

# GEORGIAN MEDICAL NEWS

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ISSN 1512-0112

NO 11 (344) ноябрь 2023

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ТБИЛИСИ - NEW YORK



ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии  
საქართველოს სამედიცინო სიახლენი

## GEORGIAN MEDICAL NEWS

Monthly Georgia-US joint scientific journal published both in electronic and paper formats of the Agency of Medical Information of the Georgian Association of Business Press.  
Published since 1994. Distributed in NIS, EU and USA.

**GMN: Georgian Medical News** is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

**GMN: Медицинские новости Грузии** - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

**GMN: Georgian Medical News** – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებშიდან.

### WEBSITE

[www.geomednews.com](http://www.geomednews.com)

## К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman (Кириллица)**, для текста на грузинском языке следует использовать **AcadNusx**. Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - <http://www.spinesurgery.ru/files/publish.pdf> и [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html) В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректур авторам не высылаются, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

**При нарушении указанных правил статьи не рассматриваются.**

## REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or computer-printed on a single side of standard typing paper, with the left margin of 3 centimeters width, and 1.5 spacing between the lines, typeface - **Times New Roman (Cyrillic)**, print size - 12 (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html)  
[http://www.icmje.org/urm\\_full.pdf](http://www.icmje.org/urm_full.pdf)

In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

**Articles that Fail to Meet the Aforementioned  
Requirements are not Assigned to be Reviewed.**

## ავტორთა საქურაღებოლ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დაიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx**. შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შედეგის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფხიხლებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

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## MEDICAL AND FORENSIC IDENTIFICATION OF PERSONS WHO HAVE BECOME VICTIMS OF WAR CRIMES OF THE RUSSIAN WAR AGAINST UKRAINE

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### Abstract.

The relevance of the study is determined by necessity of accurate forensic studies to identify victims of war crimes in Ukraine for the practical use of the most effective measures by law enforcement agencies to establish such persons. The aim of the research is to reveal procedure and opportunities of identification of victims of war crimes, who may be combatants and civilians are according to the results of the analysis of regulations, practices of forensic identification of corpses of unidentified persons. Methodological framework of research are scientific and theoretical methods, which are analysis, synthesis, concretization, generalization, analogy, as well as the empirical method of studying normative sources and special literature, the method of systematic approach in order to form conclusions to reveal ways to solve the problem. Result of the research is conclusion that the standards that are used today in Ukraine and the opportunity of conducting medical and forensic examination to identify unidentified persons who have become victims of war crimes, corresponding to modern European approaches. It is noted that it is impossible to solve the problem of identification only with the help of traditional methods of medical and forensic identification of a person. It is substantiated that the use of modern methods of deoxyribonucleic acid identification by forensic doctors can be promising for ensuring of tasks of the identification of unidentified corpses and fragments of human bodies. It was emphasized that the disadvantage is that today in Ukraine there is no database of deoxyribonucleic acid identification of all or some categories of citizens of Ukraine. It was concluded that it would be effective to approve the concept of the State Target Program to expand the network of deoxyribonucleic acid laboratories and create a National Database of Human Genetic Traits, to do this. The practical value of the work consists in ensuring that forensic doctors perform the tasks of identifying persons of unrecognizable corpses and fragments of human bodies using the modern method of deoxyribonucleic acid identification.

**Key words.** Person, law, medicine, evidence, research, methods, science, deoxyribonucleic acid.

### Introduction.

The hostilities of the war in Donbas began on April 12, 2014, with the seizure of the Ukrainian cities of Sloviansk, Kramatorsk and Druzhkivka by Russian units led by officers of the Russian special services, where Russian saboteurs armed local collaborators with weapons seized from the Ministry of Internal Affairs and recruited them into their ranks. In the conditions of non-resistance of the local security forces of Ukraine, and sometimes open cooperation, small assault

units of Russian saboteurs took control of Horlivka and other cities of Donetsk and Luhansk regions in the following days. On April 13, 2014, in response to the invasion of subversive squads, Acting President of Ukraine Oleksandr Turchynov announced the start of the Anti-Terrorist Operation. Special units of the SBU and the Armed Forces of Ukraine deployed to the Sloviansk and Kramatorsk regions took part in the first battle on the morning of April 13 in Semenivka, a suburb of Sloviansk. Today, the official statistics of the Office of the Prosecutor General of Ukraine regarding registered criminal offenses against the foundations of national security of Ukraine, which shows that in 2014 – 435 registered crimes, in 2015 – 316; 2016 – 204; 2017 – 281; 2018 – 383; 2019 – 318; 2020 – 358; 2021 – 433; 2022 – 14,639; and in the period from January to November 2023 – 4,696 criminal offenses [1]. Statistics indicate that civilian casualties from February 24, 2022, after the beginning of the Russian Federation's full-scale war against Ukraine, until September 8, 2023, amounted to 27,768 people, including 9,806 dead (9,701), the Office of the United Nations High Commissioner for Human Rights reported. This indicates the need for scientific research on the identification of the bodies of those who died as a result of hostilities, establishing the facts of the mass death of people [2].

