

## **MOSQUITOES AND DETERMINATION OF HUMAN IDENTITY USING DIRECT AMPLIFICATION**

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Evidence such as blood or saliva containing deoxyribonucleic acid (DNA) can be helpful in linking an individual to a crime scene. One of the more unusual sources that can be used for generation of DNA profiles are insects such as mosquitoes or flies. Mosquitoes are not generally included as potential sources of human DNA despite the fact that they feed on human blood and maintain a ubiquitous presence in the environment, especially in the summer or in geographical areas with hot climates. These insects are among the most commonly found creatures in the world and are responsible for causing many illnesses. Therefore, it would not be unusual for them to be present at crime scenes. In fact, mosquitoes have been previously documented and collected at crime scenes around the world.

The primary goal of this research was to obtain forensic DNA profiles from the blood from the abdomen of mosquitos by direct amplification using the PowerPlex® Fusion 6C System from Promega Corporation and the Investigator® 24plex GO! Kit from Qiagen. Mosquitoes were frozen or euthanized by putting them in ethanol at different time intervals after they were fed on human blood meals. Blood meals included both single sources of human blood and a mixture of two sources of human blood. Direct amplification was used, thus bypassing standard extraction and quantification steps. The results indicated that profiles obtained from the blood in the mosquitoes were consistent with profiles obtained from reference blood of the same source. In addition, the degradation of the DNA from mosquitoes euthanized at different time intervals was assessed. The results of this study indicate that it is possible to use mosquitoes as a tool for human identity.