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# Achieving Defense by Means of Forensic Science During the Criminal Proceedings in Romania

*La fundamentación de la defensa por medio de las ciencias  
forenses en el marco del procedimiento penal en Rumanía*

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**ABSTRACT:** The function of defense during the criminal proceedings in Romania is the result of traditional separation of the three procedural functions of accusation, judgement and defense. Exceeding the barriers of the contradictory principles the penal procedure in Romania features, the investigation bodies are interested in finding truth in penal cases and solving them legally and substantially. Both constitutive parts are achieved in criminal proceedings based on genuine evidence gathered legally from the crime scene. The current paper aims to identify elements which contribute to achieving the function of defense during the criminal proceedings in Romania by approaching and implementing tools and scientific techniques provided by forensic science. In reaching the study's proposed objectives, a mixed research methodology has been used consisting of qualitative methods.

**KEYWORDS:** Forensic examination; Forensic science; Function of defense; Investigation body; Investigation phase.

**RESUMEN:** *La función de la defensa en el procedimiento penal en Rumanía es el resultado de la separación tradicional de las tres funciones procesales de acusación, enjuiciamiento y defensa. Más allá de los límites del principio de contradicción que caracteriza el procedimiento penal en Rumanía, los órganos de investigación están interesados tanto en encontrar la verdad en los asuntos*

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<sup>1</sup> Doctor in Law since 2005 awarded at the State University of Moldova, Republic of Moldova.

*penales como en resolverlos jurídica y sustantivamente. Ambos objetivos se logran en el procedimiento penal por medio de pruebas obtenidas legalmente por parte de los entes jurisdiccionales. En este artículo pretendo identificar los elementos que contribuyen a lograr la función de la defensa en el procedimiento penal en Rumanía mediante el uso de instrumentos y técnicas de las ciencias forenses. Para alcanzar los objetivos propuestos, se ha empleado una metodología de investigación mixta, basada en un método cualitativo.*

**PALABRAS-CLAVE:** Examen forense; Ciencias forenses; Función de la defensa; Ente de investigación; Fase de investigación.

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## INTRODUCTION

The tripartite division of criminal proceedings functions - accusation, defense and judgment - has permanently received the Romanian practitioners' attention. From the beginning, it has been appreciated that justice in criminal matters cannot be achieved in the absence of the nexus between these three functions of criminal proceedings. Doctrine has also always been involved in finding a legal relation between these judicial entities within criminal proceedings. However, their intrinsic features have played a decisive role in the process of establishing the objective criteria based on the involvement of forensic science in finding scientific evidence.

The judicial connection between these functions of criminal proceedings means a premise for solving the penal cases legally and substantially. Moreover, the extrinsic component expressed by its forms of manifestation acts to complete them.

For the current paper, the legal means of forensic science which offer the judicial bodies and defendants the necessary legal instruments in order to achieve the function of penal trial present a high interest. Doctrine is usually speaking about the concept of "dual-use evidence"<sup>2</sup>

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<sup>2</sup> MILLER, Marc L.; WRIGHT, Ron F.; TURNER, Jenia I.; LEVINE, Kay L., *Criminal Procedures. Cases, Statutes, and Executive Materials*, Sixth (ed), New York: Wolters Kluwer, 2019, pp. 861-894.

the court of law must take into account while proceeds in evaluating the evidence gathered and administered in the penal case in purpose to deliberate and pronounce the judicial decision.

The discussion is not structured solely around the idea of the proper exercising the function of defense during the criminal proceedings, but also on the connections established between them and the means of forensic science. This is because in the absence of forensic science support and the associated investigation methods and methodology, the forensic techniques and procedures, jurisprudence would not complete its role of intermediary for the three judicial functions. Thus, when analyzing the exercising of the function of defense during the criminal proceedings in Romania the defining elements which feature the judicial instruments, generally speaking, must be taken into consideration. Equally, the means of forensic science also present a particularity in the judicial bodies' activity of finding the truth in the penal case<sup>3</sup>. From this perspective, forensic science offers logistical and tactical support to the judicial system in criminal matters which consists of a set of methods, techniques and other instruments aimed entirely at achieving the purpose of criminal proceedings and its functions.

Beside the functions of accusation and judgment, for the current paper the function of defense is related to the judicial way in which it interferes with the forensic science. In this context, the modality of exercising the defendant's procedural rights, as part of defense, is also of high interest. This means that the function of defense involves two legal relations. One of them is stated between the judicial body and defendant who is bringing charges of committing an offense, while another one between the defendant and victim who suffered a material or moral harm from the committed offense<sup>4</sup>.

Each of the parties to criminal proceedings is interested in applying their procedural rights in such a way to prove the defendant's

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<sup>3</sup> CARPINEAN, Ion Cristian, *Rolul Probelor Criminalistice in Stabilirea Adevarului*, Revista de Criminologie, Criminalistica si Penologie, Issue 4/2019, pp. 83-85.

<sup>4</sup> MAGHERESCU, Delia, *Recunoasterea vinovatiei si aplicarea pedepsei*, Bucharest: Hamangiu Publishing House, 2019, p. 119.

guilt, on the one hand, or innocence, on the other hand. The victim is always interested in proving the defendant's guilt<sup>5</sup> being entitled to obtain all the scientific evidence the Code of penal procedure regulates under the free evidence principle<sup>6</sup>, while the defendant is interested in proving their innocence.

The Code of penal procedure regulates a series of rights and obligations the parties have during the criminal proceedings. They differ in accordance with the judicial phase of criminal proceedings. The legal ways of exercising these rights are diversified in conformity with the parties' interest and the adverse parties' position. Nevertheless, despite this adversarial judicial situation, the real scope of criminal proceedings is that of finding truth and solving the penal case based on evidence<sup>7</sup>. In these circumstances, forensic science offers the appropriate means of gathering scientific evidence<sup>8</sup>.

