

DOI: <https://doi.org/10.34069/AI/2022.50.02.13>

How to Cite:

Stepaniuk, R., Kikinchuk, V., Pyrih, I., Pletenets, V., & Prylovskiy, V. (2022). Multifaceted approach to legislative regulation for using dna analysis in criminal proceedings of Ukraine. *Amazonia Investiga*, 11(50), 130-139. <https://doi.org/10.34069/AI/2022.50.02.13>

Multifaceted approach to legislative regulation for using dna analysis in criminal proceedings of Ukraine

КОМПЛЕКСНЫЙ ПОДХОД К ЗАКОНОДАТЕЛЬНОМУ РЕГУЛИРОВАНИЮ ИСПОЛЬЗОВАНИЯ ДНК-АНАЛИЗА В УГОЛОВНОМ ПРОЦЕССЕ УКРАИНЫ

Received: January 3, 2022

Accepted: February 15, 2022

Written by:

Stepaniuk Ruslan⁵²<https://orcid.org/0000-0002-8201-4013>**Kikinchuk Vasyi**⁵³<https://orcid.org/0000-0003-2241-6384>**Pyrih Igor**⁵⁴<https://orcid.org/0000-0002-8391-067X>**Pletenets Viktor**⁵⁵<https://orcid.org/0000-0002-3619-8624>**Prylovskiy Volodymyr**⁵⁶<https://orcid.org/0000-0002-4490-6301>

Abstract

The purpose of this article is to develop propositions for improving legal regulation of the use of DNA analysis in criminal proceedings of Ukraine. System-structural, comparative-legal and formal-logical methods of research, analysis of theory and practice are used. The article proposes to apply an integrated approach to the development and introduction of the field-oriented legislation after public discussion on the problems of protecting genetic data in law enforcement practice based on European standards. It is already necessary to separate the concepts of biological material and genomic information in the current legislation of Ukraine, to establish the terms of their storage and the rules for destruction after they are no longer needed. The legislation should also differentiate the methods of obtaining biological samples with defining the priorities for obtaining samples for DNA analysis by the way of buccal scraping (genal swabbing). We should provide separate rules for the permissible scope of molecular

Аннотация

Целью данной статьи является разработка предложений по усовершенствованию правового регулирования вопросов использования ДНК-анализа в уголовном процессе Украины. Используются системно-структурный, сравнительно-правовой и формально-логические методы исследования, анализ теории и практики. В статье предложено применить комплексный подход к разработке и внедрению профильного законодательства после общественной дискуссии по проблемам защиты генетических данных в правоохранительной практике на основе европейских стандартов. В действующем законодательстве Украины рекомендовано разделить понятия биологического материала и геномной информации, установить сроки их хранения и правила уничтожения после того, как в них отпала необходимость. Также нужно дифференцировать в законе способы получения биологических образцов с

⁵² Doctor of Law, Professor, Professor of the Department of Criminalistics and Forensic Science, Faculty № 1, Kharkiv National University of Internal Affairs, Kharkiv, Ukraine.

⁵³ Candidate of Law, Manager of the Department of Criminalistics and Forensic Science, Faculty № 1, Kharkiv National University of Internal Affairs, Kharkiv, Ukraine.

⁵⁴ Doctor of Law, Professor, Professor of Department Criminalistics and Home Medicine Training; Dnipropetrovsk State University of Internal Affairs, Dnipro, Ukraine.

⁵⁵ Doctor of Law, Associate Professor, Associate Professor of Department of Criminalistics and Home Medicine Training; Dnipropetrovsk State University of Internal Affairs, Dnipro, Ukraine.

⁵⁶ PhD in Law, Associate Professor of Department of Criminalistics and Home Medicine Training; Dnipropetrovsk State University of Internal Affairs, Dnipro, Ukraine.



genetic testing for suspects (convicts) and other persons. It is also necessary to limit the possibility of unofficial obtaining DNA profiles and to establish procedural rules for mass genetic testing to detect especially grave crimes.

Keywords: forensic DNA analysis, criminal proceedings of Ukraine, legal bases of forensic DNA analysis, molecular genetic examination in criminal proceedings, use of DNA to investigate crimes.

Introduction

Forensic DNA analysis has proven itself to be a powerful tool in combating crime. Effective tools and methods have been developed and successfully implemented for more than thirty years of its history, which allow identifying a person by biological traces, establishing biological paternity and biological kinship by DNA, as well as solving a number of important tasks that are important while investigating crimes and during judicial proving. At the same time, DNA analysis methods are most effectively used in terms of the state DNA database functioning, which requires proper legal regulation. Since versatile personal information is encoded in DNA, its study without legal restrictions can lead to a significant violation of human rights. Therefore, the protection of human genomic information is an important aspect in any democratic state.

