

1124-92-344

Lauren M Childs*, 460 McBryde Hall, Blacksburg, VA 24061, and **Jane Heffernen** and **Caroline Buckee**. *Modeling the dynamics of immunological memory to malaria*. Preliminary report.

Each year nearly 200 million people are infected with the malaria parasite, *Plasmodium falciparum*. One of the most notable features of infection with malaria is the inability of individuals to acquire sterilizing immunity to the parasite. The failure of protection is in part due to parasite strategies to avoid and limit host immune response including antigenic variation; however, recent evidence suggests that in addition to these parasite-mediated strategies there may be deficiency in the ability of the immune system itself to create long-lived protection against *P. falciparum*. Here, we develop a mathematical model of the generation and maintenance of B cell and antibody response to *P. falciparum*. We analyze simulated output to understand the origin of protective as well as ineffective immune responses in the presence of a multitude of varied proteins as well as antigenically varying proteins. We find that the level of persistent antibodies depends upon assumptions on the relative production of different type of antibody producing cells. Understanding the development and maintenance of protective immune responses to malaria is key in the on-going push towards elimination and eradication. (Received September 12, 2016)