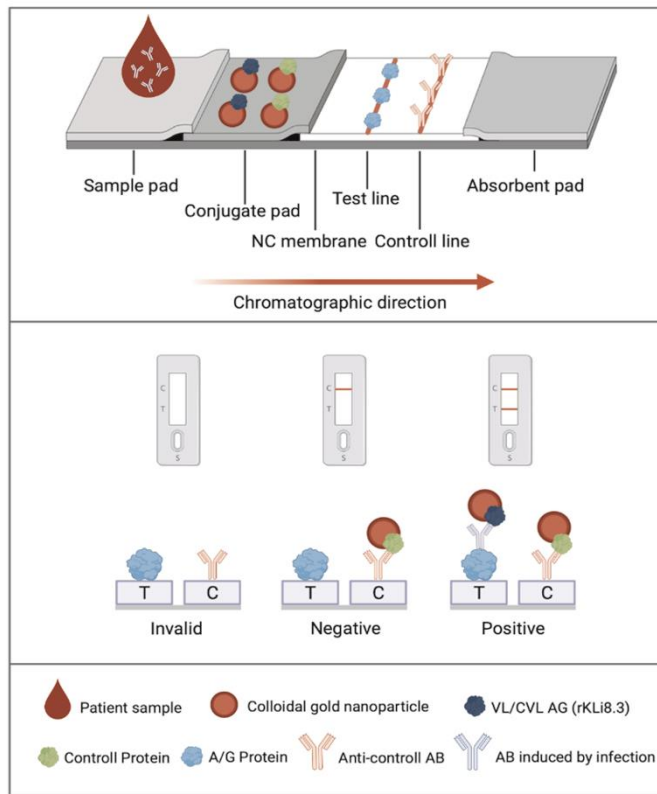


**A****B****C**

**Supplemental Figure S1.** Lateral flow test (LFT) for detection of VL specific antibodies. **(A)** Schematic assembly of LFT device. **(B)** Example of negative and **(C)** positive VL antibody reaction.

**Supplemental Table S1.** Kinesin AA diversity of different *Leishmania* strains from Sudan compared with published sequences of rK39, KE16 and rKLO8

	P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39			
KE16	C	L	E	Q	R	L	R	D	S	E	E	R	A	A	E	L	K	R	K	L	E	A	T	A	A	A	K	S	S	A	E	Q	D	R	E	N	T	R	A	T			
				Q		E		A	H								M	A	Q		S																					A	
rK39	C	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	A	S	Q	L	E	A	T	A	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
						E		A												S	T		S																				A
rKLO8	S	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	A	S	Q	L	E	A	T	A	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
						L	E	L		G										S	T		S																				A
Sudanese <i>L. archibaldi</i>	S	L	E	Q	R	L	R	D	S	E	E	R	A	A	E	L	K	S	E	L	E	A	T	A	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
						L	E		A								A	A	Q		S	T																					A
Sudanese <i>L. donovani</i>	S	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	K	S	E	L	E	S	T	T	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
						L	E		A								A	A	Q		A	A																					A
Sudanese <i>L. infantum</i>	S	L	E	Q	R	L	R	D	S	E	E	R	A	A	E	L	K	S	E	L	E	S	T	T	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
						L	E		A								A	A	Q		A	A																					

P, Pre-Repeat Region.  
Boxes indicate substitution of charged for uncharged AA.

**Supplemental Table S2.** Kinesin AA diversity of recombinant rKLi8.3, rKLa8.3 and rKLa8.3 antigens

	P	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39			
rKLi8.3	C	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	A	S	Q	L	E	A	T	A	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
		L				E					S		T							S							S													A			
rKLa8.3	C	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	K	S	E	L	E	S	T	T	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
		L				E					A					A	A	Q		A		A					S														A		
rKLa8.3	C	L	E	Q	Q	L	R	D	S	E	E	R	A	A	E	L	A	S	Q	L	E	S	T	T	A	A	K	M	S	A	E	Q	D	R	E	N	T	R	A	T			
		L				E					A									A		A					S															A	

P, Pre-Repeat Region.

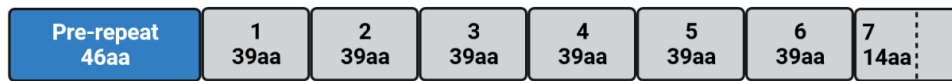
rKLi8.3: *L. infantum* with 8.3 tandem repeats.

rKLa8.3: *L. donovani* with 8.3 tandem repeats.

rKLa8.3: *L. archibaldi* with 8.3 tandem repeats.

