To
The Chairman of the Scientific Jury,
appointed by Decree No. R-109-260/15.05.2023
by the Rector of Medical University "Prof. Dr. Paraskev Stoyanov"
City of Varna

REVIEW

by Associate Professor Dr. Svetlozar Spasov Spasov, MD - Head of the Department of Forensic Medicine and Deontology of the Medical University - Plovdiv,

Regarding the procedure for the defence of a doctoral dissertation by Dr. Deyana Georgieva Velkova in the field of higher education area

- 7. Healthcare and Sports, professional direction
- 7.1. Medicine,

Medical specialty-03.01.59 "Forensic Medicine and Deontology" - full-time doctoral student in the Department of "General and Clinical Pathology and Forensic Medicine and Deontology" of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna.

With Protocol No. 410 dated April 27, 2023, from the first meeting of the scientific jury, I have been assigned to prepare a review of the scientific work authored by the candidate Dr. Deyana Georgieva Velkova, as part of the procedure for obtaining the educational and scientific degree of "Doctor" at Medical University - Varna.

Attached herewith is the review of the dissertation titled "Forensic Medical Identification using Earlobe Characteristics" for the award of the degree of "Doctor" in Medicine, scientific specialty: Forensic Medicine and Deontology, authored by Dr. Deyana Georgieva Velkova, a regular form Ph.D. student in the Department of "General and Clinical Pathology, Forensic Medicine and Deontology" at Medical University - Varna.

Field of higher education: 7. Healthcare and Sports.

Professional direction: 7.1. Medicine.

Doctoral program in the scientific specialty **03.01.59** "Forensic Medicine and Deontology" (accredited specialty by the National Evaluation and Accreditation Agency for Medical University - Varna).

I. Procedure Details

Dr. Deyana Georgieva Velkova is an assistant in the Department of "General and Clinical Pathology, Forensic Medicine and Deontology" at Medical University - Varna.

She was enrolled in the same department as a *regular form Ph.D.* student, pursuing the educational and scientific degree of "Doctor" in the scientific specialty of "Forensic Medicine and Deontology," as per the enrolment order issued by the Rector of Medical University - Varna, Decree No. R-109-449/28.10.2020. The project is supervised by Assoc. Prof. Dr. William Dokov, MD.

The Chairman of the Scientific Inc.

appointed by Degree No. K-109-200/15.05.2023

by the Rector of Wellical University "Prof. Dr. Parasker Stoyanov".

City of Vigner

MARKEY

by Associate Frofessor Dr. Svetlezer Spasov Spasov, NOD - New of the Ospadiness of account which tend and Green Joseph Medical University - Ploydix.

Regardant the procedure for the defence of a doctoral dissertation by the language of the fellowing the field of higher education area.

steadles to the Stages professional direction

writing to the state of the sta

Modifical apprehatives at 1.59 "Forencic Medicine and Department" - full-time deducted surface for the local section of "General and Chinical Pathology and boronsic Medicant and Depart in 45° or 1955, the carrier and Dr. Parasker Stopenov", Varna.

With Protect No. 410 dated April 27, 2023, from the first meeting of the scientific judy of seen easing of the property at a raview of the scientific work authored by the carefidate Dr. Denames, which a Madrian are part of the procedure for obtaining the educational and referriff objects of themselves at Aledical transmitters, surface. Varian.

Juneable Committees in the Avaid of the dissertation titled "Forensic Madical Mentileading value being Farloge Characteristics" for the Avaid of the degree of "Doctor" in Medicine, selvatific special or some in Manchell of Decembers, authored by Dr. Doctors Secreties, Medicine and Percentile, and Percentile and Percentile, in the Decembers of Secreties and Percentile, and Percentile, in the interest of Medicine and Percentile," in the interest of Medicine and Percentile," in the interest of Secreties, in the Percentile, when the percentile of Percentiles, in the interest of Secreties, in the Percentile of Secreties, in the Percentile of Percentiles of Percen

test refers ederation; 7. Health are and Sports.

Prince had direction ".1. Medicina.

