

Peculiarities of Using DNA Research Results From Mobile Laboratories in Criminal Proceedings

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The primary concerns of this paper are to analyze the procedural status of rapid DNA test results obtained in mobile and stationary DNA laboratories. It identifies the benefits and restrictions of such studies and determines whether the results comply with the requirements for adequacy, admissibility, credibility, and sufficiency of evidence. Additionally, it proposes ways to improve the legal regulation concerning the procedural form for applying specific expertise in this area. To achieve this goal, the author employs a range of general scientific and special legal methods, including induction, deduction, analysis, synthesis, comparison, prognostic, comparative legal, and formal logical. The paper explores the procedural status of rapid DNA test results obtained in both mobile and stationary DNA laboratories. The paper discusses the differences between mobile and stationary laboratories, identifies peculiarities in the collection and processing of biosamples, and outlines problematic aspects of admitting such results as evidence. Emphasis is placed on the relevance of utilizing mobile technologies under martial law in Ukraine and the need to improve the legal regulation of their use. The latest legislative changes and case law on evaluating rapid studies were also carefully analyzed.

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Keywords: *mobile DNA laboratories; biological samples; expert research; evidence, evidence properties; process of proving; DNA identification.*

Research Problem Formulation

Traces remaining at the molecular level, particularly DNA traces, have a special probative value in today's criminal proceedings. These traces may be found in biological samples collected at the scene. The development of forensic technologies has played a role in the introduction of mobile DNA laboratories capable of conducting forensic genetic examination directly in the field. This is especially important under martial law when it is urgent to quickly identify human remains at sites of mass graves or armed clashes.

Despite the obvious efficiency and technological convenience of mobile laboratories, their utilization is linked to certain forensic and procedural challenges. Specifically, we are discussing how to assess the probative value and admissibility of findings obtained through rapid DNA testing, as well as their place in the system of proving within criminal proceedings. Under these circumstances, it is important to distinguish between the capabilities of mobile and stationary DNA laboratories, to clarify the legal nature of analysis findings, their procedural status, and to determine the criteria for assessing the adequacy, admissibility, credibility, and sufficiency of such evidence.

The article analyzes the key differences between mobile and stationary DNA laboratories, outlines the peculiarities of collecting, processing, and using biosamples, and highlights the types of evidence that can be developed according to DNA analysis findings. It also addresses cer-

tain problematic aspects of the procedural form and evidentiary status of rapid tests obtained using mobile technologies.

The relevance of this scientific article lies in the realities of armed aggression against Ukraine, accompanied by active hostilities, mass burials, tortures of civilians, and other war crimes. Given these circumstances, it is crucial to quickly and accurately clarify circumstances of a criminal offense, particularly the identification of the deceased. Mobile DNA laboratories have become an essential tool for fulfilling criminal proceedings tasks, especially in temporarily occupied or just liberated territories where additional expert infrastructure cannot be deployed.

With the onset of the Russian Federation's full-scale invasion, mobile DNA laboratories have been extensively utilized not only for investigating war crimes but also for general criminal proceedings. This practice demonstrates the significant potential of integrating state-of-the-art technologies into investigative activities under the rule of law. Simultaneously, the statutory regulation of this area is insufficient. The issue regarding the probative value of DNA analysis results produced by mobile laboratories is particularly understudied. The lack of a unified approach to determining their procedural status leads to uncertainty during pre-trial investigation and trial, especially in cases requiring promptness and high accuracy of findings.

In addition, a number of related questions arise:

- "Can rapid test results be recognized as independent evidence?"

- “What is their correlation with other pieces of evidence: are they primary or derived?”;
- “Can printouts of mobile laboratory reports have procedural independence and what evidentiary value do they possess in judicial practice?”.

The answers to these questions are important for law application and necessitate proper theoretical and regulatory substantiation.

Analysis of Essential Researches and Publications

On October 9, 2024, the Verkhovna Rada of Ukraine adopted the Law of Ukraine *On Amendments to the Code of Ukraine on Administrative Offenses, the Criminal Code and the Criminal Procedure Code of Ukraine Regarding the Optimization of Specialists' Activities in Criminal Proceedings* (hereinafter referred to as *Law 4009-IX*), which gives

the specialist the same standing as the expert in the identification of persons, weapons, explosives, drugs, and grants him/her further authority to provide certificates, conclusions, and other documents during research and use these documents as evidence ¹. Such changes stem from the fact that experts in the field of immunology, cytology, genetics, ballistics, and explosives are under considerable strain today. At the same time, promptness, speed, and quality of the pre-trial investigation are required to draw timely procedural decisions in the investigation of general criminal offenses (murder, rape, drug possession, etc.) and criminal offenses against peace, human security, and international law and order ².

Researchers such as P. Davydiuk et al. ³, V. Dem'ianchuk ⁴, V. Zhuravel and A. Kovalenko ⁵, M. Shumylo ⁶ addressed the problematics of certain proving aspects during criminal proceedings. Re-

