

**Table 1. Candidate Malaria Vaccines in Clinical Development**  
**October 2008**

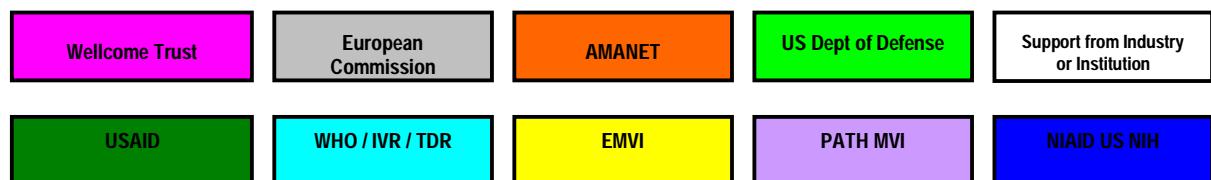
Activities completed or ongoing are marked with a bold X  
 Support for activities indicated with colour and without an X has been secured  
 The various stages are considered as initiated at the steps indicated below:  
 Phase 1a: first volunteer recruited for phase 1 in industrialized country  
 Phase 2a: first volunteer recruited for challenge study in industrialized country  
 Phase 1b: first volunteer recruited for phase 1 in disease endemic country  
 Phase 2b: first volunteer recruited for phase 2 in disease endemic country  
 Pivotal: first volunteer recruited for clinical study directed at licensure

Pre-erythrocytic Vaccines					
CSP	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
RTS,S/AS02A : (MVI/GSK)	X	X	X	X	
RTS,S/AS01B : (WRAIR/GSK)	X	X	X		
RTS,S/AS01E : (MVI/GSK/WRAIR)	X	X	X	X	
Adenovirus serotype 5 <b>CSP</b> (NMRC/Genvec/USAID)	X	X			
Adenovirus serotype 35 <b>CSP</b> (NIAID/Crucell)	X				
HepB Core Ag-CSP VLP: (Malarivax Apovia)	X	X			
RTS,S/AS02 and Modified vaccinia virus Ankara (MVA) CSP (Oxford-GSK)	X	X			
RTS,S/AS02 / DNA CSP (NMRC-GSK)	X	X			
CSP Long synthetic peptide: (Dictagene/University of Lausanne)	X	X			
CSP DNA immunization: (NMRC/USAID)	X				
MVA CSP + LSA-1 epitope (Oxford)	X				
Fowlpox strain FP9 CSP + LSA-1 epitope (Oxford)	X				
FP9 CSP + LSA-1 epitope/ MVA CSP + LSA-1 epitope (Oxford)	X	X	X		

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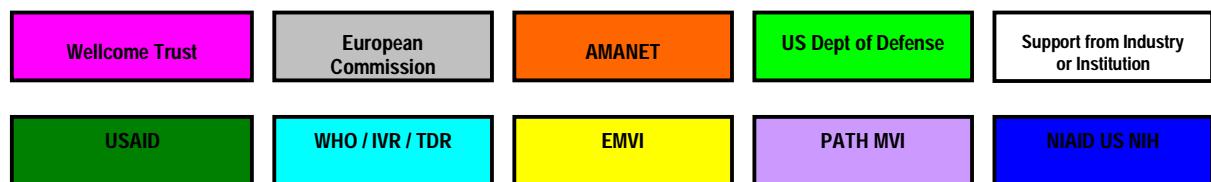
## Pre-erythrocytic Vaccines

Non -CSP	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
AdCh63 MVA prime-boost <b>ME-TRAP</b> (Oxford)	X  X				
DNA MVA prime-boost <b>Multi-epitope(ME)</b> string + <b>TRAP</b> (Oxford)	X	X	X	X	
FP9 MVA prime-boost <b>ME-TRAP</b> (Oxford)	X	X	X	X	
<b>RTS,S/AS02 and TRAP</b> (WRAIR-GSK)	X	X			
FP9 MVA <b>polyprotein</b> (Oxford/EMVI)	X	X			
<b>LSA-1</b> <i>E. coli</i> expressed /AS02A(LSA-NRC) (GSK/ WRAIR)	X	X			
<b>LSA-1</b> <i>E. coli</i> expressed /AS01B (LSA-NRC) (GSK/ WRAIR)	X	X			
<b>LSA-3</b> <i>L. lactis</i> expressed (Institut Pasteur)	X	X			

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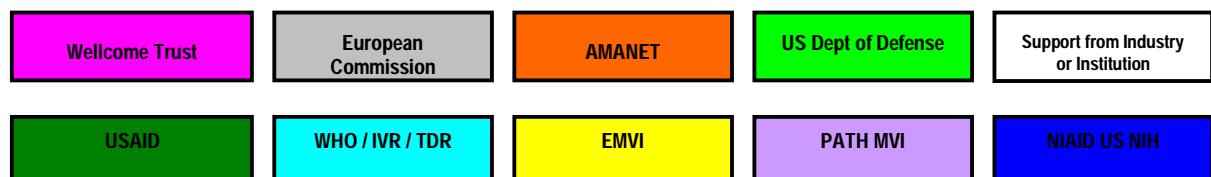
## Blood-stage Vaccines