In the scientific article, the authors present scientific and practical examples of the study of the identification of deceased persons from war crimes committed by Russian soldiers against civilians in Ukraine in the cities of Bucha and Irpin, whose corpses were significantly damaged by explosion, fire, numerous gunshot wounds, damage from the action of destroyed structures of buildings and facilities, the time factor that caused putrefactive changes, etc. The authors reveal the essence of medical and forensic identification of persons for the purposes of civil and criminal proceedings through the methods of molecular genetic analysis - due to the high discriminating ability and the possibility of using indirect identification schemes when biological samples from relatives of the deceased are used as its objects. The authors have found that the use of modern and latest methods and expert techniques for establishing the identity of a person from a found corpse or its fragments is not sufficiently covered in the special forensic and medical literature. The authors analyse the scientific views The development of forensic medical and forensic examination as an institute of evidentiary and procedural law and proper expert support of justice at the national level cannot take place without scientific discussions and relevant scientific developments, which combine the opinions of theorists and practical experience of both forensic medical experts and forensic scientists.



### **The current state of studying the problem.**

Research has been conducted for the last five years Lauren Wilson in a scientific article *History and Overview of Forensic DNA* this article discusses the history of forensic DNA from its inception to potential advancements in the technology over the next decade. It briefly highlights not only the need for quality management process, validation, and verification for use in case work, but also the need for consideration of Ethical, Legal, and Social Issues [3].

Professors Franco L. Marsico, Inés Caridi the scientific article *Genetic databases allow performing kinship tests between multiple pedigrees and UPs*. Recently, large-scale DNA-based identification through database search has become a fast-growing field [4].

Zupanič Pajnič the scientific article *Identification of a Slovenian prewar elite couple killed in the Second World War* investigates investigators frequently use skeletal remains to identify missing persons and war victims [5].

It is these scientific studies that testify to the expediency of studying the problems the identifying bodies is becoming more and more important in the conditions of establishing the mass death of people whose corpses were found under the rubble of buildings, in basements, in bomb shelters, in temporary burial places of a significant number of corpses in the yards of residential buildings, in quickly dug trenches in the middle of a field, etc.

### **General scientific provisions of the article.**

Human life and health are not only personal, but also common public goods, their protection in developed countries is established by both national legislation and acts of international law. Scientifically supported, organizationally balanced, functionally available, and effective justice is a defining component of the system of means of protecting human rights, the most important of which is the right to life and health, in every democratic state. A key element of justice, its determining link is proving, which is provided by a developed theory of evidence, systematic and logical legislation and established practice of pre-trial investigation and trial of criminal and civil proceedings.

From February 24, 2022, from the beginning and waging of Russia's aggressive war on the territory of Ukraine, the practice of Ukrainian criminal justice deals with numerous violations of the laws and customs of war, when a large number of dead civilians, children, women, old people became its victims, and also became military personnel, combatants from the Armed Forces of Ukraine, as well as soldiers and mercenaries of the occupying Russian army. Harsh conditions for waging an aggressive war, bombardment and artillery and rocket attacks on residential areas, destruction of civilian infrastructure in order to intimidate citizens protesting an aggressive war, lack of humanitarian corridors for the timely evacuation of the wounded and dead from the places of hostilities, prohibition of volunteer organizations providing assistance to war victims, located in the occupied territories, led to terrible consequences. Thousands of dead bodies have been found and continue to be found today in the places of hostilities and in the territories of settlements that were hit by armed attacks or were under temporary occupation, a large number of which remain unidentified.

The development of medical forensic examination as an institution of evidentiary and procedural law and the proper expert provision of justice at the national level cannot take place without scientific discussions and relevant scientific developments, which combine the opinions of theorists and the practical experience of both forensic medical experts and judicial experts-criminologists. It should be noted that forensic experts can be different in terms of focus and subject of research. The appointment and list of questions that arise for the expert, depend on the specific situation and circumstances of the commission of the war crime (type of murder, torture, etc.). The main place among the forensic examinations at the primary stage of the investigation of war crimes should be given to the forensic medical examination of the corpse [6-8].

It can reveal answers to questions that will play a key role in the investigation, such as: the cause of death, the time of its occurrence, the nature and sequence of injuries, the causal relationship between them and the death of the victim. Forensic medical examination of a corpse requires the use of certain research methods: a) a method of biometric description of a person's appearance [9]; b) biometric criteria for sorting corpses in the center of hostilities with numerous human casualties [10]; c) a method of diagnosing the somatotype of men and women by somatic body measurements [10]; d) the method of portrait and osteological identification, including the use of a combined graphic method of research, the method of combining a photo of the skull of a corpse and a lifetime photo of a missing person, the method of graphic identification algorithms (GIA) [11-13].

