Application of Mitochondrial DNA Technologies in Wildlife Investigations — Species Identification

REFERENCE: Linacre A: Application of mitochondrial DNA technologies in wildlife investigations — Species identification; *Forensic Sci Rev* 18:1–8; 2006.

ABSTRACT: Forensic science laboratories are increasingly requested to investigate crimes involving wildlife and to examine nonhuman biological tissue. The illegal trade in endangered species has led to a need to use methods, accepted by the forensic community and acceptable to a court of law, that will identify species that are present from seized samples and to determine whether the ownership of the samples contravenes any legislation. The use of genetic loci on the mitochondrial genome has become standard with the cytochrome *b* gene being the best described and utilized of the mitochondrial genes. The amplification of part or all of the gene and comparison to stored DNA sequences held on DNA databases such as EMBL (by the European Molecular Biology Laboratory) or GenBank (by the National Institutes of Health) can lead to the identification of the species. Examination of single nucleotide polymorphisms is possible in the case of highly degraded samples. The testing methods available have led to the successful prosecution of traders in endangered or protected species.

KEY WORDS: CITES, cytochrome *b*, DNA sequencing, EMBL, GenBank, mitochondrial DNA, SNP, wildlife.