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The orphan kinase PfPK7 and the ubiquitin proteasome system are central in melatonin response to *Plasmodium falciparum*

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The ubiquitin/proteasome system (UPS) plays a fundamental role in eukaryotic cellular processes including signal transduction, cell cycle control and transcription regulation. We reported previously that melatonin modulates the *Plasmodium falciparum* cell cycle, but the molecular effectors of the hormone remained elusive. By using real time PCR assays upon 5 hours of melatonin treatment of parasite, we demonstrated transcriptional modulation of UPS genes. We also show that the orphan protein kinase PfPK7 plays a crucial role in the melatonin-activated transduction pathway, as (i) the cycle properties of a *pfpk7* remained unchanged upon addition of melatonin, and (ii) melatonin treatment did not affect transcription of UPS genes in this mutant parasite line. The wild-type phenotypes of melatonin-induced alterations in cycle properties and UPS gene transcription were restored by reintroduction of a functional copy of the *pfpk7* gene in the *pfpk7* parasites

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