- 1 Про внесення змін до Кодексу України про адміністративні правопорушення, Кримінального та Кримінального процесуального кодексів України щодо оптимізації діяльності спеціалістів у кримінальному провадженні : Закон України від 09.10.2024 р. № 4009-IX. URL: <https://zakon.rada.gov.ua/laws/show/4009-20#Text> (date accessed: 22.04.2025) ; Кримінальний кодекс України від 05.04.2001 р. № 2341-III (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 22.04.2025).
- 2 Пояснювальна записка до проекту Закону про внесення змін до Кримінального процесуального кодексу України з метою оптимізації залучення спеціалістів під час досудового розслідування від 20.09.2023 р. № 10075. URL: <https://itd.rada.gov.ua/billinfo/Bills/pubFile/1991295> (date accessed: 22.04.2025).
- 3 Давидюк П. П., Пелешок І. І., Якимчук М. Ю. Сучасний стан розвитку молекулярно-генетичної експертизи в Україні. *Науковий вісник Ужгородського національного університету. Серія Право*. 2023. Вип. 75. Ч. 2. С. 171—176. DOI: 10.24144/2307-3322.2022.75.2.27 (date accessed: 22.04.2025).
- 4 Дем'янчук В. Застосування поняття “документ” у кримінальному процесі. *Правова інформатика*. 2008. № 2 (18). С. 57—60. URL: <https://ippi.org.ua/sites/default/files/08dvdvdp.pdf> (date accessed: 22.04.2025).
- 5 Журавель В. А., Коваленко А. В. Дослідження доказів у кримінальному провадженні як складова процесу доказування. *Вісник Національної академії правових наук України*. 2022. Т. 29. № 2. С. 313—328. DOI: 10.31359/1993-0909-2022-29-2-313 (date accessed: 22.04.2025).
- 6 Шумило М. Є. Поняття “докази” у Кримінальному процесуальному кодексі України: спроба критичного переосмислення ідеології нормативної моделі. *Вісник Верховного Суду України*. 2013. № 2 (150). С. 40—48. URL: http://nbuv.gov.ua/UJRN/vvsu_2013_2_10 (date accessed: 22.04.2025).

search by T. Mykhalchuk and Ye. Svoboda⁷, O. Narozhna⁸ and M. Khrapytska, M. Shcherbakovskiy⁹ emphasized forensic molecular genetic examination and the possibility of utilizing its results as evidence. Furthermore, the issues of conducting forensic DNA analyses in mobile laboratories are raised in research papers by foreign scientists (R. S. Turingan et al.)¹⁰.

V. Zhuravel and A. Kovalenko point out that evidence is examined at both the trial stage and the pre-trial investigation stage, and single out various subjects of research. Researchers stress that the investigator's procedural activity on the study of evidence encompasses drawing up a report to record information¹¹. We find this opinion convincing because, before submitting evidence to the court for direct forensic examination as required by the Criminal Procedure Code of Ukraine (hereinafter referred to as the CPC), it is expected that the parties to the criminal proceedings will independently

gain an understanding of the evidence obtained and the factual information available in the procedural source. They must also evaluate all of the above for admissibility, credibility, and sufficiency alongside other evidence¹². Thus, the investigator and the prosecutor possess the right to inspect documents and computer data (Art. 237 of the CPC)¹³. Such an inspection results in a report, which is merely a means of recording relevant facts and may be considered derivative evidence.

In this context, it is important to note that, in compliance with amendments in cl. 5 of P. 2 of Art. 99 of the CPC, documents such as certificates, conclusions, and other documents of a specialist are viewed as evidence¹⁴. However, unfortunately, the CPC does not define the *other documents of a specialist* concept. This results in additional problems that investigators and prosecutors may encounter when proving their cases and may contradict the principle of legal certainty

- 7 Михальчук Т. В., Свобода Є. Ю. Система ANDE RAPID DNA — унікальна технологія швидкісного встановлення ДНК. *Актуальні питання криміналістики та судової експертизи* : мат-ли міжвідом. наук.-практ. конф. (Київ, 25.11.2022). Київ, 2022. С. 82—85. URL: https://www.navs.edu.ua/files/kafedru/ksm/2023/mater_konf_251122.pdf (date accessed: 22.04.2025).
- 8 Нарожна О. В., Храпицька М. О. Значення молекулярно-генетичної експертизи для криміналістичної ідентифікації особи. *Правовий вимір конституційної та кримінальної юрисдикції в Україні та світі. Треті юридичні читання* : мат-ли ювіл. всеукр. дистанц. конф., присвяч. 155-річ. Одес. нац. ун-ту ім. І. І. Мечникова (Одеса, 10.04.2020). Одеса, 2020. С. 245—248.
- 9 Щербаківський М. Г. Проблеми формулювання висновків молекулярно-генетичної експертизи. *Процесуальне та техніко-криміналістичне забезпечення досудового розслідування* : тези доп. всеукр. наук.-практ. конф. (Харків, 28.11.2019). Харків, 2019. С. 193—195. URL: <http://dspace.univd.edu.ua/xmlui/handle/123456789/13593> (date accessed: 22.04.2025).
- 10 Turingan R. S., Vasantgadkar S., Palombo L. et al. Rapid DNA analysis for automated processing and interpretation of low DNA content samples. *Investigative Genetics*. 2016. Vol. 7. Is. 2. 12 p. DOI: 10.1186/s13323-016-0033-7 (date accessed: 22.04.2025).
- 11 Журавель В. А., Коваленко А. В. Зазнач. твір. DOI: 10.31359/1993-0909-2022-29-2-313 (date accessed: 22.04.2025).
- 12 Кримінальний процесуальний кодекс України від 13.04.2012 р. № 4651-VI (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 22.04.2025).
- 13 Там само.
- 14 Там само.

following the practice of the European Court of Human Rights¹⁵.

From V. Ishchenko's perspective, the document is a physical medium that directly conveys information about events and facts relevant to criminal procedures in a fixed format. Such information is set out in signs that can be reproduced uniquely in the form of images or oral speech. These signs also allow for the transmission and interpretation of human opinion. The document is compiled by a specific person, enterprise, institution, or organization, or it is received by the bodies of investigation or court in a stipulated order and added to the case file¹⁶.

The above definition is more relevant, but the issue of *other documents of a specialist* is yet to be discussed. Let us delve into the Law: *On Information*, according to which document shall mean a physical medium containing the information the main functions of which include storage and transmission thereof in time and space¹⁷. That is, another document of a specialist can be considered a physical medium containing recorded information about events or facts in the form of signs and is capable of transmitting this information through space and time. It is drawn up by a specialist in the course of investigating circumstances that require specific expertise.

When discussing evidence obtained as a result of molecular genetic examinations, P. Davydiuk et al. state that the object of study of molecular genetic examination is human DNA, namely acids containing

cell nucleus (nuclear DNA), as well as acids that are in the mitochondria of a cell (mitochondrial DNA). The task of forensic examination is to determine whether traces found at the scene belong to a specific person suspected of committing a crime; establish whether traces found at several crime scenes belong to one person and substantiate the link between a criminal offense and a person under investigation; estimate the number of people associated with a scenario where mixed biological substances were seized from the scene; identify parts or remains of unidentified corpses using DNA data obtained from suspected close relatives¹⁸.

