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

REVIEW

regarding the competition for the academic position of Associate Professor
in Higher Education Area 7. "Health and Sports,"
Professional Field 7.1 "Medicine,"
Scientific Specialty "Nuclear Medicine,"
announced in 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. Aneliya Dimitrova Klisarova, MD, DSc
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By Order No. 109-258 dated June 6, 2025, of the Rector of the Medical University – Varna, and in accordance with the decision of the first meeting of the Scientific Jury, I have been appointed as Chairperson and Reviewer for the present competition.

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

Brief Biographical Data

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 specialized in Family Medicine at the same university, obtaining a specialty in General Practice and Family Medicine in 2010.

In 2013, she completed the legalization and recognition process of her medical qualification in Bulgaria. Following the successful recognition of her diploma, she worked at Medical Center "Clinic Nova" Ltd., Varna (2014–2015). Since 2015, she has been working as a physician at the Clinic of Nuclear Medicine and Metabolic Therapy at University Hospital "St. Marina" – Varna. Since 2018, Dr.

Marina Dyankova has been working as a part-time teaching assistant at the Medical University of Varna. In February 2019, she was enrolled as a doctoral student under the supervision of Prof. Dr. Borislav Chaushov, MD, with a dissertation topic titled:
"68Ga-PSMA PET/CT in Prostate Cancer: Advantages and Potential Diagnostic Pitfalls."

In 2019, she acquired a medical specialty in Nuclear Medicine.
In January 2020, she was appointed as an Assistant Professor in the Department of Imaging Diagnostics, Interventional Radiology and Radiation Therapy at the Medical University – Varna.
In June 2022, she was awarded the educational and scientific degree of Doctor (PhD) in the scientific specialty "Medical Radiology and Radiodiagnostics (including the use of radioactive isotopes)" after a successful defense of her doctoral dissertation.
In June 2023, she was promoted to the position of Chief Assistant Professor in 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, held in Latvia and Bulgaria. She has attended annual congresses of the European Association of Nuclear Medicine (EANM), European School of Radiology (ESOR), European Society for Hybrid Imaging (ESHI), the Bulgarian Association of Radiology (BAR), and the WARMTH Symposium in Finland. She has also taken part in specialized training seminars of the European School of Multimodality Imaging & Therapy (ESMIT), as well as in annual online continuing education courses for medical professionals organized by SNMMI, ESOR, EFRS, and CHILI.

She is an active participant in national and international scientific congresses and conferences.
She is a member of Women in Nuclear (WiN) Bulgaria, the Bulgarian Society of Nuclear Medicine (BDNM), European Society for Hybrid, Molecular and Translational Imaging (ESHI), European School of Radiology (ESOR), the Bulgarian Association of Radiology (BAR), and the European Association of Nuclear Medicine (EANM).

Dr. Dyankova also takes part in international educational programs and shares her clinical and scientific experience with medical students and radiography students. Her main professional and scientific interests are focused on prostate cancer, Langerhans cell histiocytosis, multiple myeloma, ovarian cancer, hyperparathyroidism, and malignant melanoma.

She is fluent in Russian, Ukrainian, and English.

Scientometric Indicators

For the current competition for the academic position of Associate Professor, Dr. Dyankova has submitted a total of **37 scientific works** (full-text articles and conference reports), the majority of which have been published after the successful defense of her doctoral thesis.

Her overall publication activity is significant and includes:

- **15 full-text articles**, of which 11 are published in peer-reviewed journals indexed in globally recognized scientific databases;
- **25 abstracts** published in national and international scientific congresses and symposia;
- **25 participations** in scientific events with published programs and active presentations.

In the presented works, Dr. Dyankova is:

- First author in 12 publications;
- Second author in 5;
- Third or subsequent author in 20.

A total of 33 of her works are published in journals indexed in international scientific databases (Scopus, Web of Science, PubMed, etc.).

Her **cumulative impact factor (IF)** is **369.979**, which reflects the importance and quality of her research output.
Dr. Dyankova has submitted a list of citations, which meet and exceed the required threshold for the academic position of Associate Professor. The citations originate from both national and international journals, confirming the relevance, contribution, and international visibility of her scientific work.