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<sup>5</sup> MAGHERESCU, Delia, The victims' rights on the forensic examination during the penal procedure in Romania. In: Andrasko, Jozef; Hamulák, Juraj; Kahounova, Michaela (eds) *Constitutional, Statutory and Criminological Attributes for Crime Victims*. Bratislava: Univerzita Komenského v Bratislave, 2018, pp 136-142, available online at: [https://www.flaw.uniba.sk/fileadmin/praf/Veda/Konferencie\\_a\\_podujatia/bpf\\_2018\\_new/Zbornik\\_BPF2018\\_sekcia\\_1.pdf](https://www.flaw.uniba.sk/fileadmin/praf/Veda/Konferencie_a_podujatia/bpf_2018_new/Zbornik_BPF2018_sekcia_1.pdf) (accessed on 14 November 2019); CASSEL, Paul G.; BOYCE, Ronald N., *Crime victims' rights*. In: LUNA, Erik (ed.) *Reforming Criminal Justice: Pretrial and Trial Processes*, Phoenix: Arizona State University, 2017, pp. 171-192, available online at: [https://law.asu.edu/sites/default/files/pdf/academy\\_for\\_justice/Reforming-Criminal-Justice\\_Vol\\_3.pdf](https://law.asu.edu/sites/default/files/pdf/academy_for_justice/Reforming-Criminal-Justice_Vol_3.pdf) (accessed on 9 January 2020)

<sup>6</sup> COMAN, Andreea, *Forta probanta a raportului de expertiza in procesul penal*, 2019, available online at: <https://www.juridice.ro/649822/forta-probanta-a-raportului-de-expertiza-in-procesul-penal.html> (accessed on 17 November 2019)

<sup>7</sup> ZARAFIU, Andrei, *Procedura penala. Partea generala. Partea speciala*, 2<sup>nd</sup> ed, Bucharest: C.H. Beck, 2015.

<sup>8</sup> MURPHY, Erin, *Forensic evidence*. In: LUNA, Erik. (ed) *Reforming Criminal Justice: Pretrial and Trial Processes*, Phoenix: Arizona State University, 2017, pp. 171-192, available online at: [https://law.asu.edu/sites/default/files/pdf/academy\\_for\\_justice/Reforming-Criminal-Justice\\_Vol\\_3.pdf](https://law.asu.edu/sites/default/files/pdf/academy_for_justice/Reforming-Criminal-Justice_Vol_3.pdf) (accessed on 9 January 2020)

## 1. METHODOLOGY OF RESEARCH

The current research study addresses the topic of exercising the function of defense by means of forensic science and is grounded on data gathered from the judicial law enforcement agencies which publish relevant jurisprudence references in criminal matters as well as judicial decisions adequate for conducting the current research. The issues of jurisprudence have covered the results investigated both during the investigation and the judgment phases of criminal proceedings. Moreover, the jurisprudence has been analyzed from the perspective of its corroboration with the theoretical opinions offered by doctrine on this topic.

The analysis and studies emphasize how much the state's institutions and judicial authorities are involved in developing a legal framework favorable to fighting criminality, in particular the organized crime phenomena they are confronted with.

The current paper also highlights the research results related to exercising the function of defense during the criminal proceedings on behalf of defendants who are accused of having committed serious crimes. The research study advances a unitary method of analysis and research with an in-depth approach based on qualitative methods<sup>9</sup>. The paper, being conceptual research, takes into account the fact that "*the traditional narrative review is still the popular methodology in criminology and criminal justice*"<sup>10</sup>.

Other significant research decisions must also be considered, including sample size as an important criterion for verifying suppositions stated in practice. Within the next sections, the important decisions regarding the research design are stated and justified.

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<sup>9</sup> ONWUEGBUZIE, Anthony J.; LEECH, Nancy L., *Generalization practices in qualitative research: A mixed methods case study*, Quality & Quantity, vol. 44, Issue 5/2010, pp. 881-892 <http://dx.doi.org/10.1007/s11135-009-9241-z>; SCHREIER, Margrit, *Sampling and Generalization*. In: FLICK, Uwe (ed) *The SAGE Handbook of Qualitative Data Collection*, London: SAGE Publications, 2018, pp. 84-97, <https://dx.doi.org/10.4135/9781526416070>

<sup>10</sup> COLLINS, Rachael E., *Applying Meta-Analysis to Criminological Research: A Step-by-Step Approach*, London: SAGE Publications, 2017, pp. 1-12, <https://dx.doi.org/10.4135/9781473994782>

Due to the diverse topics addressed in the current paper, data on the serious crimes for which judicial bodies have used forensic investigation techniques have also taken into consideration. In this way, the concrete instruments provided by the forensic science for each category of offense can be precisely established. It covers the offenses of violent crimes including the serious form of homicide with unidentified corpse, organized crime and financial offenses, including tax evasion.

Using this research methodology, obtaining pertinent scientifically argued conclusions - provided at the end of the paper - was made possible. Nevertheless, the paper neither uses statistical data from the relevant public institutions nor generates such data. From this perspective, it is appreciated that the paper imposes some limitations regarding the criminal police records<sup>11</sup>.

Moreover, carrying out a criminological meta-analysis is not imposed in this context, due to the fact that the paper does not use data to criminological research<sup>12</sup>.

## 2. MEANS OF FORENSIC SCIENCE IN ACHIEVING DEFENSE

Exercising the function of defense during the criminal proceedings departs from the fundamental right to defense that the defendant has during those proceedings. The other parties<sup>13</sup> also have the right to defense as a constitutional right regulated both by the Constitution and the Code of penal procedure. Nevertheless, for the current study the defendant's right to defense presents a particular interest. It consists of the means of forensic science provided by the penal procedure in particular the activity of achieving the function of defense by using these techniques and methods.

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<sup>11</sup> CORREIA, Sara Giro, *Responding to victimisation in a digital world: a case study of fraud and computer misuse reported in Wales*, Crime Science, vol. 8 Issue 4/2019, pp. 1-12, <https://doi.org/10.1186/s40163-019-0099-7>

<sup>12</sup> COLLINS, Rachael E., *op. cit.*, pp. 1-12.

<sup>13</sup> The civil party and civil responsible party, as regulated by Article 84-87 Code of penal procedure of Romania, adopted by Law no. 135/2010 on the Code of penal procedure of Romania, published in the Romanian Official Journal no. 486 of 15 July 2010, entered into force on February 1, 2014.