Article Purpose

Analyze the procedural status of rapid DNA test results obtained in mobile and stationary DNA laboratories, identify the benefits and restrictions of such studies and determine whether the results comply with the requirements for adequacy, admissibility, credibility, and sufficiency of evidence, and propose ways to improve legal regulation concerning the procedural form of applying specific expertise in this area.

Research Methods

To achieve this goal, the authors employ a range of general scientific and special legal methods. The comparative legal method enabled to compare the peculiarities

15 Case of the Sunday Times v. the United Kingdom. Appl. No. 6538/74. Judgm. of 26 Apr 1979 / European Court of Human Rights. URL: <https://hudoc.echr.coe.int/eng#%7B%22itemid%22%3A%5B%22001-57584%22%5D%7D> (date accessed: 22.04.2025).

16 Іщенко В. М. Поняття документа як джерела доказів у кримінальному судочинстві. *Право України*. 1997. № 2. С. 42–45.

17 Про інформацію : Закон України від 02.10.1992 р. № 2657-XII (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/2657-12#Text> (date accessed: 22.04.2025).

18 Давидюк П. П., Пелешок І. І., Якимчук М. Ю. Зазнач. твір. DOI: 10.24144/2307-3322.2022.75.2.27 (date accessed: 22.04.2025).

of how mobile and stationary DNA laboratories function, as well as to analyze the differences in legal regulation and judicial practice regarding the admissibility of rapid test results. The formal and logical approach provided a clear definition for the key legal categories of “adequacy”, “admissibility”, ‘credibility’, and “sufficiency” of evidence. What is more, it also made it possible to formulate the criteria to which DNA analysis results must comply in order to be used in criminal proceedings.

The comparison method was used to evaluate court decisions regarding the recognition of rapid test results as evidence, particularly with regard to the use of the report printout as a source of independent evidence. The inductive method was used to analyze certain criminal cases and provide an overview of law enforcement practices. The deductive method was employed to test the practical relevance of general theoretical conclusions. The prognostic method contributed to the formation of proposals for improving the legal regulation of specific expertise use in the field of forensic examination.

The methods of analysis and synthesis helped to systematically review the legislative rules, judicial practice, as well as organizational and procedural peculiarities of collecting and processing biosamples. This enabled to comprehensively evaluate the pros and cons of utilizing mobile forensic technologies in proving.

Main Content Presentation

Since the beginning of Russia’s full-scale invasion against Ukraine, forensic experts have often used *ANDE* rapid DNA technology mobile laboratories, a company registered and operating in the United States¹⁹. Such DNA laboratories have been developed as a high-tech tool for prompt identification of biological material under field-like conditions.

They have several advantages when it comes to investigating criminal offences. Firstly, mobile DNA laboratories can *automate routine processes* because they do not require a technical operator. All processes, from the application of biological samples to the output of the genetic profile, are automated and do not require third-party intervention. It minimizes the human factor and reduces the risk of errors. The laboratory contains three main components: sample collection containers, a sample preparation cartridge, and an automated analyzer. Thanks to its compact size and compliance with US military standards (specifically *810G*), the system can be used directly at the scene, even outside a controlled laboratory environment²⁰.

Secondly, the DNA laboratory *identifies a wide range of biological samples*: buccal swabs, blood stains, traces of weapons and ammunition, clothing, samples from bottles, cups, cigarettes, chewing gums, car steering wheels, touch controls, etc.

19 Хрипун В. “Якість і швидкість експертиз Міністерства юстиції суттєво покращаться завдяки новим мобільним ДНК-лабораторіям”,— заступник міністра юстиції Андрій Гайченко / Судово-юридична газета : вебсайт. 04.06.2024. URL: <https://surl.luh.gov.ua/brcliiq> (date accessed: 22.04.2025).

20 Саковський А. А., Атаманчук В. М., Волошин О. Г. Особливості встановлення загиблих осіб в умовах воєнного стану. *Актуальні питання криміналістики та судової експертизи* : мат-ли міжвідом. наук.-практ. конф. (Київ, 25.11.2022). Київ, 2022. С. 25—29. URL: https://www.navs.edu.ua/files/kafedru/ksm/2023/mater_konf_251122.pdf (date accessed: 22.04.2025) ; Turingan R. S., Brown J., Kaplun L. et al. Identification of human remains using Rapid DNA analysis. *International Journal of Legal Medicine*. 2020. Vol. 134. Pp. 863—872. DOI: [10.1007/s00414-019-02186-y](https://doi.org/10.1007/s00414-019-02186-y) (date accessed: 22.04.2025).

Thirdly, *identifying the biological sample takes no longer than two hours*, so the process is quick. This contributes to compliance with the pre-trial investigation deadlines, and can even accelerate the process in some cases. *Automation enables to minimize human involvement* in identifying a biological sample, *thus reducing the cost of research and logistics, especially in the conditions of active investigative (search) actions*.

Fourthly, *it is possible to accomplish a preventative result* by prompt identification of suspects or victims, which may also have a significant psychological impact on offenders, contribute to solving crimes, and prevent their reoccurrence. That is, *this system helps to prevent new criminal offenses*.

Furthermore, DNA laboratories have the advantage of being highly accurate (with a 99.9% probability of identification), meaning the results can be used as reliable evidence in criminal proceedings. A striking example is the scientific experiment by Richard Selden, a renowned American scientist, who proved that there are no discrepancies between the results of DNA analyses obtained from different types of biological material: from buccal swabs to liver, brain and bones. According to the results of this study, the most suitable samples for analysis are buccal swabs and muscle tissue, depending on how long the body has been in an open environment²¹.

