To the Chairperson of the Scientific Jury
Faculty of Medicine
Medical University "Prof. Dr. Paraskev Stoyanov" – Varna

Evaluation Report for the Academic Position of Associate Professor

On the competition for occupying the academic position of Associate Professor in the field of higher education 7. Healthcare and Sports, professional field 7.1. Medicine, scientific specialty Nuclear Medicine, announced in the State Gazette, Issue No. 30 of April 8, 2025, for the needs of the Department of Nuclear Medicine, Metabolic Therapy and Radiation Therapy, Faculty of Medicine, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna,

by **Prof. Dr. Borislav Georgiev Chaushev, MD**
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By Order No. 109-258 of June 6, 2025, of the Rector of the Medical University – Varna, and by decision of the first meeting of the Scientific Jury, I was appointed to serve as Chairperson and Reviewer in the present competition.

In this competition, the sole applicant is **Chief Assistant Professor Dr. Marina Dyankova, PhD**, from the Department of Nuclear Medicine, Metabolic Therapy and Radiation Therapy, Faculty of Medicine, Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

Brief Information on Career Development and Qualifications

Dr. Marina Dyankova was born on February 3, 1985, in Odessa, Ukraine. She graduated with honors in Medicine from Odessa State Medical University in 2008. Between 2008 and 2010, she completed postgraduate specialization in Family Medicine at Odessa State Medical University, and in 2010 obtained a specialty in General Practice, Family Medicine.

In 2013, she legalized her professional qualification as a physician in Bulgaria. Following the recognition of her diploma, she worked at Medical Center "Clinica Nova" Ltd., Varna (2014–2015). Since 2015, she has been working as a physician at the Clinic of Nuclear Medicine and Metabolic Therapy, University Hospital "St. Marina" – Varna. In 2018, she was appointed as a part-time assistant at the Medical University of Varna.

In February 2019, she was enrolled as a doctoral student under the supervision of Prof. Dr. Borislav Chaushev, PhD (Med.), with a dissertation topic: "68Ga-PSMA PET/CT in Prostate Cancer: Advantages and Potential Diagnostic Pitfalls." In the same year, she acquired a specialty in Nuclear Medicine. In January 2020, she was appointed Assistant Professor at the Department of Diagnostic Imaging, Interventional Radiology and Radiotherapy, Medical University – Varna. In June 2022, she was awarded the educational and scientific degree *Doctor* in the scientific specialty Medical Radiology and Roentgenology (including the use of radioactive isotopes) after successfully defending her dissertation. In June 2023, she assumed the position of Chief Assistant Professor at the same department.

Dr. Dyankova actively participates in scientific forums in Bulgaria and abroad, as well as in continuing education courses organized by the IAEA and the EANM in Latvia and Bulgaria, annual European congresses (EANM, ESOR, ESHI, BAR), and the international symposium WARMTH in Finland. She has also participated in seminars of the European School of

Nuclear Medicine organized by EANM and ESMIT, as well as in annual online courses for continuing professional education organized by SNMMI, EFRS, and CHILI. She is a regular participant in national and international conferences and congresses.

She is a member of WiN Bulgaria – Women in Nuclear Industry Association – Bulgaria, *the* European Society for Hybrid, Molecular and Translational Imaging (ESHI), *the* European School of Radiology (ESOR), and the European Association of Nuclear Medicine (EANM), as well as the Bulgarian Association of Radiology (BAR).

Dr. Dyankova also takes part in various international training programs and shares her expertise with medical students and radiographer trainees. Her professional interests include prostate cancer, Langerhans cell histiocytosis, multiple myeloma, ovarian carcinoma, hyperparathyroidism, and malignant melanoma. She is fluent in Russian, Ukrainian, and English.

Scientometric Indicators

For participation in the present competition for the academic position of Associate Professor, Chief Assistant Professor Dr. Marina Dyankova has submitted **37 scientific works** (full-text articles and conference proceedings), most of which were published after the successful defense of her doctoral dissertation.

The overall publication activity of the candidate is considerable and comprises:

- **Full-text articles – 15**, of which **11** have been published in peer-reviewed journals indexed in internationally recognized scientific databases;
- **Published abstracts of conference presentations – 25**;
- **Participation in scientific forums in Bulgaria and abroad with program evidence – 25**.

In the submitted materials, Dr. Dyankova is:

- First author in 12 works,
- Second author in 5 works,
- Third or subsequent co-author in 20 works.

A total of 33 publications have appeared in journals indexed in leading international scientific databases.

The **cumulative impact factor (IF) amounts to 369.979**, which demonstrates the significance of her scientific contributions.

