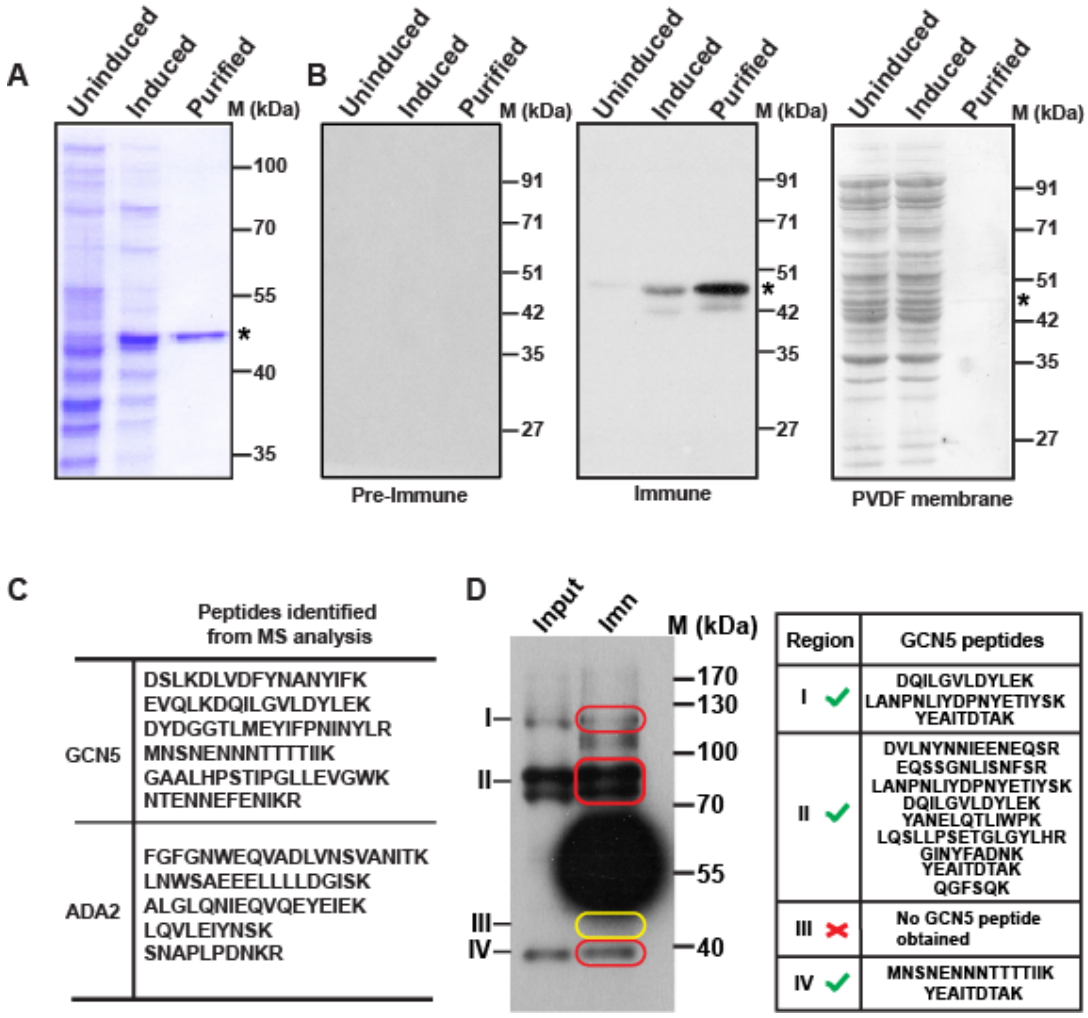

Figure S1. Specificity of mouse polyclonal antibodies generated against PfGCN5 protein and Mass spectromectirc analysis of different bands corresponding to PfGCN5. (**A**) Coomassie stained gel showing purification profile of recombinant His_6-PfGCN5 protein.'*' indicates the purified protein band that is also present in the lane corresponding to induced bacterial cell lysate. (**B**) Western blot analysis of purified PfGCN5 protein using pre-immune (left blot) and immune PfGCN5 sera (middle blot). Coomassie stained PVDF membrane after protein transfer on the right indicates the presence of protein in each lane. '*' indicates the purified protein band. (**C**) List of peptides identified from in solution MS analysis of GCN5-IP sample corresponding to PfGCN5 and PfADA2. (**D**) Western blot analysis of Immunoprecipitated PfGCN5 from *P. falciparum* lysate using antibodies against PfGCN5. The IP sample was also subjected to SDS-PAGE under similar experimental conditions followed by silver staining (data not shown). Regions (I to IV) as indicated in immune IP lane were excised from silver stained gel