1070-92-164   **Miao Wang*** (`wangm@lafayette.edu`), Box 9486, 111 Quad Drive, Lafayette College, Easton, PA 18042, and **Miranda Ijang Teboh-Ewungkem** (`tebohewm@lafayette.edu`), 3261 Highfield Drive, Bethlehem, 18020. *A Mathematical Perspective: How male fecundity affects the optimal gametocyte sex ratio of Plasmodium falciparum during incomplete fertilization.*

A mathematical model developed to simulate the within-vector dynamics of Plasmodium falciparum in an Anopheles mosquito is used to investigate how the ratios of the fecundities of double and triple parasite strains shift the optimal gametocyte sex ratio. For both the double-strain and the triple-strain cases, we showed that under random unbiased mating and incomplete fertilization, the sex ratio can be written as a function of the ratios of the fecundities under a cooperative gaming system. Moreover, the variation in the ratios of the fecundities led to a moderate variation in the optimal gametocytes sex ratio and also resulted in a more female biased sex ratio. Additionally, male biased sex ratios were observed under certain conditions when in addition to the difference in fecundities, the number of ingested gametocytes was different between strains. (Received February 08, 2011)