

EUROPE

New EU standard for DNA profiling

► Forensic scientists have laid the groundwork to expand and harmonise the exchange of the roughly 6 million DNA fingerprints from criminal offenders that are currently stored in national DNA databases throughout the European Union. At the end of April, the European DNA Profiling Group (EDNAP) and the European Network of Forensic Science Institutes (ENFSI) recommended upping the current European standard set (ESS) for DNA profiling of short tandem repeats (STRs) - the non-coding DNA sequences used to confirm identity - from 7 to 12. The decision has now been passed on to the contact group at the European Council that will decide on the new standard in the second half of the year, and the upcoming Swedish EU presidency has already agreed to put the issue on its priority list. The move is aimed at harmonising the STR set used in forensic labs, as well as improving the robustness and sensitivity of tests, thereby avoiding any random matches that could link DNA profiles of criminal offenders to innocent EU citizens.

The idea of expanding the standard set emerged more than four years ago, when 10 EU countries signed the Prüm Treaty, an extra-EU agreement that defines rules for automatic exchange of DNA sets to track cross-border crime between those nations (see EUROBIOTECHNEWS 7-8/2008). After 6 additional EU countries declared they

also intend to join the Treaty, the European Council last year decided to incorporate it into EU law.

“The Council decision commits the EU member states to establish national DNA databases and automatic data exchange by 2011,” Dr. Rainer Wenzel from German State Office of Criminal Investigation (LKA) in

Mainz told EUROBIOTECHNEWS. “And with a growing number of DNA datasets being exchanged, the statistical probability of random matches is also growing.”

According to analyses from ENFSI, which established the current standard in 1999, the 6 million DNA datasets stored in national DNA police registers is set to grow as new countries join in. “At the moment Austria, Germany, Spain, Slovenia, Luxembourg, and the Netherlands already automatically exchange STR profiles, and France and Finland are joining soon,” confirmed Wenzel.

STR suppliers feel well-prepared

At their last meeting in Lisbon, ENFSI and EDNAP recommended adding three very short mini-STRs and two midi-STRs to the standard set to make the DNA tests more robust, more sensitive, and more effective at finding matches even in highly degraded samples. “The new standard will have a greater capacity to discriminate very similar DNA profiles, or to match STRs of degraded or very small samples,” said German forensic expert Dr. Mark Benecke.

According to Wenzel, forensic labs would be able to implement new multiplex kits covering the 12 STRs a few weeks after they have come to the market. “We will be able to deliver multiplex kits with the new standard plus the additional very meaningful marker SE33 by the end of the year,” said Dr. Peter Quick, who views his company Promega as well-positioned to provide STR systems to meet anticipated market demands. Promega’s competitor Life Technologies will also offer 12+X STRs kits, but without SE33. Together, Life Technologies and Promega already share more than two thirds of the worldwide human identity testing market. Amidst fierce competition, it’s unlikely that costs will rise with the new multiplex kits.

According to Wenzel, STR profiles already provide hit rates of up to 30% in identifying cross-border criminality, and will become more accurate with the standard. Interestingly, most of the felons apprehended using the technology are not terrorists, murderers or other perpetrators of violent crimes. Instead, it has proven most effective at catching burglars. ◀



Photo: Jasmin Agovic / ICMP

Researcher of the International Commission on Missing Persons (ICMP) with a bone sample that will be subject to DNA profiling