

STR GENOTYPING OF ENVIRONMENTALLY CHALLENGED SKELETAL SAMPLES

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In the case of mass disasters, missing persons and some forensic casework, skeletal samples that have been exposed to various environmental conditions such as extreme heat, water immersion, prolonged surface exposure or burial may be encountered. Such harsh conditions often inflict significant damage and degradation to the endogenous DNA of these samples, which in turn may lead to partial or no genetic profiles being obtained. Often the successful identification of samples exhibiting very high levels of DNA degradation is further complicated by also presenting in very low quantities.

This work examines the success of short tandem repeat (STR) genotyping of bone and tooth samples which have been exposed to a wide range of taphonomic processes such as burial, sun exposure, fresh and salt water immersion and heat and fire exposure for periods ranging from two weeks to two years. Bones and teeth from a 200 year old shipwreck will also be examined. DNA quantity, level of degradation and presence of any PCR inhibition was assessed using a multiplex quantitative PCR assay prior to STR analysis. Samples were then analysed using different STR kits. The results of this study and the comparison of the kits will be presented.