Moreover, the consequences which result from infringing the defendant's right to defense during criminal proceedings show how important the unity of legal content between the defendant's fundamental right and justice in criminal matters is.

The right to defense appears as a complex concept which implies both the right of the defense and the other elements it is completed with. Indeed, the most relevant component of the right to defense during the criminal proceedings is the right of the defense, but the legislator equally supports the defendant during the criminal proceedings regulating the other judicial elements which, among others, converge to the right of formulating requests, the right of invoking procedural exceptions, the right to be heard, the right of proposing evidence, the right of requesting a forensic expert appointed by the defendant, the right of expressing conclusions, the right of having the last word<sup>14</sup>, the right of appeal.

The defendant assisted by its lawyer either appointed by himself or called *ex officio* by the judicial bodies, has the right to prepare its defense in accordance with the penal procedure instruments the legislator has regulated in this matter.

In practice, a unanimous view has been stated on the absolute nullity of the judicial decision pronounced in cases of infringing the defendant's right to defense<sup>15</sup>. Thus, exercising the function of accusation and judgment in order to pronounce a judicial decision in the penal case is a reason of the first instance judicial decision nullity. This is because in this way the court of law infringes one or many constitutive elements of the right to defense.

From this perspective, the right to defense the defendant can exercise during the criminal proceedings appears as an absolute one.

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<sup>14</sup> ENGEL, Christoph; GLÖCKNER, Andreas; TIMME, Sinika, *Defendant Should Have the Last Word – Experimentally Manipulating Order and Provisional Assessment of the Facts in Criminal Procedure*, Bonn: Max Planck Institute Collective Goods Preprint, vol. 24/2017, pp. 1-30, <http://dx.doi.org/10.2139/ssrn.3077855>

<sup>15</sup> MAGHERESCU, Delia, 2019, *op. cit.*, p. 269. See also the jurisprudence reference in the matter: Penal Decision no. 287/A of 28 February 2017 of the Court of Appeal of Timisoara, available online at: <http://www.rolii.ro/hotarari/58d44a6ee49009481300003d> (accessed on 8 September 2019)



In most cases, the defendant has to be involved in a particular defense activity due to the nature of the offense he is accused of. The categories of offenses or even serious crimes are presented in Table 1 below. It is observed that the main crimes are those of serious physical violence including homicide with unidentified corpse, rape or any kind of bodily violence. Another category of crimes is related to the organized crime phenomenon while another one covers financial crimes. For example, fraud, counterfeiting and tax evasion belong to the latter category of crimes which require special attention from the defense party of criminal proceedings.

**TABLE 1.** Disposing crimes by characteristics and means of forensic science used for achieving defense

Crime category	Primary characteristics	Means of forensic science
Violent crimes Bodily violence Rape Homicide	Bodily injuries Physical traces Social relations	Biological evidence Bodily examination Corpse examination Psychiatric examination
Organized crimes Trafficking Corruption Terrorist attacks	Human being harms Economic damages Transnational activities	Goods examination Financial examination Material evidence Biological evidence
Financial crimes Fraud Counterfeiting Tax evasion	Financial damages Money laundering Banking activity	Digital examination Accounting examination Digital evidence Material evidence

Each category of crime presented in Table 1 above, brings with it its own requirements regarding the type and form of the appropriate forensic examinations the forensic expert has to carry out during the investigation phase and the kind of evidence the judicial bodies must be provided with from these forensic examinations. For example, in cases of homicide with unidentified corpse the forensic expert will conduct a corpse examination (which could include an anthropological

examination, odontological examination, archaeological examination, as will be discussed in the next section).

The discussion is not exclusively centered on the classical and modern forensic science methods which realize the function of defense during criminal proceedings, but more particular on the procedural modality the defendant possesses in order to defend itself in accordance with the evidence administered by the judicial bodies as incriminating ones. However, the penal procedure imposes them equally to administer evidence in defense if the circumstances of committing offense provide one of the following hypotheses.

(i) The offense was committed by defendant in one or many attenuating circumstances. In this case the judicial bodies must gather the appropriate evidence in this matter including those which exonerate the defendant of having committed offense.

(ii) The offense was committed in the same conditions and circumstances the defendant provides the investigation bodies with. In this case the judicial bodies must administer both the defending evidence and accusing ones.

(iii) The offense was not committed by defendant although he asserts that he is the perpetrator of committing offense. In this case the judicial bodies must gather the pertinent, conclusive and reasonable evidence alongside with the principle of effectiveness<sup>16</sup> which conclude to finding the right perpetrator, to finding the truth in penal case and to solving it legally and justified. This is because, at the end of the judgment the judicial activity of making decision in the deliberating stage of penal trial will be achieved beyond any reasonable doubt by the judge entitled to pronounce it<sup>17</sup>.

The stated working hypotheses must be taken into account by the judicial bodies even in the beginning of the criminal proceedings, more particularly in the investigation phase. All these aspects are based

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<sup>16</sup> QUEENSLAND SENTENCING ADVISORY COUNCIL, Community-based orders, imprisonment and parole options: Final report, Brisbane, 2019, available online at: [www.sentencingcouncil.qld.gov.au](http://www.sentencingcouncil.qld.gov.au) (accessed on 12 September 2019)

<sup>17</sup> ENGEL, Christoph; GLÖCKNER, Andreas; TIMME, Sinika, *op. cit.*, pp. 1-30, <http://dx.doi.org/10.2139/ssrn.3077855>

on the idea of gathering evidence<sup>18</sup> while respecting the principle of the defendant’s right to defense.

Regarding the hypotheses stated above, two ideas are outlined which will be detailed within the next chapters. It concerns the situation in which the defendant admits to committing an offense he did not actually commit and another one in which the defendant declares that he did not commit the offense he is accused of and which he really did commit.

**3. SCIENTIFIC APPROACH OF PRACTICAL HYPOTHESES**

The judicial bodies require the forensic examination in order to solve penal cases involving crimes against life, corruption offenses, offenses of making false documents<sup>19</sup>, and offenses committed by means of arson and explosion, such as those of terrorist attacks<sup>20</sup>.