Forensic medical examination of skeletonized remains solves the following issues: diagnosis of race, racial type and gender based on craniometric features of the skull [10], determination of the somatic dimensions of the human body during forensic medical examination of skeletonized and cremated remains [14].

Forensic medical and forensic examination of cremated remains resolves the following issues: establishment of species belonging to the bone substance based on emission spectral analysis data [15]; diagnosis of a person's gender and body length based on burnt bone remains [16].

The most significant role in the identification of a person based on signs of appearance belongs to the forensic portrait examination, the possibilities of which are quite large, but they directly depend on the quality of the objects provided for research. Video materials are the most common objects of research in forensic portrait examination. Video material has more advantages than photos because the person is recorded in a different position, under a different lighting angle, and in a different angle [17]. The practice of the work of experts proves that the solution of problems in the study of video graphic images is increasingly complex in nature and requires the participation of specialists in the field of various expert specialties and specialists in the field of forensic medicine as well. In addition, such researches require modern technological equipment and special software.

The state of affairs with the identification of victims of war crimes in Ukraine requires the use of the most effective measures to identify such persons. One of these measures successfully tested in other countries (Great Britain, Canada,

the USA, European countries, etc.) is the introduction of deoxyribonucleic acid DNA analysis methods for the genomic registration of citizens.

Since the conduct of military operations on the territory of Ukraine, questions the task of identifying the bodies of those killed as a result of hostilities arose, establishing the facts of the mass death of people, not only with the help of traditional methods that are widely used in forensic and forensic identification of a person.

**The aim of this article** is the authors' statement of the issue about identification of dead from war crimes of Russian war against Ukraine persons, what has not only the legal but also the moral side, is based on humane traditions and rules, which have been produced by mankind.

In connection with the revealed acts of terror and facts of war crimes in the territory of many regions of Ukraine, the task of identifying the bodies of those, who have been killed because of hostilities, establishing the facts of mass deaths of people is becoming more and more important in modern Ukrainian forensic medicine practice. Under the conditions of committing war crimes with massive human casualties, significant difficulties are caused by the significant amount of identification work carried out by law enforcement officers and specialists in forensic medicine and criminologists. Solving the problem of identification only with the help of traditional methods, which are widely used in forensic and forensic identification of a person, is not possible.

Under such circumstances, the task of identifying bodies under the conditions of establishing the mass death of people whose corpses were found under the rubble of buildings, in basements, in bomb shelters, in temporary burial places of a significant number of corpses in the yards of residential buildings, quickly dug trenches in the middle of the field, etc., is becoming more and more important in modern domestic forensic medical practice. The victims of such burials often do not have documents certifying their identity with them, and their appearance is distorted. Identifying the dead is also complicated by the fact that documented biological samples from the identified individuals, which could serve as objects of comparison for direct identification, are usually unavailable for examination. The statistics of the number of human victims of military aggression on the territory of Ukraine are striking in their large number. Only in the area of the city of Bucha in the Kyiv region, law enforcement officers found 1,137 bodies of Ukrainians killed at the hands of the occupiers, and 461 killed were found directly in Bucha, and the identities of each of them must be established by the investigative authorities (1137 killed and tortured Ukrainians were found near Bucha. Among them is a police officer.

One of the main issues to be resolved during the liquidation of the consequences and the pre-trial investigation of the facts of such aggression with a significant number of victims is establishing the identity of each of the dead. Currently, there are more than sixty of them in Bucha, and the number is constantly changing. The process of identifying the residents of Irpin who died at the hands of the Russians is still ongoing, in particular, according to official data, the identities of one hundred and five

of the dead remain unidentified. (French experts with a DNA laboratory will help identify 65 bodies in the Bucha morgue). The current situation in the cities of Mariupol, Severodonetsk, Slavyansk and others, established facts of cremation by the Russian military of unknown corpses in mobile crematoria do not provide an opportunity to answer a number of questions that arise today in the course of the pre-trial investigation of war crimes committed by the Russian Federation against Ukraine. At the same time, a large number of corpses belonging to the armed forces of the Russian army and illegal military formations discovered after the occupiers leaving the temporarily occupied territories of Ukraine, remain unidentified. The identification of such bodies and their transfer to relatives or loved ones for burial in their homeland is also one of the important humanitarian tasks of establishing the truth.

The technical challenges are considerable but tractable in the country's hot and humid climate, DNA in bones that have lain in shallow graves for decades is likely to have degraded extensively. Moreover, contaminants from soil microbes can inhibit the enzymes that scientists use to amplify what little DNA remains to levels that can be analysed. And because of the large numbers of bones involved, the work needs to be done efficiently.

