



**Introductory Training Course
in Molecular and Applied Parasitology
"PhD South" Programme of the LabEx PARAFRAP
Montpellier, 13-23 March 2018**

*Organised by Patrick BASTIEN & Rosa Milagros CORRALES
& Philippe SOLANO*

13th March 2018 : Malaria transmission and control

Morning:

- Isabelle Morlais ("MIVEGEC", IRD/CNRS, Montpellier): *Malaria transmission in natural settings*
- Fabrice Chandre ("MIVEGEC", IRD/CNRS, Montpellier): *Malaria vector control*

Afternoon :

- critical analysis of the article : [Goncalves et al., 2017. Examining the human infectious reservoir for plasmodium falciparum malaria in areas of differing transmission intensity. Nat Commun, 8\(1\): 1133. Available from <https://www.ncbi.nlm.nih.gov/pubmed/29074880>. DOI 10.1038/s41467-017-01270-](#)
- critical analysis of the article :

14th March 2018 : Insect-parasite interactions

Morning:

- Anne Geiger ("InterTryp", IRD/CIRAD, Montpellier): *Vectors bacteriome and its involvement in refractoriness or infection of insects by parasites.*
- Stéphanie Blandin (Strasbourg) : *Mosquito antiparasitic responses and potential applications*¹
- critical analysis of the article : [Aksoy et al. Analysis of multiple tsetse fly populations in Uganda reveals limited diversity and species-specific gut microbiota. Appl Environ Microbiol. 2014 ; 80\(14\):4301-12.](#)
- critical analysis of the article : [Ramphul et al., Plasmodium falciparum evades mosquito immunity by disrupting JNK-mediated apoptosis of invaded midgut cells, 2014, PNAS 2\(7\):201423586](#)

15th March 2018 : Drug development : from basic biology to drug development ??

- Jean-Claude Barale (Paris) : *(Title pending)*
- Sharon Wein ("DIMNP", CNRS/UM, Montpellier) : *From Plasmodium phospholipid metabolism to clinical development: the story of choline analogs.*

Afternoon :

- critical analysis of the article :
- critical analysis of the article : [McNamara CW et al. Targeting Plasmodium PI\(4\)K to eliminate malaria. Nature 2013; 504: 248-253.](#)

¹ I shall talk about interactions mosquito/parasite (with a strong focus on the antiparasitic response in mosquitoes, under the molecular and cellular aspects) and potential applications (expression of natural and artificial resistance genes to block transmission & pitfalls, gene drive)



16th March 2018 : Development of novel antiparasitic drug compounds

- E. Davioud-Charvet (Strasbourg) : [Integrative chemical biology and antiparasitic drug discovery](#)²
- Rachel Cerdan ("DIMNP", CNRS/UM, Montpellier) : [Structural approaches for rational design of antimalaria compounds](#)

Afternoon :

- critical analysis of the article : Cal , et al. Assessing anti-T. cruzi candidates in vitro for sterile cidalty. *Int J Parasitol Drugs Drug Resist.* 2016; 6(3):165-170. doi: 10.1016/j.ijpddr.2016.08.003.
- critical analysis of the article :

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19th March 2018 : Interest of whole genome sequencing for drug resistance, population genomics and antigenic diversity in parasites

Morning:

- Didier Mesnard + Frédéric Arieu (Paris) : [Emergence and spread of antimalarial drug resistance in Southeast Asia: contribution of genetic studies.](#)
- Antoine Claessens ("MIVEGEC", CNRS/IRD/University of Montpellier): [Population genomics of Plasmodium falciparum: on the origin of var gene sequence diversity](#)

Afternoon :

- critical analysis of the article : Roberto Amato et al. Origins of the current outbreak of multidrug resistant malaria in Southeast Asia: a retrospective genetic study. *Lancet ID* (in press)
- critical analysis of the article : Ruibaz-Pesantez et al. Population genomics of virulence genes of Plasmodium falciparum in clinical isolates from Uganda. *Sci. Rep.* 2017

20th March 2018 : Anti-parasitic vaccines (1)

Morning:

- Shahin Tajeri (Paris): [Vaccination against bovine theileriosis: from biology to disease control](#)
- Nicaise T Ndam ("MERIT", IRD/Ghana-Paris VI) : [Anti-disease immunogens in future malaria vaccines: from structural conservation to vaccine immunogen.](#)³

Afternoon :

- critical analysis of the article : Chaussepied et al. [TGF- \$\beta\$ 2 induction regulates invasiveness of Theileria-transformed leukocytes and disease susceptibility.](#) *PLoS Pathog* 6, e1001197, doi: 10.1371/journal.ppat.1001197 (2010)
- critical analysis of the article : Nielsen et al : [PLoS One.](#) 2015; 10(9):e0135406. doi: 10.1371/journal.pone.0135406. eCollection 2015
- OR - Lennartz et al : [Cell Host Microbe.](#) 2017;21(3):403-414. doi: 10.1016/j.chom.2017.02.009.

² Integrative chemical biology has for objective to rationalize human genetic mutations that protect from parasitic diseases. It can accelerate the discovery of small molecules to probe the mechanisms of life and discover innovative drugs. In the content of the talk, examples will be exploited to rationalize the discovery of redox-active molecules acting on malaria or other parasite diseases.

³ I will focus around the place for an anti-disease vaccine in the innovative vaccine strategies against malaria. Several promising molecular targets have been identified for each parasite stage, including CSP, RH5 and HAP2, Pfs48-45 and Pfs230. I will discuss the other possibilities for proteins that determine the outcome of the infection (symptoms), notably the PfEMP1, then I will give an update on the clinical development of one such vaccine, the VAR2CSA for placental malaria. I will also open the discussion to the recent achievements on severe malaria phenotypes.



21st March 2018 : Host-parasite relationships

Morning:

- Bruno Bucheton ("InterTryp", IRD/CIRAD, Montpellier-Guinée) : *Trypanotolerance in human and cattle: genetic, immune determinants and implication for control*
- Bernard Carcy (Faculty of Pharmacy, Montpellier) : *Genetic diversity and antigenic variation in Apicomplexa*

Afternoon :

- critical analysis of the article :.....
- critical analysis of the article :.....

22nd March 2018 : Novel diagnostic and treatment strategies

Morning:

- Loïc Rivière (Bordeaux) : *Diagnosis in parasitology : back to the future!*
- Abdoulaye Djimé (MRTC, Bamako, Mali) : *Should current ACTs fail in Africa, what's next?*

Afternoon :

- critical analysis of the article :.....
- critical analysis of the article :.....

23rd March 2018 : Anti-parasitic vaccines (2)

Morning:

- Ogobara K Doumbo (MRTC, Bamako, Mali) : *Malaria vaccine development in the field*
- Olivier Silvie ("CIMI", Inserm/CNRS/UPMC, Paris) : *Future prospects for malaria vaccines*

Afternoon :

- critical analysis of the article :
- critical analysis of the article : *Srinivasan et al. A malaria vaccine protects Aotus monkeys against virulent Plasmodium falciparum infection. NPJ Vaccine 2017*

