	314 $\pm$ 120
	Advax-CpG Immune	3682 $\pm$ 2999	393 $\pm$ 413	628 $\pm$ 559	428 $\pm$ 456	1853 $\pm$ 1536	181 $\pm$ 168	379 $\pm$ 362	390 $\pm$ 222	191 $\pm$ 147	393 $\pm$ 152
		6	1	2	5	4	4*	2	2	2	1
	Alum Control	457 $\pm$ 525	161 $\pm$ 124	78 $\pm$ 55	39 $\pm$ 26	125 $\pm$ 100	19 $\pm$ 7	57 $\pm$ 24	101 $\pm$ 48	24 $\pm$ 25	ND
	Alum Immune	537 $\pm$ 318	316 $\pm$ 208	457 $\pm$ 270	336 $\pm$ 330	2804 $\pm$ 2872	113 $\pm$ 131	215 $\pm$ 282	215 $\pm$ 175	57 $\pm$ 36	137 $\pm$ 43
		1	2	6*	9*	23*	6*	4*	2	2*	2
	Alt4 Control	1670 $\pm$ 2882	532 $\pm$ 514	695 $\pm$ 853	256 $\pm$ 283	1339 $\pm$ 1442	63 $\pm$ 59	485 $\pm$ 471	319 $\pm$ 157	119 $\pm$ 117	310 $\pm$ 197
	Alt4 Immune	1656 $\pm$ 1023	423 $\pm$ 187	931 $\pm$ 643	864 $\pm$ 546	5740 $\pm$ 3113	419 $\pm$ 235	756 $\pm$ 269	486 $\pm$ 278	148 $\pm$ 125	241 $\pm$ 54
		1	1	1	3	4*	7	2	2	1	1

late	Advax-CpG Control	322 ± 405	134 ± 102	121 ± 180	32 ± 36	255 ± 639	ND	39 ± 14	ND	ND	ND
	Advax-CpG Immune	1132 ± 1145	253 ± 213	373 ± 408	83 ± 76	537 ± 758	36 ± 16	145 ± 101	41 ± 12	ND	ND
		4	2	3	3	2	x	4	x	x	x
	Alum Control	372 ± 389	181 ± 95	245 ± 236	56 ± 72	1492 ± 2949	102 ± 45	285 ± 297	56 ± 8	ND	ND
	Alum Immune	851 ± 884	267 ± 182	373 ± 290	233 ± 271	615 ± 467	79 ± 48	279 ± 512	38 ± 20	ND	ND
	2	1	2	4*	-2	1	1	1	x	x	

**Table S3.** Antigen-specific antibody titers from mice immunized with *Ov*-FUS-1 and either Advax-CpG, alum or AIT4 as the adjuvant. Serum was collected from immunized mice at the time of recovery following early and late recovery time points. IgG1 and IgG2ab specific for either *Ov*-103, *Ov*-RAL-2 or *Ov*-FUS-1 were measured in the serum using ELISA. Data shown are mean titers ± standard deviations. \*  $p$  value ≤ 0.05 when compared to appropriate adjuvant-only controls at the at the same time point.

Anti- <i>Ov</i> -103									
IgG1									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	63,352	±	70,244 *	764,012	±	270,577 *	1,054,163	±	466,021 *
Immune Late	65,094	±	61,280 *	746,343	±	226,494 *			
IgG2ab									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	5378	±	2856*	3018	±	1240 *	22,887	±	22,263 *
Immune Late	4460	±	5826*	3045	±	1895 *			
Anti- <i>Ov</i> -RAL-2									
IgG1									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	273,559	±	244,832 *	2,146,736	±	450,007 *	3,230,477	±	4,199,062 *
Immune Late	66,364	±	83,142 *	1,342,119	±	388,793 *			
IgG2ab									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	33,256	±	23,829 *	13,288	±	10,318 *	21,962	±	20,970 *
Immune Late	16,845	±	13,479 *	9358	±	7725 *			
Anti- <i>Ov</i> -FUS-1									
IgG1									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	425,142	±	316,201 *	3,596,149	±	780,522 *	4,630,715	±	2,070,432 *
Immune Late	126,603	±	98,256 *	2,612,567	±	570,184 *			
IgG2ab									
	Advax-CpG			Alum			AIT4		
Control	0	±	0	0	±	0	0	±	0
Immune Early	48,203	±	34,627 *	22,881	±	12,085 *	65,635	±	46,502 *
Immune Late	27,609	±	17,860 *	15,634	±	7932 *			

**Table S4.** Antigen-specific antibody titers from NHPs immunized with *Ov*-FUS-1 and either Advax-CpG, alum or AIT4 as the adjuvant. Serum was collected from immunized NHPs at multiple time points throughout the duration of the experiment as indicated. Data shown are mean IgG titers ± standard deviations. \*  $p$  value ≤ 0.05 when compared to controls at the at the same time point.