Through these means of evidence conclusive evidence for the judicial body which helps the court of law in pronouncing the legal and justified judgment decision are gathered.

For this reason, there are certain forensic investigating standards the forensic expert must take into consideration when offering suppositions and scientific opinions, as stated in Table 2 below.

**TABLE 2.** Disposing standards of investigation by explanation of particular feature

Investigating standards	Particularities
Solving the penal case	Conclusive, pertinent and genuine scientific evidence
Transparency and precision in the criminal investigation	Accuracy of forensic experts’ determination

<sup>18</sup> MURPHY, Erin, *Forensic evidence*, 2017, *op. cit.*, pp. 171-192.

<sup>19</sup> GEHL, Rod; PLECAS, Darryl, *Introduction to Criminal Investigation: Processes, Practices and Thinking*. New Westminster, BC: Justice Institute of British Columbia, 2016, p. 152, available online at: <https://pressbooks.bccampus.ca/criminalinvestigation/> (accessed on 25 October 2019)

<sup>20</sup> MAGHERESCU, Delia, *Criminalistica*, Bucharest: Wolters Kluwer Publishing House, 2017, p. 148.

Investigating standards	Particularities
Working probabilities	Sufficient evidence gathered legally
Reasonable suspicions	In the beginning of the forensic examination
Investigators' interest	Discovering sufficient material evidence

Certain working hypotheses are outlined in accordance with the approach of the activity of forensic examination in case of exercising the function of defense during the criminal proceedings.

#### *Case 1: Admitting offense uncommitted*

The first case concerns a defendant admitting an offense despite the evidence suggesting that the defendant is not the perpetrator. Basically, the situation seems to be a simple one from a procedural perspective. Actually, the investigation bodies are usually confronted with the laborious work of proving the contrary, more particularly to continue the investigative activity of the penal case in its entirety.

In this context, achieving the function of defense during criminal proceedings clarifies those aspects advanced by the defendant in cases in which his confession is confirmed or otherwise he misleads the investigator. Why? In some instances, to hide the committing of other serious crimes, the defendant admits to committing a lesser uncommitted offense which could result in reduced criminal liability or even in their exoneration. While in other instance to prove subsequently the missing solidity of the offenses the defendant is accused of, or to propose counter-evidence in achieving a defense.

The working hypothesis has taken into consideration the involvement of forensic examinations the results of which would create opportunities for the defendants during the criminal proceedings and would result in their acquittal. All these aspects are taken into account by the court of law at the phase of deliberating the solution in the penal case which will consider the entire evidence administered in such a way

for the judge to pronounce the judicial decision within the procedure of corroborating all evidence.

Thus, the evidence administered by the judicial body gathered from the forensic examinations may profit the defendant too. They will conclude the aspects aimed at by the judicial body in the beginning of the investigation phase and refer to the following issues: (1) Whether the defendant is the perpetrator of the offense investigated; (2) Whether there are other accomplices who must be involved in the penal liability; (3) What the set of circumstances of place, time and *modus operandi* the offense was committed in were; (4) What kind of criminal means the defendant used in committing the offense; (5) What form of guilt the defendant's criminal activity features; (6) The number of victims; (7) The consequences of the offense committed.

The forensic expert is called to clear up all these issues outlined by the judicial body.

At the same time, doctrine speaks about the voluntariness of confession<sup>21</sup> appreciating that a involuntary confession cannot be considered a valid source of evidence. In these circumstances, the voluntary confession is discussed in accordance with certain offenses, such as the physical abuse.

### *Case 2: Declining offense committed*

The second case involves declining an offense committed by the defendant and implicitly implies the means of forensic science as well as the forensic examinations the judicial bodies will order in the penal cases they investigate. This is because admission of guilt by the defendant is not absolute evidence during the criminal proceedings, as a consequence it must be corroborated by the other evidence administered in the penal case. Thus, admitting guilt of having committed an offense by defendant must be sustained by the other evidence the judicial bodies have to discover and administer.

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<sup>21</sup> MILLER, Marc L.; WRIGHT, Ron F.; TURNER, Jenia I.; LEVINE, Kay L., *Criminal Procedures. Cases, Statutes, and Executive Materials*, Sixth (ed), New York: Wolters Kluwer, 2019, pp. 472-492.

In accordance with the nature of offense<sup>22</sup> as well as its complexity, the duty of discovering, settling, gathering and examining the offense traces in order to obtain conclusive and genuine evidence for solving the penal case legally and justified belongs to the forensic expert. Article 34 Code of penal procedure regulates that “*the expert is the person who is not a part of the penal trial, but a participant who helps in solving the penal case with data and knowledge it holds and provides the judicial body with*”<sup>23</sup>.

At the same time, the forensic examinations results stated in the forensic report drawn up by the expert<sup>24</sup> profits the defendant in exercising the function of defense during the criminal proceedings, if it contains conclusive evidence which certifies that he is not the perpetrator of the offense he has been accused of.

In the case of the three categories of offenses, such as violent crimes including the serious form of homicide with unidentified corpse, organized crimes committed in diverse manners (trafficking of any kind, corruption and terrorist attacks) and financial offenses, forensic experts can be called upon to take part in the investigation. In accordance with Article 172 (8) Code of penal procedure “*in carrying out the examination authorized independent experts can participate, called at the parties’ request ...*”. The legal institution of expert-party during criminal proceedings is so common in the Romanian judicial system and acts as a fundamental guarantee on respecting the defendant’s procedural rights. As a consequence, achieving the function of defense during criminal proceedings in Romania is stated by the legislator and transposed by the judicial bodies with the defendant’s consent. In exercising their rights, defendants can also recommend an expert-party who will participate in the activity of carrying out the forensic examination, in accordance with Article 173 (4) Code of penal procedure.

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<sup>22</sup> AMZA, Tudor, *Criminologie teoretica*, Bucharest: Lumina Lex, 2000.

<sup>23</sup> MAGHERESCU, Delia, 2017, *op. cit.*, pp. 86-87.

<sup>24</sup> ALAMOREANU, Sorin, *Problematica expertizei criminalistice*, Bucharest: Hamangiu Publishing House, 2013.

