Study programme: MOLECULAR AND TRANSLATIONAL MEDICINE

ANNOTATION

The doctoral study programme „Molecular and Translational Medicine“ is focused on understanding the molecular basis of human diseases, diagnostics and therapy. It focuses on the identification and validation of new molecular targets, biomarkers of diseases, innovative therapeutic approaches, health informatics, data analysis and personalized medicine. The field emphasizes the development of scientific and critical thinking of postgraduate students and deepens their theoretical and practical knowledge. Additional information on topics and the study programme are available at https://imtm.cz/careers/doctoral.

ADMISSION PROCEDURE 2025/2026

Contact details of the training department:

Institute of Molecular and Translational Medicine, Faculty of Medicine and Dentistry, Palacký University Olomouc, Hněvotínská 5, Olomouc, phone: +420 585 632 081

Dissertation topic/s of the training department:

1. **The Importance of PD1 Signaling in the Immune Response against Solid Tumors**
   1 position in full-time form of study and 1 position in part-time form of study
   Supervisor: prof. Juan Bautista De Sanctis, Ph.D.

2. **Liquid Biopsy in Experimental and Clinical Oncology**
   2 positions in full-time form of study
   Supervisor: MUDr. Josef Srovnal, Ph.D.

3. **Novel Prognostic and Predictive Markers in Solid Cancer**
   2 positions in full-time form of study
   Supervisor: MUDr. Josef Srovnal, Ph.D.

4. **Natural Products with Anticancer Activity**
   2 positions in full-time form of study
   Supervisor: doc. RNDr. Milan Urban, Ph.D.

5. **DNA Replication in Human Pathophysiology**
   1 position in full-time form of study
   Supervisor: Ing. Pavel Moudrý, Ph.D.

6. **Axonal Transport in Neurodegeneration**
   1 position in full-time form of study and 1 position in part-time form of study
   Supervisor: Gorazd Bernard Stokin, Ph.D.

7. **Role of Amyloid Precursor Protein in Astrocytes**

1 position in full-time form of study and 1 position in part-time form of study

Supervisor: Gorazd Bernard Stokin, Ph.D.

8. **Identification of New Derivatives Targeting Precancerous and Tumor Lesions and Identification of their Mechanism of Action**

2 positions in full-time form of study

Supervisor: MUDr. Petr Džubák, Ph.D.. Doc. MUDr. Marián Hajdúch, PhD.

9. **Mitochondrial-microglial Dysfunctions in Tauopathies: Effects of Pathogenic TAU Strains**

1 position in full-time form of study

Supervisor: Viswanath Das, M.Sc., Ph.D.

10. **Analysis of Morphological Profiles of Compounds**

1 position in full-time form of study

Supervisor: Pavlo Polishchuk, M.Sc., Ph.D.

11. **Structural Optimization of Compounds to Improve their Biological Activity Profiles**

1 position in full-time form of study

Supervisor: Pavlo Polishchuk, M.Sc., Ph.D.

12. **Prediction of Compound Properties Based on Assembly of Molecular Representations**

1 position in full-time form of study

Supervisor: Pavlo Polishchuk, M.Sc., Ph.D.

13. **Innovative Multicomponent Reactions for Applications in Drug Discovery.**

1 position in full-time form of study

Supervisor: prof. Alexander Dömling, Ph.D.

14. **Innovative Scaffold Development Using MCR Chemistry for Various Drug Targets**

1 position in full-time form of study

Supervisor: Pravin Hasuram Patil, Ph.D.

15. **Novel Chemo- and Bioinformatic Tools for Innovative Drug Discovery**

1 position in full-time form of study

Supervisor: Vijayendar Venepally, Ph.D.

16. **The Natural and Artificial Degradation of Tubulin**

1 position in full-time form of study

Supervisor: prof. Alexander Dömling, Ph.D.

17. Analysis of Cancer Biomarkers Using Plasmonic 2D Nanomaterials
1 position in full-time form of study
Supervisor: doc. RNDr. Václav Ranc, Ph.D.

18. Identification of Cellular Stress Response Pathways Relevant to Cancer Cell Survival
1 position in full-time form of study
Supervisor: Mgr. Martin Mistrík, Ph.D.

19. New Prognostic and Predictive Factors in Solid Tumors
2 positions in full-time or part-time form of study
Supervisors: doc. MUDr. Marián Hajdúch, Ph.D.

20. Identification of Molecular Targets and Resistance Mechanisms of Anticancer Drugs by Cell Biology and Proteomics Methods
1 position in full-time form of study
Supervisor: doc. MUDr. Marián Hajdúch, Ph.D.

21. Anticancer Drugs Targeting Nucleic Acid Metabolism
1 position in full-time form of study
Supervisors: doc. MUDr. Marián Hajdúch, Ph.D.

22. Bioinformatics Processing of Big Data in Clinical and Preclinical Studies
2 positions in full-time or part-time form of study
Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., RNDr. Petr Pavliš, Ph.D., Mgr. Jana Vrbková, Ph.D.

23. Diagnosis and Treatment of Rare Diseases
2 positions in full-time form of study
Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Josef Srovnal, Ph.D.

24. Absolute and Relative Information in Metabolomic Data of Rare Diseases
1 position in full-time of study
Supervisor: prof. RNDr. Tomáš Adam, PhD.

25. Research and Development of Agents for Cancer, Neurodegenerative and Infectious Diseases
3 positions in full-time form of study
Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Petr Džubák, Viswanath Das, M.Sc., Ph.D.

Application deadline: **May 15, 2025**

Date and location of the entrance examination: **June 4, 2025** – 10:00 AM
Institute of Molecular and Translational Medicine, Faculty of Medicine and Dentistry, Palacký Univesity Olomouc, Hněvotínská 5, Olomouc, alternatively online.

Anticipated maximum number of admitted students:

Full-time form: max. **34** students
Part-time form: max. **7** students

Examination format: oral (onsite or online)

Contents of entrance exam:
- basics of individual fields - molecular and translational medicine, eventually medicinal chemistry, bioinformatics and informatics depending on selected topic
- knowledge of the topic the candidate is applying for
- language skills (especially English)

Evaluation criteria:

The level of general professional knowledge will be evaluated according to the result of the admission procedure and interview, the applicant's aptitude for scientific work, the applicant's previous experience with scientific and professional work (diploma thesis, professional lectures and publications, applicant's scientific activities, motivation, etc.), language skills, preconditions for graduation. Students will be admitted to the study based on the above criteria, capacity of the supervisors and the training facility.

The annual tuition fee for the post-graduate study programme conducted in English is set at EUR 100.