The procedure for obtaining a result in a mobile DNA laboratory involves the following steps:

- 1) collection of biological samples using a cotton, foam, or flocked swab;

- 2) placement of the swab in the cartridge (lab-on-a-chip);
- 3) concentration and purification (isolation of cellular DNA and its purification from impurities);
- 4) amplification (multiplication of short tandem repeats [STR loci] using polymerase chain reaction, hereinafter referred to as PCR);
- 5) processing STR loci during PCR modification through dye incorporation;
- 6) detection of the region of interest (using laser detection);
- 7) interpretation: determination of allelic composition;
- 8) result production: automatic analysis of fragments and generation of DNA profile report. See the result in Fig.

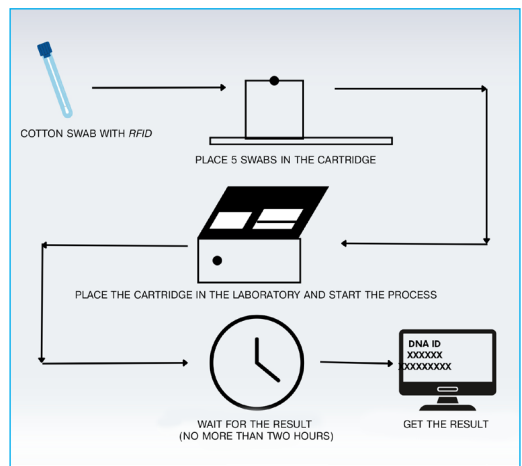


Fig. Schematic representation of obtaining the result in a mobile DNA laboratory

Thanks to the built-in *Expert System* software, the DNA profile is automatically uploaded to the system, where it is com-

21 Turingan R. S., Brown J., Kaplun L. et al. Op. cit. DOI: [10.1007/s00414-019-02186-y](https://doi.org/10.1007/s00414-019-02186-y) (date accessed: 22.04.2025).

pared with samples in the database to determine identity or detect matches ²².

In conformity with the Instruction on the Appointment and Conduct of Forensic Examinations and Expert Studies (hereinafter referred to as the *Instruction*), the Scientific and Methodological Guidelines on the Preparation and Appointment of Forensic Examinations and Expert Studies, and the CCP, a forensic molecular-genetic examination is conducted by forensic experts and relevant institutions involved by the parties to the criminal proceedings or the investigating judge at the request of the defense counsel ²³. In view of the 4009-IX Law, the prosecution is not required to engage a forensic expert to conduct a forensic examination for identification of a person, narcotic substances, explosives ²⁴. On the contrary, based on its decision formalized by a ruling in accordance with Pt. 3 of Art. 110 of the CPC, the investigator or prosecutor may involve a specialist under Art. 71 of the CPC to inspect the scene and seize corresponding biological samples for the purpose of identifying the deceased person at the place of scene inspection. This will expedite the pre-trial investigation and help establish all circumstances relevant to the criminal proceedings ²⁵. It

is worth noting that in compliance with Art. 5 of the Law of Ukraine: *On State Registration of Human Genomic Information*, state registration is mandatory for certain types of genomic information ²⁶.

Following cl. 4.19 of Sec. IV of the Instruction, the results of the expert molecular genetic testing shall be indicated in written documents: the expert's opinion and the registration card. The expert's opinion (excluding the introductory, research section, summary, and evaluation of research results) comprises date and number of a person's application, registration card for biological sample, name of the body conducting research and/or the last name, first name, and patronymic, position of a person conducting research, name of the biological sample collection tool and its manufacturer, storage period of the selected biological material. Notably, research findings and the expert's opinion both indicate the possibility that the compared objects (biological samples) are coincident. This ensures that the court will make a final decision after studying the evidence in its totality. The registration card is issued in accordance with the procedure determined by the Ministry of Justice of Ukraine ²⁷.

22 The image created in the *Canva* graphic editor illustrates the process of obtaining a result in a mobile DNA laboratory.

23 Інструкція про призначення та проведення судових експертиз та експертних досліджень ; Науково-методичні рекомендації з питань підготовки та призначення судових експертиз та експертних досліджень : затв. наказ. Мін'юсту України від 08.10.1998 р. № 53/5 (зі змін. та допов.). URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 22.04.2025) ; Кримінальний процесуальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 22.04.2025).

24 Про внесення змін до Кодексу України URL: <https://zakon.rada.gov.ua/laws/show/4009-20#Text> (date accessed: 22.04.2025)

25 Кримінальний процесуальний кодекс URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 22.04.2025).

26 Про державну реєстрацію геномної інформації людини : Закон України від 09.07.2022 р. № 2391-IX. URL: <https://zakon.rada.gov.ua/laws/show/2391-20#Text> (date accessed: 22.04.2025).

27 Інструкція про призначення ... URL: <https://zakon.rada.gov.ua/laws/show/z0705-98#Text> (date accessed: 22.04.2025).

Research findings obtained by a forensic specialist in the ANDE 6C DNA laboratory are displayed as computer data in the context of the investigator's or prosecutor's evidentiary activities. Pursuant to the provisions of the CPC, such data possess all the features of a document as a type of evidence, whether in print or electronic format.

Under Pt. 1 of Art. 84 of the CPC, evidence in criminal proceedings is factual data obtained in the manner prescribed by this Code, on the basis of which the investigator, public prosecutor, investigating judge, and court establish the presence or absence of facts and circumstances relevant to criminal proceedings. As stipulated in Pt. 2 of the same Article, documents are procedural sources of evidence²⁸.

Furthermore, in accordance with Pt. 1 of Art. 71 of the CPC, a specialist has the right to provide not only explanations, certificates, and opinions, but also other documents²⁹. The law does not define the *another specialist document* concept, but given the legal doctrine and law enforcement practice, it is understood as a physical medium containing recorded information about events or facts in the form of signs and is capable of transmitting this information through space and time. Such a document is compiled by a specialist who has relevant specific expertise and authority.

