E24 Frequency of Occurrence and Magnitude of Plus Four (n+4) Stutter in Forensic DNA Profiles

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After attending this presentation, attendees will understand the frequency of occurrence and magnitude of plus-four (n+4) stutter in forensic DNA profiles.

This presentation will impact the forensic community by demonstrating empirical data to support the occurrence of plus-four stutter in forensic DNA samples.

Stutter is a common technical artifact of the PCR amplification processes used by forensic DNA profiling laboratories. Crime laboratories routinely use filters to recognize and discount signals associated with n-4 stutter but usually do not take into consideration the possibility of different but related stutter artifacts such as n+4 stutter. An examination of 220 single source reference samples suggests that recognizable n+4 stutter occurs frequently during the course of routine casework: 36 instances of n+4 stutter were observed in a total of 28 reference samples that had been genotyped during the course of routine casework by 15 different laboratories across the United States. Peaks were considered to be n+4 stutter if they met six criteria: 1) they were in an n+4 stutter position; 2) they were greater than or equal to 50 but less than 4,000 RFUs in height; 3) they could not be explained as being due to n-4 stutter; 4) the primary peak before the target peak was between 900 and 4,000 RFUs; 5) peak height imbalance suggested it did not correspond to a true allele; and 6) its peak-height-to-peak-area ratio made it inconsistent with both spikes and blobs. The magnitude of n+4 stutter peaks relative to the primary peaks that they are associated with is considered, and a conservative filter (5.9%) for the identification of stutter artifacts in the n+4 stutter position is proposed.

N+4 Stutter, Electropherograms, Forensic DNA

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