Most European states are democratic, that is the reason why the issues of such legal regulation are solved in accordance with generally accepted standards for guaranteeing human rights. However, not every country has adopted separate legislation on biodata protection and on the use of DNA analysis while investigating crimes. As analysts rightly noted, the interpretation of vague and more general laws in those countries having no such legislation is subject matter of concert parties, law enforcement agencies and, finally, judicial power (Bárd, 2010). Ukraine belongs to this category of countries. Special laws aimed at establishing clear and understandable rules for obtaining and using genomic information by law enforcement agencies in order to combat crime have not been adopted yet. That is the reason for

определением приоритетности получения образцов для ДНК-анализа путем буккального соскоба (щечного мазка). Следует предусмотреть отдельные правила по поводу допустимого объема молекулярно-генетического исследования для подозреваемых (осужденных) и других лиц. Необходимо ограничить возможности негласного получения ДНК-профилей и установить процессуальные правила массового генетического тестирования для раскрытия особо тяжких преступлений.

Ключевые слова: судебный ДНК-анализ, уголовный процесс Украины, правовые основы судебного ДНК-анализа, молекулярно-генетическая экспертиза в уголовном процессе, использование ДНК для расследования преступлений.

significant problems within investigative and judicial practice (Stepaniuk et al., 2019). We believe that the situation should be changed, and the need to develop a set of legal norms to properly regulate the use of DNA analysis in law enforcement activities in Ukraine is badly needed.

Literature Review

Despite the existing problems with legal regulation of the use of DNA analysis in criminal proceedings, Ukrainian scholars have just recently begun to study the possibilities of its improvement. At the same time, the particular relevance of this issue has been emphasized and it has been offered to legislatively specify the entities authorized to take biological samples and the persons, who can provide such samples, as well as the procedure of forced sampling (Drozd et al., 2019). Some researchers believe it useful to determine the types of biological samples, to establish a clear procedure for recording a person's refusal to provide samples voluntarily, to regulate the right of a person to appeal against forced sampling and provide an opportunity to oblige the prosecution to destroy the collected samples by a court decision (Leiba, 2021, p. 312). It has been also suggested to more clearly regulate the types and procedural methods of taking samples from corpses (Denysovskiy, Bumba, 2021, p. 159). The legislator is pleading with establishing the admissibility criteria for coercion while collecting biological samples by introducing alterations to the Criminal Procedural Code of Ukraine, taking into account the approaches developed in the practice of the

European Court of Human Rights (Gorelkina, 2021, pp. 136-138). Besides, several suggestions have been made to supplement the Criminal Procedural Code of Ukraine in regard to the need to develop a separate Section regulating the collection of DNA samples, the use and storage of DNA profiles (Horpyniuk, 2019, pp. 248-249).

The above suggestions are generally useful, but not always precise and require more thorough analysis, specifications, updates and clarifications. When developing recommendations, it is important to take into account legal principles aimed at balancing state intervention into human rights by DNA analysis method in order to combat crime (Simoncelli & Krimsky, 2007), European standards for obtaining biological samples in the context of the criteria applied by the European Court of Human Rights (Kaplina, Shylo, & Titko, 2019), international legal and ethical standards for maintaining DNA databases (Wallace et al., 2014) and the approaches of other European countries in regard to legal regulation of the use of DNA analysis while investigating crimes.

Methodology

While conducting this research, the authors have applied generally accepted methods of scientific cognition in relation to the set purposes, in particular, system and structural, comparative and legal, analysis, synthesis, analogy and others. The authors have studied the current situation of legal regulation of using forensic DNA analysis in the practice of Ukrainian law enforcement agencies. The bills available in Ukraine and the suggestions of scholars to improve legislation in this area have been analyzed. The authors have taken into account the European standards for filling DNA databases and approaches to legal regulation of these issues in the German criminal proceedings in order to develop recommendations on the need to amend and supplement the criminal procedural legislation of Ukraine in regard to the use of DNA analysis while investigating crimes.

