

Symptomatic *Plasmodium vivax* infection with parasite density higher than commonly observed in Duffy-blood-group negative patient in Mali, West Africa

Amadou Niangaly^{1*}, Tamarah Koleala², Safiatou Niare¹, Leonie Raijmakers², Karthigayan Gunalan³, Abdoulaye K. Kone¹, Boubacar Niare¹, Louis H. Miller³, Ivo Mueller², Mahamadou A. Thera² and Ogobara K. Doumbo^{1†}

¹Malaria Research and Training Center, International Center for Excellence in Research, University of Sciences, Techniques and Technology of Bamako, Mali. ²Walter and Eliza Hall Institute for Medical Research, Parkville, VIC, Australia. ³Laboratory of Malaria and Vector Research, National Institutes of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD 20852

*Corresponding: niangaly@icermali.org; +223 66-86-9906

†In memory of

Abstract

Plasmodium vivax (*P. vivax*) was observed not to be able to infect the red blood cells of Duffy-blood-group negative people particularly in Central and West Africa. In the last decade, *P. vivax* has appeared across sub-Saharan Africa as well in areas inhabited predominantly by Duffy-blood-group negative populations. Previous studies suggested that *P. vivax* is less efficient in Duffy-blood-group negative people and infection is milder than the one observed in Duffy-positive individual. Also, parasite density in Duffy-blood-group negative individual was reported to be very low. Our recent data have shown that chronic carriage of asymptomatic *P. vivax* infection in Duffy-blood-group negative individual can be associated with anemia. Moreover, cross sectional surveys are ongoing to better understand the paradigm shift of *P. vivax* infection in Duffy-blood-group negative individuals. Preliminary data show high *P. vivax* parasite density in febrile Duffy-blood-group negative child.

Objectives and Hypothesis

Aim 1: To determine molecular prevalence of *P. vivax* infection in sample
Collected from febrile patient

Aim 2: To determine the Duffy-blood-group status of patients carrying *P. vivax* infection

Hypothesis: In malaria endemic areas predominantly inhabited by Duffy-negative populations, *P. vivax* malaria occurs in Duffy-blood-group negative patient and parasite density might be high.