and subjected to MS analysis. List of peptides detected in MS analysis corresponding to regions I, II and IV is shown on the right suggesting that the bands detected by anti-PfGCN5 sera are generated from full-length PfGCN5 protein.

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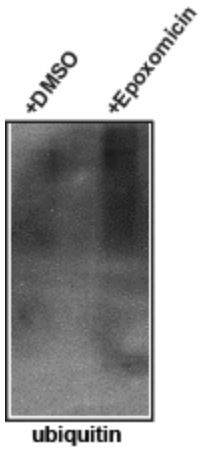

Figure S2. Accumulation of ubiquitinated proteins in epoxomicin treated parasite. Parasites were treated with DMSO and epoxomicin separately followed by Western blot analysis using antibodies against ubiquitin.

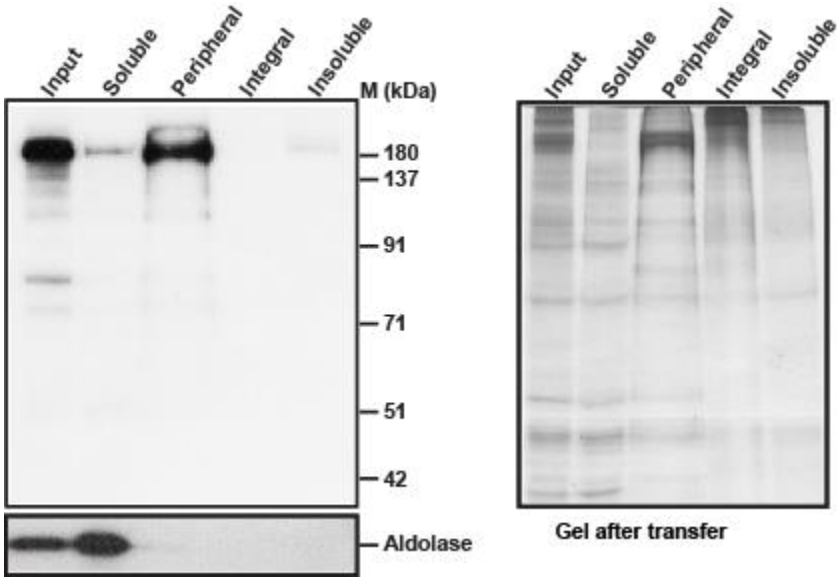

Figure S3. The full-length PfGCN5 protein is a peripheral membrane associated protein.To check the membrane association of full-length PfGCN5 protein, MG132 treated parasites were fractionated using protocol described in materials and methods. Equal amount of sample from each fraction was subjected for Western blot analysis. PfGCN5 is predominantly extracted in sodium carbonate extractable fraction (left panel) confirming its association with the peripheral membrane. Coomassie stained gel after transfer on right shows the similar loading of proteins from each fraction.

