**Supplementary Fig. S1.** Identification of expressed segments of PbTIP. (A) PbTIP protein was screened in TMHMM online server. (B) The results showed VCBS field from 204-277 AA using SMART online server. (C) VCBS field are mined in NCBI database, corresponding to 204-335 AA.

**Supplementary Fig. S2.** The extraction and purification of schizonts, gametocytes and ookinetes from *P. berghei* ANKA.