Discount arounum in the scientific saxialty 03.01.59 "Forensic Sic foince and Throntology, as reduced exclusively alone and Accreditation Agency for Medical University.

Marco 3.

all shall small seconds

12. Deyand Carryleve Volkova is an assistant in the Department of Lenctul and Climating of Landin Mark Thorn and Denatology "at Neelical University - Vivos).

Sho was unailed to the same department as a regular form FA O. student pursuing the deciminant of materials of "Forensic Medicin under the cultists of Members of Medical Interests of Members under the same the cut of Medical Interests of Materials and the same the cut of Medical Interests of Materials and the cut of Associated the Members of Members of the cut of the same the cut of the same of the cut of the same that the cut of the same of the cut of the same of the cut of the cut of the same of the cut of the cut of the same of the cut of th

With Protocol No. 410/127.04.2023, Dr. Velkova has been dismissed with the right to defend her dissertation after receiving a positive evaluation of her work from the academic staff of the department.

The dismissal with the right to defend was carried out based on a decision of the Faculty Council of the Faculty of Medicine, Protocol No. 2/04.05.2023, regarding the submitted reports with ref. No. 102-1048/27.04.2023 by Assoc. Prof. Dr. Deyan Lyudmilov Dzhenkov, MD, Head of the Department of "General and Clinical Pathology, Forensic Medicine and Deontology," and report with ref. No. 103-2078/09.05.2023 by Prof. Dr. Yoto Yotov, MD, Dean of the Faculty of Medicine at Medical University - Varna.

The procedure for the dismissal with the right to defend of the Ph.D. student Dr. Deyana Georgieva Velkova has been finalized with Decree No. R-109-260/15.05.2023.

The procedures for the enrollment and dismissal of Dr. Deyana Georgieva Velkova as a regular form Ph.D. student in the Department of "General and Clinical Pathology, Forensic Medicine and Deontology" at Medical University - Varna, in the field of higher education: 7. Healthcare and Sports; professional direction: 7.1. Medicine; doctoral program in the scientific specialty 03.01.59 "Forensic Medicine and Deontology" (accredited specialty by the National Evaluation and Accreditation Agency for Medical University - Varna), have been conducted in accordance with the requirements of the Higher Education Act and the Regulations on the Conditions and Procedures for Obtaining Scientific Degrees and Occupying Academic Positions at Medical University "Prof. Dr. Paraskev Stoyanov" in Varna.

The materials submitted by the candidate in electronic format for the preparation of the review, as well as the dissertation and abstract in paper format, are in accordance with the requirements of the Higher Education Act and the Regulations on the Conditions and Procedures for Obtaining Scientific Degrees and Occupying Academic Positions at Medical University "Prof. Dr. Paraskev Stoyanov" in Varna.

II. Biographical data, career development, achievements

- 1. Date of birth: October 22, 1991, in Kyustendil, Bulgaria.
- 2. Higher education:
- 2010-2016: Master's degree in Medicine, Medical University "Prof. Dr. Paraskev Stoyanov" Varna, Bulgaria.
 - 3. Specialization:
- 2017-2021: Specialization in Forensic Medicine at Medical University Varna. Obtained a medical specialty in Forensic Medicine and Deontology.
 - 4. Positions held:
 - 2016-2021: Physician at the SOS Center, "Dream Business Solutions" Ltd.
- 2017-2021: Resident Physician at the Clinic of Forensic Medicine, University Hospital "St. Marina" EAD, Varna, Bulgaria.

With Protocol No. 410/127/04 2023. Dr. Velkova has been dismissed with the right to defend to be a content to the department.

The dismissal with the right to defend was carried out based on a decision of the Faculty Council or the Lacelty of Medicine. Personal No. 2/04.05.2023, regarding the submitted reports with Call No. 102-1048. 27.04.2023 by Assoc Prof. Dr. Deyan I vodmillov Ozhenkov. MD, Head of the Department of "General Color: Parhology, Ferensic Medicine and Deontology," and report with not No. 103-2078/09.05/2023 by Park Dr. McD. Dean of the Faculty of Modicine at Medical University - Marna.

