

Masaryk University	
Faculty	Faculty of Science
Procedure field	Environmental Health Sciences
Applicant	Stanislav Mazurenko
Applicant's home unit, institution	Faculty of Science, Masaryk University
Habilitation thesis	Advanced Data Modelling for Protein Engineering
<u>Board members</u>	
Chair	prof. RNDr. Robert Vácha, PhD. <i>Faculty of Science, Masaryk University</i>
Members	doc. Ing. Vlad Calin Popovici, PhD <i>Faculty of Science, Masaryk University</i> Mgr. Tomáš Pluskal, Ph.D. <i>IOCB</i> Mgr. Jan Brezovský, Ph.D. <i>Adam Mickiewicz University</i> Prof. Sílvia Osuna, PhD <i>Universitat de Girona</i>

Evaluation of the applicant's scholarly/artistic qualifications

Stanislav Mazurenko received his Candidate of Science degree in 2013 from M. V. Lomonosov Moscow State University, where he studied differential equations, dynamical systems and optimal control. He also holds a specialist degree in Applied Mathematics and Informatics from the same university (2009) and an MA in Economics, summa cum laude, from the New Economic School in Moscow (2011). He joined the Loschmidt Laboratories at RECETOX, Faculty of Science, Masaryk University, as a postdoctoral researcher in 2014. After working as a Research Associate at the University of Liverpool in 2017–2018, he returned to Brno as an MSCA@MUNI Fellow. Since 2021, he has led the AI in Protein Engineering team at the Loschmidt Laboratories and has also served as Head Researcher at the International Clinical Research Center of St. Anne's University Hospital in Brno.

Dr. Mazurenko applies advanced data modelling and machine learning to protein engineering. His research includes prediction of mutation effects on protein stability, solubility and activity, generative protein design, machine-learning analysis of molecular dynamics simulations, and mathematical modelling of biophysical and biochemical data. His work closely integrates computation with experiment. His team has developed curated databases, modelling and benchmarking tools, including FireProtDB, SoluProtMutDB, CalFitter and BenchStab, and has validated computational predictions experimentally, often using high-throughput microfluidics. One notable example is the design of dehalogenase variants with improved stability and activity using variational autoencoders. Several of these methods are available as freely accessible web tools.

Dr. Mazurenko has published 37 original papers indexed in the Web of Science, including 28 in first-quartile and 6 in second-quartile journals. He is first, sole or last author of 15 papers. His publications span leading journals in protein science, biotechnology and computational biology, including Nature Catalysis, ACS Catalysis, JACS Au, Nucleic Acids Research, Bioinformatics, Briefings in Bioinformatics and Biotechnology Advances, as well as mathematical journals such as SIAM Journal on Optimization. His work has received more than 1000 citations (without self-citations) and an h-index of 16 in Web of Science.

His international profile is further demonstrated by his co-editorship of a 2024 ACS Synthetic Biology special issue on artificial intelligence for synthetic biology, an invited commentary in Nature Communications in 2025, and his participation in international initiatives such as the DOME recommendations for reporting machine learning in biology. He collaborates with researchers at institutions including the Technical University of Denmark, ETH Zürich, the University of Greifswald and the Czech Technical University in Prague. His team also participates in the Horizon Europe project CLARA.

Conclusion: The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Environmental Health Sciences.

Evaluation of the applicant's pedagogical experience

Dr. Mazurenko has taught at the Faculty of Science, Masaryk University, since 2019. He lectures and leads practical training in Artificial Intelligence in Biology, Chemistry, and Bioengineering for students across Bachelor's, Master's and doctoral programmes. He also contributes to courses in Molecular Biotechnology and Synthetic Biology and participates regularly in the research seminars of the Loschmidt Laboratories. He has developed e-learning materials, lecture notes and tutorials on artificial intelligence and its applications in biology and synthetic biology. He also contributes to science communication, including public discussions on the role of machine learning in protein engineering.

At the point of submission of the thesis, Dr. Mazurenko has supervised two Bachelor students, two Master students and one PhD student, who successfully defended (since the thesis submission more PhD students have defended). His doctoral students work primarily on machine-learning methods for protein design and analysis and publish their results as first authors in high-quality scientific journals.

Conclusion: The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Environmental Health Sciences.

Habilitation thesis evaluation

The submitted habilitation thesis, "Advanced Data Modelling for Protein Engineering", comprises 11 published research articles accompanied by a critical commentary. It presents Dr. Mazurenko's contributions to computational methods for protein engineering, developed mainly at Masaryk University between 2015 and 2025. The work combines two complementary approaches: low-parameter modelling based primarily on biophysical principles and data-driven modelling based on machine learning. It covers the analysis of experimental biophysical data, curated datasets and benchmarks, prediction of mutation effects, machine-learning analysis of molecular simulations, and generative approaches to protein design. The commentary places these contributions in the broader context of the field and discusses their limitations and future development. Dr. Mazurenko played a major role in the underlying studies, including study design, development of mathematical frameworks and algorithms, and supervision of data-modelling and machine-learning components.

The habilitation board evaluated the thesis positively, in agreement with all three international reviewers: Prof. Armita Nourmohammad (University of Washington, USA), Prof. Fabrizio Pucci (Université Libre de Bruxelles, Belgium), and Prof. Aalt-Jan van Dijk (Wageningen University & Research, the Netherlands). Dr. Mazurenko addressed all reviewers' questions and comments during the public habilitation lecture.

Conclusion: The applicant's habilitation thesis **meets** the requirements expected of habilitation theses in the field of Environmental Health Sciences.

Secret vote results

Voting took place: electronically

Number of board members	5
Number of votes cast	5
of which	5
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 Science of Masaryk University to **appoint the applicant associate professor** of Environmental Health Sciences.

Digitally signed by

prof. RNDr. Robert Vácha PhD.

In Brno on 08.10.2026

prof. RNDr. Robert Vácha, PhD.

..

08.10.2026

.....