OPINION

on a dissertation for obtaining the educational and scientific degree "doctor" in the field of higher education 6. Agricultural sciences and veterinary medicine, professional field 6.3. Animal husbandry, scientific specialty "Breeding of agricultural animals, biology and biotechnology of reproduction"

Author of the dissertation: *Yanka Deneva Ivanova - Mihailova*
part-time doctoral student at the Department of Animal Husbandry Sciences at the Agricultural University, Plovdiv

Dissertation topic: Molecular markers for genotyping and evaluation of the genetic resources of local sheep breeds in Bulgaria

Reviewer: Assoc. Prof. Dr. Krasimir Emilov Rusanov, AgroBioInstitute, Agricultural Academy, field of higher education 4. Natural Sciences, Mathematics and Informatics, professional field 4.3. Biological Sciences, scientific specialty "Genetics"

appointed as a member of the scientific jury by order No. RD-16-779/07.05.2022 of the Rector of AU.

1. Relevance of the topic.

The dissertation of Yanka Deneva Ivanova - Mihailova on "Molecular markers for genotyping and evaluation of the genetic resources of local breeds of sheep in Bulgaria" is structured in the standard generally accepted way, including all the necessary sections, aiming at both familiarizing the reader with the relevance of the topic and also the presentation of the results, their discussion, the conclusions drawn and the contributions of the realized scientific activity. The presented literature review, in which the main attention is paid to the need for the development of sustainable agriculture on a European and global scale, the protection of biological diversity, the protection of genetic resources of domesticated species and the state of local genetic resources, as well as the use of DNA markers for analysis of genetic diversity, clearly indicates and emphasizes the relevance of the topic.

2. Aim, tasks, hypotheses and research methods.

The well-structured literature review of the dissertation has allowed the doctoral student to clearly formulate the aim of the research related to the use of microsatellite markers for assessing the population structure and characterization of the genetic diversity of local Bulgarian sheep breeds, as well as the related tasks for its achievement. The methods used by the doctoral student are described in detail in the "Material and

Methods" section and include a justified selection of 12 local autochthonous breeds of sheep or a total of 600 animals from 50 flocks with pointed geographical origin, optimization and application of a set of microsatellite markers for multiplex PCR analysis of genetic diversity in sheep and the use of a variety of modern statistical methods for bioinformatic analysis and processing of the obtained results.

3. Visualization and presentation of the obtained results.

The results of the dissertation are presented in a total of 12 tables and 27 figures to the Results and discussion section, as well as 6 tables as an appendix, presenting in an optimal way what was achieved by the doctoral student, through the use of a wide range of modern methods and software products. Visualization of the obtained results demonstrates an excellent mastery of the methods used.

4. Discussion of the results and cited literature.

The results presented by the doctoral student are discussed in the context of the contemporary scientific literature in the research field, which allowed the formulation of clear and justified conclusions. A total of 296 literature sources have been cited. The doctoral student has formulated a total of 10 conclusions highlighting the most important of the achieved results.

5. Contributions of the dissertation work.

The doctoral student has formulated two contributions demonstrating the importance of the first systematic study of 12 populations of local Bulgarian sheep breeds, of which 7 new ones, through the analysis of 13 microsatellite loci, as well as the first correlation analysis between genotypic and phenotypic matrices for the analyzed sheep breeds. I accept the contributions without objection.

6. Critical Notes and Questions.

I have no critical questions and notes for the doctoral student.

7. Published articles and citations.

The dissertation is accompanied by one publication in a journal with an impact factor with Yanka Mihailova as the sole author, which allows the doctoral student to meet the minimum national requirements for obtaining the scientific and educational degree "doctor" in the field of higher education 6. Agricultural sciences and veterinary medicine.

The presented abstract reflects objectively the structure and content of the dissertation work.

CONCLUSION:

Based on the different research methods adopted and applied by the doctoral student, the properly conducted experiments, the summaries and conclusions made, I believe that the presented dissertation meets the requirements of ZRASRB

and the Regulations of the Agrarian University for its application, which gives me reason to evaluate it POSITIVELY.

I would like to propose to the honorable Scientific Jury also to vote positively and award to Yanka Deneva Ivanova-Mihailova the educational and scientific degree "doctor" in the scientific specialty "Farm animal breeding, reproduction biology and biotechnology'

Date: 24/08/2022
Plovdiv

Author of
THE OPINION: ....
(Assoc. Prof. Dr. Krasimir Rusanov)