The main features of *another specialist document* containing the results of a DNA test:

- 1) physical medium form (telephone, paper document, computer file, digital report, etc.);

- 2) recording information in signs (digital or alphanumeric codes, genetic profiles, etc.);
- 3) recorded information is of legal relevance, confirming circumstances pertinent to criminal proceedings;
- 4) ability to share this information through space and time (e.g., by attaching to the case file);
- 5) compiled by an authorized person who possesses specific expertise³⁰.

In this context, computer data or printouts of the results of rapid DNA tests obtained in a mobile DNA laboratory can be regarded as aligning with a document's features. As set forth in Pt. 4 of Art. 99 of the CPC, copies of information, specifically computer data, made by the investigator, public prosecutor with the involvement of a specialist, shall be recognized by the court as the original document provided that the agreed procedure for their receipt is followed. That is why *another document* may be computer data or printouts of rapid DNA laboratory tests on selected biological samples.

The case law analysis shows that DNA analysis results obtained by the *Ande Rapid DNA 6C System* are heterogeneous. For instance, the investigating judge of the Pyatikhatsky District Court in the Dnipropetrovsk region reviewed an incident in which an investigator requested a search based on the results of a rapid DNA analysis performed using *Rapid DNA* technology. On September 9, 2023, it was found that biological material was seized from the scene, which was examined using the *ANDE 6C* device. Research into the substances found in the victim's body led to

28 Кримінальний процесуальний кодекс ... URL: <https://zakon.rada.gov.ua/laws/show/4651-17#Text> (date accessed: 22.04.2025).

29 Там само.

30 Кримінальний кодекс ... URL: <https://zakon.rada.gov.ua/laws/show/2341-14#Text> (date accessed: 22.04.2025).

the identification of a male's genotype. Later, as part of the pre-trial investigation, samples of buccal mucosa were taken from the suspect, which were also examined via *ANDE 6C*, as confirmed by the property inspection report dated September 6 and 22, 2023. The comparative analysis of genetic profiles showed a match, which served as the basis for subsequent procedural actions³¹.

It is also worth noting that, in this case, the materials were attached to the reports on item inspection that documented the use and presence of the DNA analyzer, rather than being included in a separate report or specialist opinion on the identity of DNA profiles. From a procedural standpoint, this approach is insufficient since using the device does not provide information about the genetic match, credibility, research method, or *STR* loci used, etc.

Let us conclude that results of the DNA laboratory analysis are issued as a specialist's document as per Pt. 1 of Art. 71 of the CPC, and not just recorded in the device inspection report. Otherwise, there is a risk of such data being recognized as improper evidence due to the lack of a procedural method for fixing and certifying them.

The use of the *ANDE 6C* mobile DNA laboratory in criminal proceedings in Ukraine is increasingly being documented in investigative reports and court rulings as part of the evidentiary basis. The analysis of court practice indicates the forma-

tion of certain trends in the application of such results, but also reveals a number of procedural inaccuracies regarding the correct definition of an investigative action: inspection of items or documents. Let's consider some examples.

According to the court judgment drawn by the Fastiv City District Court of Kyiv Region dated October 20 and 21, 2023, it was found that the investigator, in collaboration with a forensic specialist, conducted an inspection of items and reports on the identified DNA profiles and tables of illustrations. Everything was recorded in the report. Four envelopes containing wooden swabs with samples from a bucket, the floor, the feet of PERSON_4, and his/her buccal mucosa were inspected. Each swab was placed in a separate *ANDE I-Chip*, assigned a unique identifier in the *FAIRS* system, and then placed in the *ANDE 6C* genetic analyzer. Consequently, the corresponding DNA profiles were obtained. They were later compared using *FAIRS Client Software*³².

Interestingly, in this case, the investigator, in collaboration with a forensic specialist, inspected items and reports of DNA analysis, which does not contradict the CPC and the Instruction on the procedure for seizure, accounting, storage, and transfer of physical evidence in criminal cases, valuables, and other property by the inquiry, pre-trial investigation, and court³³; however, it would be preferable if they

31 Ухвала П'ятихат. райсуду Дніпропетр. обл. від 23.09.2023 р. Справа № 190/1885/23. Провадж. № 1-кп/190/376/23 / ЄДРСР : вебсайт. URL: <https://reyestr.court.gov.ua/Review/113676188> (date accessed: 22.04.2025).

32 Вирок Фастів. міськрайсуду Київ. обл. від 23.01.2024 р. Справа № 381/321/24. Провадж. № 1-кп/381/232/24 / ЄДРСР : вебсайт. URL: <https://reyestr.court.gov.ua/Review/116472692> (date accessed: 22.04.2025).

33 Інструкція про порядок вилучення, обліку, зберігання та передачі речових доказів у кримінальних справах, цінностей та іншого майна органами дізнання, досудового слідства і суду : затв. наказ. Генпрокуратури України, МВС України, ДПА України, СБ України, Верхов. Суду України, ДСА України від 27.08.2010 р. № 51/401/649/471/23/125. URL: <https://zakon.rada.gov.ua/laws/show/v0051900-10#Text> (date accessed: 22.04.2025).

first inspected items (from the moment of unpacking the envelopes containing the seized items to the time they are placed in DNA laboratory cartridges), followed by a document inspection. This would involve displaying computer data after the samples have been loaded into the system. However, it is noteworthy that rapid analysis reports were attached to the aforementioned inspection report of items and documents, so we have every reason to believe that such reports are independent evidence in these criminal proceedings. Thus, the inspection report included not only items (swabs), but also the report documents with rapid analysis results, which are, in fact, computer data obtained after processing samples. The report exhibits signs of two different investigative actions: the inspection of items and the inspection of documents. It would be more appropriate, however, to conduct these inspections separately: first, inspect physical media, and then information recorded in digital format.

The ruling of the investigating judge of the Kyiv District Court of Odesa states that the suspicion is based on the data of the document inspection report (information from the *ANDE 6C Rapid DNA-Analysis* mobile laboratory³⁴). Thus, in this case, the investigator complied with procedural requirements (inspection of the document on the information about mobile DNA laboratory).