Results and discussion

After it became clear that DNA analysis is a powerful tool for identifying criminals, relevant technologies have been introduced into law enforcement practice in many countries around the world. At the same time, an important condition for increasing the effectiveness of this tool was the development and adoption of the field-oriented legislation in each state. However,

only technical means and methods of DNA analysis were introduced in Ukraine all the while. No legislative steps have been taken so far. As a result, there are actually no special legal norms that regulate the possibilities of using DNA analysis within investigative and judicial practice in the state.

The only exception at the level of the law is Part 2 of the Art. 26 of the Law of Ukraine "On the National Police", which states that the police force ensures the collection of biometric data (including DNA samples) to fill the databases of the Unified Information System of the Ministry of Internal Affairs of Ukraine about persons detained on suspicion of committing offenses. However, the practical application of this norm is virtually impossible due to the lack of grounds and procedures for the collection of biometric data by the police. In this regard, it has been concluded that the above norm of the Law contains a provision that does not correspond to reality (Dubonos, 2021, p. 49). DNA samples are not obtained from detainees in routine police activities in Ukraine. The only exceptions are cases of taking samples for forensic examination in criminal cases in the manner prescribed by the Criminal Procedural Code of Ukraine. But there are significant problems even in these cases, since the procedural rules are common to all types of examination and the law does not separately take into account the specifics of DNA analysis.

Sampling for examination according to criminal procedural legislation of Ukraine is carried out in accordance with the general procedure established for all types of biological samples (Part 2 of the Art. 245, the Art. 241 of the Criminal Procedural Code of Ukraine). This procedure looks like this. Samples can be taken from any suspect, witness or victim, if there is such a need for carrying out the examination. Prosecutor's authorization is sufficient for the collection of biological samples on a voluntary basis. If a person does not agree to provide his / her samples voluntarily, then the law provides the possibility of their forced removal with the permission of the investigating judge or court. The procedure for consideration of petitions for the compulsory selection of biological samples by the court is the same as for temporary access to objects and documents. This procedure is not adapted to biological samples, resulting in a controversial case law, where courts permit or prohibit forced sampling in similar situations.

In addition to experimental samples from persons present, law enforcement officers practice

obtaining so-called free samples, that is, biological traces of a missing person from things that he / she reliably used (toothbrushes, razors, etc.).

Samples from corpses are obtained either during the forensic medical examination of the corpse or during the exhumation of the corpse, which is carried out by the prosecutor's authorization. Judicial permission is not required in this case.

There is also non-public sampling for comparative research (the Art. 274 of the Criminal Procedural Code of Ukraine). Non-public samples are not used as evidence and the law obliges their second open obtaining after there is no need to comply with the regime of covert investigation. Sometimes law enforcement officers resort to the practice of non-public obtaining DNA samples (for example, from a discarded cigarette butt) to check for a match with the DNA profile of an alleged criminal. Such actions are carried out only with the permission of a judge. However, the law does not provide permissible purposes for the analysis and use of genomic information obtained in such a way. Given the importance of having adequate legal protection against covert genetic testing (Strand, 2016), we believe that it is a significant gap that needs to be addressed when reforming legislation. At a minimum, it is necessary to supplement the law with a norm about the use of the obtained DNA profile solely for comparison with the profile from the crime scene and about further destruction of both biomaterial and genetic information.

Ukrainian scholars note the existence of significant problems on the issue of legal regulation of the possibilities to use DNA analysis in criminal proceedings, but among specific propositions we could only find a statement of the need to establish a list of crimes, when it is possible to form a DNA profile of a suspect, and definition of the storage terms for DNA profiles (Horpyniuk, 2019, pp. 248-249). These issues are important, but they concern not so much the Criminal Procedural Code of Ukraine, but the field-oriented law on the national DNA database, which is not existed in Ukraine.

Due to the lack of the field-oriented legislation, DNA analysis technologies are not currently used very effectively in Ukraine. And we should remember the fact that forensic molecular genetic examinations have been carried out since 1992 in the country, a network of forensic genetics laboratories has been deployed, and

there is the necessary equipment and personnel. There is a situation, where the DNA database has been technically created in the expert institutions of the system of the Ministry of Internal Affairs of Ukraine, but it is not properly filled due to the lack of a legal basis. Some issues of maintaining such a database are regulated by departmental orders of the Ministry of Internal Affairs of Ukraine. In fact, only DNA profiles of convicted persons with their voluntary consent, profiles from traces seized from the crime scene, unidentified corpses, and more recently law enforcement officers who participate in the crime scene search (with their written consent) get into the database.

