MASARYKOVA UNIVERZITA

Annex No. 11 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

Habilitation Thesis Reviewer's Report

Masaryk University	
Faculty	Faculty of Science
Procedure field	Biomolecular Chemistry
Applicant	Mgr. Pavel Plevka, Ph.D.
Applicant's home unit, institution	Masaryk University
Habilitation thesis	Virion Structures and Genome Release Mechanisms of Picorna-like Viruses
Reviewer	Dipl. Ing. Dr. Dieter Blaas
Reviewer's home unit, institution	Center of Med. Biochem. Med. Univ. Vienna, Vienna Biocenter, A-1030 Vienna, Dr. Bohrgasse 9/3

Dr. Pavel Plevka has an impressive number of high impact publications in prestigious journals and has become a well-known figure in the field of Structural Virology, in particular with respect to X-ray Crystallography and Cryo-Electron Microscopy. His work has been centered not only on the mere determination of high quality 3D-structures of bacteriophages with a very complex composition and of animal viruses, including several ones specifically infecting humans or bees, but he also put forward bold hypotheses on the release of viral genomes upon infection. For example, he demonstrated that a rhinovirus appears to eject its partially unfolded genome through orifices created by the dissociation of single or multiple pentamers from the virion, rather than as a single strand through one of the small holes in the subviral particle, as had been the general belief in the community. This publication has certainly revived the discussion on the still poorly understood uncoating mechanism of this and other virused.

In other work he demonstrated the structural changes of a honey bee virus that culminate in the egress of the genome. He also determined the 3D-structure of virus-antibody complexes furthering the understanding of the mechanism of antibody-mediated neutralization. His major interest is thus centered on the structural changes of various viruses upon initiating the egress of their genomes, including the analysis of modifications of interactions between the nucleic acid and the protein shell. To gain insight into the entry pathway of viruses within the cell culminating in uncoating in vivo, he employs state-of-the-art cryo-tomography paired with focused ion beam milling.

Pavel's publication record also demonstrates various collaborations on subjects unrelated to viruses and, most remarkably, theoretical/methodological papers. The homepage of Pavel's group lists a number of past and present students and I had the occasion to meet some of them and discuss their work. From this I got the impression that Pavel is an excellent teacher, very efficiently supervising and mentoring his students and postdocs and preparing them for a scientific career. I met Pavel at several occasions where I noticed that he was also very well valued by all colleagues working in the field.

To my opinion, Pavel Plevka has all attributes required for an Associate Professor and I strongly recommend his promotion.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

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Conclusion

The habilitation thesis entitled "Virion Structures and Genome Release Mechanisms of Picorna-like Viruses" by Mgr. Pavel Plevka, Ph.D. ***fulfils*** requirements expected of a habilitation thesis in the field of Biomolecular Chemistry.

20 -02- 2020

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