

# Integrated Serologic Surveillance of Population Immunity and Disease Transmission

## Technical Appendix

**Technical Appendix Table.** Examples of antigens that have been included in multiplex bead assays\*

Pathogen or disease	Antigen
<b>Vaccine preventable diseases</b>	
Measles	Whole virus (1)
Rubella	Inactivated whole virus (1)
Mumps	Inactivated whole virus (1)
Varicella-zoster	Whole virus (1)
Diphtheria	Diphtheria toxoid (2)
Tetanus	Tetanus toxoid (3–5)
Pertussis	Pertussis toxin, FHA, Prn (3,4)
Human papillomavirus	E6, E7, L1 proteins (6)
<b>HIV</b>	
HIV-1	p66, gp120, gp160, gp41 (7)
<b>Malaria</b>	
<i>Plasmodium falciparum</i>	MSP-1 (7), AMA-1, CSP (8–10)
<i>Plasmodium vivax</i>	MSP-1 (7,8)
Malaria (multiple species)	Multiple proteins and peptides (11,12)
<b>Neglected tropical diseases</b>	
Lymphatic filariasis ( <i>Wuchereria bancrofti</i> )	Bm33, Bm14, Wb123 (13)
River blindness ( <i>Onchocerca volvulus</i> )	Ov16, Ov17, Ov33 (14)
Trachoma ( <i>Chlamydia trachomatis</i> )	Pgp3, CT694 (15)
Yaws ( <i>Treponema pallidum</i> )	rp17, TmpA (16)
Schistosomiasis ( <i>Schistosoma mansoni</i> )	SEA, Sm25, SERPIN (17,18)
Strongyloidiasis ( <i>Strongyloides stercoralis</i> )	NIE (8,19)
Cysticercosis ( <i>Taenia solium</i> )	T24H (8)
Ascariasis ( <i>Ascaris</i> spp.)	AsHb†
Dengue virus	Dengue 2 VLP, dengue 3 VLP (20)
Chikungunya virus	Envelope E1 protein (20)
Multiple viruses (including Ebola and Lassa)	Inactivated whole virus (21)
<i>Leishmania donovani</i>	KRP42 (22)
Toxocarasis ( <i>Toxocara canis</i> )	Tc-CTL-1, Tc-TES-26 (23)
<b>Enteric pathogens</b>	
<i>Cryptosporidium parvum</i>	Cp17, Cp23, CpP2 (24)
<i>Giardia intestinalis</i>	VSP1–5, VSP7 (24)
<i>Entamoeba histolytica</i>	LecA, C-IgL (22,25)
<i>Campylobacter jejuni</i>	p18, p39†
<i>Salmonella enterica</i> serotype typhimurium	LPS group B (26)
<i>Salmonella enterica</i> serotype enteritidis	LPS group D†
Enterotoxigenic <i>Escherichia coli</i>	Heat labile toxin β subunit (26)
<i>Vibrio cholerae</i>	Cholera toxin β subunit (22)
Norovirus	VLP GI.4, VLP GII.4 New Orleans (26)
<b>Other</b>	
<i>Helicobacter pylori</i>	Multiple (27)
<i>Mycobacterium tuberculosis</i>	Multiple (28)
<i>Toxoplasma gondii</i>	SAG1, SAG2A (22,29)
<i>Babesia microti</i>	Bm17N, Bm9c (30)

\*AMA-1, apical membrane antigen 1; AsHb, *Ascaris suum* hemoglobin; C-Igl, C-terminal of *Entamoeba histolytica* intermediate subunit of galactose; CSP, circumsporozoite protein; FHA, filamentous hemagglutinin; KRP42, kinesin-related protein 42; LPS, lipopolysaccharide; MSP-1, merozoite surface protein 1; prn, pertactin; SAG, surface antigen; SEA, soluble egg antigen; SERPIN, serine protease inhibitor; Tc-CTL-1, *Toxocara canis* control antigen 1; Tc-TES-26, *Toxocara canis* excretory/secretory antigen of 26 kDa; TmpA, treponemal membrane protein A; VLP, virus-like particle; VSP, variant-specific surface protein.

†Details available upon request (P.J. Lammie, unpub. data).

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