

Hair color of unknown offenders is no longer a secret

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The hair color of an unknown perpetrator who has committed a crime will soon no longer be a secret for forensic investigators. Erasmus MC scientists, in collaboration with their Polish colleagues, have discovered that DNA can be used to predict people's probable hair color. Their findings¹ will be published today in the Springer journal *Human Genetics*.

The research findings demonstrate that on the basis of DNA information it is possible to determine with an accuracy of more than 90 percent whether a person has red hair, with a similarly high accuracy whether a person has black hair, and with an accuracy of more than 80 percent whether a person's hair color is blond or brown. This new DNA approach even allows differentiating hair colors that are similar, for example, between red and reddish blond, or between blond and dark blond hair. The necessary DNA can be taken from blood, sperm, saliva or other biological materials relevant in forensic case work.

Prof. Manfred Kayser, Chair of the Department of Forensic Molecular Biology at Erasmus MC, who led the study, said, "That we are now making it possible to predict different hair colors from DNA represents a major breakthrough because, so far, only red hair color, which is rare, could be estimated from DNA. For our research we made use of the DNA and hair color information of hundreds of Europeans and investigated genes previously known to influence the differences in hair color. We identified 13 'DNA markers' from 11 genes that are informative to predict a person's hair color."

Prof. Ate Kloosterman of the Department of Human Biological Traces at the Netherlands Forensic Institute (NFI) said: "This research lays the scientific basis for the development of a DNA test for hair color prediction. A validated DNA test system for hair color shall become available for forensic research in the not too distant future. These researchers have previously published articles on predicting eye color and estimating age on the basis of DNA material. This type of objective information can be used to refine the description of an unknown but wanted person. This new development results in an important expansion of the future DNA toolkit used by forensic investigators to track down unknown offenders."

The current study was directed at the predictability of the color of the hair on the head. Further research would be necessary to predict the color of body hair.

More information: Branicki W, Kayser M et al. (2011). Model-based prediction of human hair color using DNA variants. *Human Genetics*; [DOI:10.1007/s00439-010-0939-8](https://doi.org/10.1007/s00439-010-0939-8)

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