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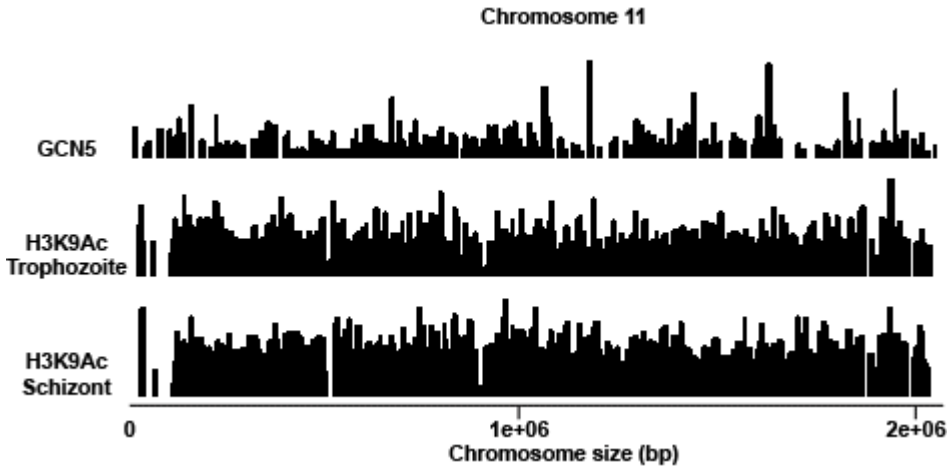

Figure S4. Comparative alignment of GCN5, H3K9Ac (trophozoite stage) and H3K9Ac (Schizont stage) ChIP-seq coverage plots.Upper panel shows the PfGCN5 binding sites on chromosome 11. PfGCN5 ChIP-sequencing was performed in asynchronous stages parasites. PfH3K9Ac ChIP-sequencing results were obtained from Bartfai et al., 2010. Chromosome size (bp) is indicated below.

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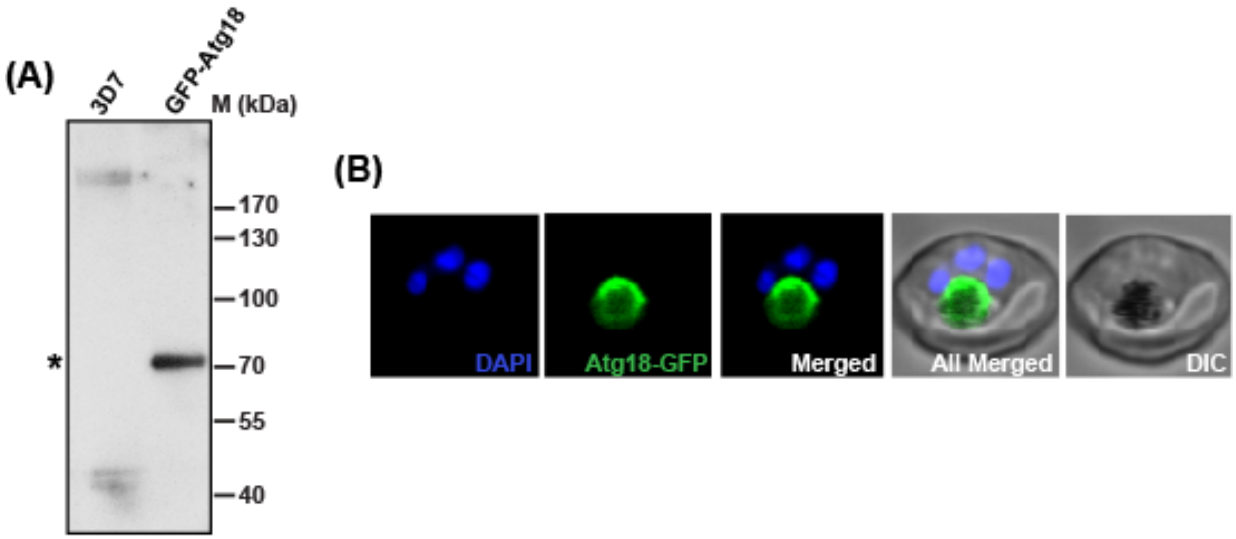

Figure S5. Immunoblotting and live cell imaging to check the expression of GFP-Atg18 in parasites. (**A**) To check the expression of Atg18-GFP in the parasite, lysate were prepared from asynchronous stage 3D7 or Atg18-GFP parasites and resolved in SDS-PAGE followed by Western blotting analysis using antibodies against GFP. "*" indicates the GFP-tagged Atg18 band. No specific band is present in 3D7 un-transfected parasite line. (**B**) Live confocal microscope image showing expression of Atg18-GFP (green) surrounding the food vacuole of the parasite that contains haemozoin. The parasite nuclei were stained with DAPI (blue). All merged panel shows all fluorescence signals including DIC image (containing haemozoin deposition as dark spot).