A draft law "On State Registration of Human Genomic Information" was developed in 2020, which was submitted to Parliament, but its consideration is still ongoing and the perspectives are not clear yet. It seems that even if this bill is adopted, it will not solve all the main problems. It is important to note that an attempt to establish mandatory sampling not only in accordance with the Criminal Procedural Code of Ukraine, but also during routine procedures in prisons by convicted persons, as it is suggested in the draft law, cannot be successful due to the specifics of the current legislation. There is no need for such an approach. Analysts noted that many countries require a certain level of supervision before collecting DNA samples, ranging from presenting a person with suspicion and ending with judicial permission. Such a procedure exists in most European countries, most US states, and throughout Latin America (Wallace et al., 2014). The rule of preliminary judicial control has been already clearly established in criminal proceedings of Ukraine, if there is a need of forced collection of biomaterial from a living person. We believe that such control cannot be weakened in case of DNA.

The issues of obtaining and using DNA information by law enforcement agencies in most European countries unlike Ukraine are sufficiently regulated in details. Certain standards have been developed both on the admissibility of interference with private life while obtaining DNA samples within criminal proceedings and on the use of automated DNA databases for the purpose of detecting and investigating crimes.

Ukraine is on the integration path into the European Union and is making attempts to accordingly harmonize domestic legislation. Therefore, the legal grounds for DNA analysis should be developed on the basis of European

approaches. In this regard, it is appropriate to mention the experience of other European countries.

For example, the DNA reform in Norway adopted in 2008 has been identified as one of the main reforms in the criminal law area. At the same time, the use of DNA to detect repetitive crimes was actually not effective before the reform of the legislation (AARli, 2013, pp. 64-67). One can also expect a significant increase in the effectiveness of DNA analysis methods for detecting crimes in Ukraine, if criminal procedural legislation is reformed. It is not enough to adopt one law on DNA databases. The first priority is to introduce a number of legislative norms about DNA based on an integrated approach.

In general, we support the idea about a more clear legislative regulation of the procedural manner for handling biological samples within criminal proceedings, taking into account international human rights standards and modern needs in the practice of combating crime (Koropetska & Smushak, 2020, p. 265). But Ukrainian scholars, in our opinion, do not fully analyze this issue. Attention is focused only on the type of samples (voice, fingerprints, saliva, blood, etc.) and some formal procedures (Drozd et al., 2019; Leiba, 2021; Denysovskyi & Bumba, 2021). However, taking into account modern approaches to determining the type of samples, it is necessary to pay particular attention to the special significance of DNA not only as an object for identifying a person, but also as a carrier of encrypted information about a person (about biogeographic origin, health condition, etc.). Undoubtedly, DNA has properties that significantly distinguish it from other samples in terms of the ethical and social problems, which it causes (Kimmelman, 2000). Therefore, it is necessary to take into account the potential information content of biological samples and further perspectives for their analysis and use in criminal proceedings. We must clearly understand that biological material taken from a person is a source of DNA. As a result of its expert examination within a criminal case and in some other cases, personal information about a human being appears in a forensic database. This information is also subject to proper protection by the state from unauthorized access.

It should be also noted that material evidence with traces of biological origin is seized and examined in criminal cases along with biological samples taken from a certain subject. And these are not only the traces of the perpetrator, but also

the biological material of the victim, witnesses, and sometimes outsiders, whose DNA was at the crime scene. It is another argument in favor of the thesis that it is not enough to simply provide a more complete procedure for obtaining biological samples in the Criminal Procedural Code of Ukraine. It should be separately taken into account that biological material is a source of DNA, and DNA, in turn, is a carrier of human genetic data, the handling of which is also subject to proper legal regulation. It is in line with the principles of the International Declaration on Human Genetic Data (Adopted by the Resolution of the UNESCO General Conference according to the report of the Commission III at the 20th plenary meeting on October 16, 2003), which clearly separates the concepts of human genetic data, human proteomic data and biological samples. It also corresponds to the practice of the European Court of Human Rights, where the gradation of human biological samples according to the degree of interference with privacy is accepted for: cellular material, DNA profile and fingerprints (Kaplina, Shylo O.H., & Titko, 2019, p. 1579).

It has been noted that the primary consideration while developing the legal framework for forensic DNA analysis should be the preservation of only profiles created as a result of molecular genetic analysis, but not the storage of cell samples (Atalay, 2019, p. 180). It is especially important for the Criminal Procedural Code of Ukraine, because it does not currently reflect the concept of DNA profiles at all, there are no rules for storing the obtained biological samples, but there are only general rules for storing physical evidence.

