

## **DIFFERENTIATION OF IDENTICAL TWINS USING NEXT GENERATION SEQUENCING**

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Monozygotic (MZ) twins are considered being genetically identical, therefore they cannot be differentiated using standard forensic DNA testing. Here we describe how identification of extremely rare mutations by ultra-deep next generation sequencing can solve such cases. We sequenced DNA from sperm samples of two twins and from a blood sample of the child of one twin. Bioinformatics analysis revealed five Single Nucleotide Polymorphisms (SNPs) present in the twin father and the child, but not in the twin uncle. The SNPs were confirmed by classical Sanger sequencing. The method provides a solution to solve paternity and forensic cases involving monozygotic twins as alleged fathers or originators of DNA traces.