



THE HUCK INSTITUTES OF THE LIFE SCIENCES

Postdoctoral position in malaria mass spectrometry-based metabolomics

Job Description:

The laboratory of Prof. Manuel Llinás is moving from Princeton University to Pennsylvania State University and seeks outstanding post-doctoral researchers in the areas of metabolomics and metabolic biochemistry, specifically focusing on the malaria parasite *Plasmodium falciparum* and its interaction with the host red blood cell. The Llinás lab, in collaboration with Joshua Rabinowitz at Princeton, has paved the way forward for malaria metabolomics and is a recognized leader in this area. Candidates with strong track records of accomplishment in metabolomics or a biochemistry-related discipline are encouraged to apply. The post-doctoral researcher will be expected to lead their own independent research project, as well as contribute to collaborative research. **Prior metabolomics and mass spectrometry experience is desired.** Exceptional opportunities are available for highly motivated candidates with strong publication records, regardless of their specific area of expertise.

Applicants must have recently received their Ph.D. in biology, chemistry, or biochemistry. Rank and salary are dependent upon qualifications.

Applications should include a *curriculum vita* that includes a list of publications and a brief statement (2 pages) of research interests and goals. Please provide contact information for three references that can provide letters of recommendation. Materials should be sent to mllinas@Princeton.edu.

The laboratory of Dr. Manuel Llinás at Pennsylvania State University is studying the malaria parasite *P. falciparum* using a variety of approaches to investigate parasite-derived metabolic processes, biochemistry and interactions. In particular, we are using mass spectrometry-based metabolomics approaches to characterize the following: 1) the genetic variation underlying metabolic differences in malaria parasites, 2) the effects of antimalarial drugs, 3) an in-depth probing of specific biochemical pathways, and 4) measuring metabolic flux through the Plasmodium metabolic network. The goal of this work is to establish the relative importance of metabolic pathways utilized by the parasite to ultimately design better therapeutics against this devastating global human pathogen. This work will also provide an invaluable public resource for interpreting metabolic data, identifying new drug targets, and generating testable hypothesis on the metabolic regulatory mechanism of *P. falciparum*. Our group has already developed the mass spectrometry methods capable of performing the global metabolite detection experiments proposed.

Relevant publications:

- van Brummelen AC, Olszewski KL, Wilinski D, Llinás M, Louw AI, Birkholtz LM. "Co-inhibition of *Plasmodium falciparum* S-adenosylmethionine decarboxylase/ornithine decarboxylase reveals perturbation-specific compensatory mechanisms by transcriptome, proteome and metabolome analyses." (2008) *J Biol Chem.*, 284 (7), pp. 4635-4646. PubMed PMID: 19073607
- Olszewski KL, Morrisey JM, Wilinski D, Burns JM, Vaidya AB, Rabinowitz JD, Llinás M. "Host-parasite Interactions Revealed by *Plasmodium falciparum* Metabolomics" (2009) *Cell Host & Microbe*, 5 (2), pp. 191-199. PubMed PMID: 19218089
- Kafsack BFC & Llinás M. "Eating at the Table of Another: Metabolomics of Host/Parasite Interactions." (2010) *Cell Host & Microbe*, 7 (2), pp. 90-99. PubMed PMID: 20159614
- Plata G, Hsiao T-L, Olszewski KL, Llinás M, Vitkup D. "Reconstruction and flux-balance analysis of the *Plasmodium falciparum* metabolic network." (2010) *Molecular Systems Biology*, 6: 408, Epub 2010 Sept 7. PubMed PMID: 20823846
- Olszewski KL & Llinás M. "Central carbon metabolism of *Plasmodium* parasites." (2010) *Molecular and Biochemical Parasitology*, 175 (2): 95-103. PubMed PMID: 20849882
- Babbitt SE, Altenhofen L, Cobbold SA, Istvan ES, Fennell C, Doerig C, Llinás M, Goldberg DE. "Plasmodium falciparum responds to amino acid starvation by entering into a hibernatory state." (2012) *Proc Natl Acad Sci U S A* Nov 20;109(47) Epub 2012 Oct 29. PubMed PMID: 23112171
- Olszewski KL, Llinás M. "Extraction of hydrophilic metabolites from Plasmodium falciparum-infected erythrocytes for metabolomic analysis." (2013) *Methods Mol Biol.*;923:259-66. PubMed PMID: 22990783



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