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Interpretation of DNA analysis data on the basis of the evaluation of a series of equivalent probability values

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Interpretation of probability values is a difficult phase of the DNA research, especially in cases when one can not achieve very convincing figures. The base calculated value: Match probability, as well as its derivative value-LR; being considered by itself carry limited information on these quantities in terms of the reliability of establishing the identity. However, if we express this values through a series of mathematical equivalents describing its content and evaluate all the data in the complex, it is possible to get extra information which can be useful for the assessing the risk of the identification mistake. It is also important that these equivalents may include new parameters that can deliberately be set. They may include such values as probability of uniqueness of the DNA profile in a specific population; probability that in the specific general population there is at least one more person, another than the suspect, whose genotype may also match the DNA profile of the object under examination; the probability that for a given level of reliability the accuracy of at least a certain number of identification studies is ensured, and so on. As the equivalent probability values describe different aspects of the same statistical model, the evaluation of their complex can be useful for the investigator and the court. The range of equivalent values may also be used to develop the standard of the determination of genetic identity.

Biography

Irina Perepechina is Professor of Department of Criminalistics of Legal faculty of Lomonosov Moscow State University. She has both medical and legal education, PhD degree (1990) and Doctor of Medicine degree (2003) in Forensic Medicine (genetic identification). Her scientific interests focus on fo¬rensic DNA analysis, DNA evidence interpretation, DNA database, DNA phenotyping, forensic serology; legal aspects, theory and methodology of forensic science/medical law. She has more than 120 scientific publications and manuals. She is a member of ISFG; in 1995-1999 - representative of Russian Federation in DNA WG of ENFSI. At the University, she lectures on forensic medicine, forensic genetics, criminalistics and forensic science.

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