Evaluation of Scientific Contributions

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

I. NUCLEAR ONCOLOGY

a) Nuclear oncology – studies and publications related to prostate cancer (PC)
b) Nuclear oncology – studies and publications related to other oncological diseases beyond prostate cancer

II. OTHER TOPICS

I. NUCLEAR ONCOLOGY

a) Nuclear Oncology – Studies and Publications Related to Prostate Cancer (PC)

Key Scientific and Applied Contributions:

1. For the first time in nuclear medicine practice in Bulgaria, a comprehensive study was conducted on the application of the novel hybrid imaging modality, 68Ga-PSMA PET/CT, in a large cohort of patients with biochemical recurrence (BCR) of prostate cancer following radical therapy. The study identified prognostic factors associated with PSMA-PET positivity and detection rates, as well as the advantages of PSMA PET/CT over conventional CT. Special emphasis was placed on the application of this imaging modality in patients with biochemical progression after radical prostatectomy across a broad range of PSA levels, particularly at low PSA values. The influence of PSA levels on sensitivity and detection rates was evaluated, along with correlations between PSA and recurrence localization, Gleason score, and the impact of prior androgen deprivation therapy (ADT).
2. The role of PSMA PET/CT in initial regional nodal (N) and distant metastatic (M) staging in treatment-naïve patients with intermediate- and high-risk primary prostate cancer was investigated. The advantages of PSMA PET/CT over conventional CT in staging accuracy were clearly demonstrated.
3. A detailed analysis of PSMA PET/CT findings in patients with ISUP Grade 5 prostate cancer was conducted for the first time in Bulgarian nuclear medicine. The study examined patterns of nodal and osseous metastases, the relationship between PSA levels and detection frequency at different anatomical sites, and correlations with clinical T-stage.
4. The impact of 68Ga-PSMA PET/CT on N and M staging was analyzed in detail for the first time in Bulgaria. Anatomical patterns of metastatic involvement were evaluated in both primary and recurrent prostate cancer, based on imaging data from a total of 386 patients.

5. A practical contribution includes the analysis of key diagnostic performance metrics of 68Ga-PSMA PET/CT for the first time in the country: detection rate, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and overall accuracy. The study also addressed the potential risk of false-positive and false-negative findings in various diagnostic subgroups.
6. A comprehensive study of the correlation between PSMA PET/CT positivity and key clinical parameters was performed, including PSA level, Gleason score/ISUP grade, clinical T-stage, and prior therapies. This analysis included patients with BCR after radical therapy (n = 133), biochemical progression after radical prostatectomy (n = 144), and primary prostate cancer (n = 109) – totaling 386 patients.
7. In order to optimize interpretation, a detailed assessment of diagnostic pitfalls in PSMA PET/CT was carried out. This included evaluation of physiological PSMA uptake variants, non-prostate-related pathological PSMA expression, and causes of false-negative results.

Practical Clinical-Diagnostic Contributions and Recommendations Derived from the Studies:

1. Based on the principles of individualized patient care, 68Ga-PSMA PET/CT is clinically justified even in patients with biochemical progression after radical prostatectomy and low PSA levels.
2. The studies revealed a significantly higher detection rate of pathological PSMA PET/CT findings in patients with ISUP Grade 5, particularly for distant metastases. This finding supports the early use of PSMA PET/CT to avoid false-negative assessments in this high-risk subgroup.
3. The role of [68Ga]Ga-PSMA-11 PET/CT in assessing therapeutic response following androgen deprivation therapy (ADT) in prostate cancer patients was investigated, confirming its clinical utility.
4. The role of salvage radiotherapy (SRT) is well-established for patients with biochemical recurrence after radical prostatectomy, in the absence of distant metastases. The impact of 68Ga-PSMA-11 PET/CT on therapeutic decision-making for early BCR (PSA $\leq$ 0.5 ng/mL) was assessed. The study demonstrated that PSMA PET/CT plays a critical role in guiding salvage radiotherapy planning in men with early BCR after prostatectomy, supporting a personalized approach to radiotherapy that may improve progression-free survival outcomes.