For each case of death, Ukrainian law enforcement officers open criminal proceedings in order to establish the reasons and circumstances of their death. During the pre-trial investigation, the identity of each deceased must be established, regardless of which country he is a citizen, which category of population or combatant of which side he belongs to. The question of identification of victims of war crimes has not only a legal, but also a moral side, it is based on humane traditions and rules developed by mankind. This, at the same time as a legal obligation, is tangentially related to the obligation of human memory. However, it is not always possible to establish a person's true identity in the process of identifying persons whose corpses have significant destruction as a result of an explosion, fire, multiple gunshot wounds, damage from the action of destroyed structures of buildings and structures, the time factor that caused putrefactive changes, etc. This requires the use of medical and forensic identification of a person.

In connection with the mass death of people in the combat zone or in the temporarily occupied territories, an important legal question arises regarding the recognition of persons who have disappeared under special circumstances. This provides legal regulation of social relations related to the acquisition of legal status of such persons, with registration, search and social protection of missing persons and their family members. In fact, it should be about the medical and forensic identification of persons for the performance of civil and criminal justice tasks.

During the identification of unidentified human remains due to their mass arrival from the zones of temporary occupation, significant difficulties usually arise. It is necessary to take into account the fact that a significant number of bodies of those who died as a result of acts of terror had been subjected to deformation, burning, partial or complete destruction. A large number of corpses arrive in such a state that they cannot be identified using conventional medical forensic methods. The

impossibility of identification is due to the fact that in many cases the victims were shot in the face, some of the victims came under rocket or other fire and in fact human bodies were burned to the state of skeletal remains. There are also corpses of victims who were tortured, their faces were disfigured, and they are also very difficult to recognize. There are cases when separate fragments of human bodies are subject to forensic examination and identification, and there is a need not only to identify them, but also to establish whether the various remains belong to a certain or another person. There are many cases when the body of a deceased person, at the time of discovery by law enforcement agencies, has already undergone significant changes due to natural decay. Such bodies, which are in plastic bags, look like a kind of "smoothies". As a result of the existing damage to the bodies of the dead, the tissues and organs of the corpses, there is a loss of significant signs of identification, even to the point that individual remains of the bodies become unsuitable not only for visual identification, but also for expert identification. Molecular genetic analysis methods can play a decisive role in such a case - thanks to the high discriminating ability and the possibility of using indirect identification schemes, when biological samples from relatives of the dead are used as its objects. At the same time, it should be pointed out that the issue of using modern and new methods and expert methods of identifying a person based on the discovered corpse or its fragments is not sufficiently covered in the special forensic literature.

The authors of this article see the need to draw the attention of society, judicial experts in the field of medical and forensic examinations, law enforcement officers, and the court to the need for wider coverage in special scientific literature of the problems of conducting expert studies on the identification of persons whose corpses were found in the area of hostilities, on temporarily occupied territories, in places of mass burials of tortured residents of cities and villages of Ukraine. We believe that today in Ukraine an algorithm for the identification procedure of the bodies of those killed in the combat zone, in the temporarily occupied territories has been developed, thanks to which relatives can take a DNA test without hindrance and free of charge to search for missing persons. Carrying out a forensic medical examination is not just an investigation, but also a procedural action regulated by law, which involves the research of objects of examination by a specialist who has the procedural status of an expert and drawing up an expert opinion. The questions that are decided within the framework of forensic medical examination relate to the most important interests of a person, which are life and health. Therefore, this type of forensic examination occupies a prominent place in a number of other special studies, which are carried out during the pre-trial investigation of criminal proceedings regarding war and a number of other crimes, the consequences of which are deliberate murders, causing of grievous bodily harm, torture, rape, in which the victims may be people. The legislation of each country, where these issues are regulated, should comply with the general legal norms and modern practice of the European Community.

