

OPINION

in a competition for the academic position "Associate Professor"
in the specialty "Immunology",
SG №38 of 28 April 2023
with candidate Rositsa Milcheva, PhD, Assistant Prof.
by Prof. Ludmil Penuv Kirazov

The competition for the academic position of „Associate Professor” in area 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological Sciences, scientific specialty "Immunology" (01.06.23), has been announced for the needs of the "Pathology" section at IEMPAM-BAS. The only candidate in the competition is assistant professor Rositsa Svetolik Milcheva, PhD. The procedures for the competition has been followed. The candidate has submitted all documents required by law for participation in the competition.

Rositsa Milcheva graduated from SU "St. Kliment Ohridski" with a master's degree in Molecular Biology, specialization in Clinical Chemistry. Since October 2002, she has been at IEPP, which after a merger was transformed into IEMPAM-BAS, and has 20 years of work experience at the institute. In the period 2007 - 2011, she was a doctoral student with the topic "Mechanisms of apoptosis in striated muscle fibers after invasion with *Trichinella spiralis*" at Comenius University, Bratislava, Slovak Republic, and obtained the PhD degree.

Associate professor Milcheva presents the equivalent of a habilitation work of 5 publications in publications referenced and indexed in world-renowned databases with scientific information. She also participates in the competition with 14 articles published in scientific journals, referenced and indexed in Web of Science/Scopus. She presented 32 citations on Web of Science/Scopus, and the total number of citations is 74. The presented materials fulfill and in some cases exceed the minimum required points for the groups of indicators in the professional field. The candidate has a total impact factor of 204.609 and a personal impact factor of 4.0776. She participated in 22 scientific forums with 16 reports and 6 posters, as well as in 7 scientific research projects (in 3 – leader, in 4 – participant). She is the author of 3 anonymous reviews and is the recipient of 3 awards and 2 certificates. In her experimental work, she uses a wide range of research methods such as immuno- and affinity-blot, isoelectrofocusing, lectin and immunohistochemistry, cultivation and work with tissue samples and yeast, gene expression analysis, RT-PCR.

The basic direction in the candidate's experimental work is the study of the invasion of the parasitic nematode *Trichinella spiralis*, mainly in the phase of development in the striated

muscles, the formation of a nurse cell and the parasite-host relationship. Glycosylation was found to change at different developmental stages of *Trichinella*. Increased expression of sialic acid is observed in the affected area of the muscle fiber, which favors the successful accommodation of the parasite in the host cell. The serum levels of sialic acid in the serum of *Trichinella*-infected rats at different stages of disease were investigated. This can be a useful indicator in trichinellosis. Glycosylation changes have been demonstrated in the nurse cell in mouse skeletal muscle. The results contribute to an understanding of the ability of *T. spiralis* to manipulate the host's genetic program.

The regulation of apoptotic factors in the skeletal muscle cell was investigated as an adaptation mechanism for *Trichinella* survival in the host. Changes in the nuclear distribution of proteins in muscle fibers invaded by *Trichinella* have been described, indicating its ability to regulate intracellular systems in muscle tissue.

T. spiralis induces increased dystrophin expression in invaded striated muscle. Dystrophin plays a role in muscle regeneration and in the formation of nurse cells and thus ensures the survival of the parasite.

Another direction is the research on the influence of mycotoxins on the immune system of chickens in amounts naturally present in fodders. It has been found that they can affect the health of poultry. The comparative study of the sensitivity of cell cultures to the action of mycotoxins makes it possible to choose a suitable model for studying their cytotoxicity.

Applied studies have shown that alcohol-based fixatives are an excellent storage medium for tissue samples intended for immunohistochemical and mRNA expression studies. Sonochemically produced zinc oxide/amylase coatings preventing catheter-related urinary tract infections are presented, as well as a new hydrogel with very good potential as a biomaterial for medical applications.

CONCLUSION: The candidate has a clearly defined profile of the research work in the field of the announced competition. The presented materials meet the requirements of the law and the regulations of IEMPAM. This gives me the reason to give a positive assessment and recommend to the Scientific Council of IEMPAM to vote for the election of assistant professor Rositsa Milcheva at the academic position "Associate Professor".

30.08.2023


(Prof. L. Kirazov)