I. NUCLEAR ONCOLOGY

b) Nuclear Oncology – Studies and Publications Related to Oncological Diseases Other Than Prostate Cancer

Scientific and Methodological Contributions:

1. The role of [18F]FDG PET/CT in malignant melanoma was investigated and validated. The study assessed the diagnostic and clinical utility of [18F]FDG PET/CT in the follow-up of patients after definitive treatment for first regional recurrence, as well as its potential for early detection of operable disease progression. The application of [18F]FDG PET/CT as a surveillance tool in this context demonstrated excellent performance in timely and accurate detection of potentially resectable lesions. The modality proved to be significantly more effective than conventional imaging for monitoring high-risk patients.
2. The use of 18F-FDG PET/CT in the diagnosis of POEMS syndrome was studied. The whole-body metabolic and anatomical imaging capability of the modality facilitated the assessment of bone lesions and the detection of associated findings such as organomegaly, lymphadenopathy, and skin lesions, all of which are crucial for the diagnosis and evaluation of the syndrome.
3. The performance of 18F-FDG PET/CT in patients with multiple myeloma was evaluated, particularly for restaging in cases with clinical or laboratory signs of recurrence or progression. The study confirmed the value of this imaging technique due to its ability to detect not only lytic bone lesions, but also extramedullary sites of malignant infiltration, while simultaneously providing a metabolic assessment of disease activity with high prognostic significance.
4. A comparative study was conducted to assess the effectiveness of physical examination and endoscopy versus FDG PET/CT for detecting recurrence of head and neck squamous cell carcinoma (HNSCC) following treatment. FDG PET/CT demonstrated high sensitivity and a high negative predictive value for local recurrence detection.
5. The role of FDG PET/CT in identifying metachronous and synchronous tumors in patients with HNSCC was examined, highlighting its screening potential as an imaging modality. The diagnostic performance of 18F-FDG PET/CT was evaluated in detecting additional primary tumors in this patient population.
6. The value of 18F-FDG PET/CT in determining the therapeutic approach in patients with cutaneous melanoma across various clinical stages was explored. Furthermore, its application was studied in patients with unknown primary tumors, particularly when multiple myeloma was suspected. The whole-body, non-invasive, and high-sensitivity nature of the modality was emphasized for both primary tumor detection and

simultaneous staging, as well as for guiding targeted biopsy. The role of 18F-FDG PET/CT in patients with osteolytic lesions of unknown origin, suspicious for multiple myeloma, was also assessed. In patients with cancer of unknown primary (CUP), 18F-FDG PET/CT was recommended as the first-line imaging modality. The method demonstrated robust diagnostic performance, aiding the diagnosis in 57.6% of patients, with a specificity of 64.29% and positive predictive value (PPV) of 79.17%.

7. The use of 18F-FDG PET/CT in evaluating the metabolic activity of osteolytic lesions in patients with newly diagnosed multiple myeloma was studied as a predictive factor for overall survival.

II. Clinical Practice-Oriented Publications

1. The clinical case "Synchronous rectal carcinoma with increased 68Ga-PSMA uptake: incidentally discovered malignancy during staging of prostate cancer" demonstrates the importance of histopathological verification of lesions with increased 68Ga-PSMA expression that are atypical for prostate cancer involvement.
2. The application of 18F-fluorodeoxyglucose (FDG) PET/CT in pulmonary Langerhans cell histiocytosis (PLCH) was investigated. The study presents 18F-FDG PET/CT as a valuable and promising imaging modality for initial staging and re-staging of PLCH, particularly for monitoring therapeutic response. The method is applicable as a non-invasive screening tool in both early and advanced disease assessment.
3. The critical role of 18F-FDG PET/CT in restaging a patient with malignant peripheral nerve sheath tumor (MPNST) associated with neurofibromatosis was evaluated. The method proved highly effective due to its whole-body imaging capability, as well as its high sensitivity and specificity in detecting recurrence and distant metastases.
4. The application of 68Ga-DOTATATE PET/CT in monitoring treatment response in a patient with pancreatic neuroendocrine tumor (NET) was examined. 68Ga-DOTATATE PET/CT is presented as an effective modality not only for initial diagnosis and therapy planning, but also for longitudinal assessment of treatment outcomes.
5. The role of 18F-FDG PET/CT was assessed in the diagnostic work-up of an incidentally detected secondary skin lesion in a patient with cancer of unknown primary (CUP) during the COVID-19 pandemic. The study highlights the advantages of PET/CT for identifying the optimal biopsy site and accurately staging CUP.
6. Various benign and malignant pathologies with increased PSMA expression were reviewed, possibly related to tumor-driven angiogenic factors and endothelial cell proliferation. An unusual clinical case of a serous cystadenoma of the pancreas showing intense radiotracer uptake,

as well as a PSMA PET/CT-negative multiple myeloma (MM) post-chemotherapy, were discussed. Incidental findings on 68Ga-PSMA PET/CT scans in patients with prostate cancer are not uncommon and should prompt a broad differential diagnosis, including both benign and malignant entities. The degree of radiotracer uptake is not a reliable discriminator, which has significant clinical implications. A thorough medical history and individualized interpretation are required to avoid misdiagnosis and misinterpretation of PET/CT results.