Thus, it is necessary to distinguish between the source of human DNA (biological material) and genetic information as a result of its examination (DNA profile) when regulating individual legal procedures. The Criminal Procedural Code of Ukraine must contain separate norms on the protection of genetic information. At the same time, it is necessary to take into account the experience of European states in determining the scope of the use of DNA analysis methods permitted by law in criminal proceedings.

For example, the German Criminal Procedural Code, in contrast to Ukrainian, contains both the norms regulating the rules for the physical examination of a person and obtaining his / her biological samples and clear rules for their use (§ 81e – 81h). It seems important for us that these norms regulate: 1) the permissible goals of molecular genetic examination (the scope of

obtained information both from samples and from traces); 2) procedural grounds for its conduction; 3) necessary measures to protect personal data; the range of persons whose DNA profiles can be placed in the DNA database; 4) rules for conducting mass gene testing for the detection of grave crimes against life, health, sexual freedom of a person. Law enforcement agencies in Germany due to this method of legal regulation have an accurate idea of the permissible limits for using the capabilities of DNA analysis in criminal procedural practice.

There is no such understanding in Ukraine yet. Therefore, issues both about who and how to take samples for DNA analysis and what information is permissible to obtain by DNA analysis methods, how to protect it from unauthorized access, what are the cases and for how long to store it are very relevant. Obviously, the solution of these issues requires both scientific analysis and public discussion to determine the limits of state intervention into personal and family life of citizens in order to combat crime.

Having analyzed the suggested draft law in Ukraine "On State Registration of Human Genomic Information", it can be stated that the issues in regard to whose DNA profiles will be subject to mandatory registration and the terms of storage of genomic information are the only currently clear matters. The DNA profiles of suspects and those convicted of crimes against life, health, will, honor, dignity, sexual freedom and sexual inviolability of the person, DNA profiles of traces of unknown persons from the crime scene, unidentified corpses and missing persons will be mandatory placed in the database. This approach seems reasonable to us, since it generally corresponds to European practices. Another positive feature of the draft law is the separation of biological material and genomic information in matters of their storage and usage. In addition, it is important to note that the suggested rules comply with the European standard on the destruction of the DNA profiles of persons in respect of whom criminal proceedings were closed, they were released from criminal liability or excused.

Ways to resolve other issues are either non-existent or appear to be highly controversial.

Thus, there is no understanding about the general procedure for obtaining biological material for the DNA database. The draft law offers to do this in some cases according to the rules of criminal procedural law, and in others according to the routine procedures of the penitentiary or

probation authorities, as well as medical institutions. As we have already noted above, the second method in Ukraine does not correspond to generally accepted practice. The current approach of exclusively criminal procedural law should be maintained to ensure the appropriate legal procedure and judicial control in case of forced sampling. In turn, it is necessary to improve the norms of the Criminal Procedural Code of Ukraine and more clearly establish the procedural grounds and rules for the selection, use and storage of biological material.

It is important to note that the criminal proceedings of Ukraine do not take into account the differences in the methods of intervention in the human body for the purpose of voluntary and forced selection of biological material. Such a separation in the context of samples for DNA analysis from a living person would facilitate to solve the problem of legal regulation.

It is known that it is customary to divide procedures into intimate and non-intimate in common law countries. At the same time, intimate samples can be taken only with the person's consent and only by a health care professional. Non-intimate samples can be taken without the person's consent and without the involvement of a health care professional (Kaye, 2006, pp. 18-19). For example, reasonable force is allowed in the US to obtain a buccal swab, which is considered minimal intrusive intervention (Roy, 2021, pp. 877-878). Therefore, we believe that while improving the criminal procedural legislation of Ukraine, it is necessary to take into account that obtaining a sample for DNA analysis is most often possible by buccal scraping (swabbing from the inner surface of the cheek), which is favorably different from other methods of obtaining biological samples. It does not require significant intervention in the human body, does not cause physical pain. No medical instruments needed in this case. Swabbing can be performed by anyone, but not just by a physician. Therefore, buccal scraping should be explicitly indicated in the Criminal Procedural Code of Ukraine as a priority method for obtaining samples for DNA analysis, which can be performed without the participation of a physician. In turn, invasive methods of obtaining biological samples can be used only if there are good reasons, only in a medical institution and only by health care professionals. In all cases there must be judicial authorization for forced collection of biological samples.

