

**Chelsea Liddell**

DARTMOUTH COLLEGE, USA

e-mail: Dorothy.Wallace@Dartmouth.edu

**Dorothy Wallace**

DARTMOUTH COLLEGE

**Nicci Owusu-Brackett**

DARTMOUTH COLLEGE

**Kristen Klepac**

DARTMOUTH COLLEGE

## **Persistence of the Sickle Cell Genome in the Presence of Malaria**

It is believed that the sickle cell gene has persisted in the human population due to the partial resistance it confers on victims of malaria. We use a system of six equations tracking populations of three genotypes and two age brackets to study what relative death rates for malaria and sickle cell are required in order for the gene to persist, and what resulting proportions of the population are expected to carry the gene under different assumptions about malarial death rates. The results can be compared with current data to infer historical death rates for malaria. The model also allows estimation of the length of time it takes such a gene to reach equilibrium in a population, and how this depends on assumed death rates.