The procedure for the dismissal with the right to defend of the Ph.D. student Or Devana Georgieva Alkan a has been timelized with Decree No. R-109-260/15.05.2023

The procedures for the enrollment and dismissal of Dr. Deyana Georgieva Velkova as a sequent from Ph.D. student to the Department of "General and Chinical Pathology, Foransic Medicine and Department of processional direction: 7.1. Medicine; doctoral program in the scientific specialty 03.01.29 "Forensic Medicine and Departments of Departments of Specialty by the National Evaluation and Accrebianted Agency for Medicial University - Varia), have been conducted in accordance with the requirements of the Higher Education Act and the Regulations on the Conditions and Procedures in Stranging Scientific (Regrees and Occurying Academic Positions at Medical University "Prof. Dr. Decisions Stovanov" in Varia.

The naturals submitted by the candidate in electronic format for the preparation of the series, as well as the dissertation and abstract in paper format, are in accordance with the requirements of the Higher Education Act and the Regulations on the Conditions and Procedures for Obtaining Scientific Degrees and Occupying Academic Positions at Medical University Prot. De. Papasker Stavenov' in Van a

14. Phographical data, career development, achievements

- i. Date of cirtle trepber 22, 1991, in Kynstendil, Bulgaria.
 - 2. Higher education:
- . 2016-2016. Masser's degree in Modicine. Medical University "Prof. Etc. Paraskey Stepheno" -Vorna. Polyania.
 - 3 Secondization:
- 2017-2021: Specialization in Foreistic Medicine at Medical University Varna, Obsained as medical specialization in Foreistic Medicine and Deputology.
 - 4. Positions held:
 - "H6-2021; Physician at the SOS Center, "Dream Business Solutions" | 10.
- 2017 2021; Resident Physician at the Clinic of Forestic Medicine. Onlycrythy Hospital Al-(fining) EAE: Variat. Bulgaria.

- 2021-present: Specialist in Forensic Medicine at the Clinic of Forensic Medicine, University Hospital "St. Marina" EAD, Varna, Bulgaria.
- 2017-2021: Assistant; in 2023 Honorary Lecturer, Medical University "Prof. Dr. Paraskev Stoyanov" Varna, Bulgaria.
 - 5. Short-term specializations: both in Bulgaria and abroad.
- **6. Teaching experience:** Conducted classes in the field of forensic medicine and deontology for medical and dental medicine students.

7. Membership in organizations:

- International Academy of Legal Medicine.
- Forensic Anthropology Society of Europe.
- British Association for Human Identification.
- Bulgarian Society of Forensic Medicine.
- Bulgarian Medical Association.
- 8. Language proficiency: Intermediate level in English.

III. Position on the Dissertation

Regarding the topic - essence and title of the work

The problem of personal identification discussed by the doctoral candidate is fundamental to forensic medicine science and practice. The historical aspects of human identification are highly interesting and encompass numerous attempts by various scholars to standardize certain characteristics of the human body and qualify and systematize features, measurements, and indicators that allow for the establishment of the identity of an expert object (a person) or their remains, both soft tissue and skeletal.

The persistent efforts of French police officer and biometric researcher Alphonse Bertillon, who developed and created a system of identification based on physical measurements in the mid- to late 19th century, are well known. His goal was to analyse and systematize anthropobiometric data for the purpose of identification. During its time, this system was effective and widely used until the discovery of newer and more accurate identification methods.

Following in history, we have the fields of dactyloscopy, cranial measurement, and osteometry. In the 20th century, blood group and serological examinations, as well as examinations of hair and fibres, gained importance. Forensic odontology also progressed, with dental status identification becoming a matter of state policy in some countries.

With the scientific discovery of DNA, it became the primary method of identification from the late 20th century to the present day.

In the Republic of Bulgaria, key researchers in the field of identification include Prof. Y. Yordanov, Prof. D. Radoynova, Prof. Dr. Ivan Doychinov, Assoc. Prof. Dr. Pavel Timonov, and others.

