

Supp. File 1: Location names and coordinates for samples examined

Supplementary table: Details of the field sites where schistosome miracidium were collected from school children stool and urine samples.

Schistosome species	Location	Country	Village / School	Latitude	Longitude	Collection date
<i>Schistosoma mansoni</i>	East Africa	Tanzania	Nyamazugo	-2.55731	32.54214	2012
			Sekagi	-2.39005	33.09819	2012
			Kigongo	-2.70955	32.89879	2012
			Kabita	-2.31845	33.64372	2012
			Katunguru	-2.50537937	32.67316932	2012
			Luchelele	-2.61916	32.8733	2012
			Nyandago	-2.69974	31.85495	2012
	West Africa	Senegal	Nder	16.259306	-15.883925	2007/2008
			Temeye	16.333483	-15.766183	2007
		Niger	Namarigoungou	14.3554	1.2627	2006/2007
			Diambala	14.31376	1.299648	2007
		Cameroon	Bessoum	9.13562	13.71521	2007
		<i>Schistosoma haematobium</i>	East Africa	Tanzania (Zanzibar archipelago)	Chambani (Pemba)	-5.333333
Ngwachani (Pemba)	-5.316667				39.75	2011
Chanjamjamiri (Pemba)	-5.2991833333				39.7607333333	2011
Michakaini (Pemba)	-5.233333				39.766667	2011
Uwandani (Pemba)	-6.3				39.266667	2011
Pujini (Pemba)	-5.3				39.8	2011
Shumba Viamboni (Pemba)	-5.0028833333				39.7719333333	2011

			Kizimbani (Pemba)	-5.116667	39.733333	2011
			Mzambarauni (Pemba)	-5.083333	39.766667	2011
			Konde B (Pemba)	-4.95	39.75	2011
			Piki (Pemba)	-5.116667	39.766667	2011
			Wingwi (Pemba)	-5	39.833333	2011
			Ng'ombeni (Pemba)	-5.3521833333	39.6473666667	2011
			Vitongoji (Pemba)	-5.233333	39.833333	2011
			Bububu (Unguja)	-5.933333	39.233333	2011
			Chaani (Unguja)	-5.95	39.3	2011
			Fujoni (Unguja)	-6	39.2	2011
			Regeza Mwendo (Unguja)	-6.14946667	39.25723333	2011
			Kinyasini (Unguja)	-5.733333	39.3	2011
			Mahonda (Unguja)	-6	39.25	2011
			Kitope (Unguja)	-6.016667	39.266667	2011
			Mchangani (Unguja)	-6.05	39.316667	2011
			Mwera (Unguja)	-6.15	39.283333	2011
			Kiboje	-6.083333	39.3	2011

			<i>(Unguja)</i>			
			Kombeni <i>(Unguja)</i>	-6.25	39.266667	2011
			Mwenge <i>(Unguja)</i>	-6.05865	39.25426667	2011
	West Africa	Niger	Daikaina Bell	14.1875213979	1.4863100513	2013
			Dokimana	13.0279	2.3301	2013
			Karma	13.671667	1.815	2013
			Lata	13.766667	1.666667	2013
			Libore Tonko	13.4034	2.1919	2013
			Namarde Goungou	13.6182	1.8801	2013
			Seberi	13.294	2.3462	2013
			Tiaguirire	13.271	2.3165	2013
			Yoreize kouara	13.6121	1.8648	2013
			Youri	13.3342	2.2475	2013

Supp. File 2: *S. haematobium* vaccine candidate list. List of relevant vaccine candidates included in the design of the baits. Gene name and RNA id correspond to those in the annotation file of the *S. haematobium* genome.

Gene name	RNA id
Alkaline phosphatase, placental type	rna8550
Alkaline phosphatase, placental-like	rna8552
Alkaline phosphatase, placental type	rna8708
Alkaline phosphatase	rna10181
Acetylcholinesterase	rna1212
Acetylcholinesterase	rna1772
Acetylcholinesterase	rna5122
Hemoglobinase	rna8838
Endoplasmic reticulum metalloproteinase 1	rna7306
Methionine aminopeptidase 2	rna5991
Methionine aminopeptidase 1	rna8741
Triosephosphate isomerase	rna10340
Glyceraldehyde-3-phosphate dehydrogenase	rna9740
Glyceraldehyde-3-phosphate dehydrogenase	rna10942
Acid sphingomyelinase-like phosphodiesterase 3b	rna6904
Putative neutral sphingomyelinase	rna8921
TGF-beta receptor type-1	rna1191
CD81 antigen	rna9311
Tetraspanin-33	rna2147
Tetraspanin-31	rna4244
Tetraspanin-1	rna5080
Tetraspanin-3	rna6308
23 kDa integral membrane protein	rna8830
Dynein heavy chain 2, axonemal	rna362
Dynein light chain LC6, flagellar outer arm	rna513
Dynein regulatory complex protein 1	rna796

