The Chairman of the Scientific Jury,
appointed by Order No. 80/ 16.03.2026
of the Director of the NCIPD, Sofia

Review by

Prof. Mariyana Stoycheva Vartigova, MD, PhD, DSc
Scientific specialty "Infectious Diseases", External member of the
Scientific Jury

Subject: Competition for the academic position of "PROFESSOR",
Announced in State Gazette issue 115/30.12. 2025, p.43, for the needs of the Virology Department of the NCIPD, in the field of higher education 4. "Natural Sciences, Mathematics and Informatics" in the professional field 4.3 Biological Sciences, in the scientific specialty "Virology"

The only candidate in the competition is Associate Professor Ivaylo Alexiev Ivanov, PhD DSc, Head of the National Reference Confirmatory Laboratory for HIV (NRCL for HIV), Head of the Department of Virology, National Center for Infectious and Parasitic Diseases – Sofia
I declare that I have no conflict of interest with the participant in the competition.
The submitted documents and materials for the competition, by Associate Professor Ivaylo Alexiev Ivanov are in full compliance with the requirements of the Law on the Development of Academic staff in the Republic of Bulgaria (LDASB), and the Rules of for its implementation, and The Rules of the NCIPD, Sofia. I would like to note that the documents (the huge amount of evidence) are very correctly and precisely presented, which facilitates their analysis and evaluation.

Analysis of the candidate's career development.
Associate Professor Ivaylo Aleksiev Ivanov, PhD, DSc, is a graduate of the Faculty of Biology, Sofia University "St. Kliment Ohridski". He has a Master's degree in Biology, after an academic course 2988 - 1994 and defended his diploma thesis on "Methods for the detection of antiplatelet antibodies by monoclonal antibody - immobilized platelet antigens". In 2003 he entered the NRCL for HIV at the NCIPD. From 2006 to 2008 he was a postgraduate in clinical virology at the National Center for Clinical Virology. From 06.2008 to 2011 he was a PhD student at the National Center for Clinical Virology, Sofia. In 2011, he acquired the ONS DOCTOR after successfully defending her dissertation "Molecular and virological characterization of the HIV-1 epidemic in the Republic of Bulgaria through sequencing and phylogenetic analysis"
In 2014 he was elected Associate Professor. Since 2016 he has been Head of the HIV Prevention Unit, and since 2024 he has been Head of the Virology Department, NCIPD Sofia. In 2025, he successfully defended his dissertation "Antiretroviral resistance and molecular epidemiology of HIV-1 in Bulgaria: an integrated analysis of genetic diversity,

(d = 0.5%) and more distant (d = 1.5%) transmission events.

A systematic national analysis of antiretroviral drug (ARVs) resistance on 1,654 HIV-1 sequences found an overall resistance incidence of 31.4%, with differentiated profiles for protease inhibitors (PI 1.7%), nucleoside reverse transcriptase inhibitors (NRTI 15.4%) and non-nucleoside inhibitors (NNRTI 19.3%). A controlled epidemic of transmission resistance with an incidence of 5.7% in untreated patients was documented, meeting the WHO criteria for low to a moderate level and reflecting effective epidemiological control. Statistically significant associations between resistant mutations and demographic and transmission characteristics have been established, with the highest levels in MSM (35.7%) and the lowest in IDU (13.6%). Subtype analysis showed higher levels of NRTI and NNRTI resistance in subtype A6 compared to A1, which is relevant for therapeutic approaches (publications 1, 2, 34, articles without IF 7, 14).

A large-scale European multicenter analysis of HIV transmission resistance was carried out on 4,140 untreated individuals from 26 European countries (2008–2010). A stable overall transmission resistance rate of 8.3% for the period 2002–2010 was established, with a higher incidence of NRTI **resistance in subtype** B compared to non-B subtypes. The K103N mutation is significantly more common in recently infected patients, and the predicted reduced sensitivity is highest for rilpivirine and efavirenz. These results highlight **the complex relationship between epidemiological incidence and clinical significance of resistant mutations** (Publication 2).