Chief Assistant Professor Dr. Dyankova has also provided a comprehensive list of citations that meet and exceed the requirements for holding the academic position of Associate Professor. These citations, originating from both Bulgarian and international journals, attest to the relevance, contribution, and scientific value of her research against the background of her high publication activity.

Evaluation of Scientific Contributions

The submitted scientific works and the results of the research activity of Chief Assistant Professor Dr. Marina Dyankova, PhD (Med.), are thematically structured into the following research areas:

I. Nuclear Oncology
a) Nuclear Oncology – studies and publications related to **prostate cancer (PC)**
b) Nuclear Oncology – studies and publications related to **oncological diseases other than prostate cancer**

II. Other

I. Nuclear Oncology

a) Nuclear Oncology – studies and publications related to **prostate cancer (PC)**

Main Scientific and Applied Contributions

1. For the first time in nuclear medicine practice in Bulgaria, the application of the newly introduced hybrid imaging modality 68Ga-PSMA PET/CT was investigated in a large cohort of patients with biochemical recurrence of prostate cancer (PC) following radical therapy. Prognostic factors for PSMA-PET positivity, factors influencing detection rates, and the advantages of the method compared with CT were determined. The application of PSMA PET/CT was studied in patients with biochemical progression after radical prostatectomy across a broad range of tumor marker values (with emphasis on low PSA levels). The impact of PSA values on sensitivity and detection rates was analyzed, along with the relationship between PSA levels and recurrence detection at different sites, as well as the association with Gleason score, recurrence localization, prior ADT/hormonal therapy, and PSA levels.
2. The application of PSMA-PET for initial regional nodal (N) and distant metastatic (M) staging was investigated in patients with newly diagnosed primary PC of intermediate and high risk prior to radical therapy. The advantages of PSMA-PET over conventional CT were identified.
3. A comprehensive study was performed on patients with ISUP grade 5, for the first time in the nuclear medicine practice of the country, analyzing the specific features of nodal and osseous metastases, the relationship between detection rates for different sites of malignant involvement and PSA levels, as well as the correlation with clinical T stage.
4. For the first time in Bulgaria, the influence of 68Ga-PSMA PET/CT on (N, M) staging was analyzed. A detailed study was conducted on various anatomical patterns of metastatic involvement in both primary and recurrent PC detected by PSMA PET/CT (in a cohort of 386 patients).
5. A practical contribution is the analysis of 68Ga-PSMA PET/CT performance parameters (for the first time in the country): detection rate, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall accuracy, including the risk of false-positive and false-negative findings in different diagnostic patient groups.
6. A comprehensive investigation was carried out on the relationship between positive/pathological PSMA PET/CT findings and PSA levels, Gleason score/ISUP grade, clinical T stage, and other prognostic factors in patients with biochemical recurrence after radical therapy (n=133), with biochemical progression after RP (n=144), as well as with primary PC (n=109), for a total of 386 patients.

7. In order to optimize PSMA-PET interpretation, a thorough analysis of potential diagnostic pitfalls was performed, including variations of physiological PSMA uptake, pathological PSMA expression unrelated to PC, and false-negative findings.

Clinical and diagnostic contributions include the following recommendations for clinical practice, derived from the conducted studies:

1. In line with the principles of individualized care, 68Ga-PSMA PET/CT is justified in patients with biochemical progression after RP even at low PSA values.
2. The studies demonstrated a significantly higher detection rate of pathological PSMA-PET findings in patients with ISUP grade 5, particularly for the detection of distant metastases. This highlights the importance of ruling out potential false-negative results.
3. The role of [68Ga]Ga-PSMA-11 PET/CT was investigated as a method for evaluating treatment response following androgen deprivation therapy (ADT) in men with PC.
4. Salvage radiotherapy is an established treatment option for patients with biochemical recurrence after radical prostatectomy in the absence of distant metastases. The impact of 68Ga-PSMA-11 PET/CT on the concept of salvage radiotherapy was studied in patients with early biochemical recurrence at low PSA levels (≤0.5 ng/ml) after RP. It was demonstrated that PSMA PET/CT plays a decisive role in defining the therapeutic plan for salvage radiotherapy in men with early biochemical recurrence of prostate cancer after radical prostatectomy. Evidence shows that PSMA PET/CT can substantially contribute to a personalized approach to radiotherapy planning, which may improve progression-free survival.