Thus, it is necessary to supplement the Art. 245 of the Criminal Procedural Code of Ukraine on obtaining samples for examination with a new Part, where we should determine that obtaining a sample for DNA analysis is carried out by the method of buccal scraping (swabbing from the inner surface of the cheek). The choice of another method should be additionally substantiated, should be used only by a physician and carried out in a medical institution.

One of the most important issues requiring legal regulation in Ukraine is the scope and limits of possible DNA examination within criminal proceedings. It is due to the fact that DNA analysis technologies are rapidly developing. New methods are being introduced that mostly intrude into personal and family life. It has been long known that this situation requires thorough development of appropriate legal principles (Simoncelli, & Krimsky, 2007). But such principles have not been discussed in Ukraine yet. Because, on the one hand, there is no understanding of the level of development of modern practices of DNA analysis among lawyers and accordingly there are no amendments to laws, and on the other hand, these new directions do not find real practical application in the country due to the lack of legal regulation.

We believe that there is a need for a broad public discussion in Ukraine on the admissibility in general and the possible limits for using various DNA analysis techniques that can facilitate in detecting grave crimes. To our opinion there are currently two main problems in this area, which must be urgently resolved in order to increase the effectiveness of this area.

The first problem is to increase the efficiency of searching for an unknown criminal on the basis of DNA traces left by that criminal, and the second problem is to determine the permissible boundaries for studying genomic information.

Regarding the first problem, the legislative regulation of the practice of mass DNA testing, which is used to detect especially grave crimes in case if there is no match between the DNA profile of an unknown criminal and the DNA database, can be very useful for Ukraine. This tool is essential, since there are almost always no matches in Ukraine due to a poor DNA database. Law enforcement agencies have technical means, but there are no legislative norms that would establish appropriate procedures. Nevertheless, investigators still carry out mass testing for DNA profile to detect especially grave crimes. But they

accomplish such testing by applying the general norms of the Criminal Procedural Code of Ukraine on the selection of biological samples and the involvement of experts. As a result, such actions take a very long time, which reduces their effectiveness. They also do not fully comply with the requirements for the protection of human genomic information, since its access is not regulated at all in this context. Nowadays, molecular genetics laboratories in some cases of unsolved murders receive thousands of samples for DNA analysis from various individuals, often random, which the police officers consider it necessary to verify. Such a situation, in our opinion, is unacceptable. The lack of a clear procedure for conducting mass DNA testing has led to the fact that samples from participants in such testing are taken without judicial control. There are no legislative requirements on the inadmissibility of using the obtained genomic information for purposes not related to the crime under investigation, on the need for its immediate destruction after a comparative analysis. All this, on the one hand, can lead to a significant violation of human rights to the inviolability of personal and family life, and on the other hand, significantly increases the terms for conducting inspections and material costs.

In our opinion, the Criminal Procedural Code of Ukraine should be supplemented with a separate Article "Mass DNA testing". It must take into account the minimum requirements known under German law, namely: 1) conducting such tests only to detect especially grave crimes and only with the permission of the investigating judge; 2) obtaining biological samples only with a written voluntary consent and only from persons who have characteristics of the alleged suspect; 3) using the obtained DNA profile only for comparison with the DNA profile of the trace of the alleged suspect; 4) immediate destruction of the obtained DNA profiles after they are no longer needed for the investigation; 5) a ban on placing the obtained DNA profiles in the DNA database and their use in future investigations.

In regard to the second problem, we note that currently STR profiling methods are most widely used for standard sets of autosomal STR-locus in the laboratories of forensic molecular genetic examination in Ukraine for criminal investigations, comparing DNA profiles from crime traces with DNA profiles of obtained samples from living individuals. and unidentified corpses. At the same time, "junk DNA" is being studied and interference with personal information in this case is limited only to the creation of a DNA profile that allows us to

identify a person without receiving information about his health, origin, appearance, etc.

However, other methods of DNA analysis are also used in the world, which can much more intrude into private life. For example, forensic DNA phenotyping methods have been already used in some countries (Schneider, Prainsack, & Kayser, 2019). Various methods of searching for relatives in DNA databases have been introduced (Ge, & Budowle, 2021), including the latest methods of investigative genetic genealogy (Greytak, Moore, & Armentrout, 2019). It is noted that new NGS-based DNA analysis platforms will become indispensable in forensic practice in the future (Haddrill, 2021, p. 383). In case of the development of new legal considerations and approaches to privacy, they may make the “junk DNA” as the history (Scudder et al., 2018). Such perspectives additionally reinforce the need for legislation to clearly define the scope of permissible human DNA analysis for the purposes of criminal investigation.

