Habilitation Board Decision on the Nomination for Appointment to Associate Professor

Masaryk University	
Faculty	Faculty of Medicine
Procedure field	Anatomy, Histology and Embryology
Applicant	Mgr. Tomáš Bárta, Ph.D.
Applicant's home unit, institution	Faculty of Medicine, Masaryk University
Habilitation thesis	Utilizing Retinal Organoids to Understand the Development, Function, and Diseases of the Human Retina

Board members

Chair	prof. RNDr. Petr Dubový, CSc. *Faculty of Medicine, Masaryk University*
Members	Professor Lyle Armstrong *Institute of Human Genetics, Newcastle University, GB* doc. MUDr. Marek Joukal, Ph.D. *Faculty of Medicine, Masaryk University* prof. MUDr. Jaroslav Mokrý, Ph.D. *Ústav histologie a embryologie LF UK Hradec Králové* prof. MUDr. Mgr. Zbyněk Tonar, Ph.D. *Ústav histologie a embryologie LF UK v Plzni*

Evaluation of the applicant's scholarly/artistic qualifications

Tomáš Bárta, MSc., Ph.D., graduated from the Faculty of Science at Masaryk University in Brno, Czech Republic, in 2008 with a Master's degree in Molecular Biology and Genetics. He subsequently pursued doctoral studies at the Faculty of Medicine, Masaryk University, where he earned his Ph.D. in Medical Biology in 2012. At the end of 2013, he completed a postdoctoral fellowship at the Institute of Genetic Medicine, Newcastle University, United Kingdom. Upon returning to the Czech Republic, he held research positions at the International Clinical Research Center of St. Anne's University Hospital in Brno and later, as an Assistant Professor, at the Department of Histology and Embryology, Faculty of Medicine, Masaryk University. His academic and research activities focus on stem cell biology and regenerative medicine.

Dr. Bárta is the author or co-author of 41 peer-reviewed scientific publications, of which 10 were published as first or corresponding author. His work has received 1010 citations (945 according to Scopus without self-citations), and he has achieved an H-index of 19, which reflects a significant and sustained impact on the scientific community.

He has actively participated in 6 national or international research projects, either as a principal investigator or co-investigator. His research activities are further supported by authorship of a chapter in an internationally recognized monograph and contributions to educational and popular science publications. Recently, he was nominated to the College of Experts at Fight for Sight—one of the United Kingdom's leading funding bodies for vision research.

Overall, Dr. Bárta's scholarly output significantly exceeds the recommended criteria set by the Faculty of Medicine at Masaryk University. His research is quantitatively strong and qualitatively impactful, with clear relevance to the field of regenerative medicine.

Conclusion: The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Anatomy, Histology and Embryology.

Evaluation of the applicant's pedagogical experience

Dr. Tomáš Bárta has demonstrated a long-term and diverse commitment to teaching and academic mentorship. He has been actively involved in regular teaching at Masaryk University since 2008, covering a wide range of subjects across Bachelor's, Master's, and Doctoral levels. His teaching portfolio includes lectures, seminars, and laboratory courses in subjects of molecular biology, developmental biology, and clinical embryology.

He has taught 7 lecture-based courses, 5 laboratory courses, and 1 seminar course. These courses are integral to accredited study programs at the Faculties of Medicine and the Faculty of Science Masaryk University, and they contribute significantly to the education of students in both Czech and English programs.

In terms of supervision, Dr. Bárta has successfully supervised 4 Bachelor's and 4 Master's theses, with 2 additional theses in progress at each level. He has also supervised 3 doctoral candidates, one of whom has already defended their thesis with the highest evaluation and is now employed as a scientist at the Vienna BioCenter.

Since 2020, Dr. Bárta has served as a member of the State Examination Board for the Master's program in Experimental Animal Biology and Immunology. His pedagogical contributions are supported by two reviewed textbooks, one textbook chapter, and several educational materials and public lectures. These outputs demonstrate his dedication to both formal academic teaching and science communication.

In conclusion, Dr. Bárta's pedagogical experience is extensive, well-documented, and exceeds the recommended standards for habilitation at the Faculty of Medicine, Masaryk University.

Conclusion: The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Anatomy, Histology and Embryology.

Habilitation thesis evaluation

The habilitation thesis of Mgr. Tomáš Bárta, entitled „Utilizing Retinal Organoids to Understand the Development, Function, and Diseases of the Human Retina", summarizes his long-term professional interest in retinal development and the experimental application of in vitro organoids. The thesis is an annotated summary of 6 publications focused on the surgical treatment of stenosis or occlusion of the supply cerebral arteries.

The habilitation thesis is based on three manuscripts published in past four years in high-impact, peer-reviewed international science journals. The author presents how the development of protocols for the in vitro generation of retinal organoids has significantly advanced retina-focused research. It begins with a well-structured introduction to the development, anatomy, and physiology of the human retina, including the roles of individual retina-specific cell types. It provides an overview of the history, generation, and use of pluripotent stem cell-derived retinal organoids as a model for studying human retinal development, function and disease.

In the second part of the thesis, using state-of-the art methods, Mgr. Bárta presents findings that evidence the role of miRNAs in human retina development, particularly identifying the miR-183/96/182 cluster as regulator of PAX6 expression, a key transcription factor in retinal morphogenesis. He also investigates how different wavelengths of light induce specific miRNAs, thereby influencing the regulation of circadian rhythms. Finally, he demonstrated how retinal organoid technology can be combined with mouse models to study the functions of retina-specific proteins in great detail.

The habilitation thesis was reviewed by three respected experts in the field of retinal development, retinal diseases, and the application of pluripotent stem cell-derived organoids. All reviewers agreed that the habilitation thesis of Mgr. Tomáš Bárta Ph.D., presents new and valuable knowledge in the field of retinal development, cellular interactions, and their functions. They also praised the thesis for its concise and precise use of language and its high formal quality. Based on all three reviews, the submitted habilitation thesis meets the standard requirements for habilitation theses in the field of Anatomy, Histology and Embryology at the Faculty of Medicine, Masaryk University.

Conclusion: The applicant's habilitation thesis **meets** the requirements expected of habilitation theses in the field of Anatomy, Histology and Embryology.

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Habilitation Board Decision on the Nomination for Appointment to Associate Professor

Secret vote results

Voting took place: electronically

Number of board members		5
Number of votes cast		5
of which	in favour	5
	against	0

Board decision

Based on the outcome of the secret vote and following an evaluation of the applicant's scholarly or artistic qualifications, pedagogical experience and habilitation thesis, the board hereby submits a proposal to the Scientific Board of the Faculty of Medicine of Masaryk University to **appoint the applicant associate professor** of Anatomy, Histology and Embryology.

In Brno on 24.06.2025

prof. RNDr. Petr Dubový, CSc. .....