

Table S4. Genetic crosses between *misfit* ko and a panel of female or male gamete deficient *P. berghei* mutants

Genetic crosses	Oocyst densities	Prevalence	Oocyst size	Sporulation	# of midguts	Type of feed
<i>Δpbmisfit</i> in GFP reference line genetic background						
<i>Δpbmisfit</i> (♀) x <i>Δpbs47</i> (♂)	62	100%	Normal	√	20	Membrane
	53	100%	Normal	√	40	Membrane
	13	100%	Normal	√	12	Membrane
	179	100%	Normal	√	45	Direct
<i>Δpbmisfit</i> (♂) x <i>Δpbs48/45</i> (♀)	22	43%	Small	–	30	Membrane
	9	16%	Small	–	44	Membrane
	21	40%	Small	–	10	Membrane
<i>Δpbmisfit</i> (♂) x <i>Δpbcdpk4</i> (♀)	19	83%	Small	–	29	Direct
	21	92%	Small	–	51	Direct
<i>Δpbmisfit</i> (♂) x <i>Δpbmap2</i> (♀)	18	100%	Small	–	58	Direct
	31	100%	Small	–	15	Direct
<i>Δpbmisfit</i> in ANKA 2.34 wt genetic background						
<i>Δpbmisfit</i> (♀) x <i>Δpbs47</i> (♂)	97	100%	Normal	√	45	Membrane
<i>Δpbmisfit</i> (♂) x <i>Δpbs48/45</i> (♀)	1	37%	Small	–	22	Membrane
<i>Δpbmisfit</i> (♂) x <i>Δpbcdpk4</i> (♀)	7	83%	Small	–	47	Direct
	3.1	82%	Small	–	50	Direct
<i>Δpbmisfit</i> (♀) x <i>Δpbnek4</i> (♂)	34	96%	Normal	√	49	Direct
	213	100%	Normal	√	50	Direct
Control crosses of <i>Δpbplp5</i>						
<i>Δpbplp5</i> (♂) x <i>Δpbcdpk4</i> (♀)	30	96%	Normal	√	50	Direct
<i>Δpbplp5</i> (♂) x <i>Δpbmap2</i> (♀)	39	86%	Normal	√	50	Direct

The table reports the outcome of *A. stephensi* infections with *P. berghei* parasites generated by genetically crossing *Δpbmisfit* (*misfit* ko) parasites with mutants that are either female (*Δpbs47*, *Δpbnek4*) or male (*Δpbs48/45*, *Δpbcdpk4*, *Δpbmap2*) gamete deficient. The results from two independent *misfit* ko lines, where *misfit* was disrupted in the Pbc507 (GFP reference) or ANKA 2.34 wt genetic background lines, respectively, are shown. Crosses between the male gamete deficient *Δpbcdpk4* or *Δpbmap2* and *Δpbplp5* mutants were used as a control. Each line represents an independent crossing and infection experiment, carried out by feeding mosquitoes either via a membrane on ookinete *in vitro* cultures initiated with blood of mice co-infected with the indicated mutants or directly on co-infected mice. Only crosses where males carry functional *misfit* alleles result in normal oocyst development. Crosses where functional *misfit* alleles are provided only by female gametes result in oocysts of reduced prevalence (percentage of midguts with at least one oocyst) or density (mean oocyst number per infected midgut), small in size and which fail to sporulate.