## **Materials and Methods.**

The research used a complex of general scientific and special methods to achieve the goal. The methodological basis of the research is the dialectical method of scientific cognition, which made it possible to consider the theoretical and scientific-practical bases of medical and forensic identification of a person in forensic examination and to reveal the latest means of expert research. On this methodological basis, special scientific methods of cognition were also used in the research. With the help of chronological and comparative-historical methods, the reasons that led to the need to find, implement, and develop new methods of researching corpses of unidentified persons for the purpose of their identification were analyzed. With the help of the logical-semantic method, the general scientific meanings of such concepts as "medical-forensic identification", "DNA analysis", "genotyposcopy" and others were studied. An analysis of the list of a number of definitions and their meaning within the scope of the research was carried out. During the study of trends in society regarding the increase of interest in these new methods in the identification of persons and the possibilities of their application to solve the problems of forensic medical and forensic identification, the methods of expert evaluations were used. With the help of the system-functional method, the forensic and medical directions of identification of corpses of unidentified persons were determined and the need for their complex use was substantiated. With the help of the structural-logical method, the most effective methods of medical and forensic research within the scope of solving diagnostic and identification examinations for establishing the identity of an unrecognizable corpse are substantiated. Today in Ukraine an algorithm for the identification procedure of the bodies of those killed in the combat zone, in the temporarily occupied territories has been developed, thanks to which relatives can take a DNA test without hindrance and free of charge to search for missing persons. The matching of a postmortem DNA profile of an unidentified person with an ante mortem reference DNA profile of an individual of known identity, a so-called comparative DNA analysis, is one of the preferred methods to identify anonymous individuals or human remains. Carrying out a forensic medical examination is not just an investigation, but also a procedural action regulated by law, which involves the research of objects of examination by a specialist who has the procedural status of an expert and drawing up an expert opinion. With the help of prognostic methods, the most prospective methods of corpse research and the possibility of their application in solving the tasks of forensic medical examinations have been identified. The theoretical basis of the research is the works of modern scientists in the field of forensic medicine and criminology. The empirical basis of the research is the results of the systematization of methods and techniques of medical and forensic examination of corpses and individual remains of bodies in solving the identification, classification, and diagnostic tasks of forensic examinations, which are used in the expert practice of Ukraine and other countries of the world.

## Results and Discussion.

### General provisions of medical and forensic identification of a person.

Prohibited methods and means of warfare often make it impossible to identify dead persons, relying only on traditional forensic or purely forensic identification methods. The conditions of receiving bodily injuries or death in war are such that the bodies of combatants and other victims of war injury factors undergo significant changes, disfigurement, burn, and damage to such an extent that it becomes extremely difficult to identify such a body. In addition, it is sometimes difficult to establish the identity of even an alive but significantly injured patient. After all, as a result of contusions, painful shock, other medical conditions, combatants, and civilians who are directed to medical institutions cannot provide complete information about themselves and remain unknown for a long time. A significant number of combat casualties is related to the fact that today Ukrainian military and civilian citizens die from sniper bullets, as well as from explosive devices. In the first case, often little can be left of the head and face, as the most informative parts of the body, and in the second case, separate parts, scattered fragments of human bodies become the object of identification, and even the number of dead does not immediately become known.

Identification by DNA offers the ability to identify and compare individuals, including determining whether or not there is a genetic link between them. In events involving disaster victim identification (DVI), several biological samples can be used as source of DNA for genetic analyzes. However, many factors may affect the integrity of the genetic material obtained.

The close connection between forensic medicine and forensics found a way out in the creation of medical and forensic departments on the bases of forensic expert institutions, staffed by forensic doctors who have specialized in one or another area of forensics. Medical and forensic studies, which are used in the course of conducting forensic examinations, make it possible to establish the identity of corpses that were subjected to putrefactive changes by means of portrait identification, reconstruction of the face by the skull, photo-telecombination of images of the skull and facial part with lifetime photographs of the deceased person, by reproduction of papillary lines of fingers, their fingerprinting and verification according to the relevant forensic records.

The tasks of medical and forensic expert researches of the corpses of unidentified persons are: determination of the species belonging to the remains; their origin from one or more people; diagnosis of gender, race, age, body length; identification of features of the body structure, signs of appearance, individual characteristics; determination of age and cause of death, type and duration of influence to the remains of damaging environmental factors, nature of damage, their durability and age of formation.

Identification of a person is an independent section of forensic medicine and forensics. The content of this section consists of the medical and biological properties of the person, their reflection in the surrounding world, detection methods, methods of research and recording of the obtained results, as well as criteria for their evaluation. When conducting research related to

the identification of a person, the achievements of anthropology, anatomy, embryology, histology, molecular biology, radiology, dentistry, mathematics, physics, chemistry, and other sciences are used. The theoretical foundations of person identification are the theory of identification, developed within the framework of forensics, and physical (biological) anthropology, which traditionally develops within the framework of forensic medicine. The process of identification is carried out on the basis of studying and evaluating the entire set of features that distinguish one person from another.

Forensic scientists investigating the theory of identification include both the process and the result of a certain practical activity in the concept of "identity". That is, both the task and the process of solving it are like that. At the same time, it is part of the general forensic theory and a special method of forensics in the theoretical sense. It is important for the theory of identification that the objects of identification are not individual properties and qualities of objects, but the object as a carrier of an individual, unique set of properties and qualities. Therefore, the property as such does not act as an object of identification, but as its mean. The methodological basis of both forensic and forensic medical identification as a method of establishing identity consists of the following provisions of the materialist dialectic.

1. All objects and events of the material world are interconnected and represent an endless interweaving of connections and interactions. If the effect is known, it is not difficult to establish the cause and vice versa.

2. Events and phenomena of the material world are individual (determined), since there are not the same two things. This fundamental position makes it possible to find and learn about real objects caused by practical human activity.

