QUANTITATIVE PCR FOR DNA IDENTIFICATION BASED ON GENOME SPECIFIC INTERSPERSED REPETITIVE ELEMENTS

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We have designed and evaluated a series of class-specific (*Aves*), order-specific (*Rodentia*), and species-specific (equine, canine, feline, rat, hamster, guinea pig, and rabbit) polymerase chain reaction (PCR) based assays for the identification and quantitation of DNA using amplification of genome-specific short and long interspersed elements (SINEs/LINEs). Using SYBR Green-based detection, the minimum effective quantitaion levels of the assays ranged from 0.1 ng to 0.1 pg of starting DNA template. Background cross –amplification with DNA templates derived from sixteen other species was negligible prior to 30 cycles of PCR. The species-specificity of the PCR amplicons was further demonstrated by the ability of the assays to accurately detect known quantities of species-specific DNA from mixed (complex) sources. These assays will help facilitate the sensitive detection and quantitation of common domestic animal and bird species DNA from complex biomaterials.