The ruling of the investigating judge of the Industrial District Court of Dnipro City notes the following: *“From the motion records, it is clear that the suspicion is confirmed and substantiated by the evidence*

collected in the criminal proceedings: <...> Item and document inspection reports dated September 5, 6, and 22, 2023, state that, following the seizure of biological material from the body of the deceased PERSON_7, it was examined via the technology of automatic rapid DNA profiling using “ANDE Rapid DNA 6C” devices. According to the indicated study, the male sex genotype was identified. As part of the pre-trial investigation, biological samples were seized from PERSON_6, INFORMATION_1, namely the buccal mucosa (saliva), and his genotype was determined with the help of a rapid DNA analyzer. An automated DNA database search established a match between the identified genotype obtained from the sample collected during the inspection of PERSON_7’s body and the genotype obtained from the buccal mucosa of PERSON_6”³⁵. Subsequently, a genetic molecular examination was conducted in these criminal proceedings. According to the results, the male DNA found in the under-nail contents of the victim’s left hand (PERSON_7) could have come from the suspect (PERSON_6) with a probability of at least 99.9999999999999982%. The DNA found in the vaginal contents of PERSON_7 (the victim) can be attributed to PERSON_6 (the suspect) with a probability of at least 99.9999999999999982%.

In this case, we observe that the investigator, in collaboration with the forensic specialist, also conducted an inspection of items and documents (information on mobile DNA laboratory). This revealed a match in the samples, which was further confirmed by the molecular genetic examination with a probability of 99.9 %.

34 Ухвала Київ. райсуду м. Одеса від 26.03.2024 р. Справа № 947/10256/24. Провадж. № 1-кс/947/4278/24 / ЄДРСР : вебсайт. URL: <https://reyestr.court.gov.ua/Review/117923939> (date accessed: 22.04.2025).

35 Ухвала Індустр. райсуду м. Дніпро від 16.01.2024 р. Справа № 202/19874/23. Провадж. № 1-кс/202/512/2024 / ЄДРСР : вебсайт. URL: <https://reyestr.court.gov.ua/Review/116367914> (date accessed: 22.04.2025).

For instance, the ruling of the Kyiv-Svyatoshinsky District Court of Kyiv Region issues the statement as follows: *“The validity of PERSON_5’s suspicion of committing this crime is supported by the evidence collected in the criminal proceedings, namely: <...> the inspection report of items using ANDE 6C genetic analyzer No. NUMBER_1. This device was used to produce and process DNA profiles from the following samples: “01.12.2023_ERDR_3420_shtanu”, “01.12.2023_ERDR_3420_skotch”, “01.12.2023_3420_zapalnuchka”, “01.12.2023_3420_rykavutsya_prava”, “01.12.2023_3420_ztyashka”, “01.12.23_Rubin_A.G.07.05.1951_5” dated December 1, 2023; the inspection report of items using ANDE 6C genetic analyzer No. NUMBER_1, which was used to produce and process DNA profiles from the following samples: “11.12.23_buk_POGREBNUY_O.V._1981”, “11.12.23_buk_POGREBNUY_O.V._1981_2”; a match was found between the DNA profiles “11.12.23_buk_POGREBNUY_O.V._1981”, “11.12.23_buk_POGREBNUY_O.V._1981_2” with samples “INFORMATION_2”, “INFORMATION_3”, “01.12.2023_3420_zapalnuchka”, “01.12.2023_ERDR_3420_skotch”, “01.12.2023_3420_ztyashka” (i.e., these samples belong to one male person, namely PERSON_5, INFORMATION_1) as well as among other evidence considered in its totality”³⁶.*

In this case, the investigator also made a procedural error because he examined documents rather than physical evidence from the moment the data displayed by the genetic analyzer and reproduced by the computer were examined. This constitutes a different investigative action.

The Zhytomyr Court of Appeal dismissed the suspect’s appeal on the following grounds: *“The reported suspicion is supported by: <...> the report on item inspection, specifically her underwear, voluntarily provided by PERSON_10 (the victim), revealed the presence of white and brown biological traces of an unknown origin; the report on PERSON_8’s detention, during which his personal belongings were seized, including underwear on which traces of a brown substance of biological origin were found; the report on item inspection, during which the ANDE 6C genetic analyzer No. and 7236 was used, established that the brown substance found on PERSON_11’s underwear contained biological traces of PERSON_10 (the victim); witness interrogation protocols; and physical evidence”³⁷.* Therefore, in this case, the investigator also made a procedural error, since he did not examine the ANDE 6C DNA laboratory itself, but the information displayed in it and reproduced on the computer.

The ruling of the Kyiv-Svyatoshinsky District Court of Kyiv Region issues the following statement: *“the reasonableness of PERSON_4’s suspicion is confirmed by the case materials from the criminal proceedings that have been collected so far: <...> the item inspection report dated February 17, 2024, compiled with the participation of a forensic expert from the Criminal Support Department of the Investigative Division of the Main Department of the National Police of the Kyiv Region. The “ANDE 6C” DNA analyzer was used to process the samples and the following DNA profiles were identified: Paper envelope No. 1: swabs from the head wounds of PERSON_7’s corpse; Paper envelope No. 2: swabs*

36 Ухвала Києво-Святош. райсуду Київ. обл. від 12.12.2023 р. Справа № 369/20974/23. Провадж. № 1-кс/369/4121/23 / ЄДРСР : вебсайт. URL: <https://reyestr.court.gov.ua/Review/115861608> (date accessed: 22.04.2025).

37 Ухвала Житомир. апеляц. суду від 03.06.2024 р. Справа № 279/3104/24. Провадж. № 11-сс/4805/345/24 / Там само. URL: <https://reyestr.court.gov.ua/Review/119587381> (date accessed: 22.04.2025).

from the head wounds of PERSON_7's corpse; Paper envelope No. 3: blue pants with traces of RNA that were collected from PERSON_4. The results established a probable match between the DNA profile and the sample: "541_krov_tryp_mirshyk.v.o.1937.2" (taken from the head wound belonging to PERSON_7), and "541_zmuv_RBK_shtanu.1", "541_zmuv_RBK_shtanu.2" (taken from the blue pants containing RNA traces belonging to PERSON_4)"³⁸.