7. The application of 99mTc-MDP whole-body bone scintigraphy was explored in a rare case of McCune-Albright syndrome (MAS). Scintigraphic imaging with 99mTc-MDP plays a key role in evaluating skeletal abnormalities, which can affect multiple bones and are essential for the diagnosis of MAS.
8. The value of 18F-FDG PET/CT-guided biopsy was investigated in the diagnosis of primary extranodal diffuse large B-cell lymphoma of the bone.
9. The application of 18F-FDG PET/CT in the detection of leptomeningeal metastases was explored.
10. A rare clinical case of radiotracer uptake in the right hemidiaphragm in a patient post-pneumonectomy was presented, contributing to the understanding of potential imaging artifacts.
11. A rare clinical case highlighting the application of 18F-FDG PET/CT in a patient with osteomyelitis and diagnosed multiple myeloma was presented, underscoring the importance of precise interpretation of PET/CT findings.
12. Potential diagnostic pitfalls in the interpretation of 18F-FDG PET/CT in a patient with metachronous tumors were analyzed.

III. Other Contributions

1. The role of 18F-FDG PET/CT in the detection of FDG-avid lymph nodes following SARS-CoV-2 vaccination was examined, with the aim of optimizing clinical interpretation of hybrid imaging results that guide subsequent therapeutic decisions in patients with diagnosed malignancies.
2. A rare clinical case of a recurrent bone-invasive giant meningioma in a patient with gastric cancer, visualized via 18F-FDG PET/CT, was presented. The case underscores the importance of precise evaluation of CT images as part of hybrid imaging interpretation.

Teaching Activity

Dr. Marina Dyankova conducts practical classes for both Bulgarian and international fourth-year medical students, as well as radiography students from the Medical College of Varna. She actively participates in examination

committees for the aforementioned groups. Her annual teaching load exceeds 100 academic hours, fully complying with the requirements for participation in the current academic competition.

She also contributes lectures to the core course in Nuclear Medicine and takes part in numerous educational and scientific events, including those with international participation held in Bulgaria. She is regularly involved in academic activities organized by the Clinic of Nuclear Medicine and Metabolic Therapy at St. Marina University Hospital – Varna and the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

Dr. Dyankova is a member of the Academic Council of the Faculty of Medicine at the Medical University of Varna.

Clinical Work

Since 2015, Dr. Dyankova has been an active member of the team at the Clinic of Nuclear Medicine and Metabolic Therapy at St. Marina University Hospital – Varna. She applies her specialized knowledge in daily clinical practice and demonstrates dedication and collaboration with colleagues from both her own and other departments within the hospital, as well as with professionals from across the country.

She is proficient in performing all nuclear medicine procedures conducted at the clinic and actively contributes to the development and implementation of new diagnostic methods.

Conclusion

Dr. Marina Dyankova is an experienced nuclear medicine specialist and educator with long-standing clinical and academic engagement. She participates in the training of both undergraduate and postgraduate students and demonstrates a deep and consistent interest in scientific research and innovation.

She is highly respected not only within the field of imaging diagnostics but also among clinicians from other specialties. She possesses qualities of responsibility, integrity, and professional loyalty.

The submitted scientific works reflect her creative and research-oriented mindset, and are characterized by both methodological rigor and practical

relevance. Her publications and presentations at international scientific forums contribute meaningfully to the development of nuclear medicine in Bulgaria and its recognition within the global medical community.

In light of Dr. Dyankova's scientific contributions, teaching activities, and clinical expertise, I believe she fully meets the requirements of the Law and Regulations for the Development of Academic Staff in the Republic of Bulgaria, as well as the internal regulations of the Medical University "Prof. Dr. Paraskev Stoyanov" – Varna.

I strongly recommend that the esteemed members of the Scientific Jury confer upon **Dr. Marina Dyankova the academic position of Associate Professor**.

Prof. Anelia Klisarova, MD, DSc
Varna
May 25, 2025