- ાં કે કે કે કુલાં કે મુખ્યાં માને કે કારણ <mark>Modicine at the Clinic o</mark>f fibrorsic Medicine. કે તાંત્ર ભાગો સંવર્ષના કુલા ધી અને તરી કે કે છે. કે સાતા ક્રિયાં દુવા પ્ર
- Mill-2021, Assistant on 2023 Homoray Lecturer, Neducal University "Note Dell'rustion Stevenses", Marin Betaggia
 - Separaterra specializations: both in Bulgaria and abroad.
- 5. Fearting experiences Conducted classes in the field of force-it medicine and department to meet a local demain and department.
 - I sit adservato in occumizations:
 - and a street of the street of Legal Madiente.
 - . I man in Applications variety of surope.
 - . Fritish . . secciation for Human identification.
 - Belgariaa Kaciery of Forensia Medicine.
 - ic topped a decical association.
 - 3. Larguage proficiency: Internediate level in English

III. P. sition on the Dissertation

Regarding the topic - events and tile of the work

The problem of presental leightification discussed by the doctoral candidate is fluidational to corensed machine released practices. The historical aspects of human adentification are highly understay and recommons attempted by various scholars to standardize certain characteristics of the human hadronism and cystemative features, incasurements, and indicators that allow to the ortablishment of the identity of an expert object (a person) or their remains, both soft tissue, make belieful.

The persistent efforts of French police of ficer and hismatric researcher Alphonse Bertalon, who developed and created a system of identification based on physical measurements in the mid- to be fain control are well known. His goal was to analyse and systematize authropoliometric data for the authropose of identification. During his time, this system was effective and widely used will the discovery of every and true recurate identification in athods.

Endowed in history, we have the fields of dactyloscopy, cranial invisurement, and osteometry, in the July context of his and serotogical examinations, as well as examinations of hair and fibres, wheel unportance. Forensic odomology also progressed, with dental status identification becoming a matter of state points in some countries.

With the strength, discovery of DNA, it became the primary method of identification from the base Code contury to the present day.

is the Kentblic of Bulgaria, key assearchers in the field of Identification include Prof. V. Souteness, Prof. D. Radoyressa, Prof. Dr. N. at Daychinov, Assoc. Prof. Dr. Povel Timoney, and others

The presented scientific project directs the attention of the scientific community to something new not only for the country but also for the world. This research is significant in debunking scepticism regarding the topic expressed by some authors.

A great deal of effort and energy has been invested, which is an exceptional merit of the chosen research topic. The obtained results can be used to validate other studies and, after a certain proven practical relevance of the methodology, as an independent method of identification.

Upon reviewing the presented materials, the exceptional perseverance of the author and their scientific supervisor in overcoming various methodological and result standardization issues is evident.

Familiarity with the topic:

The introduction to the topic sufficiently propaedeutic, defines the problem and substantiates the idea of the research project.

The literature review comprises 40 pages, which accounts for 35.1% of the entire work, representing a standard relative share of this part of the research. The literature review is comprehensive, containing sufficient data that motivated the author's choice of the topic, explaining the issues, and providing essential theoretical information on the subject. Authors from the country and around the world are presented. The effort made by the researcher to cover all aspects of the topic, which would be useful in proving the null hypothesis, is impressive. Data from textbooks, encyclopaedias, monographs, and popular science sources of various ages are used, covering almost all scientific knowledge related to the research.

A substantial and high-quality literature database is cited. The bibliography contains 123 correctly referenced literary sources, with 22 in Cyrillic and 101 sources in foreign languages. The review has a good structure, arrangement, and style. All aspects relevant to the topic and the subsequent research are addressed. At the end of the review, a brief analysis and conclusions are made, substantiating the essence of the topic and its purpose.

The goal of the dissertation work corresponds to the topic and the set tasks for its achievement.

The tasks of the research are relevant to the goal, well organized, specific, clear, and precise.

The materials and methods are suitable for achieving the goal and accomplishing the tasks, as well as for the overall development of the topic. A significant strength of the work is the development of a statistical chart for data integration and subsequent analysis.

Another notable strength of the work is the developed methodology for photographic examination and documentation of the results, which is evidently a result of in-depth analysis of the primary outcomes and continuous refinement of the methodology to achieve an excellent final result in this regard.

