BIOENGINEERING
Fall 2020 Seminar

Date: **Thursday, October 29**
Time: **12:00 pm - 1:00pm**
Location: **Virtual**
Join Zoom Meeting—https://gmu.zoom.us/j/92554249038?pwd=V2p1ZUdqM1Y2RnBCcWhDU0V0T2FZZz09

Meeting ID: 925 5424 9038 Passcode: 640851

Lampouguin Douti, Ph.D.

Biography: Lampouguin Yenkoidiok Douti is a scientist at GlaxoSmith Kline, Slaoui Center for Vaccine Research. Dr. Douti graduated from the University of Maryland - College Park, in 2015 with a B.S. He attended graduate school in the same institution, completing his PhD in Bioengineering in 2020. His doctoral research focused on Malaria vaccine design, and he was co-advised by Dr. Carolina Barillas-Mury at the NIH Malaria Branch and Dr. Jewell at University of Maryland. His efforts led to the identification and testing of exciting new vaccine antigens. Throughout his PhD, Dr. Douti initiated multiple collaborations, including a collaboration with researchers in Togo - Africa, that could improve future dissemination of vaccine technologies. Dr. Douti published multiple papers, including in impactful journals such as *Scientific Reports*, *ACS Biomaterials Science and Engineering*, and *PNAS*. During his PhD, Dr. Douti was selected to present his work at more than a dozen national and international meetings, and received numerous awards, including the Keystone Future of Science Fellowship and the NIH Fellow Award for Research Excellence. After graduating, Dr. Douti accepted a postdoctoral fellowship from the NIH, but he took a scientist position at GlaxoSmith Kline shortly after. In his current position, Dr. Douti is working on RNA delivery platforms.

Title: Development and Optimization of a P47-based *Plasmodium* Vaccine to Block Malaria Transmission

Abstract: Malaria is an infectious disease caused by *Plasmodium* parasites that are transmitted to hosts by infected *Anopheles* mosquitoes. Over the last two decades, the widespread deployment of drugs and insecticides has resulted in significant reductions of malaria cases. However, without an effective vaccine, the recent emergence of drug-resistant parasites and insecticide-resistant mosquitoes are threats to this progress. Recently, reducing *Plasmodium* transmission from humans to mosquitoes has become an actively pursued approach to eradicate malaria. One unique strategy to achieve this goal is through transmission-blocking vaccines (TBVs). TBVs generate antibodies in immunized individuals that are transferred to mosquitoes during a blood meal to block the *Plasmodium* life cycle. Recently, our laboratory discovered that the *P. falciparum* surface protein P47 (Pfs47) allows parasites to evade mosquito immune system. This makes Pfs47 critical for the parasite's survival, and a valuable target for a TBV. The potential of P47 as a TBV target was tested in two models of malaria either as a monomer or a multimer conjugated on the surface of virus-like particles. Antibodies targeting a key region of Pfs47 significantly reduced *Plasmodium* density in mosquito. In addition to an effective vaccine, there is an urgent demand for effective delivery technologies that can be easily deployed in resource-poor settings. Thus, Pfs47 vaccine was loaded into dissolvable microneedles, micron-scale structures, and tested for function *in vitro*.