References

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Preliminary data

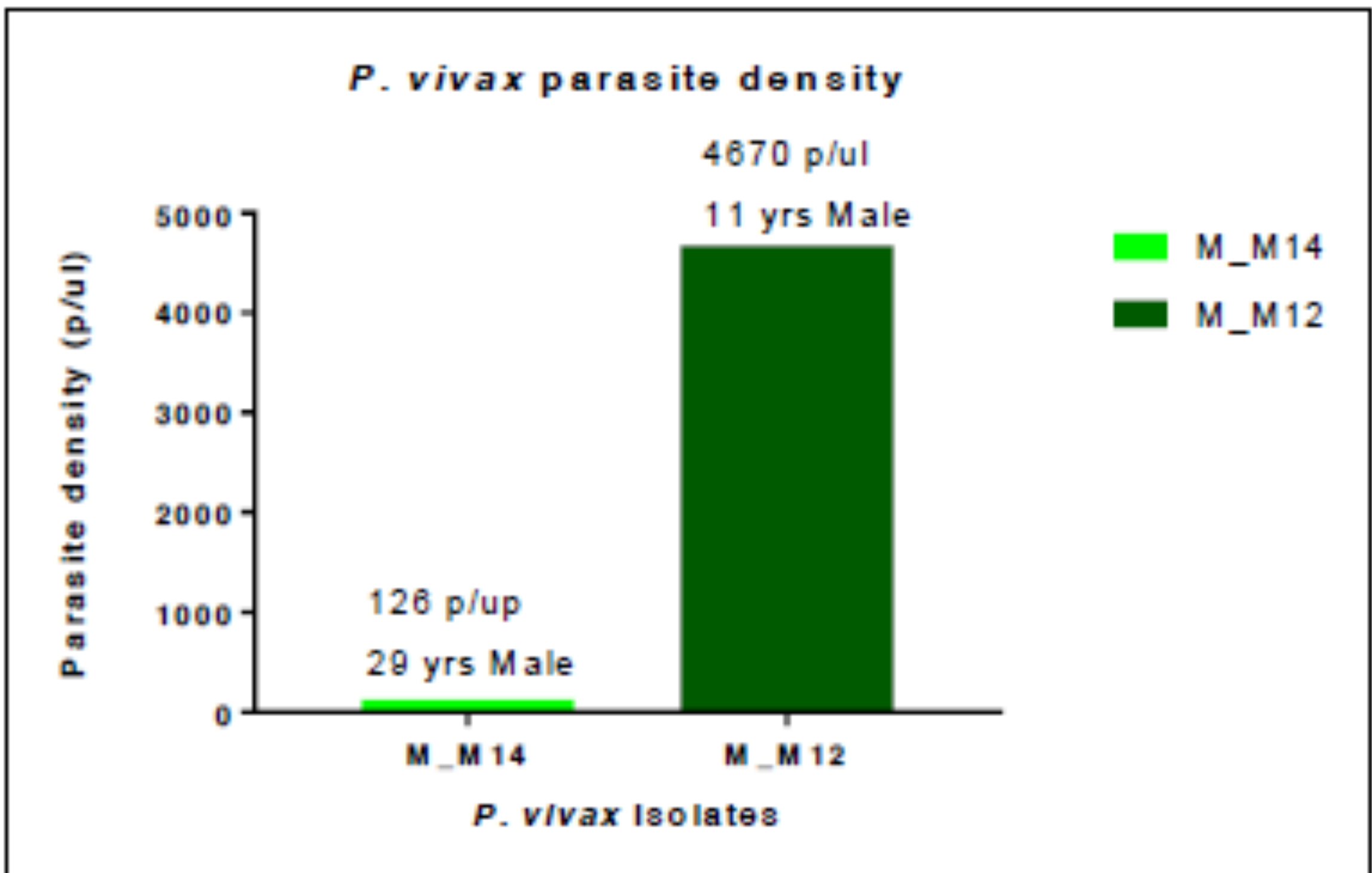


Figure 1: *P. vivax* parasite density in infected patients

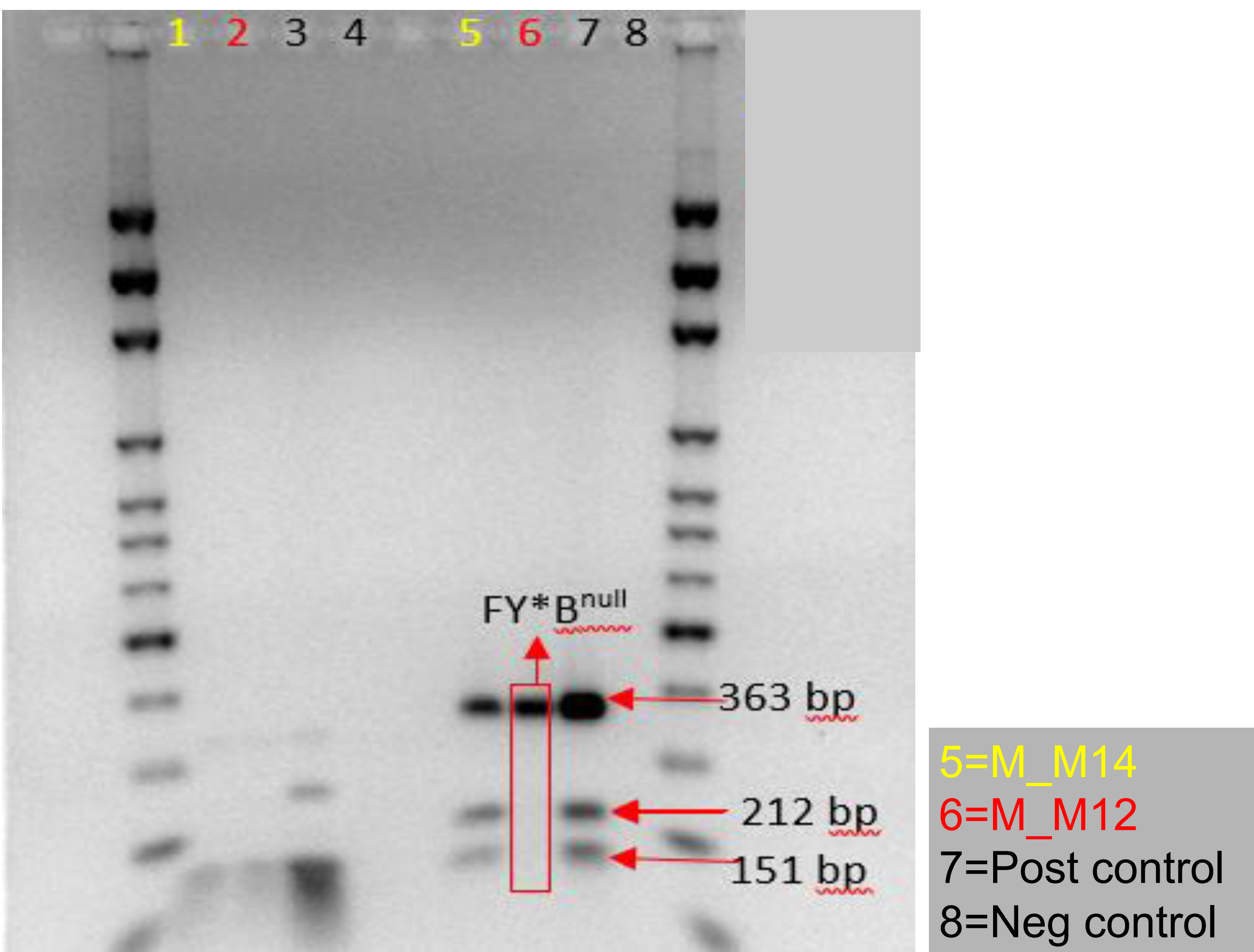


Figure 2: Gel profile of the BanI RFLP of DARC-PCR indicating the Duffy genotype of patient harboring *P. vivax* infection

Methods

Study site

- Samples were collected from 8 different sites,
- Seasonal malaria transmission

Study population

- Children cohort and all age patients
- Blood samples collection and malaria microscopy

DNA template extraction and amplification

- DNA was extracted from filter paper dried blood spot using FavorPrep™ 96-Well Genomic DNA Extraction Kit (Favorgen Biotech Corporation)

- Multiplex *Plasmodium falciparum* (Pf) and *Plasmodium vivax* (Pv) protocol using TaqMan Master Mix

Human DARC genotyping

- StyI and BanI RFLP

Current and Future Activities

- Cross sectional surveys of *Plasmodium vivax* infection with a larger sample size in different age groups and different geographical regions in Mali, West Africa
- Carry out *in vitro* cellular assays to determine receptors/ligand involved in the invasion of Duffy-negative erythrocytes
- Seroprevalence of *P. vivax* infection to help characterizing parasite transmission dynamics and identifying areas for more interventions

Acknowledgments

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