

M2 INTERNSHIP IN MOLECULAR & CELLULAR PARASITOLOGY (MALARIA)

Position: A 6 months Master 2 internship, **starting December 2019 or January 2020**

Laboratory: UMR 261-IRD-Université de Paris/Paris Descartes (Faculté de Pharmacie, 4 av. de l'Observatoire, 75006 Paris, France)

Keywords: *Plasmodium falciparum*, antimalarial drug, cell culture and biology, drug assays, molecular biology, genetic engineering of the parasite.

Project summary: Primaquine is the only marketed antimalarial drug, together with a primaquine derivative (tafenoquine) with established activity against the mature gametocytes blood stage of *Plasmodium falciparum* malaria parasites that are responsible for human-to-mosquito transmission. The World Health Organization recommends that a single low dose of primaquine should be added to antimalarial treatments administered in endemic areas in order to reduce parasite transmission. Despite this unique position among antimalarial drugs, the mode of action of primaquine against malaria parasites remains hypothetical. The activity of primaquine is proposed to arise mainly from the redox-cycling and/or alkylating properties of its hydroxylated metabolites produced by human hepatic transformation, and specifically by the human cytochrome CYP2D6. A better understanding of the molecular mechanisms driving the activity of primaquine may help to design more potent transmission-blocking compounds with fewer side-effects. A recent publication and our own ongoing work in the lab have set-up *in vitro* culture protocols that permits to test directly these hypotheses.

The Master 2 student will be involved in: *P. falciparum in vitro* culture (asexual stage and gametocytes), drug metabolism, phenotypic characterization of wild-type and mutant parasites with regard to primaquine and primaquine-metabolized mixture, the construction of transfection plasmids for the over-expression of previously identified candidate genes, and parasite transfections.

Criteria: We are looking for a highly motivated Master's student in Cellular and Molecular Biology or Pharmacology or Parasitology. Team working skills, initiative and autonomy are also requested.

Application: Send (either in French or English) 1) cover letter including contact details, research interest and your suitability for this position, 2) detailed CV including experience -if any- of academic or professional research, and 3) contact of one referee.

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Deadline for applications: 03/11/2019