In this case, the investigator also made a similar procedural error: instead of inspecting the DNA laboratory, he inspected the information displayed in it and reproduced on the computer. He should have inspected the DNA laboratory documents (DNA laboratory information).

As we can see, document inspection reports were used in the above court decisions. Nevertheless, it is no longer undisputable that opinions of specialists entirely derived from reports obtained from the *Ande 6C* DNA Laboratory cannot be used as evidence. Such opinions will be considered evidence in conformity with the CPC. The procedural source of this evidence is a document, since a specialist's opinion corresponds to the features of the above-mentioned document. According to the resolution of the Criminal Court of Cassation of the Supreme Court in Case No. 344/8350/22 dated November 7, 2024, a system analysis of the rules of Arts. 84 and 298-1 of the CPC shows that "*specialist's opinion, as defined in paragraph 2 of Article 298-1 of the CPC, is not considered evidence in criminal proceedings for crimes. Therefore,*

it cannot be used to confirm or refute the circumstances that need to be proven in criminal proceedings for the crimes set out in Part 1 of Article 91 of the CPC"³⁹. This thesis is difficult to substantiate because it fails to differentiate between the concepts of *evidence* and *sources of evidence*, which is unacceptable.

Conclusions

In light of the above, we can assert that mobile DNA laboratories, particularly the *ANDE 6C* system, represent a significant advancement in the field of pre-trial investigation and are becoming increasingly commonplace in Ukraine. These laboratories provide fast, accurate, and mobile examination of biological samples directly at the scene, which is highly important amid active hostilities, humanitarian disasters, or the need for rapid identification. Thanks to its capacity to automate processes, deliver highly accurate results, and efficiently process a variety of samples, the *ANDE 6C* has proven to be an effective tool that promotes procedural efficiency, has a psychological impact on the offender, and prevents the commission of new crimes.

The experience of utilizing this technology in other jurisdictions, specifically in the US, has been validated through the official recognition by the Federal Bureau of Investigation and the development of appropriate standards. In this regard, the procedural aspect of proper presentation of results is of particular importance. As shown by this research, the report from

38 Ухвала Києво-Святош. райсуду Київ. обл. від 16.04.2024 р. Справа № 369/6089/24. Провадж. № 1-к/369/1338/24 / ЄДРСР : вебсайт. URL: <https://revestr.court.gov.ua/Review/118520604> (date accessed: 22.04.2025).

39 Постанова Касаційн. кримін. суду Верховн. Суду від 07.11.2024 р. Справа № 344/8350/22. Провадж. № 51-1808км24 / ipLex : вебсайт. URL: <https://iplex.com.ua/doc.php?reg-num=123081920&red=10000308c65932c94111ffbf6be800b1e242da&d=5> (date accessed: 22.04.2025).

the ANDE 6C DNA laboratory can be issued as a specialist's opinion. Following the CPC, such an opinion is recognized as evidence in criminal proceedings, and the document is considered the procedural source of this evidence.

A printout of the rapid DNA test report has all the features of a document: contains a physical medium, information recorded in alphanumeric format that confirms legally relevant circumstances and can be reproduced in electronic or paper format. This printout is to be compiled by an authorized person with specific expertise. The investigator or forensic specialist's signature is another form of its certification. Court practice analysis demonstrates that such documents are already being used as evidence in criminal proceedings. Although, procedural errors in their presentation have been also revealed, including the combination of two different investigative actions—inspection of items and inspection of documents—in one report. Nevertheless, investigating judges focus predominantly on the content of such documents rather than their titles, unless these errors significantly affect the rights of the parties to the proceedings.

Given the identified challenges, we deem it feasible to develop a separate departmental instruction that would govern the procedure for conducting *Ande 6C* DNA laboratory examinations and introduce a standardized format for the relevant specialist conclusion. Implementing clear rules will increase legal certainty and the general level of confidence in the results of such analyses as a full-fledged source of evidence.

To conclude, rapid DNA analysis technologies have the potential to substantially alter the practice of collecting evidence in criminal proceedings, enhance the

efficiency of law enforcement, and promote the prompt establishment of truth in a case.

**Особливості використання
результатів ДНК-досліджень
мобільних лабораторій
у кримінальному процесі**

**Катерина Латиш,
Данило Жидков**

Мета статті — проаналізувати процесуальний статус результатів експресаналізів ДНК, виконаних за допомогою мобільних і стаціонарних ДНК-лабораторій, виокремити переваги й обмеження таких досліджень, визначити критерії відповідності їх результатів вимогам щодо належності, допустимості, достовірності та достатності доказів, а також запропонувати шляхи вдосконалення правового регулювання процесуальної форми застосування спеціальних знань у цій сфері. Для досягнення поставленої мети застосовано комплекс загальнонаукових і спеціально-правових методів: індукцію, дедукцію, аналіз, синтез, порівняння, прогностичний, порівняльно-правовий, формально-логічний. Досліджено процесуальний статус результатів експресаналізів ДНК, виконаних за допомогою мобільних і стаціонарних ДНК-лабораторій. Розглянуто відмінності між мобільними та стаціонарними лабораторіями, з'ясовано особливості збирання й оброблення біозразків, окреслено проблемні аспекти допустимості таких результатів як доказів. Особливу увагу приділено актуальності застосування мобільних технологій в умовах воєнних дій в Україні та необхідності вдосконалення правового регулювання їх застосування. Ретельно проаналізовано також останні законодавчі зміни й судову практику з оцінювання експресдосліджень.

Ключові слова: мобільні ДНК-лабораторії; біологічні зразки; експертне

дослідження; докази, властивості доказів; процес доказування; ДНК-ідентифікація.

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Declaration of Competing Interest

The authors declare no conflict of interest.