I. Nuclear Oncology
b) Nuclear Oncology – studies and publications related to oncological diseases other than prostate cancer

Scientific and methodological contributions include:

1. The role of [18F]FDG PET/CT in malignant melanoma has been investigated and demonstrated. The diagnostic and clinical value of [18F]FDG PET/CT was assessed in the follow-up of patients after definitive treatment of the first regional recurrence, as well as for the early detection of operable disease progression. The use of [18F]FDG PET/CT as a surveillance tool in patients after the first recurrence showed excellent performance in timely and accurate detection of potentially operable lesions. The method proved to be significantly more effective compared to conventional examinations in monitoring high-risk patients for progression.
2. The role of 18F-FDG PET/CT in the diagnosis of POEMS syndrome has been investigated. The evaluation of bone lesions through whole-body anatomical and metabolic imaging, together with the detection of associated findings such as organomegaly, lymphadenopathy, and skin lesions, has been shown to be of particular importance for diagnosis and assessment of the syndrome.
3. The performance of 18F-FDG PET/CT in multiple myeloma was studied in patients referred for staging due to clinical or laboratory evidence of recurrence or progression after treatment. 18F-FDG PET/CT should be considered a valuable imaging modality owing to its ability to detect not only lytic lesions but also extramedullary sites of malignant infiltration, while simultaneously providing a metabolic assessment of disease involvement. The method demonstrated high prognostic value.

4. A comparative analysis was performed between physical examination/endoscopy and FDG PET/CT for the detection of recurrences in head and neck squamous cell carcinoma (HNSCC) after treatment. FDG PET/CT demonstrated high sensitivity and negative predictive value in detecting local recurrences.
5. The role of FDG PET/CT in detecting metachronous/synchronous tumors in patients with head and neck cancer (HNC) as a screening modality was studied. The effectiveness of 18F-FDG PET/CT in detecting additional primary tumors in this patient group was evaluated.
6. The role of 18F-FDG PET/CT in therapeutic planning for patients with cutaneous melanoma at different clinical stages was investigated. The method was also studied in patients with unknown primary tumors suspicious for multiple myeloma. 18F-FDG PET/CT is a non-invasive, highly sensitive whole-body modality that not only enables detection of the primary tumor but also provides simultaneous staging and guidance for targeted biopsy. Furthermore, its role was evaluated in patients with osteolytic lesions of unknown origin suspicious for multiple myeloma. In cases of carcinoma of unknown primary, 18F-FDG PET/CT should be the modality of first choice. The hybrid method demonstrated high diagnostic performance, contributing to diagnosis in 57.6% of patients, with specificity and positive predictive value reaching 64.29% and 79.17%, respectively.
7. The application of 18F-FDG PET/CT for assessing the metabolic activity of osteolytic lesions in newly diagnosed multiple myeloma patients has been investigated as a predictive factor for overall survival.

II. Applied Clinical Contributions (Publications and Case Studies)

1. The clinical case "Synchronous Rectal Carcinoma with Increased 68Ga-PSMA Uptake: Incidentally Detected Malignancy during Staging of Prostate Cancer" demonstrates the importance of histological verification of lesions with increased 68Ga-PSMA expression but atypical for PC involvement.
2. The application of 18F-fluorodeoxyglucose (FDG) PET/CT in pulmonary Langerhans cell histiocytosis (PLCH) was studied. 18FDG PET/CT has been presented as a valuable and promising imaging modality for staging/initial evaluation as well as for restaging, supporting treatment response monitoring. It represents an applicable, non-invasive screening method assisting in the early diagnosis and assessment of PLCH.
3. The indispensable role of 18F-FDG PET/CT as a restaging modality was evaluated in a patient with malignant peripheral nerve sheath tumor (MPNST) developed on the basis of neurofibromatosis. Its significance lies not only in the possibility for whole-body scanning but also in its high sensitivity and specificity for the detection of recurrence and distant metastases.
4. The application of 68Ga-DOTATATE PET/CT in monitoring treatment response in a patient with a pancreatic neuroendocrine tumor (NET) was studied. 68Ga-DOTATATE PET/CT proved to be an effective imaging tool not only for initial diagnosis and therapy planning, but also for post-therapeutic monitoring.
5. The role of 18F-FDG PET/CT in the diagnosis and evaluation of an incidentally diagnosed secondary cutaneous lesion in a patient with a carcinoma of unknown primary (CUP) during the COVID-19 pandemic was assessed. The study emphasized the advantages of 18F-FDG PET/CT in selecting an appropriate biopsy site and in accurate staging of CUP.
6. Various benign and malignant pathologies with increased PSMA expression were investigated, likely related to tumor-associated angiogenic factors and endothelial cell

proliferation. An unusual clinical case was presented of a serous cystadenoma of the pancreas with intense radiotracer uptake and of a PSMA PET/CT-negative multiple myeloma after chemotherapy. Incidental lesions detected on 68Ga-PSMA PET/CT scans in prostate cancer patients are not uncommon and should trigger a broad differential diagnosis, including both benign and malignant conditions. Radiotracer uptake alone is not a reliable criterion to differentiate them from PC lesions, which has essential clinical significance. Detailed medical history and individualized interpretation are required to avoid misdiagnosis.