Taking into account the above, we note that it is necessary to introduce a separate Article “Molecular genetic examination” into the Criminal Procedural Code of Ukraine, which should consider the following aspects: 1) to establish a larger permissible scope of molecular genetic examination for samples seized from suspects and from traces of unknown persons and corpses, compared with samples from the persons being under investigation (witnesses, victims and others); 2) to establish a rule for the mandatory destruction of personal information obtained as a result of DNA analysis, as soon as it is no longer necessary for the investigation of a particular crime, except for those DNA profiles that are to be placed in the national DNA database; 3) to provide the possibility of conducting, besides forensic examination, verifications solely for the purpose of comparing the DNA profiles of the persons being under investigation with the DNA profile from the crime traces; 4) to provide special rules for the protection of personal data in order to prevent the divulgence of individual genetic information obtained as a result of molecular genetic examination.

These priority measures, in our opinion, will lead to the streamlining of criminal proceedings related to the use of DNA analysis while investigating crimes.

Conclusions

1. There is currently no separate legislative regulation of using DNA analysis while detecting and investigating crimes in Ukraine. Therefore, the relevant technologies are used only in the general procedure of involving experts within criminal proceedings. As a result, the national DNA profile database is not formed, and many issues related to obtaining biological samples from living individuals and examining traces of DNA from crime scenes are controversially solved at the discretion of law enforcement and the judicial agencies. A separate bill on state registration of human genomic information is being considered, but there are no specific propositions to improve the Criminal Procedural Code of Ukraine. An option to solve this problem is the need for comprehensive development of the field-oriented legislation and its implementation after a broad public debate on the problems of protecting genetic data in law enforcement practice on the basis of European standards in this area.
2. We support the decisions offered in the draft law “On State Registration of Human Genomic Information” concerning the range of persons whose DNA profiles need to be placed in the DNA database, as well as concerning the conditions and terms of their storage. However, we believe it necessary to supplement the Criminal Procedural Code of Ukraine together with the adoption of the Law on the national DNA database. At the same time, it is necessary to distinguish the concepts of biological material and genomic information, to establish the terms of their storage and the rules of destruction after they are no longer needed in connection with the investigation and trial of a criminal case. The law should also differentiate the methods of obtaining biological samples with the determining the priority of obtaining samples for DNA analysis by the method of buccal scraping (genal swabbing). We should establish certain rules regarding the possible scope of molecular genetic examination for suspects (convicts) and other persons. Special rules should be developed to protect personal data in order to prevent the divulgence of individual genetic information obtained as a result of molecular genetic examination. It is also necessary to limit the possibility of covert obtaining DNA profiles only in exceptional cases, under judicial control and with the immediate destruction after verification for coincidence with the trace from the crime

scene. Besides, it is necessary to enshrine procedural rules for mass genetic testing to detect especially grave crimes.

The perspective areas for further research in the field of legal regulation of the use of forensic DNA analysis in Ukraine is the development of recommendations on the admissibility and scope of new techniques and methods, in particular techniques of forensic phenotyping and search for relatives in DNA databases.