References

- Davydiuk, P. P., Peleshok, I. I., Yakymchuk, M. Yu. (2023). Suchasnyi stan rozvytku molekuliarno-henetychnoi ekspertyzy v Ukraini [The current state of development of molecular genetics expertise is Ukraine]. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Seriya Pravo*. Vyp. 75. Ch. 2. DOI: [10.24144/2307-3322.2022.75.2.27](https://doi.org/10.24144/2307-3322.2022.75.2.27) [in Ukrainian].
- Dem'ianchuk, V. (2008). Zastosuvannia poniattia dokument u kryminalnomu protsesi [Application of the "document" concept in criminal procedure]. *Pravova informatyka*. № 2 (18). URL: <https://ippi.org.ua/sites/default/files/08dvdvdp.pdf> [in Ukrainian].
- Ishchenko, V. M. (1997). Poniattia dokumenta yak dzherela dokaziv u kryminalnomu sudochynstvi [The concept of document as a source of evidence in criminal proceedings]. *Pravo Ukrainy*. № 2 [in Ukrainian].
- Khrypun, V. (2024). "Iakist i shvydkist ekspertyz Ministerstva yustytstii suttievo pokrashchatsia zavdiaky novym mobilnym DNK-laboratoriiam",— zastupnyk ministra yustytstii Andrii Haichenko ["Thanks to new mobile DNA laboratories, the quality and speed of the Ministry of Justice's forensic examinations are expected to improve considerably," said Deputy Minister of Justice Andrii Haichenko] / *Sudovo-iurydychna hazeta* : vebсайт. URL: <https://surl.luh.gov.ua/brciiq> [in Ukrainian].
- Mykhalchuk, T. V., Svoboda, Ye. Yu. (2022). Systema ANDE RAPID DNA — unikalna tekhnolohiia shvydkisnoho vstanovleniia DNK [ANDE RAPID DNA SYSTEM: a unique technology for rapid DNA analysis]. *Aktualni pytannia kryminalistyky ta sudovoi ekspertyzy* : mat-ly mizhvidom. nauk.-prakt. konf. (Kyiv, 25.11.2022). Kyiv. URL: <https://elar.navs.edu.ua/jspui/handle/123456789/22891> [in Ukrainian].
- Narozhna, O. V., Khrapytska, M. O. (2020). Znachennia molekuliarno-henetychnoi ekspertyzy dlia kryminalistychnoi identyfikatsii osoby [The significance of molecular genetic examination for forensic identification]. *Pravovyi vymir konstytutsiinoi ta kryminalnoi yurydyktsii v Ukraini ta sviti. Treti yurydychni chytannia* : mat-ly yuvil. vseukr. dystants. konf., prysviach. 155-rich. Odes. nats. un-tu im. I. I. Mechnykova (Odesa, 10.04.2020). Odesa [in Ukrainian].
- Sakovskiy, A. A., Atamanchuk, V. M., Voloshyn, O. H. (2022). Osoblyvosti vstanovleniia zahybykh osib v umovakh voiennoho stanu [Peculiarities of identifying the deceased under martial]. *Aktualni pytannia kryminalistyky ta sudovoi ekspertyzy* : mat-ly mizhvidom. nauk.-prakt. konf. (Kyiv, 25.11.2022). Kyiv. URL: https://www.navs.edu.ua/files/kafedru/ksm/2023/mater_konf_251122.pdf [in Ukrainian].
- Shcherbakovskiy, M. H. (2019). Problemy formuluvannia vysnovkiv molekuliarno-henetychnoi ekspertyzy [Issues of formulating molecular genetic analysis conclusions]. *Protsesualne ta tekhniko-kry-*

- minimalistychne zabezpechennia dosudovoho rozsliduvannia* : tezy dop. vseukr. nauk.-prakt. konf. (Kharkiv, 28.11.2019). Kharkiv. URI: <http://dspace.univd.edu.ua/xmlui/handle/123456789/13593> [in Ukrainian].
- Shumylo, M. Ye. (2013). Poniattia “doka-zy” u Kryminalnomu protsesualnomu kodeksi Ukrainy: sprobа krytychnoho pereosmyslennia ideolohii normatyvnoi modeli [The “evidence” concept in the Criminal Procedure Code of Ukraine: an attempt to critically rethink the ideol-ogy of the normative model]. *Visnyk Verkhovnoho Sudu Ukrainy*. № 2 (150). URL: http://nbuv.gov.ua/UJRN/vvsu_2013_2_10 [in Ukrainian].
- Turingan, R. S., Brown, J., Kaplun, L. et al. (2020). Identification of human remains using Rapid DNA analysis. *International Journal of Legal Medicine*. Vol. 134. DOI: [10.1007/s00414-019-02186-y](https://doi.org/10.1007/s00414-019-02186-y).
- Turingan, R. S., Vasantgadkar, S., Palom-bo, L. et al. (2016). Rapid DNA analysis for automated processing and inter-pretation of low DNA content samples. *Investigative Genetics*. Vol. 7. Is. 2. DOI: [10.1186/s13323-016-0033-7](https://doi.org/10.1186/s13323-016-0033-7).
- Zhuravel, V. A., Kovalenko, A. V. (2022). Doslidzhennia dokaziv u kryminalnomu provadzhenni yak skladova protsesu dokazuvannia [Examination of Evidence in Criminal Proceedings as a Component of the Proof Process]. *Visnyk Natsionalnoi akademii pravovykh nauk Ukrainy*. T. 29. № 2. DOI: [10.31359/1993-0909-2022-29-2-313](https://doi.org/10.31359/1993-0909-2022-29-2-313) [in Ukrainian].
- Latysh, K., Zhydkov, D. (2025). Peculiarities of Using DNA Research Results From Mobile Laboratories in Criminal Proceedings. *Theory and Practice of Forensic Science and Criminalistics*. Issue 2 (39). Pp. 58—73. DOI: [10.32353/khrife.2.2025.05](https://doi.org/10.32353/khrife.2.2025.05).