3. All objects of the material world are in constant motion, development, and change. However, the individuality and definiteness of the object presuppose its relative constancy, immutability, that is, the preservation of characteristic features that allow it to be identified with itself. Although the identified object changes all the time, its identification in the process of cognition is in general and is widely used as a method in the forensic process in particular.

4. The identification period for different objects is different and depends on many factors, which remain a kind of white spot in the theory of forensic identification.

It is well known that each object is unique and strictly individual even among its own kind, therefore, in the process of forensic identification, the identity and equality of the object to itself is actually established by its reflections. Therefore, to identify an object means to establish its identity with itself in different time periods or in different states based on the left reflections.

Forensic medical examinations for the purpose of identifying a person are regulated by the Rules for conducting forensic medical examinations (researches) of corpses in the forensic medical examination bureau (Rules for conducting forensic medical examinations of corpses dated January 17, 1995 No. 6.). In cases of mass discovery of corpses, the issue of their suitability for identification is primarily resolved. In such cases, all discovered corpses are separated into groups: suitable for identification and unsuitable for identification by external

features. The first group includes those in which the elements of the appearance are preserved, by which recognition is possible, first, the face, or there is a unique set of cognitive features suitable for recognition, that is, "special signs". This is usually established through forensic identification. Another group of unrecognizable corpses includes those for which visual recognition did not lead to identification or those that are unsuitable for forensic recognition based on external features. In these cases, the identity of an unidentified corpse can be established only by special medical methods, in particular, osteological, radiological, serological, molecular, genetic, etc.

During a forensic medical examination for the purpose of identification of persons, the following are determined: the species belonging to the remains, the number of corpses to which they belonged, their race, gender, and age; lifelong height and other dimensions of the body, peculiarities of its structure, the presence of signs of diseases that the person had, physical injuries, their nature and antiquity; signs of a verbal portrait and other individual features for identifying the identity of unrecognizable corpses.

Usually, the collection of an adequate ante mortem sample is technically simple, but the acquisition of a good quality postmortem sample under unfavourable DVI circumstances is complicated due to the variable degree of preservation of the human remains and the high risk of DNA (cross) contamination. This paper provides the community with an efficient method to collect post-mortem DNA samples from muscle, bone, bone marrow and teeth, with a minimal risk of contamination.

During the examination of burned bone remains, there are cases, when it is necessary to start the research with the establishment of the fact that the corpse was burned. The research is also significantly complicated by the fact, that during burning the bones are destroyed, their sizes and even their chemical composition are significantly changed. These are especially difficult cases, because it is not possible to use the material for identification by the method of genotyping from the sent objects, because the structures that contain DNA burn out.

Today in Ukraine, experts face the greatest difficulties when examining corpses that have a fragmented appearance and considering that a characteristic feature of such events as Buchan, Irpin, Mariupol, etc. there is a predominance of damage factors, the influence of which leads to a pronounced change and destruction of bodies, the task of identifying the identity of fragmented corpses becomes especially relevant.

#### **Separate methods of medical and forensic identification of a person.**

When identifying a person, various research methods and technical techniques are used, depending on the nature of the objects of research, their number and state. Medical and forensic examination of a corpse and its remains for the purpose of identifying a person is carried out in three stages: examination of the provided remains for the purpose of identifying general and individual signs; research of objects of comparison with a similar purpose; a comparative study of the researched objects according to general and then individual characteristics.

One of the main issues facing an expert in the field of forensic medicine is the identification of a person. In such cases,

biological methods are of great importance for conducting expert research and obtaining correct results. Modern methods of biological research make it possible to solve a complex of problems, namely: to establish the presence of traces of biological origin on objects, to establish the group or gender affiliation of traces of biological origin in order to determine the source of their origin, to identify living people and corpses. The results of the identification of a person by the DNA analysis method acquire the procedural status of evidence as factual data established during the molecular genetic examination.

Molecular genetic examination is based on the indisputable fact – the individuality and uniqueness of each person's genome. The DNA molecule has several features that make it extremely promising for use in forensic identification. The reasons for this are: the uniqueness of individual DNA, that is, each person is genetically individual (except for identical twins); genetic constancy of the body, i.e. the structure of DNA molecules does not change throughout a human's life; the identity of DNA molecules in the cells of the entire body, that is, all cells of the body have the same structure of DNA molecules. Forensic DNA expertise is based on the study of polymorphism (that is, a large number of individual traits) in the DNA molecules of different individuals. All people belong to the same biological species, and therefore the genetic information of one person is similar to the information of another. However, the purpose of DNA analysis is the study of differences. This that distinguishes one person from another. The so-called STR loci (from the English Short Tandem Repeat) turned out to be a very convenient tool for this. They are contained in heterochromatin (the non-coding part of the genome). The research principle is that there are several varieties of each of the STR loci and each variety occurs with a certain frequency in the human population. The CODIS system (COmbined DNA Index System) has become the de facto international standard, which recommends using 20 main loci for research. Commercial kits of reagents are used to study STR loci. The main manufacturers are Promega and Applied Biosystems (USA). The scientific research expert and forensic centers of the Ministry of Internal Affairs of Ukraine currently use sets of reagents from the company Applied Biosystems – this is the Identifiler Plus set, which makes it possible to study 16 STR loci, and the Globalfiler set, which allows studying 24 STR loci.

