

## Abstract

This study explores the research that was carried out in Jakarta, Indonesia at the Indonesia International Institute for Life Sciences (i3L). The problem of drug-resistant forms of the malaria-causing parasite *Plasmodium falciparum* in Indonesia is the main topic of this report. The study emphasizes the necessity of developing new diagnostic techniques in order to quickly and accurately detect drug-resistant strains of malaria. It demonstrates how inexpensive Loop-Mediated Isothermal Amplification (LAMP) tests may be when used in place of more traditional PCR-based methods, especially in low-resource settings. The goal of the project is to create specialized LAMP assay methods that target the *Plasmodium falciparum* PfMDR1-S1034C gene. By revolutionizing malaria diagnostics, these strategies hope to improve the treatment and control of drug-resistant malaria to a greater extent. The study describes the primer design techniques used, such as the PCR and LAMP primer creation process using Primer3 and PrimerExplorer software. Melting temperatures, percentages of GC content, and primer sequences are among the results. This study supports continuing initiatives to fight drug-resistant malaria, which is in line with i3L's objective to improve society through scientific innovation.

Keywords: LAMP, malaria, *Plasmodium falciparum*, PfMDR1-S1034C