



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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| Name(s) Emmanuel P. Chan | Project Number S1597 |
| Project Title Use of FTA Paper for the Transportation of Plasmodium Infected Blood Sample: A Feasibility Study | |
| Abstract Objectives/Goals The use of FTA paper to transport biological specimens is important for remote areas to get access to laboratory services. Although some research studies have shown that nucleic acids of some microbial agents can be maintained for a long time on FTA paper, it is not clear whether the stability of these microbial DNAs can be maintained under various environmental conditions, such as high heat treatment. Here, the feasibility of FTA paper to transport Plasmodium falciparum DNA was examined. Methods/Materials FTA paper containing P. falciparum infected blood was subject to treatment at different temperatures for 24 hours, or at high temperature for up to 5 days. A field study was also carried out by sending FTA paper containing DNA of the parasite to different regions of the world. Quantitative real time PCR was used to measure the change in amplifiable DNA isolated from these treated FTA papers Results Results showed that there was no statistical significant change in amplifiable DNA when FTA paper containing the parasite was incubated at room temperature, 370C, 550C and 700C for 24 hours. Even when the FTA paper containing the infected blood was incubated for 5 days at 700C, there was no significant drop in amplifiable DNA. When FTA papers containing DNA of the parasite were sent to Cleveland, Toronto, Hong Kong and Shanghai, there was also no significant difference in amplifiable DNA isolated from these samples. However, based on linear regression analysis, a weak correlation was observed between the duration of postal transit and decrease in amplifiable DNA on the FTA papers. In addition, no amplifiable DNA was detected in two samples sent to Asian regions, suggesting other factors may affect the stability of the parasite DNA on the FTA paper. Conclusions/Discussion Results support the use of FTA paper to transport Plasmodium infected blood for clinical diagnostic uses. However, more studies are needed to delineate other factors which may compromise its use. | |
| Summary Statement To determine whether FTA is suitable for transporting Plasmodium infected blood sample for clinical diagnostic uses | |
| Help Received Scientists for Zoologix, Inc supervised and trained me in carrying out the research | |