The presented scientific project directs the attention of the scientific community to something a value of the scientific community to something a value of a value of the variety of the world. This research is significant in deputating scapication as a value of the copies seed by some authors.

A great deal of effort and energy has been invested, which is an exceptional mark of the consensuscent in pick the product of the obtained results can be used to validate other studies and, ofter a cert in prover precised elevance of the methodology, as on independent method of identification

I pare reviewing the presented materials, the exceptional perseverance of the author and their sejentific easer is or in accounting various methodological and result standardization is tues is or identi-

Tamiliarity with the topic:

The introduction to the ionic sufficiently propaedeuric; defines the problem and substantium are ideals. The research project.

The literature review comprises 4.1 pages, which accounts for 35.1% of the entire word, representing a standard relative share of this part of the research. The literature review is away chensive, containing sufficient data that motivated the outhor's choice of the topic, explaining reliastics, and providing essential theoretical information on the subject. Authors from the commy and around the world are presented. The effort made by the researcher to cover all aspects of the torke which would be useful in proving the null hypothesis. is impressive. Data from textbe is encyclopaedias, propographs, and popular science sources of various ages are used, covering othnost all scientific knowledge related to the research.

A substantial and high-quality literature database is cited. The bibliography contains 1.3 correctly referenced literary sources, with 22 in Cyrillic and 101 sources in foreign languages. The review has a good structure, arrangement, and style. All aspects relevant to the topic and the subsequent research are addressed. At the end of the review, a brief analysis and conclusions are made, substantiating the essence of the topic and its purpose.

the goal of the dissertation work corresponds to the topic and the sertusks for its achievement. The tasks of the research are relevent to the goal, well organized, specific, clear, and precise.

The materials and methods are suitable for achieving the goal and eccomplishing the tasks as well as for the exercit development of the topic. A significant strength of the work is the development of a strength of the work is the development of a strength of the work is the development of a strength of the work is the development.

Another notable strength of the work is the developed methodology for photographic examination and other results, which is evidently a result of un-depth analysis of the nrivnan contentes and continuous reflectment of the methodology to achieve an excellent final result in the rayard.

The methods are described in a 5-page section, including photographs and graphical material. They are well explained, and even for the uninformed reader, their description is useful and essential for evaluating the entire project.

Own research and results:

The results of the conducted analysis are presented both in textual and partially in graphical form. They are clear, specific, and aligned with the set tasks and the goal of the work. The relevant conclusions have been drawn from the available database and are presented in an understandable and clear manner.

It should be noted that the statistical processing of the measured values is exceptionally well done and well presented, both in text and graphical form.

Formulated conclusions, recommendations, conclusion and claimed contributions are presented in separate chapters. They are clear, relevant, correct and true. I accept all stated contributions as genuine. The scientific work has a unique informational contribution for the Bulgarian population, being a good theoretical-practical basis for future work in this direction with a practical verification of the established results with the aim of routinely introducing the methodology in forensic medicine and forensic practice, when this is needed as an additional identification method.

I have almost no critical notes. The language and style of the work are strictly according to the rules of the scientific style and communicate the information concisely and clearly. The information is new for Bulgaria, and the research itself for expert purposes is new.

IV. Evaluation of mandatory publications on the subject of dissertation work:

The dissertation student submits an independent peer-reviewed article:

Velkova D., Sex differences in anthropometric study of the auricle, Varna Medical Forum, 11 (2), 168-173.

In addition, the dissertation student presents a poster from participation in a scientific conference:

Velkova D. The external ear as a tool for human identification – a review. Spring Conference "Identification of the Living", British Assocciation for Human Identification (BAHID), 10th April 2021

They have the necessary scientific value and present stages of the preparation of the dissertation work.

V. The abstract meets the scientific requirements for this form and reflects the conducted research, results, conclusions and stated contributions.

(The methods are described in a 5-page section, including photographs and grant and material to be a secure with explained and cost a minimum of reader, their description is aschaland cost a table an example of the entire project.

otimes but damers and

The results of the concucied qualists are presented both in textual and partially of scanhinal form. They are crear, specific, and aligned with the set tasks and the goal of the profess. The release conclusions have been drawn from the available database and are presented in an understandable and elements.