(2) Epidemiology of co-infections in PLWH with a focus on viral hepatitis B and C. The studies include molecular characterization of HCV transmission in key vulnerable populations, as well as an analysis of access to diagnosis, treatment and care for viral hepatitis in Central and Eastern European countries.and emphasizes the need to harmonise diagnostic and therapeutic standards (Publication 15).

Active viral infections have been proven, with the detection of HBV DNA in 47.4-51.1% and HCV RNA in 69.6-78.1%, which outlines the need for timely antiviral treatment. Coinfections are concentrated in populations with multiple risk behaviors. The data obtained document an epidemic dominated by IDU, with pronounced overlap between different vulnerable groups and active transmission exchange between them (publications 4, 16).

(3) Genomic epidemiology of SARS-CoV-2 and other respiratory viruses, including systematic sequencing and phylogenetic analysis of circulating viral variants in Bulgaria for the period 2020-2023. The introduction, spread and substitution of the Alpha, Delta and Omicron variants, as well as recombinant forms, have been documented. Post-vaccination infections, co-infections with other pathogens have been analysed, and international comparative studies related to global genomic surveillance have been carried out (publications 23, 28; non-IF articles 10, 11). These studies have made significant contributions to national and international efforts to monitor viral evolution and public health.

(4). **Molecular and serological diagnostics of other respiratory viruses,** including respiratory syncytial virus, endemic coronaviruses and influenza viruses, as well as further research in parasitology, demonstrating scientific versatility, methodological flexibility and ability to adapt to the dynamic challenges of infectious pathology.

I would especially like to note that in all scientific papers the ***practical applicability of the studies is sought and taken into account.*** It is reported that the therapeutic approach based on genotypic analysis is a prerequisite for virological success and limiting the further development of resistance. The generated national reference database supports the individualization of first-line therapy, the adaptation of treatment in case of therapeutic failure, and the planning of effective rescue therapeutic regimens. Documented subtype-specific resistance profiles, including higher incidence of NRTI and NNRTI resistance in subtype A6 compared to subtype A1, have direct practical application in the selection of optimal ART in real clinical practice (publications 1, 2, 34).

The key role of early initiation of ART as a preventive strategy has been demonstrated. Bayesian phylogenetic analysis provides a quantitative estimate of the temporal parameters of viral migration and population dynamics (Publication 11).

Key information is provided for clinical decision-making on the use of integrase inhibitors (InSTIs) by documenting the baseline incidence of InSTI resistance in Europe, prior to the widespread introduction of this drug class into routine practice. The data support the positioning of InSTI as the preferred option in modern therapeutic regimens (Publication 1).

Substantial scientific and applied information is provided on the clinical management of viral co-infections in PLWH by documenting high levels of active hepatitis B and hepatitis C infections requiring therapeutic intervention. The identified concentration of co-infections in clearly defined vulnerable groups - individuals, IDU, prisoners and representatives of the Roma community, provides a practical basis for the development and implementation of targeted strategies for screening, early diagnosis and therapeutic coverage. Additionally, the molecular characterization of HCV transmission and the identification of transmission clusters create opportunities to optimize preventive interventions and limit the continued spread of infection (Publications 4, 10, 16).

Scientific and applied contributions include improving epidemiological surveillance and targeted preventive interventions, developing regionally adapted health policies, optimizing PrEP and PEP programs, implementing real-time genomic surveillance and permanently positioning Bulgarian virological science in the international scientific space.

The published results have direct and measurable applications in clinical practice, public health and strategic health planning. At the same time, they contribute to the expansion of international scientific knowledge on the molecular epidemiology of viral infections in the Southeast European region. The research activity has been realized through intensive international cooperation with leading academic and reference centers, which has contributed to the building of sustainable national expert capacity and to the establishment of Bulgaria as a significant regional center for highly specialized virological research

Complex molecular epidemiological data have been generated, providing an empirical basis for updating the national strategy for prevention and control of HIV/AIDS and adapting interventions according to the identified epidemiological trends.