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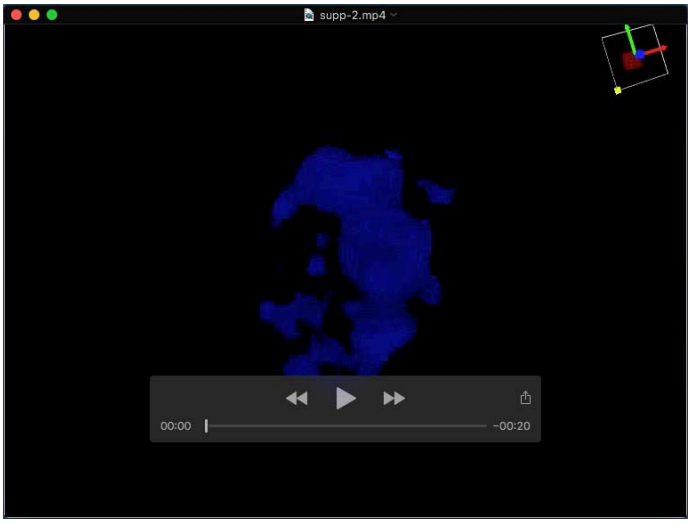
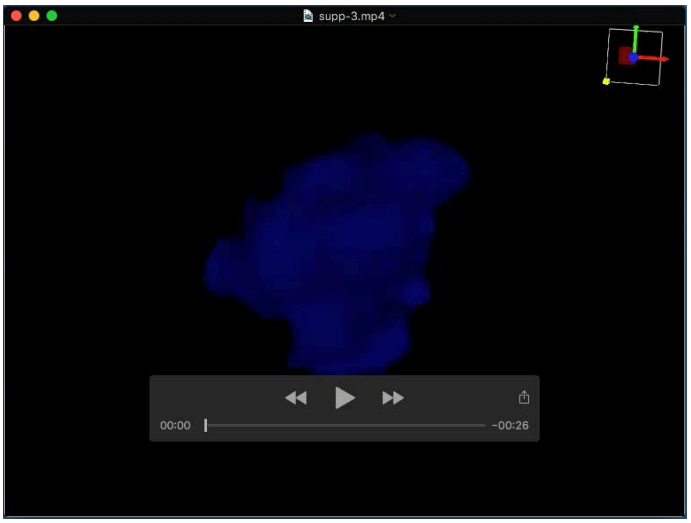


Movie 1: 3D structure of co-localization between PfGCN5 and H3K9Ac in the parasite. Red indicates localization of H3K9Ac and Green indicates localization of PfGCN5. Blue indicates the nuclear region. The movie was generated using Olympus FV31S-SW software.



Movie 2: 3D structure of co-localization between PfGCN5 and PfAtg18-GFP in the DMSO treated parasite. Red indicates localization of PfGCN5 and Green indicates localization of PfAtg18-GFP. Blue indicates the nuclear region. No co-localization was observed in DMSO treated parasite. The movie was generated using Olympus FV31S-SW software.