It should be noted that the statistical processing of the measured values is exceptionally soft to one well presented, noth in text and graphical form.

Formulated conclusions, recommendations, conclusion and claimed contributions are presented in separate chapters. They are clear, relevant correct and tract is accept all stand contribution for contribution for accepting work has a unique informational contribution for no Bulgare appetable, being a good theoretical-practical hasis for tuture work in this direction with a practical risingular contribution of the usualished results with me aim of routinely introducing the methodology is there is a reduced as an additional identification method.

I have aligned as critical arrest. The larguage and style of the work, as suicity seconding for the respective salentific soles and communicate the information concisely and electly. The reformation is now for Halarday, at the caseants itself for expert purposes is new.

Charge contribusion to training out an ambiguition continue of a street of the

- the discontine and entertainty attends on and energent peop-reviewed article.
- Venues at the Secondes in anthenno reports study of the anticlo. Verna Medical Corona, 110 Ports 1 | 18.
- le addiction in distribution sud an presents a poster from particle at a coefficience conference.
- Y. Mova, D. Etic external earlies and for trums identification a review, spring Conference The Conference of April 2021.
 ... I Long T. P. M. Andrews I. Conference of Smith Address Address April 2021.
- the find extra extra extra velentific cathe and present stages of the preparation of the distribution is
- 3. The abstract most the squarific requirements for this form that follows the conflicted control with a condition and smad contributions.

VI. Overall rating:

The presented dissertation work of Dr. Deyana Georgieva Velkova is in a volume of 114 pages, including 39 tables and 40 figures, 2 appendices.

The bibliography contains 123 correctly indicated literary sources, 22 of which are in Cyrillic and 101 sources in foreign languages.

The work is written in grammatically and stylistically sound language, structured in the sections required by law - introduction, literature review, purpose, tasks, hypotheses, research material and methodology, results and discussion, conclusions, conclusion, contributions, bibliography, which is in accordance with the legal requirements for such work.

The discussion, conclusions, recommendations and conclusion in the dissertation work of Dr. Velkova fulfils the purpose and tasks and forms a relatively clear position of the author on the discussed problem, based on the obtained results. The conclusions drawn are clear, concrete and reflect the fulfillment of the topic, purpose and tasks of the dissertation work. The working hypotheses of the work has been proven.

All this gives me reasons to recommend to the members of the Scientific Jury to vote **positively** for the awarding of the **educational and scientific degree "Doctor"** in Forensic Medicine and Deontology to Dr. Deyana Georgieva Velkova for her dissertation "Forensic Identification by the Auricle".

06.06.2023

Signed:

Assoc.Prof. Dr. Svetlozar Spasov, MD

TI. Overall reging

* ho presento, do, ortalion work of Dr. Deyona Geogricya Velkova is in a voluci of the heart. Inchesing 39 tables and 45 fourts 2 appendices.

The babling rights contains 123 can welly indicated literary sources, 22 of while are in Cyrillic and 101 septembers, in terragal longuages.

For work is wreten in grammatically and stylistically sound language, structured in the sector as equired by law - harodaction, literature review, purpose, rasks, hypotheses, research material and methodology, results and discussion, concusions, conclusion, contributions, bibliography, which is an accordance with the layer requirements for such work.

also discression, conclusions, recon mendations and conclusion in the dissertation work of the Volker a fulfills the mayone and tasks and forms a relatively clear position of the author on an incussed problem, based on the obtained results. The conclusions drawn are clear, concrete and reflect the fulfillment of the taple, purpose and tasks of the dissertation work. The work my hypotheses of the and task team proven.

All this gives me reasons to recommend to the members of the Scientific Jury to you positively for the awarding of the educational and scientific degree "Doctor" in Lorensic Medicine and Decorating to the Department Georgieva Velkova for her dissertation "Forensic Identification by the 'arrive'

196 , 101- 1112.

.hangle

All margin sorollary all low Connection