THE PRESENT AND FUTURE OF DNA DATABASE IN POLAND

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ABSTRACT: The Polish DNA national database is currently at the stage of being set up, following the introduction appropriate legislation in 2001. The paper shall include the relevant information on legal foundations (such as Police Act, Personal Data Protection Act, etc.) for the use of DNA technology as well as conditions for the establishment and operation of DNA database in Poland. With reference to legal basis, some regulations, requirements and responsibilities of different parties involved in DNA process will be presented, along with the following information: kits used for collection of samples, separation of databases (DNA profiles from individuals and casework samples), personnel responsible for collection of samples, structure of database, etc. Finally, various aspects of setting up a genetic database, that have emerged in the process shall be discussed, such as technical and human resources problems, adopting premises in compliance with contemporary standards, facilities, and resources used.

KEY WORDS: DNA; Database; Poland.

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INTRODUCTION

Within the framework of the European Union Resolution of 9th June 1997 (97/C 193/02), the Member Countries were asked to consider the possibility of creating national genetic databanks. The implication resulted from an increasing level of international crime, which could be possibly reduced with the application of the state-of-the art tools. One of these tools is a collection of DNA profiles of convicted criminals, suspects and traces from unsolved crimes, as their analysis provides main or additional evidentiary strength. As Poland is one of the European Union pre-accession countries, several preparatory activities have been undertaken in many sectors, including police and forensic science, to ensure keeping up with recent EU recommendations. The sensitivity and discrimination power of contemporary DNA profiling techniques, that have been gradually implemented in Polish forensic science since 1996, were also vital premises for the establishment of DNA database. At the same time, a rapid development in science and tech-

nology entailed the need to furnish DNA examination units existing within police forensic laboratories in Poland with the new generation analytical equipment. Owing to means and resources provided by the EU within the framework of international agreements, the forensic experts and managerial staff could become acquainted with the structure and organisation of various national DNA databanks functioning in Europe and consequently, a decision was undertaken to set up such a database in Poland.

At the onset of DNA database formation process, three factors had to be considered, such as: objective of setting the database, standards used across Europe, and finally, IT solutions:

- objective: besides the function of matching various profiles and linking crimes, the database is to facilitate international exchange of DNA profiles related to prosecuted crimes and criminals;
- standards: to ensure compatibility with other international systems, the standards which have been recommended by ENFSI and Interpol will be the ones of choice;
- IT solutions: to choose a computer application, which is both cost-effective and efficient in terms of fast and accurate generation of matches.

LEGISLATIVE CONSIDERATIONS

When setting up a DNA database, which comprises collection of samples from individuals, several political and social considerations have to be taken into the account and embraced into a legislative framework. The main problem, which needed to be overcome was the attitude of some politicians who expressed their concern in relation to abuse of human rights. Political circles were pointing to the possibility of generating personal data by the police that could be abused in some ways or that genetic profiles would provide entire information on the given individual (physical appearance, habits etc.). In order to supress these views, the representatives of forensic community attended parliamentary sessions of the Commission on Internal Affairs and Justice System, whereby they explained the objectives of setting up a DNA database and emphasised that loci chosen for forensic DNA analysis had been deliberately selected to be noncoding regions of DNA molecule.

Finally, drafting of appropriate legislation was initiated. The outcome of shared effort between political and legal representatives, as well as members of the police was an amended Police Act of 27th of July 2001, signed by the President of Polish Republic on 24th August 2001 (art. 20, § 2 of the Police Act). The wording is as follows: "for detection and identification purposes, the Police may collect, process and utilise information, including personal data, on individuals suspected of indictable offences, juveniles com-

mitting acts banned under the law and qualified as indictable offences, as well as unknown persons, persons attempting to conceal their true identity and wanted persons. In particular, the police may collect the following information: 1) personal data enlisted in art. 27, § 1 of Data Protection Act (29.08.1997) (...) however data concerning genetic code concern exclusively noncoding regions of DNA molecule.

In addition to this, art. 20, § 19 of the amended Police Act makes the Chief Commander of the Police responsible for drafting executive acts, as follows: "The Chief Commander of the Police, following consultations with the Chief Inspector for Data Protection shall define, in form of regulation, the manner, terms and conditions of collection, processing and use of information mentioned in act 2 as well as rules for setting up and maintaining collection of such, and is to determine a scope of responsibilities of police personnel authorised to use information included in such collections, and to prepare documents to be used with data processing with respect to protection of secret or confidential information".