*In cases of violent crimes including serious homicide with unidentified corpse*

The serious form of homicide with unidentified corpse has a particularity which presents interest, both from the perspective of identifying the victim and in fulfilling the main purpose of the criminal proceedings in particular the investigation phase activity. Furthermore, regarding the current topic the defendant's procedural status and the criminal proceedings' ways of using forensic science methods and means of achieving the defendant's rights of defense presents interest as well.

In the concept of forensic science investigation activity, the victim with unidentified corpse involves a set of forensic examinations. In some cases, a long time passed from committing homicide till discovering corpse. Thus, in cases of putrefied corpse or calcined one, several complex forensic examinations are to be carried out, such as: (1) odontological examination; (2) entomological examination<sup>25</sup>; (3) anthropological examination; (4) DNA genetic examination<sup>26</sup>; (5) medical-forensic examination; (6) geological examination; (7) archaeological examination. Each of these examinations presents relevance for the penal case on its object indicated above in accordance with the circumstances of committing offense as well as with the degree of biological material existing on the crime scene. In purpose to identify the victim, there are necessary many of these examinations, as a consequence the forensic experts belonging to these specializations are usually working in close cooperation in the activity of carrying out a complex forensic examination.

In cases of physical aggression, a forensic medical examination intervenes in order for the expert to establish the lesions and bodily harms produced by diverse means and instruments used by the aggressor. They

<sup>25</sup> CAMPOBASSO, Carlo Pietro; INTRONA, Francesco, *The forensic entomologist in the context of the forensic pathologist's role*, Forensic Science International, vol. 120, Issue 1-2/2001, pp. 132-139, [https://doi.org/10.1016/S0379-0738\(01\)00425-X](https://doi.org/10.1016/S0379-0738(01)00425-X)

<sup>26</sup> FERRARA, Michela; SESSA, Francesco; RENDINE, Marcello; SPAGNOLO, Lorenzo; DE SIMONE, Stefania; RIEZZO, Irene; RICCI, Pietrantonio; PASCALE, Natascha; SALERNO, Monica; BERTOZZI, Giuseppe; MAGLIETTA, Francesca, *A multidisciplinary approach is mandatory to solve complex crimes: a case report*, Egyptian Journal of Forensic Sciences, vol. 9/2019, p. 11, <https://doi.org/10.1186/s41935-019-0116-8>

are ordered by the judicial bodies in accordance with Article 172 Code of penal procedure. At the same time, the judicial body can order either a forensic medical examination of the victim's body in conformity with Article 189 Code of penal procedure or simply a physical examination. In the latter case, Article 190 thereof regulates that "*the physical examination of a person supposes both external and internal examination of its body as well as drawing biological sample. The investigation body must firstly request the victim's beforehand written consent*".

In cases of homicide a set of circumstances intervenes<sup>27</sup> that the judicial body must take into consideration during the investigation phase in purpose to order and administer forensic judicial examinations whose conclusions contain irrefutable evidence and which the solving penal case will be based on.

In accordance with the action of committing homicide over the victim's body, the judicial body will order carrying out one or more forensic examinations, as follows:

(i) The dactyloscopic forensic examination of establishing the defendant's fingerprint if there are suspicions of shooting<sup>28</sup> committed by using a shot-gun.

(ii) The ballistic forensic examination over the shot-gun<sup>29</sup> if the judicial body has suspicions that the perpetrator used it in committing the homicide; the examination will establish the gun used in committing

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<sup>27</sup> PIEL, Jennifer, *The Defense of Involuntary Intoxication by Prescribed Medications: An Appellate Case Review*, The Journal of the American Academy of Psychiatry and the Law, vol. 43, Issue 3/2015, pp. 321-328, available online at: <https://pdfs.semanticscholar.org/1d9d/4123c20938e05acde6f-2d06ea09106dfabe7.pdf> (accessed on 26 October 2019)

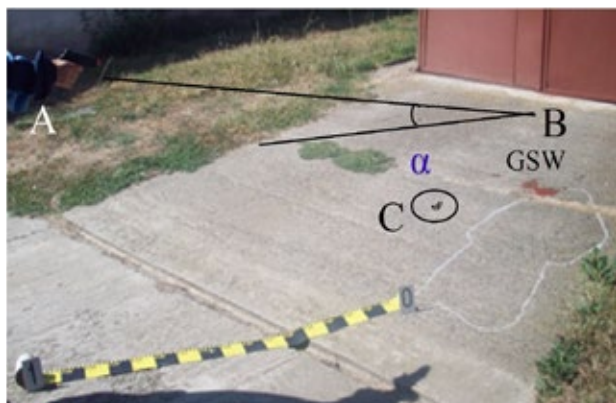
<sup>28</sup> WALTON, Richard. H., *Practical Cold Case Homicide Investigations Procedural Manual*, CRC Press, Boca Raton: Taykir and Francis Group, 2017, <https://doi.org/10.1201/b16315>

<sup>29</sup> DUTELLE, Aric W.; BECKER, Ronald F., *Criminal investigation*, Fifth (ed), Burlington: Jones and Bartlett Learning, 2019, pp. 189-193, available online at: [https://books.google.ro/books?hl=en&lr=&id=hVBLDwAAQBAJ&oi=fnd&pg=PP1&dq=defense+in+forensic+criminal+cases&ots=NIzD7CmOP-f&sig=xJK6wI2tBAhgltAHPPdPZMK2L8U&redir\\_esc=y#v=onepage&q=defense%20in%20forensic%20criminal%20cases&f=false](https://books.google.ro/books?hl=en&lr=&id=hVBLDwAAQBAJ&oi=fnd&pg=PP1&dq=defense+in+forensic+criminal+cases&ots=NIzD7CmOP-f&sig=xJK6wI2tBAhgltAHPPdPZMK2L8U&redir_esc=y#v=onepage&q=defense%20in%20forensic%20criminal%20cases&f=false) (accessed on 12 October 2019)



crime, the degree of gun's functionality, the arm shooting direction, the distance of arm shooting, both the shooter and victim's position.

(iii) The routing examination, in close collaboration with the ballistic forensic examination<sup>30</sup>. It will conclude the aspects related to the person or goods of trace producer; establishing the manner of producing traces; establishing the kind of traces; reconstituting the whole from constitutive parts.



