

**Table S1. *P.berghei* Genes targeted in this study**

<b>Product name <i>P. falciparum</i> Gene ID</b>	<b>Localization (Pf)</b>	<b>Essential for blood stages (Pf)</b>	<b>Product name <i>P. berghei</i> Gene ID</b>	<b>Essential for blood stages (Pb) *</b>	<b>Product name <i>P. vivax</i> Gene ID</b>
<b>aspartic endoprotease</b>					
plasmepsin I (PM I) PF3D7_1407900	DV	no	-	-	
plasmepsin II (PM II) PF3D7_1408000	DV	no	-	-	
plasmepsin IV (PM IV) PF3D7_1407800	DV	no	plasmepsin 4 (PM4) PBANKA_103440	no	plasmepsin 4 (PM4) PVX_086040
plasmepsin III (PM III) PF3D7_1408100	DV	no	-	-	
<b>papain-like cysteine endoprotease</b>					
falcipain 2a (FP 2a) PF3D7_1115700	DV	no	berghepain-2 (BP2) PBANKA_093240	no *	vivapain-2(VX2) PVX_091415
falcipain 2b (FP 2b) PF3D7_1115300	DV	no	-	-	
falcipain 3 (FP 3) PF3D7_1115400	DV	yes	-	-	vivapain-3 (VX3) PVX_091410 vivapain-4 (VX4) PVX_091405
<b>metallopeptidase</b>					
falcilysin (FLN) PF3D7_1360800	DV, mitochondrion, apicoplast	yes	bergheilysin (BLN) PBANKA_113700	yes *	PVX_115000
<b>dipeptidyl aminopeptidase</b>					
dipeptidyl aminopeptidase 1 (DPAP1) PF3D7_1116700	DV	yes	dipeptidyl aminopeptidase 1 (DPAP1) PBANKA_093130	no *	PVX_091465
<b>aminopeptidases</b>					
aminopeptidase P (APP) PF3D7_1454400	DV, cytosol	yes	aminopeptidase P (APP) PBANKA_131810	no *	PVX_117760
M1- family alanyl aminopeptidase (M1AAP) PF3D7_1311800	DV, nucleus	yes	M1- family alanyl aminopeptidase (AAP) PBANKA_141030	yes *	PVX_122425
M17-family leucyl aminopeptidase (M17LAP) PF3D7_1446200	DV, cytosol	yes	M17-family leucyl aminopeptidase (LAP) PBANKA_130990	no *	PVX_118180
M18-family aspartyl aminopeptidase (M18DAP) PF3D7_0932300	cytosol	no	M18-family aspartyl aminopeptidase (DAP) PBANKA_083310	no *	PVX_087090
<b>heme detoxification protein</b>					
heme detoxification protein (HDP) PF3D7_1446800	DV	yes	heme detoxification protein (HDP) PBANKA_131060	yes *	PVX_118155
<b>papain-like cysteine proteases</b>					
falcipain 1 (FP 1) PF3D7_1458000	Apical end of merozoites	no	berghepain 1 (BP1) PBANKA_132170	no *	PVX_117565
<b>dipeptidyl aminopeptidases</b>					
dipeptidyl aminopeptidase 2 (DPAP2) PF3D7_1247800	-	-	dipeptidyl aminopeptidase 2 (DPAP2) PBANKA_146070	no *	PVX_101280
dipeptidyl aminopeptidase 3 (DPAP3) PF3D7_0404700	-	yes	dipeptidyl aminopeptidase 3 (DPAP3) PBANKA_100240	no *	PVX_001005

\*, the phenotype observed in this study.

-, no published data.