

Description of Additional Supplementary Files

File name: Supplementary Data 1

Description: Summary of CERLI2 repeat structures in *Laverania*.

File name: Supplementary Data 2

Description: Gene structure of *cerli1*, *cerli2* and their homologues in Apicomplexa and Chromerids.

File name: Supplementary Data 3

Description: Average Gene structure of *cerli1* and *cerli2* lineage genes.

File name: Supplementary Data 4

Description: Summary of PHIS containing proteins in *P. falciparum*.

File name: Supplementary Data 5

Description: Source Data.

Fig 2e: PfCERLI2 protein levels with knock - down.

Fig 2f: Parasite growth with PfCERLI2 knock -down.

Fig 3a: Parasite invasion with PfCERLI2 knock -down.

Fig 3b: Mean merozoites per schizont with PfCERLI2 knock -down.

Fig 3d: % schizonts with PfCERLI2 knock - down.

Fig 3e: % free merozoites with PfCERLI2 knock -down.

Fig 3g: % bound merozoites with PfCERLI2 knock -down.

Fig 3h: % rings with PfCERLI2 knock -down.

Fig 3j: Merozoite invasion score with PfCERLI2 knock -down.

Fig 3k: Diameter of the AMA1 ring with PfCERLI2 knock -down.

Fig 4b: Correlation coefficient with PfCERLI1HA (PCC)

Fig 6b: Invasion ligand protein expression with PfCERLI2 knock -down.

Fig 6 c : RAP1 processing with PfCERLI2 knock -down.

Fig 6e: Rhoptry length with PfCERLI2 knock - down.

Fig 7g: Rhoptry length with PfCERLI2 Page 7 of 19 knock-down using 3D EM.

Fig 7h: Rhoptry surface area with PfCERLI2 knock-down using 3D EM.

Fig 7i: RAP1 distance from nucleus with PfCERLI2 knock-down using 3D EM.

Fig 7j: RON4 distance from nucleus with PfCERLI2 knock-down using 3D EM.

Suppl Fig 14a: RON4 area with PfCERLI2 knock-down.

Suppl Fig 14b: RON4 volume with PfCERLI2 knock-down.

Suppl Fig 14c: RON4 sphericity with PfCERLI2 knock-down.

Suppl Fig 14d: RAP1 area with PfCERLI2 knock-down.

Suppl Fig 14e: RAP1 volume with PfCERLI2 knock-down.

Suppl Fig 14f: RAP1 sphericity with PfCERLI2 knock-down.