

POSITION  
BY PROF. DR. NIKOLAY GEORGIEV NIKOLOV, MD  
PROFESSOR OF RHEUMATOLOGY, HEAD OF THE RHEUMATOLOGY  
CLINIC, AT "HEART AND BRAIN" HOSPITAL, PLEVEN

External member of the Scientific Jury  
According to Order No. P-110-69, dated 26.Feb.2024 of the Rector of MU-  
Varna

ON THE DISSERTATION OF  
IRINA IVANOVA MOMCHEVA

ON THE TOPIC:  
"STUDY OF THE INVOLVEMENT OF HUMORAL FACTORS OF INNATE  
IMMUNITY IN THE PATHOGENESIS OF ACTIVATED  
OSTEOARTHRITIS"

WITH ACADEMIC SUPERVISOR  
ASSOC. PROF. DR. ZHENYA RUSEVA PETROVA, MD

for awarding the educational and scientific degree of "Doctor"  
field of higher education: 7. "Healthcare and Sport"  
professional direction: 7.1. "Medicine"  
doctoral program "General Medicine"

Dr. Irina Ivanova Momcheva was born on April 14, 1967, in Sredets, Burgas region. She completed her medical education in 1993 at MU Plovdiv. She has specialties in Internal Medicine and Rheumatology, as well as a master's degree in Health Management. Dr. Momcheva is an assistant in Propaedeutics of Internal Diseases and Rheumatology at the University "Prof. Asen Zlatarov" Burgas, Faculty of Medicine. Dr. Momcheva has extensive professional experience, including in rural healthcare, emergency medicine, admissions department at Burgas Hospital, outpatient care, and rheumatology – currently her main place of work is at Burgas University Hospital, Rheumatology Department.

The dissertation presented by Irina Ivanova Momcheva contains 120 standard pages and is illustrated with 24 tables, 18 figures, and 6 histograms. The list of cited literature includes 237 titles, 4 in Cyrillic and 233 in Latin script. Structured as follows: Abbreviations Used; Literature Review; Aim, Objectives; Materials and Methods; Results of Own Research; Discussion; Conclusions; Contributions; Appendices; Bibliography.

### 1. Evaluation of the Relevance of the Topic

The chosen topic of the dissertation is relevant due to the need for new therapeutic solutions in the field of osteoarthritic disease. In her dissertation, she elaborates on the role of inflammation in the pathogenesis of this disease and the possibilities for identifying an inflammatory phenotype in patients with osteoarthritis. The doctoral candidate describes the various phenotypic manifestations of the disease and the involvement of humoral factors of innate immunity, particularly the complement system, in the pathogenesis of the disease. The results she reaches support the thesis that further study of the complement in osteoarthritis is appropriate. Evaluation of complement proteins in synovial fluid as biomarkers for disease activation on one hand and illustrating the progression of structural damage on the other could be applied in daily clinical practice. Therefore, research in this direction would help better understand the pathogenesis of the disease and develop drugs that modulate complement factors.

### 2. Evaluation of the Objective, Tasks, and Methodology

Based on a thorough and comprehensive analysis of the literature data, the doctoral candidate adequately formulates the hypothesis and objective of the dissertation. The tasks and methodology of the study are presented precisely and clearly. The object of observation is correctly defined – it includes 156 patients with activated knee osteoarthritis. Inclusive and exclusive criteria have been defined. Patients with knee joint effusion of another etiology are excluded. The methodology of the scientific research is appropriate to the objective and tasks. The clinical methods used include detailed medical history taking, objective examination, venipuncture, and arthrocentesis. Other methods include laboratory, imaging, and statistical methods. The detailed description of the laboratory challenges, which are the cause of difficulties in studying complement factors, is impressive. The work protocol is developed adequately and precisely, which fully justifies the validity of the results. The statistical software used for data analysis is IBM SPSS Statistics 20. The primary statistical method used is the Student's t-test with a preset alpha level of significance of 1% or 0.01, guaranteeing a 99% probability of the obtained results under the assumed hypothesis. The doctoral candidate is proficient in scientific research methods and can apply them correctly in practice.

### 3. Evaluation of the Results

The discussion on the obtained results demonstrates their significance by comparing them with other studies in the global literature. Based on the results, the doctoral candidate has developed her own model of low-grade local inflammation in osteoarthritis. In conclusion, the most important results of the own research are summarized:

- Higher levels of CRP, C3, and C4 in synovial fluid compared to blood plasma confirm the role of these humoral factors of innate immunity in the pathogenesis

of the disease – both in clearing the joint space of degenerative products and in maintaining low-grade inflammation.

- A stronger correlation of the obtained results is observed in the early stages of the disease when the activity of repair processes is more pronounced.

- There are no gender differences in all investigated parameters.

- The need for identification and quantitative determination of inflammation in osteoarthritis before the onset of irreversible structural joint damage holds promise for future therapy.

#### 4. Evaluation of Contributions

The developed work contains theoretical generalizations and solutions to significant scientifically applicable problems that correspond to modern achievements and enrich existing scientific knowledge. I acknowledge the contributions of the scientific work - they are original, applied, and confirmatory in nature.

#### 5. Abstract and Publications on the Work

The abstract is in accordance with the requirements, and its content corresponds to the dissertation. In connection with the dissertation topic, there are 9 scientific publications and 3 scientific communications that reflect parts of the dissertation. The presented publications fully reflect and are related to the issues addressed in the dissertation. In conclusion, Irina Ivanova Momcheva's dissertation on the topic "Study of the involvement of humoral factors of innate immunity in the pathogenesis of activated osteoarthritis" is a timely, well-structured, conducted, and analyzed scientific research. It contains results and conclusions with an original contribution to science and meets the requirements of the Law on the Development of Academic Staff and the Regulations of MU-Varna for its implementation. In connection with all the above, I give my positive assessment and recommend to the members of the Scientific Jury to award the educational and scientific degree of "Doctor" to the doctoral candidate Irina Ivanova Momcheva in the doctoral program "General Medicine" in the professional direction: 7.1. "Medicine" and the field of higher education: 7. "Healthcare and Sport."

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MD

RECOMMENDED

Заличено на основание чл. 5,  
§1, б. „В“ от Регламент (ЕС)  
2016/679

Prof. Dr. Nikolay Georgiev Nikolov,