Habilitation Board Decision on the Nomination for Appointment to Associate Professor

Masaryk University	
Faculty	Faculty of Science
Procedure field	Molecular Biology and Genetics
Applicant	Mgr. Pavel Dvořák, Ph.D.
Applicant's home unit, institution	Faculty of Science, Masaryk University
Habilitation thesis	Engineering bacteria, their enzymes, and metabolic pathways for biotechnological processing of waste compounds

Board members

Chair	prof. RNDr. Jiří Doškař, CSc. *Faculty of Science, Masaryk University*
Members	doc. Mgr. Monika Vítězová, Ph.D. *Faculty of Science, Masaryk University* prof. RNDr. Tomáš Cajthaml, Ph.D. *Institute for Environmental Studies, Faculty of Science, Charles University* prof. Ing. Kateřina Demnerová, CSc. *Department of Biochemisty and Microbiology, UCT Prague* Dr. Jose Jiménez Zarco *Faculty of Natural Sciences, Department of Life Sciences, Imperial College London, UK*

Evaluation of the applicant's scholarly/artistic qualifications

Pavel Dvořák completed his bachelor's (2007) and master's (2009) studies in the field of Molecular Biology and Genetics and then his doctoral (2014) studies in the field of Molecular and Cell Biology at the Faculty of Science, Masaryk University. He developed his student projects in Loschmidt laboratories under the guidance of prof. Jiří Damborský, which focuses on the study of biotechnological processes carried out by environmental bacteria and their enzymes.

During his studies, he was employed as a researcher at several workplaces of the Faculty of Science MU (RECETOX) and the Faculty of Medicine MU (FNUSA-ICRC). After completing his studies, in the years 2015–2018 he spent a total of 3.5 years as part of Marie-Sklodowska Curie scholarship stay and as a postdoc at the Molecular Environmental Microbiology Laboratory, Centro Nacional de Biotecnologia in Spain (Madrid). Since 2019 he is a group leader and PI in Microbial Bioengineering Laboratory, which he established in the Section of Microbiology at the Faculty of Science, MU.

In his research, Dr. Dvořák systematically focuses primarily on application of protein and metabolic engineering, and synthetic biology into the field of biodegradation and bioremediation of waste compounds. His works contributed significantly to the preparation of more efficient biocatalysts for the degradation of some toxic anthropogenic waste chemicals such as degradation of TCP by genetically engineered E. coli.

One of his very important studies based on metabolic engineering and synthetic biology approaches were adopted to upgrade environmental bacterium Pseudomonas putida for biotechnological processing of diverse lignocellulosic substrates. Some of his works are conceptually completely new and prove his great invention.

To date he published the results of his scientific work in a total of 16 original research articles in international journals. Furthermore, he published 3 very positively rated and cited reviews and one opinion article. His articles have a total impact of IF= 134 and have collected in total 765 citations (Scopus database, without self-citations, H index 12). He is the first or corresponding author of 12 works in prime biotechnology and chemistry journals. These papers report important contributions to the respective research fields.

He also presented his results in the form of 31 conference papers, most of which he presented abroad.

Dr. Dvořák is a successful applicant for grant projects. He was the successful PI of the GAČR Junior Project grant (2019–2021) and is currently the PI of two other projects (GAČR and GAMU MASH Junior) and leader of one GAČR project subteam.

The originality of the achieved results of his scientific work and the real possibilities of their practical applications in the field of biotechnology is evidenced by the fact that he is the principal holder or co-holder of 3 patents (2 foreign) and the main author of 9 functional samples.

In the field of biotechnology, Dr. Dvořák cooperates intensively with foreign workplaces. He completed one short-term (3 months) and one long-term (2015–2018) postdoctoral stay in Centro Nacional de Biotecnologia, and short-term study stays in Lyngby Denmark, Rehovot Israel and München Germany.

The habilitation board notes that Dr. Dvořák is a very successful and promising scientist who is able to very effectively manage the team he founded and achieve new and valuable findings, which he publishes in international journals, and which have a real application potential in the environmental field.

Dr. Dvořák has been awarded several prizes and honours for his work since 2014. He received the Masaryk Award in Science and Humanities Junior (2021), award for Young Czech and Slovak Microbiologist of the year 2017, the Sigma-Aldrich and Czech Society for Biochemistry and

Molecular Biology award of Gerty T. and Carl F. Cori in the field of biochemistry and molecular biology, an award for Top Paper in Environmental Science and Technology journal, and three Awards of the Dean of the Faculty of Science, Masaryk University.

Conclusion: The applicant's scholarly/artistic capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Molecular Biology and Genetics.

Evaluation of the applicant's pedagogical experience

Dr. Dvořák has been teaching at the Faculty of Science MU since 2013. He contributes with a lecture to the course Molecular biotechnology (since 2013), he teaches a semestral course and a practice in Special methods of microorganisms analysis (since 2019) and another semestral course Introduction to the metabolic engineering and synthetic biology (since 2020), which he prepared independently as a new subject introduced into the study programme for the students of Microbiology, Molecular biology and genetics, and Biochemistry.

He has been working since 2019 as a supervisor of students' projects. During the last 4 years, he supervised 6 bachelor and 7 diploma theses, and he is currently the supervisor of 3 PhD students.

He is the author of electronic teaching texts (presentations) for the subjects he teaches. He popularizes the field of his research in the form of presentations and lectures for public, and he has also published popular articles in domestic journals.

As part of his educational activities for students, he was a chairman and/or a member of the organizing committees of six student scientific conferences and seminars. He was also one of three principal supervisors of the first Brno iGEM team of undergraduate students, who took one of the first places in the international competition among 500 participants all over the world.

Since 2019, he has been a member of state examination boards for bachelor's and master's studies in Microbiology study programme.

Dr. Dvořák also demonstrated his pedagogical skills in his lecture for a wider professional public, which was evaluated very positively by both the members of the habilitation board and the audience.

Conclusion: The applicant's pedagogical capabilities **meet** the requirements expected of applicants participating in a habilitation appointment procedure in the field of Molecular Biology and Genetics.

Habilitation thesis evaluation

The habilitation thesis was assessed by three opponents: prof. Ivana Márová (Faculty of Chemistry, Brno University of Technology), prof. Peter Šebo (Institute of Microbiology of the Czech Academy of Sciences, Prague), and prof. Petra Patáková (Department of Biotechnology University of Chemistry and Technology, Prague) who are among the internationally recognized experts in the issue that the applicant deals with in his scientific research work.

The assessment of all opponents shows that the topic of the work is current and the presented results, supported by the attached publications, are original and highly valuable, and are thus accepted by the professional public as can be seen from their high citations. All opponents appreciate the high level of scientific competence and research skills, the applicant's long-term and systematic work in bioengineering and synthetic biology, his broad outlook in the field of environmental and molecular microbiology, and his invention and methodical erudition.

Conclusion: The applicant's habilitation thesis **meet** the requirements expected of habilitation theses in the field of Molecular Biology and Genetics.

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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 Science of Masaryk University to **appoint the applicant associate professor** of Molecular Biology and Genetics.

In Brno on 02.02.2023

prof. RNDr. Jiří Doškař, CSc. .....