Boxes indicate substitution of charged for uncharged AA.

A



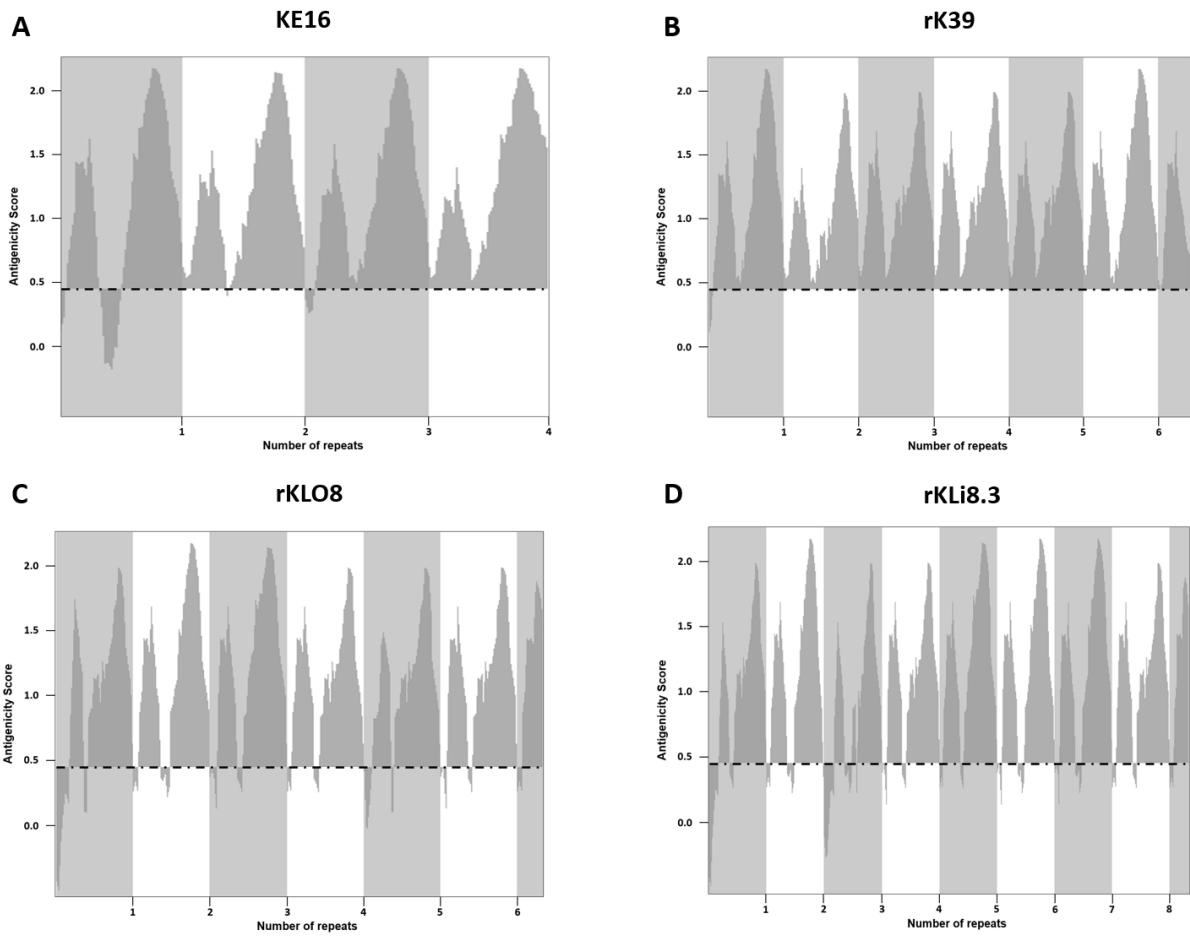
B



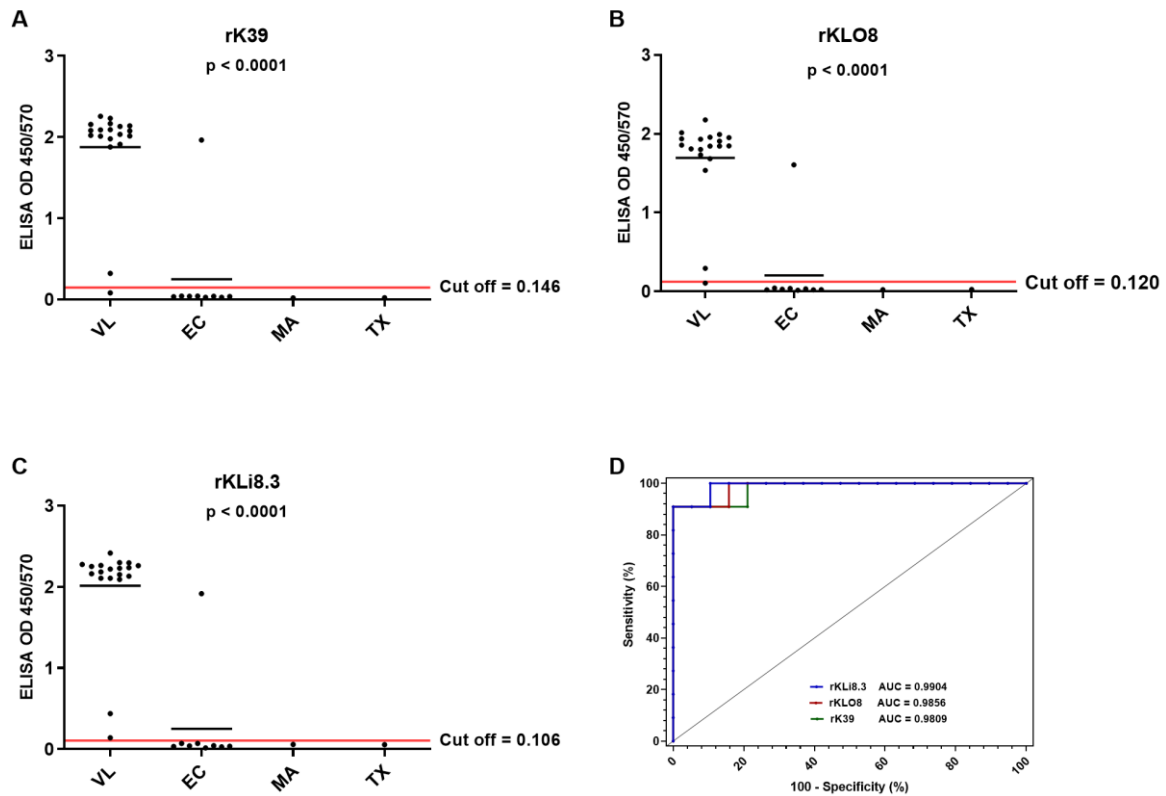
C



**Supplemental Figure S2.** Schematic representations of kinesin antigens with increasing numbers of tandem repeats. (A) rKLi6.3 (B) rKLi7.3 (C) rKLi8.3. The numbered gray boxes represents the complete (39 amino acids) or the partial (14 amino acids) repetitive motif units of kinesin. Pre-repeat region are shown in Blue.



**Supplemental Figure S3.** Linear prediction of B-cell epitopes. The prediction was performed with BepiPred 1.0, with a cut-off = 0.48. Plots of antigenicity values were created in the programming environment R v. 3.5.2 using the package ggplot2 v. 3.3.2. Gray and white boxes represent tandem repeat motifs of 39 AA. The area under curve is for **(A)** 117.6, **(B)** 184.5, **(C)** 172.3 and **(D)** 222.2.



**Supplemental Figure S4.** Antibody responses of VL sera from India. (A) rK39-, (B) rKLO8-, and (C) rKLi8.3- based ELISA. VL [n = 19], endemic controls (EC) [n = 11], toxoplasmosis (TX) [n = 1] and malaria (MA) [n = 1]. (D) ROC curves for rK39-, rKLO8- and rKLi8.3-ELISA.

**Supplemental Table S3.** VL-diagnostic performance of rK39, rKLO8 and rKLi8.3 ELISA in India

ELISA Test	Cut-off	AUC	TP	FN	TN	FP	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	DEV (%)
rK39	0.146	0.9809	18	1	10	1	94.73	90.91	94.73	90.91	93.33
rKLO8	0.120	0.9856	18	1	10	1	94.73	90.91	94.73	90.91	93.33
rKLi8.3	0.106	0.9904	19	0	10	1	100	90.91	95	100	96.66

AUC, area under curve; TP, true positive; FN, false negative; TN, true negative; FP, false positive; PPV, positive predictive value; NPV, negative predictive value; DEV, diagnostic efficiency value.