**Fig. 1** Ballistic forensic examination details on the crime scene

#### *Reconstruction of the crime scene*

A - shooter

B - victim's position

A—B - bullet trajectory

C - bullet gathered from the surrounding crime area

$\alpha$  - shooting angle

GSW - gun shot wound

Additional to the above stated provisions, the ballistic forensic examination in cases of a homicide committed by shooting will also

<sup>30</sup> TIWARI, Neelesh; HARSHEY, Abhimani; DAS, Tanurup; ABHYANKAR, Sugosh; YADAV, Vijay Kumar; NIGAM, Kriti; ANAND, Vijay Raj; SRIVASTAVA, Ankit, *Evidential significance of multiple fracture patterns on the glass in forensic ballistics*, Egyptian Journal of Forensic Sciences, vol. 9, Issue 22/2019, pp. 1-5, <https://doi.org/10.1186/s41935-019-0128-4>

establish the gun's shooting angle as shown in Fig. 1. It differs depending on the perpetrator's stature as well as the distance between perpetrator and victim, and could be between 39° and 41° for a perpetrator at least 150 centimeters tall. In this context, this kind of forensic examination concludes the fact that, for a shooting distance less than 150 centimeters, secondary traces appear on the crime area, such as soot and unfired gun powder. Moreover, for a shooting action committed at a distance, other bullets will be gathered by the investigation bodies from the surrounding crime area.

(iv) The DNA genetic examination, used frequently in the last decades, has developed in the last years a concept that doctrine has called a “*probabilistic genotyping (PG) software has been introduced to interpret evidence that is too complex for manual human analysis*”<sup>31</sup>. The DNA genetic examination has also a particular signification in the process of establishing the identity aggressor - victim in purpose to remove any uncertainties the judicial bodies could have regarding the issues met in the investigation activity, even if it is considered always probative or present evidence<sup>32</sup>. The comparison of DNA profiles do not result in any error, but “*combined with the growing numbers of genetic markers in forensic identification systems calls for expert systems that can automatically compare genotyping results within (large) sets of DNA profiles and assist in profile interpretation*”<sup>33</sup>.

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<sup>31</sup> MATTHEWS, Jeanna; BABAEIANJELODAR, Marzieh; LORENZ, Stephen; MATTHEWS, Abigail; NJIE, Mariama; ADAMS, Nathaniel; KRANE, Dan; GOLDTHWAITE, Jessica; HUGHES, Clinton, *The Right To Confront Your Accusers: Opening the Black Box of Forensic DNA Software*. In: CONITZER, Vincent; HADFIELD, Gillian; VALLOR, Shannon (eds), *Ethics, and Society*, New York: ACM, 2019, pp. 321-327, doi 10.1145/3306618.3314279

<sup>32</sup> WALTKE, Heather; LAPORTE, Gerald; WEISS, Danielle; SCHWARTING, Dawn; NGUYEN, Minh; SCOTT, Frances, *Sexual Assault Cases: Exploring the Importance of Non-DNA Forensic Evidence. Investigating and prosecuting sexual assault crimes is much more complicated than simply performing DNA testing*, NIJ Journal, Issue 279/2018, p. 14, available online at: <https://www.ncjrs.gov/pdffiles1/nij/250704.pdf> (accessed on 2 September 2019)

<sup>33</sup> BENSCHOP, Corina C. G.; HOOGENBOOM, Jerry; HOVERS, Pauline; SLAGTER, Martin; KRUISE, Dennis; PARAG, Raymond; STEENSMA, Kristy; SLOOTEN, Klaas; NAGEL, Jord H. A.; DIJLTJES, Patrick; MARION, Vincent van; PAASSEN, Heidi van; JONG, Jeroen de; CREETEN, Christophe; SIJEN,

Doctrine also states that the probabilistic evidence related to the “likelihood ratios”<sup>34</sup> prove the probabilistic functions of establishing likely instruments - standards which the forensic experts must take into account in their interpretation of DNA evidence provided by the DNA genetic examinations record<sup>35</sup>.

*In cases of organized crime including digital offenses*

When investigating this kind of crime, a set of complex forensic examinations are ordered by the judicial bodies.

(i) The physical-chemical examination is a complex one because it supposes knowledge, techniques and both technical and scientific methods which derive from several fields of science especially from physics and chemistry. The following types of forensic examination can be conducted: optical microscopy examination, scanning electronic microscopy (SEM-EDAX) examination and chromatography in gaseous state coupled with mass spectrometry (GC-MS) examination<sup>36</sup>.

Clearly, there is scope for a very wide range of forensic examinations which can be carried out in specialized laboratories, both in an institutionalized environment and a private one, authorized in accordance with the legislation<sup>37</sup>.

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Titia; KNEPPERS, Alexander L. J., *DNAXs/DNAStatistX: Development and validation of a software suite for the data management and probabilistic interpretation of DNA profiles*, Forensic Science International: Genetics, vol. 42/2019, pp. 81-89, <https://doi.org/10.1016/j.fsigen.2019.06.015>

<sup>34</sup> STIFFELMAN, Bess, *No longer the gold standard: Probabilistic Genotyping is changing the nature of DNA evidence in criminal trials*, Berkeley Journal of Criminal Law, vol. 24, Issue 1/2019, pp. 111-145.

<sup>35</sup> DARTNALL, Stephanie; GOODMAN-DELAHUNTY, Jane, *Enhancing Juror Understanding of Probabilistic DNA Evidence*, Australian Journal of Forensic Sciences, Taylor & Francis vol. 38/2006, pp. 85-96, <https://doi.org/10.1080/00450610609410635>

<sup>36</sup> MAGHERESCU, Delia. 2017, *op. cit.*, p. 84.

<sup>37</sup> LAW No. 156 of 5 July 2011 on modification and completing Government Ordinance no. 75/2000 on authorizing forensic experts and Law no. 567 of 2004 on the status of the auxiliary employees of the courts of law and prosecutor offices attached with, published in the Official Journal no. 519 of 22 July 2011; Government Ordinance no. 75 of 2000 on the organization

The technical progress achieved at the international level has made possible the interference between the scientific discovered findings in the fields of physics, chemistry, biology, and forensic science. Newer methods and techniques really help the forensic experts in clearing up the most difficult aspects they might be confronted with during the procedure of carrying out the forensic examinations of any kind.