MSP1	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
<b>MSP-1 42 3D7 (FMP-1/AS02) <i>E. coli</i> expressed (WRAIR/GSK/USAID)</b>	X	X	X	X	
<b>MSP-1 42 FVO <i>E. coli</i> expressed (WRAIR/GSK/USAID)</b>	X				
<b>MSP-1 42 3D7/ ALOH <i>E. coli</i> expressed (MVDB)</b>	X				
<b>MSP-1 42 FVO/AIOH <i>E. coli</i> expressed (MVDB)</b>	X				
<b>MSP-1-C1 42 (FVO+3D7)/AIOH <i>E. coli</i> expressed (MVDB)</b>	X				
<b>MSP-1-C1 42 (FVO+3D7)/AIOH+CPG <i>E. coli</i> expressed (MVDB)</b>	X				
AMA1	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
<b>AMA-1 <i>E. coli</i> expressed (Australia)</b>	X				
<b>AMA-1 3D7 (FMP2.1)/AS02A <i>E. coli</i> expressed (WRAIR/GSK/USAID)</b>	X	X	X	X	
<b>AMA-1 3D7 (FMP2.1) AS01B <i>E. coli</i> expressed (WRAIR/GSK/MVI)</b>	X	X			
<b>AMA-1 C1 (FVO+3D7)/AIOH <i>Pichia</i> expressed (MVDB)</b>	X		X		
<b>AMA-1 C1 (FVO+3D7)/AIOH+CPG <i>Pichia</i> expressed (MVDB)</b>	X		X		
<b>AMA-1 ISA720 <i>Pichia</i> expressed (MVDB)</b>	X				
<b>AMA-1 MontanideISA720; AS02 <i>P pastoris</i> expressed. FVO. (BPRC)</b>	X				
<b>AMA-1 AIOH <i>P pastoris</i> expressed. FVO. (BPRC)</b>	X		X		

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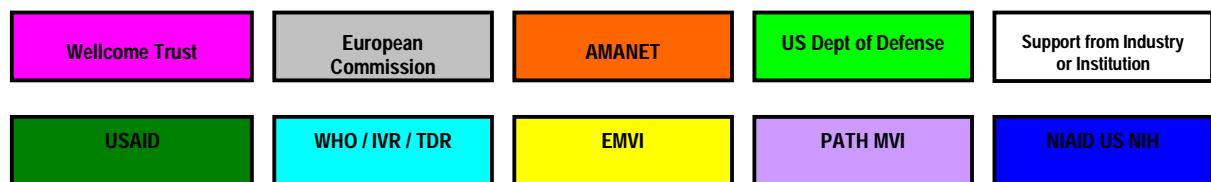


Other Blood-stage Antigens	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
MSP-3 Long synthetic peptide (Pasteur Institute/AMANET)	X		X	X	
GLURP Long synthetic peptide(SSI)		X			
MSP-2 3D7+ FC27 <i>E. coli</i> expressed (La Trobe)	X				
SE 36/ Alum <i>E. Coli</i> expressed (Osaka University, BIKEN Foundation)	X				
EBA-175 RII-NG/ (NIAID)	X				
<b>Combination Blood-stage antigens</b>					
Combination B: RESA, MSP1, MSP2 (STI)	X		X	X	
MSP-3-GLURP hybrid Long synthetic peptide (SSI)		X			
MSP3/GLURP (GMZ 2)/AlOH <i>L. lactis</i> expressed recombinant	X		X		
MSP-1 19/AMA-1 chimera (PfCP2.9) <i>P pastoris</i> expressed (SMMHS/Wanxing/ MVI/WHO)	X	X			

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## Transmission-blocking Vaccines

	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
<b>Pfs25</b> ISA51 <i>Pichia pastoris</i> expressed (MVDB)	X				
<b>Pvs25</b> AIOH/ISA51 <i>Saccharomyces</i> expressed (MVDB)	X				

## Combination Multi-stage Vaccines

	Phase 1a	Phase 2a	Phase 1b	Phase 2b	Pivotal
FMP-1 ( <b>MSP-1 42 3D7</b> ) plus <b>RTS,S (CSP) /AS02</b> (WRAIR/GSK/USAID)	X	X			
Adenovirus 5 <b>CSP</b> /Adenovirus 5 <b>AMA-1</b> (NMRC/Genvec)	X				
<b>CSP, AMA-1 IRIV</b> (Immunopotentiating Reconstituted Influenzae Virosomes)(Pevion)	X	X			

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