Pedagogical, mentoring and organizational abilities of Assoc. Prof. I. Alexiev, PhD, DSc.
He is the supervisor of two successfully defended PhD students: Reneta Dimitrova, thesis topic: "Molecular virological study of the prevalent subtypes of HIV-1 among heterosexual persons in Bulgaria" 2017 and Lyubomira Grigorova, thesis topic: "Molecular virological analysis of the transmission clusters of the introduced and widespread HIV-1 subtypes in Bulgaria" 2025.

Assoc. *Academic mentor* in a project under the Operational Program "Human Resources Development", co-financed by the Ministry of Education and Science and the European Social Fund, for "Mentoring and Coordination of Student Practices in the Field of Clinical Virology and Laboratory Research".
Last but not least, Assoc Prof. I. Alexiev is the main driver of the annual national conferences organized by the NCIPD with international participation ***on HIV and co-infections***, which are meetings between clinicians, virologists, immunologists for the exchange of scientific information and practical experience in the field of diagnosis, clinical picture and therapy of HIV/AIDS.

Membership in scientific societies. Associate Professor Ivo Alexiev is a member of the

- Union of Scientists in Bulgaria
- Bulgarian Society of Virology
- European Society for Translational Antiviral Research (ESAR)
- Euroguidelines in Central and Eastern Europe Network Group (ECEE)

International cooperation and scientific capacity

Assoc. Prof. I. Alexiev is a recognizable scientist in the field of virology and HIV medicine in Europe and beyond. His active and leading participation in prestigious European and global scientific consortia and research networks, including the SPREAD programme for the surveillance of HIV drug resistance, the *Sialon II project for biobehavioral surveillance among MSM populations*, ECEE Network for HIV and viral hepatitis in Central and Eastern Europe, as well as international collaborations in the field of genomic epidemiology of SARS-CoV-2 makes Bulgarian scientific achievements visible and significant. The publication of the results in high-ranking international scientific journals (Nature Communications, Clinical Infectious Diseases, Eurosurveillance, Journal of Medical Virology) confirmed the scientific weight of the Bulgarian virological school in the global scientific exchange and the national research gained international recognition (publications 1, 2, 3, 9, 22, 25).
The research activity has been realized through intensive international cooperation with leading academic and reference centers, which has contributed to the building of sustainable national expert capacity and to the establishment of Bulgaria as a significant regional center for highly specialized virological research. Reference Center for Advanced Virological Research.
Integrated analytical approaches have been developed and implemented, including phylogenetic reconstruction of transmission clusters, whole-genome sequencing of SARS-CoV-2 and other respiratory viruses, as well as high-resolution molecular characterization of antiretroviral resistance. This complex scientific and methodological toolkit builds long-term national capacity for highly specialized epidemiological surveillance and research at an internationally competitive level (publications 11, 23, 28, 34).

Conclusion

Associate Professor Ivaylo Alexiev Ivanov, PhD, DSc, is a proven scientist in the field of virology and HIV medicine. His knowledge and practical experience in the field of clinical virology is essential for the development of modern diagnostic approaches in the Virology Department of the NCIPD in Sofia.
Given the impressive publication activity, the significant contributions, the citations of scientific works in prestigious international journals, the active participation in research projects and her commitment to teaching activities, I can confidently state that they fully meet the quantitative and qualitative requirements of the Law on the Development of Academic staff in the Republic of

Bulgaria, and the Rules of for its implementation, and The Rules of the NCIPD, Sofia for holding the academic position PROFESSOR.

On the basis of all this, I give my positive vote and recommend to the esteemed members of the Scintific Jury to elect Associate Professor Ivaylo Alexiev Ivanov, PhD, DSc for PROFESSOR in the scientific specialty "VIROLOGY", for the needs of the Department of Virology, NCIPD - Sofia.

Prof. Mariyana Stoycheva, MD, PhD, DSc
09.04.2026