Issues, such as security, confidentiality, disclosure of information, sample storage and destruction of samples are addressed in a separate document elaborated by the Chief Commander of the Police.

ENVISAGED STRUCTURE OF DNA DATABASE

Taking into the consideration the hitherto gained experience during numerous visits abroad and European guidelines communicated during ENFSI meetings, it has been accepted that the Polish National DNA Database would encompass two, separate analytical line-ups:

- examination of profiles obtained from crime scene biological material (crimestains);
- examination of profiles obtained from collection of samples from individuals (persons).

The Biology Department of the Central Forensic Laboratory of the Police, where the central database will be situated, is responsible for the analysis of samples from persons and resulting profiles will be transported to the database. Regional forensic laboratories, located nationally and their respective genetic units (10) will deal with the analysis and submission of profiles developed from crimestains to the central database. Workstations installed in regional laboratories will be connected to the central system through the Police Data Transfer System.

The police DNA database will contain the genetic profiles generated from:

– suspects;
– unsolved crimestains;
– unknown corpses.

Data generated in the database will enable the following matches:
– crime to person;
– crime to crime;
– person to person;
– unknown corpse to a relative of a missing person.

DNA profiles will be defined in 8 loci, which is compliant with recommendation of DNA ENFSI group and Interpol, so that the profiles can be exchanged internationally.

Three basic roles of DNA database shall be highlighted. These are:
– detection role – DNA database supports investigation in terms of fast indication of potential suspects;
– prevention role – due to popularisation of success stories, linking various criminal events, especially in high profile cases, the database plays a crime prevention role;
– cost effectiveness – savings in financial resources, technical means and time needed for long investigation.

UNDERTAKEN ACTIVITIES

Biology experts working for police forensic laboratories (2 from the CFLP and 2 from regional forensic laboratories) participated in a 13-week training in Forensic Science Service (UK) National DNA Database. The training, delivered in three stages, was to provide experts with awareness of the structure, organisation of DNA database, as well as theoretical and practical knowledge in the area of DNA analysis in SGM + system. The training, being an indepth and valuable experience, was completed with certificates acknowledging the acquired skills in carrying out DNA analysis by means of ABI PRISM 377 instrumentation and software. In addition to this, the head of CFLP Biology Department spent 2 weeks at various sites of FSS and became acquainted with management and administration issues in relation to DNA database as well as with the aspects of quality management system.

Presently, all DNA experts in Poland must undergo a cascade training on application of the newest DNA technology in databasing, completed with proficiency test. The selected experts will also take part in international training on interpretation of results obtained through genetic analysis. Regularly, our experts participate in GEDNAP proficiency tests, and hold an appropriate certificate.

Up to present moment, the laboratories have been furnished with ten 377 gel sequencers (ABI PRISM) along with essential instrumentation, computers and software. In the years 2002/2003, additional purchases are envisaged from EU PHARE funds, which will complement the equipment of the central and remote sites with, for instance, 10 sequencers more.

At the same time, a DNA database site is under preparation. The DNA database will be located at new premises, which presently are undergoing renovation and adaptation to tailor database requirements.

A population (frequency) database has been generated with more than 2000 samples, which will be applied to the interpretation of forensic DNA analysis.

Our experts have developed kits for non-invasive collection of samples for genetic examinations. These kits contain FTA papers, are easy in application and can be stored at a room temperature. After positive validation, kits are ready to be used in practice.

The most difficult, still outstanding task is to decide on the software allowing for generation and search of genetic profiles. American CODIS and Austrian DIMENSION systems are considered at the moment and a final decision will have been undertaken by the end of 2002, following appropriate tests. The selection of such a software should sustain a planned exchange of DNA profiles between European laboratories.

CONCLUSIONS

Finally, I would like to present some statistical data:

- in Poland, nearly 220 000 criminal incidents with recovered forensic traces are recorded each year;
- 30 000 biological traces a year are recovered at various crime scenes;
- it is estimated that annually 100 000–200 000 samples collected from indictable suspects will be analysed and entered to the database.

To conclude, I would like to emphasise that the development of DNA database is an enormous task which involves complex technical and administrative processes. On the other hand, the possession of a new detection tool will ensure more successful prosecutions and hopefully will contribute to crime reduction. These arguments are unquestionably decisive in continuation of our efforts.