Dynein light chain 2, cytoplasmic	rna1126
Dynein light chain LC6, flagellar outer arm	rna1127
Dynein light chain 1, cytoplasmic	rna1128
Dynein light chain 2, cytoplasmic	rna1131
Dynein light chain LC6, flagellar outer arm	rna1132
Dynein light chain 2, cytoplasmic	rna1133
Dynein light chain 2, cytoplasmic	rna1134
Dynein light chain 1, cytoplasmic	rna1135
Dynein light chain Tctex-type 1	rna1148
Dynein light chain Tctex-type 1	rna1150
Dynein light chain	rna1311
Dynein light chain 4, axonemal	rna1368
Dynein heavy chain 10, axonemal	rna1422
Dynein heavy chain 10, axonemal	rna1423
Dynein heavy chain 7, axonemal	rna2159
Dynein heavy chain 6, axonemal	rna4031
Dynein heavy chain 6, axonemal	rna4032
Dynein heavy chain 6, axonemal	rna4033
Dynein heavy chain 6, axonemal	rna4034
Dynein light chain	rna4247
Dynein light chain 2, cytoplasmic	rna4248
Dynein assembly factor 1, axonemal	rna4722
Dynein light chain 2, cytoplasmic	rna5138
Dynein light chain	rna5139
Dynein light chain	rna5141
Dynein light chain 2, cytoplasmic	rna5459
Dynein heavy chain 7, axonemal	rna5588
Dynein heavy chain 7, axonemal	rna5589
Dynein light chain 2, cytoplasmic	rna5675
Dynein light chain 2, cytoplasmic	rna5676
Dynein heavy chain 3, axonemal	rna5744

Dynein assembly factor with WDR repeat domains 1	rna5927
Dynein heavy chain 5, axonemal	rna5951
Dynein-1-beta heavy chain, flagellar inner arm I1 complex	rna5955
Dynein heavy chain 1, axonemal	rna7320
Dynein heavy chain domain-containing protein 1	rna7471
Dynein heavy chain 7, axonemal	rna7561
Dynein intermediate chain 2, ciliary	rna7918
Dynein intermediate chain 2, ciliary	rna7919
Dynein heavy chain 5, axonemal	rna7925
Dynein light chain LC6, flagellar outer arm	rna8219
Dynein light chain 2, cytoplasmic	rna8220
Dynein light chain 1, axonemal	rna8521
Dynein heavy chain 17, axonemal	rna8962
Dynein beta chain, ciliary	rna8963
Dynein heavy chain 5, axonemal	rna9442
Dynein light chain roadblock-type 2	rna9552
Dynein intermediate chain 3, ciliary	rna10134
Dynein 8 kDa light chain, flagellar outer arm	rna10333
Paramyosin	rna1794
Paramyosin	rna7421
Myosin heavy chain, striated muscle	rna2888
hypothetical protein	rna5575
Myosin IA heavy chain	rna8582
Myosin heavy chain, non-muscle	rna10685
Filamin-A	rna1676
Filamin-A	rna828
Syntenin-1	rna842
Syntenin-2	rna7172
Syntenin-1	rna7314
Fructose-bisphosphate aldolase	rna2767
14 kDa fatty acid-binding protein	rna4146

16 kDa calcium-binding protein	rna5514
16 kDa calcium-binding protein	rna5644
16 kDa calcium-binding protein	rna5711
16 kDa calcium-binding protein	rna5712
16 kDa calcium-binding protein	rna6178
16 kDa calcium-binding protein	rna6179
16 kDa calcium-binding protein	rna6180
16 kDa calcium-binding protein	rna6182
16 kDa calcium-binding protein	rna6183
20 kDa calcium-binding protein	rna9455
Sarcoplasmic calcium-binding protein	rna9646
Calcium-binding protein 39-like	rna9746
Lysosomal aspartic protease	rna6107
Calpain	rna1921
Calreticulin	rna8129
40S ribosomal protein S4	rna1834
60S ribosomal protein L7a	rna1229
60S ribosomal protein L7a	rna1230
Tubulin polyglutamylase TTLL7	rna4902
60S ribosomal protein L7	rna11001
hypothetical protein	rna1730
Y-box-binding protein 3	rna1727
Stomatin-2	rna7623
Stomatin-like protein 2, mitochondrial	rna1119
Tegument antigen	rna5724
hypothetical protein	rna3812
Microsomal glutathione S-transferase 3	rna2097
Glutathione S-transferase omega-1	rna4464
Glutathione S-transferase class-mu 28 kDa isozyme	rna6212
Microsomal glutathione S-transferase 1	rna7354
Glutathione S-transferase class-mu 26 kDa isozyme	rna11108

Superoxide dismutase [Mn], mitochondrial	rna64
Extracellular superoxide dismutase [Cu-Zn]	rna2827
Extracellular superoxide dismutase [Cu-Zn]	rna2828
Superoxide dismutase [Cu-Zn]	rna8863
Ectonucleotide pyrophosphatase/phosphodiesterase family member 5	rna7706
Ectonucleotide pyrophosphatase/phosphodiesterase family member 5	rna8331
Tegument antigen	rna8098
Tetraspanning orphan receptor	rna9576
