FR 170 1 (3)

Section 2

Executive Summary of the project:

DNA based human identification technology is the most powerful tool for accurate identification of perpetrators of crime. In forensic DNA typing, Short Tandem Repeat (STR) DNA markers in human DNA from biological evidence/human remains that is collected from crime scene are selectively amplified in Polymerase Chain Reaction (PCR) PCR to generate DNA profiles that unique to an individual.

However, under tropical environmental conditions of high humidity and high temperature DNA in biological evidence tend to degrade resulting fragmentation of DNA molecules in to smaller pieces that fail to amplification in PCR creating a major obstacle on identifying perpetrators of crime. Approximately 21% of samples in DNA analysis in Sri Lanka suffer from being untypable due to heavy fragmentation due to DNA degradation.

Application of a technology that reduce the size of the PCR products to generate a miniaturized STR fragment (miniSTR), has proven to be highly successful to recover information from degraded DNA samples. However analysis of such smaller STRs, demand highly expensive commercial DNA testing kits. The present project developed a low cost in-house method to analyze human mini-STRs system reducing more than 70% of sample analysis cost against commercial test kits. A detailed population genetic study with novel mini human STR markers was also completed to determining the allelic frequencies and forensically important statistical parameters for Sri Lankan human population.