

### **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: Genomes used for MIP Design- The sample name (Sample), short read archive accession number (Run Accession), and the country of origin for the genomes used in the molecular inversion barcode design.

File Name: Supplementary Data 2

Description: Prevalence of Antimalarial Resistance Mutations- The prevalence of antimalarial resistance mutations detected by the MIPs is shown for each geographic location.

File Name: Supplementary Data 3

Description: Design of SNP MIPs- The design of each MIP used in the SNP barcode is provided.