The high technology equipment and use of innovative techniques for the fields indicated strengthen forensic science<sup>38</sup> which really has made major steps forwards in recent times.

(ii) The dactyloscopic forensic examination refers to the identification of the perpetrator through using a fingerprint identification database<sup>39</sup>. Although gathering fingerprint from the crime scene “*does not imply guilt or innocence, it is offered only to identify that a person was at a particular location or touched a particular item at some point, not whether he or she committed a crime*”<sup>40</sup>.

#### *In cases of economic crimes including tax evasion*

A defendant admitting to an uncommitted offense presents a challenge for the forensic experts appointed to conclude on the aspects related to the evidence gathered by the judicial bodies. Regarding the financial offenses the core problem is focused on the documents which will be examined by the judicial bodies. In this regard, a set of forensic examinations will be carried out, as follows:

(i) Handwriting and signature examination of the financial and accounting documents the perpetrator is suspected of using. They conclude by identifying the owner of the handwriting; identifying the

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of the forensic examination, published in the Official Journal no. 407 of 29 August 2000.

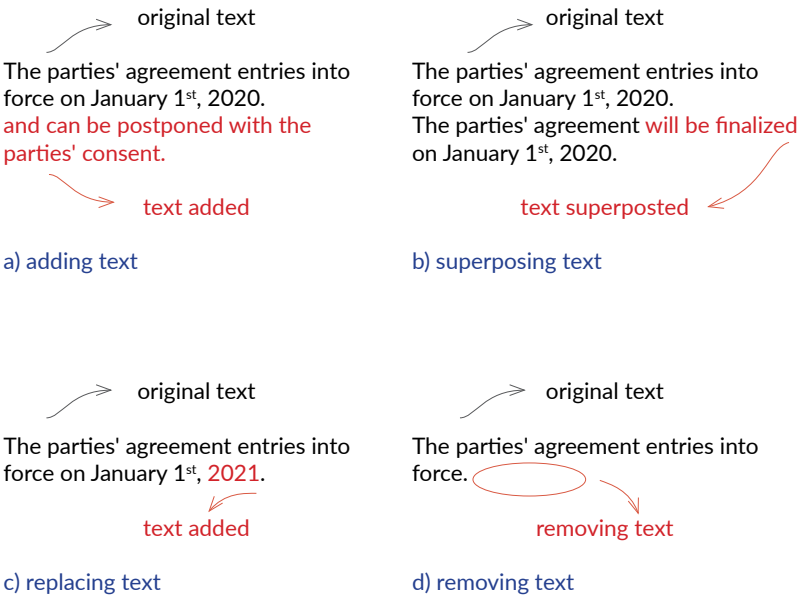
<sup>38</sup> OBREJA, Efim; GURAU, Nicolae; POSTORONCA, Veronica; DERECHA, Larysa, *Determinarea vechimii documentelor prin prisma practicii de expertiza judiciara*, Penalmente Relevant, Issue 1/2019, pp. 47-54.

<sup>39</sup> JAIN, Anil K.; ROSS, Arun, *Bridging the gap: from biometrics to forensics*, Philos Trans R Soc B, vol. 370/2015, pp. 1-10, <http://dx.doi.org/10.1098/rstb.2014.0254>

<sup>40</sup> WALTKE, Heather; LAPORTE, Gerald; WEISS, Danielle; SCHWARTING, Dawn; NGUYEN, Minh; SCOTT, Frances, *op. cit.*, p. 14.

perpetrator of text alteration; identifying the perpetrator of additions to text; determining the manner of counterfeiting signature; graphoscopical examination of documents either original or photocopied both digital and printed<sup>41</sup>.

(ii) Documents examination can establish the following achievements: determining the documents authenticity; determining the existence of documents modification; establishing the fake document carried out by different methods; determining the approximate time period of carrying out the document; determining the type of writing tools; reconstituting deteriorated documents<sup>42</sup>.



**Fig. 2.** Document alteration by adding text, superposing text, replacing text, removing text

<sup>41</sup> CATARAGA, Olga; ALAMOREANU, Sorin; PETCOVICI, Piotr, *Examinarea documentelor prezentate in copie. Aspecte practice si teortice*, Penalmente Relevant, Issue 1/2019, pp. 28-33.

<sup>42</sup> STANCU, Emilian, 2001, *op. cit.*, p. 278.

Conclusive remarks on conducting forensic examinations for financial offenses involve the four cases presented above in Fig. 2. The specific techniques of establishing a counterfeited text are those belonging to the science of chemistry. Among them, one of the most common examples of forensic examination used is based on ultraviolet and infra-red radiations<sup>43</sup>. Using these types of chemical techniques based on the phenomenon of propagating major light differences on the falsified elements of the documents can be discovered even if they are not observable to the human eye.

In order to identify the differences in text, forensic experts use infra-red radiations to highlight different colors determined by the chemical composition of material which has been added to the original text. At the same time, the chemical techniques stated above also involve the use of chemical reagents aimed at establishing the nature of the added text<sup>44</sup>.

#### *Denying scientific evidence by defense*

Scientific evidence gathered by the forensic examination, in particular the forensic examination record, has no absolute value in a penal case. It must be corroborated with the other evidence administered by the judicial bodies in such a way that the court of law pronounces the legal and justified decision at the end of the trial.

In this sense, the principle of “*non pre-established value evidence*” is successfully enforced<sup>45</sup>. The same situation occurs with the forensic examination records which refer to the evidence gathered by means of evidence also referred to as the legal forensic examination.

The evidence gathered by means of forensic examinations as scientific ones may be appealed by defense during the criminal proceedings even in the investigation phase<sup>46</sup>. At the same time, the forensic examination

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<sup>43</sup> GEHL, Rod; PLECAS, Darryl, *op. cit.*, p. 152. MAGHERESCU, Delia, 2017, *op. cit.*, pp. 215-217.