The obtained DNA is subjected to careful research – the structure of several, strictly defined parts of the genome, so-called highly polymorphic loci (STRloci), is tested in a certain way for each person being studied, and the discovered characteristics are unique in their totality. Other advantages of using DNA expertise include the following: 1) uniqueness of individual DNA, since every person in the world is genetically individual; 2) genetic stability of the organism, because genetic information does not change during life; 3) the sensitivity of the method, since even a very small amount of the sample is sufficient for the analysis; 4) the DNA molecule has increased resistance to environmental influences. 5) DNA research is also possible in biological material that has undergone changes (that is, material in the form of stains on various objects, such as: dried blood, sperm, saliva, etc.).

At the current stage of the development of forensic medical examination, the DNA analysis technology makes it possible to effectively study the following types of forensic objects recovered from crime scenes: practically all tissues and biological liquids of the human body containing DNA; biological objects contaminated with microflora; mixed traces, in the absence of comparative samples, to solve the question of the appropriateness of the biological trace. It should be noted that the use of molecular genetic research provides an opportunity to quickly and effectively identify the victims and reconstruct the circumstances of the event in situations with a large number of human victims. The main tasks of the examination are establishment of genetic features (DNA profile) of human biological material; identification of a person by genetic characteristics in traces of biological origin; establishing the ownership of parts of a dismembered corpse to one person; identification of a deceased person based on the genetic characteristics of close relatives; establishment of paternity and biological kinship of persons, etc. Typical research objects are blood, sperm, buccal epithelium, saliva, subungual contents, bone remains, teeth, hair with a bulb, as well as contact marks that contain cells with nuclei (Expert specialty 9.5 "Molecular genetic research").

The DNA analysis process itself consists of a sequence of stages. The first of them is dedicated to establishing the presence of DNA material contained in the object (that is, biological tissues, human liquids, or nuclear cells without histological characteristics) on the object submitted for research. At the second stage, DNA is isolated (extracted) from the studied biological objects. The extraction process is carried out by three main methods: first, with the help of organic compounds (the so-called phenol method); secondly, with the help of ion-exchange resin "Chelex-100"; thirdly, with the help of DNA-absorbing substances. In the process of selection, total DNA is obtained, which is a mixture of nuclear and mitochondrial DNA. The third stage is the stage of qualitative and quantitative evaluation of the isolated DNA. Currently, forensic DNA analysis laboratories use two methods of assessing the quality and quantity of extracted DNA: the electrophoresis method in the agarose gel and the method of evaluation of polymerase chain reaction in the real-time. At the fourth stage, the polymerase chain reaction is performed, followed by the amplification reaction, which is a cyclic process that ensures copying of the detected DNA sequence in order to increase the amount of DNA for further visualization. The fifth stage is devoted to the evaluation of the results of the amplification reaction by using automated systems – genetic analyzers. The result is obtaining electrophoregrams, which makes it possible to detect the presence of true alleles and non-specific fragments. So, in the end, the expert receives the genetic profile of the object, suitable for further expert analysis in order to solve the tasks set by the initiator of the study.

Usually, in the process of DNA identification, appropriate equipment is used to identify a person – computer software that characterizes the method of indirect DNA identification, which is based on the establishment of biological kinship. The calculation algorithms of this method are based on the patterns of inheritance of traits from parents to children and are reduced

to a comparative analysis of the states of chromosomal DNA loci in unidentified bodies and probable parents of these unidentified deceased and to calculations of the probability coefficients of the hypotheses of their probable kinship. The software supports databases with identification characteristics of VNTR and STR loci, HLA DQAI loci and the RM system (a potential set of 23 loci). This computer method of indirect identification is a new highly effective tool for solving the problems of identification of a person by chromosomal markers in the conditions of current information processing with a mass influx of unidentified bodies.

Biological samples of unidentified corpses are selected by specialists of the Bureau of Forensic Medical Examination in accordance with the established procedure and directed to state specialized institutions, whose competence includes conducting molecular genetic examinations with the aim of establishing their DNA profiles and future placing them in the Central Record of Human Genetic Characteristics (CRHGC). If it is necessary to establish the identity of an unknown corpse, the investigative bodies organize measures to remove the personal belongings of the presumably missing person (unironed underwear), household items (for example, a toothbrush, a razor, a comb) that may be important for the investigation and the appointment of examinations, including the establishment of a DNA profile of a missing person for placement in CRHGC. As samples, samples of buccal epithelium (saliva) or a blood sample are taken.