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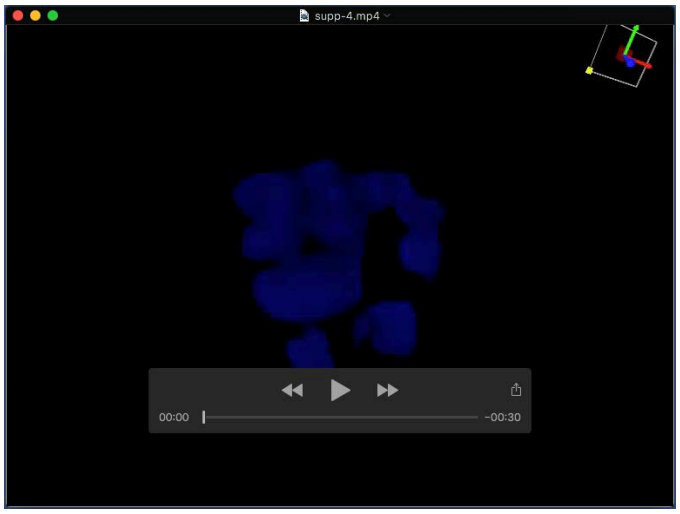
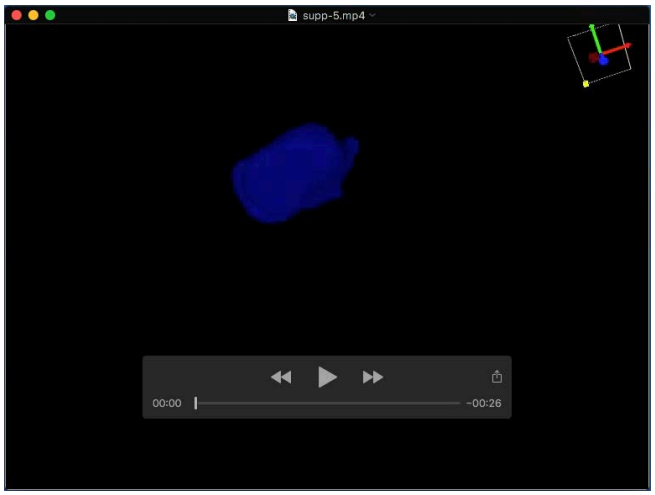


Movie 3: 3D structure of co-localization between PfGCN5 and PfAtg18-GFP in the MG132 treated parasite. Red indicates localization of PfGCN5 and Green indicates localization of PfAtg18-GFP. Blue indicates the nuclear region. Co-localization was observed between PfGCN5 and PfAtg18-GFP (yellow region). The movie was generated using Olympus FV31S-SW software.



Movie 4: 3D structure of co-localization between PfGCN5 and PfBip in the BFA treated parasite. Red indicates localization of PfBip and Green indicates localization of PfGCN5. Blue indicates the nuclear region. Co-localization was observed between PfGCN5 and PfBip in the ER compartment (yellow region). The movie was generated using Olympus FV31S-SW software.

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Table S1: Detailed annotation results generated after PfGCN5 ChIP-sequencing analysis.

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Table S2. Primers used in q-PCR analysis

Primers Name	Sequences (5′-3′)	Comments
Chr1.(548442-548639)	fw: ATCTATTCTTTTGAATTATGTATA rv: TTCTTTAGAATCCAGCACTT	
Chr2.(838758-838965)	fw: TATCTGTACAATAATTATGTAC rv: ATATTCATCTAACCCTTCAG	
Chr3.(646615-646817)	fw: TAAGTATAAATAAGTTGTTCATT rv: TTCAACATTCTGAGTAGCC	
Chr4.(319702-319916)	fw: ATAATGTGTATGTATTTATGTAT rv: AATAACAACTATAATACTAGTAT	
Chr5.(85776-86025)	Fw: AAAGATTTTATCAGGCATTATA rv: TTTATTTATTTATGATTATATATAT	Promoter region for RAP2 (PF3D7_0501600)
Chr6.(545620-545842)	fw: AATAATTTGGTAATTTACTCTT rv: ATATGTATTTGTCTTATTGTTA	Promoter region for RP (PF3D7_0613300)
Chr7.(945701-945935)	fw: ATATATAATTTCGTGATAAAATAT rv: TTAATAGAATGCTCAATATAAAA	Promoter region for RALP1 (PF3D7_0722200)
Chr9.(1254233-1254434)	fw: AATGAAATAGAAAATATAAAATGA rv: AAGTCCATACAAATTGTAACA	Promoter region for Nop52(PF3D7_0931100)
Chr11.(761384-761633)	fw: ATTATATACATTTGATATAGATAT rv: AATAAATATATAGGTACTTAACT	
Control (225279-225528)	fw: ATTATGTATAAGAAGTTCATCA rv: GTATATAAATTCAATGATTTTATA	

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