<sup>44</sup> MAGHERESCU, Delia, 2017, *op. cit.*, pp. 216-217.

<sup>45</sup> *Ibidem*.

<sup>46</sup> SATALAN, Marian; LAPADUS, Vasile; BIRO, Lucian, *Tendintele investigatiei criminalistice la nivel European. Expertul independent in practica judiciara*, Doc-trina si Jurisprudenta, Issue 1/2019, pp. 191-197.

record can be appealed, but equally the defense can request carrying out an additional forensic examination in accordance with Article 180 Code of penal procedure or carrying out a new forensic examination, based on Article 181 Code of penal procedure.

In instances where the forensic expert cannot clarify the aspects of a case the judicial bodies have reasonable doubt on or where the forensic examination record is ambiguous or contradictory then the penal procedure regulates for the defense to have the possibility to request an additional forensic examination<sup>47</sup>.

Furthermore, the defense can request conducting a counter-examination while establishing obvious contradictions in parts of the examination record which cannot be addressed by the expert nor resolved by further examination. Thus, the Romanian criminal justice system creates the premises of a forensic examination which involves discovering, settling, preserving and examining the traces drawn up from the crime scene. From this point of view, it is appreciated that *"the conclusions quality is conditioned essentially by the traces preservation on the crime scene"*<sup>48</sup>.

Although the Romanian legislator allows appealing scientific evidence there are countries where they cannot be denied during the investigation phase. It is the case of Luxembourg and Belgium<sup>49</sup>.

Moreover, doctrine has emphasized some cases in which the judicial bodies remove erroneously the evidence in defense and, from this motive the court of law has to take into account the aspects invoked by defense in order to rectify *de facto* situation. In these circumstances, it has been appreciated that *"the team of defence experts who reviewed the code identified a number of concerns, including a function, Check Frequency For Removal, that they demonstrated was capable of dropping data that is helpful to the defence"*<sup>50</sup>.

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<sup>47</sup> VOLONCIU, Nicolae, *Tratat de procedura penala*, Bucharest: Paideia, 1998, p. 392.

<sup>48</sup> SATALAN, Marian; LAPADUS, Vasile; BIRO, Lucian, *op. cit.*, pp. 191-197.

<sup>49</sup> *Ibidem*.

<sup>50</sup> MATTHEWS, Jeanna; BABAEIANJELODAR, Marzieh; LORENZ, Stephen; MATTHEWS, Abigail; NJIE, Mariama; ADAMS, Nathaniel; KRANE, Dan; GOLDTHWAITE, Jessica; HUGHES, Clinton, 2019, *op. cit.*, pp. 321-327.

## CONCLUSIONS

This article is part of the three research series project that I have started in the beginning of 2019 on the topic of the functions of criminal procedure – accusation, defense, judgment – exercised during the criminal proceedings by means of forensic science. The current study states that although the functions of criminal procedure configure a nexus and develop a corpus of rules and procedures there are particular features they are still covered with. In achieving the function of defense, the defendant is entitled to use any kind of forensic examination in order to support the innocence and combat the accusation the defendant is bringing charges with by the judicial bodies.

This research conducted on the topic of achieving defense by means of forensic science during criminal proceedings in Romania concludes that there are offenses investigated in which the use of forensic science methods is compulsory. These kinds of offenses were analysed in this paper. In particular, cases involving violent crimes, organized crime and financial offenses were highlighted. Each of these has particular features which characterize them. However, a common feature is the deployment of forensic techniques and methods of gathering evidence during criminal proceedings. One of these techniques is the gathering of the digital evidence<sup>51</sup> the judicial bodies order in cases of investigating digital crimes, digital attacks, cybercrimes or terrorist attacks which involve a device.

The research also concludes the fact that crimes of violence automatically imply the conducting of complex forensic examinations. In such an offense, the victim's body can offer substantial evidence because the traces of violent acts as well as the physical trauma suffered must be examined by the forensic medicine expert who will conclude within the forensic medicine record what kind of violent acts the defendant used, what intensity the attack had and how many days of hospitalization the victim needs to recover from their injuries. In accordance with these aspects, the judicial body will proceed to establish the offense legal qualification. Establishing these points will also clarify the psychological

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<sup>51</sup> SUIAN, Mihai, *Unele probleme privind folosirea probelor digitale in procesul penal*, Doctrina si Jurisprudenta, Issue 1/2019, pp. 134-141.



traumas the perpetrator inflicted on the victim which the investigation body must take into account while it orders the victim's examination.

Last but not least, the committed financial offenses imply the imperative manner of the judicial bodies to require carrying out the forensic examinations in order to gather conclusive, pertinent and genuine evidence and solve the penal case.

### *De lege ferenda*

As *de lege ferenda* proposal, it is appreciated that it is necessary a harmonization of the forensic criminal investigation activity during the investigation phase in such a way to achieve an efficient protection of the crime scene knowing the fact that it is full of evidence. Equally, the materials gathered from the crime scene<sup>52</sup> are also full of offense traces and establishing their source and composition is a forensic science method which helps the forensic experts in the activity of solving penal cases.

The rapidness is one of the main principles which features the forensic examinations. Basically, if the forensic expert carries out the forensic examination slowly then he can be sanctioned by the judicial body who ordered the forensic examination. In this case, Article 175 (8) Code of penal procedure regulates the sanction the forensic expert will be subject of in case in which the forensic examination will be delayed unjustified or even he refuses to carry out it. As *de lege ferenda* proposal, the sanction stated above could be amended by legislator so that the legal provision could have the following content: "*delaying or refusing unjustified to carry out forensic examinations bring about applying the forensic expert's criminal liability or the institution the expert is part of*".

## **ABBREVIATIONS**

DNA: Deoxyribonucleic acid;

SEM - EDAX: Scanning Electron Microscopy/ Energy Dispersive X-Ray Analyzer;

GC - MS: Gas Chromatography/ Mass Spectrometry;

PG: Probabilistic genotyping.

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<sup>52</sup> DUTELLE, Aric W.; BECKER, Ronald F., *op. cit.*, pp. 67-97.

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### **Informações adicionais e declarações dos autores (integridade científica)**

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