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#### De kwestie

De universiteit mag geen platform zijn voor extreem-rechte politici als Filip Dewinter.

Mee eens

Mee oneens

Geen mening

Stem!

Status

## A behind-the-scenes look at forensics

I wasn't sure what to expect when I walked into Prof. Manfred Kayser's Forensics lab. After watching a lot of televised forensic programs, especially the popular CSI series, I envisioned dark rooms, tons of complicated looking equipment, and important looking people with guns strapped to their waists analyzing bloody clothes.

*text Sheba Agarwal*

The reality was different, as it always is. Prof. Kayser is still in the process of setting up his lab, a large sunny space on the 10th floor in the Erasmus MC. I was curious about the work that is carried out in the lab, as well as its research goals.

Contrary to my hopes, there is no processing of actual crime scene samples at the lab. Rather, Prof. Kayser aims to carry out fundamental research that would ultimately advance the science of forensics, which, in the long run, would help the law makers to catch the bad guys but can also contribute to an advancement of knowledge in human biology.

Kayser started out working on micro satellites (repeats of varying lengths distributed widely throughout the genome; their length and location are unique for each person) of the human Y chromosome at a time when it was still uncharted territory, both in terms of forensics and human evolutionary genetics. He worked in the Humboldt-University, Berlin, where a number of people were interested in performing this kind of research and also applying it to forensics. Information on the Y chromosome is needed to identify the offender in rape cases, where mixed samples are often a problem. Today, Y chromosome DNA analysis for identifying male individuals is well established in forensic as well as anthropological genetic laboratories.

### Unique position

In spite of moving away from the applications field after his PhD, Professor Kayser remained interested in forensics as he moved gradually towards the field of anthropological genetics, first as a Post-doc at the Pennsylvania State University (USA) and afterwards as a research scientist at the Max Planck Institute for evolutionary anthropology in Leipzig (Germany). As money and equipment devoted solely to fundamental research in forensics is not common, he now has a rare and exciting opportunity to establish and head a Department of Forensic Molecular Biology at the Erasmus MC. The reason for this is that most forensic institutes, for example the Netherlands Forensic Institute (NFI), have to devote most of their time and energy to solving forensic cases, which often means that they have to wait for scientific input from other sources, including labs like Professor Kayser's. In this sense, his lab is in the unique position of carrying out fundamental research in the fields of human biology and human genetics, but with potentially direct applications to the way that perpetrators can be incriminated conclusively in a court of law. In order to ensure this, Professor Kayser's lab works closely with the NFI and the Forensic Laboratory for DNA Research (FLDO) at Leiden University Medical Center as well as international institutes in the field of forensics and human genetics.

### Science fiction

There is always a need to get to the bottom of cases that cannot be solved because science is not advanced enough. One of the projects that Professor Kayser is involved in is attempting to accurately pinpoint the geographic identification and origin of an unknown DNA sample. This knowledge can be used to rule out suspects or, more importantly, profile perpetrators in cases where either nothing pertinent is known, or the genetic information does not match anything in available databases. Once the genes that influence appearance have been identified, this information can be used, in principle, to predict externally visible characteristics (height, skin colour, facial characteristics) in a person. In fact, Dutch law has approved the use of genetic markers which are able to predict physical appearance in forensics, but science has not yet come up with the goods. The ultimate aim is to obtain sufficient correlation between genetic information and physical characteristics to be able to construct a person's appearance with relative precision, just by analysing a DNA sample - although this remains in the realms of science fiction at present.

### Helping humanity

Of course, research like this might encounter pitfalls in a world physical appearance can be changed very easily. To counter this, Professor Kayser explained, they are careful not to characterise genes that influence features that can be easily modified, or naturally change

significantly over lifetime, for example hair colour. Also, most criminals do not have the means or the presence of mind to systematically alter their appearance in order not to get caught (unlike in the movies where the hired assassin can turn into anyone he wants). For example, crime scene investigators always look - and often successfully - for incriminating physical fingerprints at a crime scene, even though everyone knows that we leave tell-tale physical fingerprints everywhere and could avoid leaving them simply by wearing gloves. According to Ronaldo Menezes, the life of a scientist is spent devising solutions to problems that he doesn't have, and hopes not to have. In spite of this typically selfish and bookish view of scientists by the world at large, many researchers actually do dream of bringing some kind of benefit to their fellow human beings. For a small minority, like Professor Manfred Kayser, the goal of helping humanity might be closer at hand. EM

*i Dr Manfred Kayser is Professor of Forensic Molecular Biology at Erasmus University Rotterdam and head of the Department of Forensic Molecular Biology at Erasmus MC, located in the faculty building, Room Ee 1063. In the near future, more information will be available on the departmental website <http://www.erasmusmc.nl/fmb>  
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