Days post-prime-immunization	Anti-Ov-103											
	PBS Control			Advax-CpG			Alum			AIT4		
13	18,527	±	158	316,650	±	477,308	226,465	±	3738	444,894	±	376,811
27	9298	±	9176	174,389	±	99,880	228,895	±	4606	<b>2,658,311</b>	±	<b>2,102,120 *</b>
43	13,001	±	7832	<b>1,545,434</b>	±	<b>1,740,825 *</b>	655,001	±	367,025	<b>1,749,459</b>	±	<b>1,482,943 *</b>
57	8775	±	8271	663,994	±	381,013	440,857	±	367,487	879,232	±	15,320
71	12,983	±	6788	<b>1,756,574</b>	±	<b>1,519,522 *</b>	663,577	±	380,493	<b>2,595,039</b>	±	<b>1,486,527 *</b>
85	4000	±	0	217,496	±	9415	208,891	±	9331	219,453	±	7048
98	4000	±	0	424,840	±	353,688	215,249	±	4786	627,131	±	355,038
210	4000	±	0	53,860	±	5379	40,803	±	21,655	53,705	±	6813

  

Days post-prime-immunization	Anti-Ov-RAL-2											
	PBS Control			Advax-CpG			Alum			AIT4		
13	32,765	±	27,222	442,484	±	381,308	167,708	±	93,083	335,637	±	479,695
27	30,545	±	24,199	226,186	±	5973	383,884	±	422,704	103,075	±	113,892
43	15,595	±	239	<b>10,153,475</b>	±	<b>5,883,752 *</b>	3,471,588	±	96,379	3,443,499	±	93,977
57	16,221	±	288	2,639,646	±	1,510,302	2,606,750	±	1,461,383	2,565,914	±	1,453,102
71	30,426	±	23,051	<b>13,986,030</b>	±	<b>203,418 *</b>	<b>6,886,217</b>	±	<b>5,819,676 *</b>	<b>6,897,297</b>	±	<b>5,774,291 *</b>
85	4000	±	0	857,032	±	13,250	638,741	±	357,607	225,878	±	1864
98	4000	±	0	844,876	±	976	222,306	±	6816	218,367	±	1029
210	7721	±	6445	428,350	±	366,134	107,073	±	84,755	57,488	±	1198

**Table S5.** Antigen-specific antibody titers compared between serum and diffusion chamber fluid from NHPs immunized with *Ov*-FUS-1 and either Advax-CpG, alum or AIT4 as the adjuvant. Antigen-specific IgG titers were measured by ELISA in the serum and diffusion chamber fluid at the time of diffusion chamber recovery (day 98 post-prime-immunization). Titers were measured in diffusion chambers without *O. volvulus* L3 (media only) or with *O. volvulus* L3 (media + L3). Total IgG specific for either *Ov*-103 or *Ov*-RAL-2 were measured in the serum using ELISA. Data shown are mean IgG titers  $\pm$  standard deviations.

Sample type	<i>Ov</i> -103								
	Advax-CpG			Alum			AIT4		
Serum	424,840	$\pm$	353,688	215,249	$\pm$	4786	627,131	$\pm$	355,038
Diffusion chamber - media only	106,870	$\pm$	62,142	103,180	$\pm$	67,069	67,375	$\pm$	50,060
Diffusion chamber - media + L3	94,422	$\pm$	58,367	70,505	$\pm$	57,786	55,469	$\pm$	21,257
Sample type	<i>Ov</i> -RAL-2								
	Advax-CpG			Alum			AIT4		
Serum	222,306	$\pm$	6816	218,367	$\pm$	1029	844,876	$\pm$	976
Diffusion chamber - media only	688,209	$\pm$	363,412	275,427	$\pm$	165,271	313,433	$\pm$	591,216
Diffusion chamber - media + L3	492,139	$\pm$	153,198	265,527	$\pm$	193,707	144,050	$\pm$	69,331