Bibliographic references

- AARli, R. (2013). The Status and Meaning of Criminal Procedure: An exploration of the reception of DNA evidence in the criminal process. *Bergen Journal of Criminal Law & Criminal Justice*, 1(1), 63-74.
- Atalay, A. (2019). Evaluation of Molecular Genetic Analysis in Criminal Procedure Law in Terms of Protection of Sensitive Personal Data. *Journal of Penal Law and Criminology*, 7(2), 127-184. <https://doi.org/10.26650/JPLC2019-0018>.
- Bárd, P. (2010). The force of law: genetic data protection in Central and Eastern Europe. *Jahrbuch: European Journal of Bioethics*, 1(1), 95-112. <https://hrcak.srce.hr/clanak/88785>
- Denysovskiy, MD, & Bumba, MI (2021) Some aspects of taking biological samples for examination in criminal proceedings. International scientific conference. Łódź, the Republic of Poland, October 8-9, p. 157-159. DOI <https://doi.org/10.30525/978-9934-26-148-0-41>.
- Drozd, V., Rusnak, I., Olishevskiy, O., Hapotii, V., & Minkova, O. (2019). Obtaining samples for examination in criminal proceedings: problems of normative regulation and law enforcement. *Georgian medical news*, (292-293), 129-134.
- Dubonos, K. V. (2021). The use of biometric databases of units of the Expert Service of the Ministry of Internal Affairs of Ukraine in the investigation of criminal offenses. (Thesis for the degree of Doctor of Philosophy in specialty). National Academy of Internal Affairs, Kyiv, 286 p. [in Ukrainian]
- Ge, J., & Budowle, B. (2021). Forensic investigation approaches of searching relatives in DNA databases. *Journal of Forensic Sciences*, 66(2), pp. 430-443. DOI: 10.1111/1556-4029.14615.
- Gorelkina, K. (2021). Respect for human rights and freedoms in the forced collection of biological samples. *Bulletin of the Penitentiary Association of Ukraine*, (1), pp. 133-140. <https://doi.org/https://doi.org/10.34015/2523-4552.2021.1.12>
- Greytak, E. M., Moore, C. C., & Armentrout, S. L. (2019) Genetic genealogy for cold case and active investigations. *Forensic Science International*, Vol 299, pp. 103-113. DOI: 10.1016/j.forsciint.2019.03.039.
- Hadrill, P. R. (2021). Developments in forensic DNA analysis. *Emerging Topics in Life Sciences*, 5(3), 381-393. DOI: 10.1042/etls20200304.
- Horpyniuk, O.P. (2019) International standards for the collection and use of biometric data (DNA samples) in the activities of law enforcement agencies. *Legal Scientific Electronic Journal*, № 2, pp. 245-249. http://www.lsej.org.ua/2_2019/70.pdf.
- Kaplina, O.V, Shylo, O.H, & Titko, I.A. (2019) Using the samples of human biological materials in the criminal procedure: the practice of the european court of human rights *Wiad Lek. Wiadomosci Lekarskie (Warsaw, Poland: 1960)*, 72(8), 1576-1581. PMID: 32012511.
- Kaye, J. (2006). Police collection and access to DNA samples. *Genomics, Society and Policy*, 2(1), 16-27.
- Kimmelman, J. (2000) Risking Ethical Insolvency: A Survey of Trends in Criminal DNA Databanking. *Journal of Law, Medicine & Ethics*, 28(3), pp. 209-221
- Koropetska, S. O., & Smushak, O. M. (2020). Selection of biological samples for examination in criminal proceedings: the main stages and directions of research. *South Ukrainian Law Journal*, Vol. 4, pp. 261-265. DOI <https://doi.org/10.32850/sulj.2020.4.44>
- Leiba, O. A. (2021). Selection of biological samples for expert research: controversial issues of regulation and law enforcement practice. *Scientific Bulletin of Uzhhorod National University. Series: Law*, 65, pp. 308-313. (In Ukrainian)
- Roy, K. E. (2021). *State v. Querido*, 229 A. 3d 410 (RI 2020). *Roger Williams University Law Review*, 26(3), 16.
- Schneider, P. M., Prainsack, B., & Kayser, M. (2019) The Use of Forensic DNA Phenotyping in Predicting Appearance and Biogeographic Ancestry. *German Medical Journal International*, Vol. 51-52, pp. 873-880. DOI: 10.3238/arztebl.2019.0873.
- Scudder, N., McNevin, D., Kelty, S. F., Walsh, S. J., & Robertson, J. (2018)



- Massively parallel sequencing and the emergence of forensic genomics: Defining the policy and legal issues for law enforcement, *Science & Justice*, 58(2), pp. 153-158,
<https://doi.org/10.1016/j.scijus.2017.10.001>.
- Simoncelli, T., & Krinsky, S. (2007). A new era of DNA collections: At what cost to Civil Liberties. *American Constitution Society for Law and Policy*, 2007, 1-19.
- Stepaniuk, R., Shcherbakovskyi, M., Kikinchuk, V. Lapta S., & Husieva V. (2019). Problems of using forensic molecular-genetic examination in criminal procedure of Ukraine. *Georgian Medical News*, № 5(290), pp. 157–163 (in Russian)
- Strand, N. K. (2016). Shedding Privacy Along With our Genetic Material: What Constitutes Adequate Legal Protection against Surreptitious Genetic Testing?. *AMA journal of ethics*, 18(3), 264-271.
- Wallace, H. M., Jackson, A. R., Gruber, J., & Thibedeau, A. D. (2014) Forensic DNA databases – Ethical and legal standards: A global review, *Egyptian Journal of Forensic Sciences*, 4(3), pp. 57-63,
<https://doi.org/10.1016/j.ejfs.2014.04.002>.