7. The application of 99mTc-MDP whole-body bone scintigraphy was studied in the rare McCune–Albright syndrome (MAS). Skeletal abnormalities associated with MAS may involve the entire skeleton, and their comprehensive evaluation is of critical importance for establishing the diagnosis.
8. The role of 18F-FDG PET/CT-guided biopsy in the diagnosis of primary extranodal diffuse large B-cell lymphoma of the bone was investigated.
9. The application of 18F-FDG PET/CT in the detection of leptomeningeal metastases was studied.
10. A rare clinical case of radiotracer uptake in the right hemidiaphragm in a patient after pneumonectomy was presented, contributing to better understanding of potential imaging artifacts.
11. A rare case of 18F-FDG PET/CT application in a patient with osteomyelitis and multiple myeloma was reported, highlighting the importance of careful interpretation of PET/CT findings.
12. Possible diagnostic errors in the interpretation of 18F-FDG PET/CT in a patient with metachronous tumors were analyzed.

III. Other

1. The role **of** 18F-FDG PET/CT in detecting FDG-avid lymph nodes in response to SARS-CoV-2 vaccination was studied, with the aim of optimizing the clinical interpretation of hybrid scan results that guide subsequent therapeutic decision-making in patients with diagnosed carcinoma.
2. A rare clinical case of a recurrent bone-invasive giant meningioma in a patient with gastric carcinoma, detected during 18F-FDG PET/CT scanning, was presented. The case highlights the importance of careful evaluation of CT images as an integral part of hybrid imaging.

Teaching Activity

Chief Assistant Professor Dr. Marina Dyankova, PhD, conducts practical classes in Bulgarian and English for fourth-year medical students at the Medical University of Varna, as well as for radiography students at the Medical College of Varna. She also participates as a member of the examination committees for the aforementioned students. Dr. Dyankova's annual teaching workload exceeds 100 academic hours, fully meeting the requirements for participation in the academic competition.
She takes an active role in the core course of Nuclear Medicine, delivering lectures. Dr. Dyankova also participates in various educational and scientific forums in Bulgaria with international involvement, as well as in events organized by the Clinic of Nuclear Medicine and Metabolic Therapy at University Hospital "St. Marina" – Varna and the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

She is a member of the Academic Council of the Faculty of Medicine at the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

Diagnostic and Therapeutic Activity

Dr. Marina Dyankova is a well-established specialist in nuclear medicine and actively participates in the daily clinical workload of the Clinic of Nuclear Medicine and Metabolic Therapy at University Hospital "St. Marina" – Varna. Since 2015, she has been a member of the clinic's team, successfully applying the knowledge and skills acquired in her specialty. She works diligently in close collaboration with colleagues from all departments of University Hospital "St. Marina" – Varna, as well as with specialists across the country.

She operates with the most advanced equipment available at the Clinic of Nuclear Medicine, including PET/CT and SPECT/CT systems, in accordance with national and international standards. Dr. Dyankova also takes part in the development and implementation of new diagnostic and therapeutic methods.

Personal Impressions of the Candidate

I know Dr. Marina Dyankova as a well-prepared and accomplished specialist, as well as a researcher with great potential and a competent lecturer. She is a respected professional, highly regarded not only among her colleagues in nuclear medicine but also among specialists from various clinical disciplines.

Conclusion

Chief Assistant Professor Dr. Marina Dyankova, PhD (Med.), presents herself in this competition with fully sufficient scientometric indicators. Her scientific output and teaching activity are of high quality. She is an established lecturer and nuclear medicine specialist with significant experience and practice, combined with a constant drive for professional advancement.

The scientific works she has presented serve as clear evidence of her research and creative potential.

Based on all these achievements, I consider that Dr. Marina Dyankova fully meets the requirements of the Law and Regulations for the Development of the Academic Staff in the Republic of Bulgaria, as well as the regulations of the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

This gives me sufficient grounds to vote positively and confidently recommend to the esteemed members of the Scientific Jury that **Chief Assistant Professor Dr. Marina Dyankova** be awarded the academic position of **Associate Professor**.

Prof. Dr. B. Chaushev, MD

Varna
August 18, 2025