After carrying out the procedurally established actions, molecular genetic examinations in state specialized institutions and receiving a positive research result, the registration card with the DNA profile of the relative of the missing person is sent and placed in the Central Records for further automatic verification (Methodological recommendations for organizing the selection of samples of biological origin. p. 9).

Verification is carried out in two ways. First, by identifying the coincidence of the genetic features (DNA profile) of the missing person, which were established during the forensic molecular genetic examination of his personal belongings or items of use, with the genetic features of unrecognizable corpses. Secondly, in cases where the biological samples of the missing person have not been recovered or the DNA profile on the recovered personal belongings or items of use has not been established in the course of the conducted molecular genetic research, a check is made to establish the biological relationship (parentage) of close relatives of the missing person and unidentified corpses whose DNA profiles are available in the database.

At the same time, there are cases when direct relatives of a missing person, whose probable corpse was found in the place of hostilities, are not alive. If necessary, in such cases, you can use the capabilities of the mitochondrial DNA (mtDNA) research method. Mitochondrial analysis is a useful adjunct in determining information when searching for missing persons when there are only relatives related to the maternal line. The research of mtDNA allows establishing family ties along the maternal line both vertically (between grandmother and grandchildren) and horizontally (between brothers and sisters), which is impossible when using nuclear DNA analysis methods.

Thus, in the absence of direct relatives (parents, children) or the absence of personal belongings of missing persons, but in the presence of relatives on the maternal line (brothers, sisters, grandmothers, etc.), it is necessary to consider the possibility of conducting molecular genetic examinations, in which the issue of establishing mitotypes (mtDNA nucleotide sequences) of these individuals and to conduct their comparative research will be resolved. There are also modern possibilities for establishing characteristics that are specific only for the male gender. This method of genetic identification is used only in conjunction with the study of autosomal (nuclear) DNA and allows to confirm the probability of family ties between male individuals (who inherit the Y-chromosome on the paternal line), or to deny this fact. Such relatives include brothers, grandfathers, and uncles on the paternal line.

Despite significant achievements and results in conducting molecular genetic examinations by DNA laboratories of law enforcement agencies, there are a number of problems that complicate their work. The realities of the time determined the urgent need to use the most advanced technologies to solve the mentioned problem, which include one of the most important scientific achievements of the last three decades in the field of human genomic identification, namely, the molecular genetic research of DNA and the creation of a data bank of human genetic traits.

Solving the problem of identifying victims of war crimes in modern conditions should be carried out innovatively and comprehensively, through the adoption of the Law of Ukraine "On State Registration of Genomic Information of Human", which would define the goals, principles, types of such registration, establish the basic requirements for its implementation, and establish the concept and status of genetic data of human, the conditions and procedure for obtaining, storing and using them. At the same time, the creation of a state automated information and search system will provide an opportunity to improve international cooperation regarding the exchange of genomic information with other countries and international organizations [18-30].

### **Conclusion.**

In a scientific study by the authors reveal the essence of medical and forensic identification of persons for the purposes of civil and criminal proceedings through the methods of molecular genetic analysis - due to the high discriminating ability and the possibility of using indirect identification schemes when biological samples from relatives of the deceased are used as its objects. The authors have found that the use of modern and latest methods and expert techniques for establishing the identity of a person from a found corpse or its fragments is not sufficiently covered in the special forensic and medical literature.

The authors have found that the standards and methods of conducting identification medical and forensic examinations in Ukraine correspond to modern European approaches. This fully applies to medical and forensic examinations of corpses and bone remains, as well as to the identification of a person by DNA analysis. However, today not all issues related to the observance of the rights and interests of persons in the identification of unidentified corpses and fragments of human bodies are

sufficiently regulated by the norms of the current legislation of Ukraine. This concerns the establishment of a clear normative order and rules for DNA typing of certain categories of persons for the creation of genomic registration databases.

The authors of the scientific article believe that such for making a decision regarding carrying out medical and forensic identification and obtaining a corresponding expert opinion serves as a guarantee of the fairness of the application of the requirements of the legislation regarding the recognition of the legal status of persons who have disappeared under special circumstances, and the social protection of such persons and their family members. The relevance of the unique method of DNA analysis shows that with its help it would be possible to search for missing persons more effectively, in particular in the zone of hostilities, the temporary occupation of part of the territory of Ukraine, to establish the identities of unidentified corpses, and to identify victims of war crimes. It can be considered as a disadvantage that currently Ukraine does not have a database of DNA identification of all citizens of Ukraine. For this purpose, a decision to approve the concept of the State Target Program for the expansion of the network of DNA laboratories and the creation of the National Database of Genetic Characteristics of Human would be effective.

### **Conflict of interest.**

None.

### **Acknowledgements.**

None.

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