

Study program: MOLECULAR AND TRANSLATIONAL MEDICINE

ANNOTATION

The doctoral study program „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.

ADMISSION PROCEDURE 2024/2025

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. Cellular Fluxomic Analysis for Research of Pathobiochemical Processes

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

Supervisor: prof. RNDr. Tomáš Adam, Ph.D.

2. New Prognostic and Predictive Factors in Solid Tumors

3 positions in full-time or part-time form of study

Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Josef Srovnal, Ph.D., Mgr. Vladimíra Koudeláková, Ph.D.

3. Genetic and Epigenetic Biomarkers in Health and Disease

5 positions in full-time or part-time form of study

Supervisors: Ing. Rastislav Slavkovský, Ph.D., MUDr. Petr Džubák, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D., prof. Mgr. Jiří Drábek, Ph.D., Mgr. Vladimíra Koudeláková, Ph.D.

4. Identification of Molecular Targets and Resistance Mechanisms of Anticancer Drugs by Cell Biology and Proteomics Methods

2 positions in full-time form of study

Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Petr Džubák, Ph.D.

5. Explainable Artificial Intelligence Approaches in Chemoinformatics

1 position in full-time form of study

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

6. The Role of Tumor Hypoxia in the Development of Acquired Resistance to Microtubule-Targeted Drugs

1 position in full-time form of study

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

7. Identification of Proteomic Biomarkers in Exhaled Breath Condensate Patients with Systemic or Pulmonary Disease

2 positions in full-time form of study

Supervisors: MUDr. Petr Džubák, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D.

8. Anticancer Drugs Targeting Nucleic Acid Metabolism

2 positions in full-time form of study

Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Petr Džubák, Ph.D.

9. Bioinformatics Processing of Big Data in Clinical and Preclinical Studies

3 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.

10. Search and Characterization of Compounds for the Therapy of Congenital or Acquired Diseases Caused by Aberrant pre-mRNA Editing

1 position in full-time form of study

Supervisor: Mgr. Jiří Voller, Ph.D.

11. DNA Damage Signaling in the Cellular Response to Stress

2 positions in full-time form of study

Supervisor: Mgr. Martin Mistrík, Ph.D.

12. Cellular Stress in Health and Disease

2 positions in full-time form of study

Supervisors: Mgr. Martin Mistrík, Ph.D., Mgr. Zdeněk Škrott, Ph.D.

13. Physiology and Pathophysiology of Ageing

2 positions in full-time form of study

Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., Mgr. Jiří Voller, Ph.D.

14. Drug Repurposing for Treatment and Prevention of Diseases

2 positions in full-time form of study

Supervisors: doc. MUDr. Marián Hajdúch, Ph.D., Ing. Soňa Gurská, Ph.D.

15. Biologically Active Molecules and their Therapeutic Combinations

2 positions in full-time form of study

Supervisor: doc. MUDr. Marián Hajdúch, Ph.D.

16. Multi-Instance Learning in Chemoinformatics

3 positions in full-time form of study

Supervisors: doc. RNDr. Milan Urban, Ph.D., doc. RNDr. Václav Ranc, Ph.D., Pavlo Polishchuk, M.Sc., Ph.D.

17. 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.

18. Multimodal Imaging Methods for Preclinical Testing of New Bioactive Molecules

2 positions in full-time form of study

Supervisors: PharmDr. Zbyněk Nový, PharmDr. Miloš Petřík, Ph.D.

19. Ligand- and Structure-Based Modeling of Biologically Active Compounds

1 position in full-time form of study

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

20. Omics Approaches in Reproductive Medicine

2 positions in full-time form of study

Supervisors: Mgr. Tomáš Oždian, Ph.D., doc. MUDr. Jiří Dostál, CSc.

21. Liquid Biopsies in Experimental and Clinical Oncology

2 positions in full-time or part-time form of study

Supervisors: MUDr. Josef Srovnal, Ph.D., Mgr. Vladimíra Koudeláková, Ph.D.

22. Synthesis and Characterization of 2D Nanoplatfoms as Active Drug Carriers

3 positions in full-time or part-time form of study

Supervisors: doc. RNDr. Václav Ranc, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D.

23. Plasmonic Nanomaterials in Cancer Theranostics

2 positions in full-time or part-time form of study

Supervisors: doc. RNDr. Václav Ranc, Ph.D., PharmDr. Miloš Petřík, Ph.D.

24. Preclinical Development of Molecular Imaging Agents

2 positions in full-time form of study

Supervisors: PharmDr. Miloš Petřík, Ph.D.

25. Identification of Proteomic Biomarkers in Proximal Fluids and Tissues

2 positions in full-time form of study

Supervisors: MUDr. Petr Džubák, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D.

26. Study of Basic Pharmacokinetic Properties (ADME) of New Drugs in Preclinical Development

1 position in full-time form of study

Supervisor: Mgr. Barbora Lišková, Ph.D.

27. Search and Study of the Mechanism of Action of New Circadian Rhythm Modulators for the Therapy of Civilization Diseases

1 position in full-time form of study

Supervisor: Mgr. Jiří Voller, Ph.D.

28. Search and Study of the Mechanism of Action of Substances Affecting the Viability and Motility of Human Spermatozoa

1 position in full-time form of study

Supervisor: Mgr. Jiří Voller, Ph.D.

29. An Application of Untargeted Lipidomics & Metabolomics and as a Hypotheses Generation Tool in Personalised Medicine

1 position in full-time form of study

Supervisor: Mgr. Lukáš Najdekr, Ph.D.

30. Applied Lipidomics Approach in the Search for Novel Clinical Biomarkers and Structure Elucidation of Unknown Lipid Species

1 position in full-time form of study

Supervisor: Mgr. Lukáš Najdekr, Ph.D.

31. New Methods in Protein Degradation

2 positions in full-time form of study

Supervisors: Mgr. Dušan Holub, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D.

32. Innovative Approaches to Protein Interaction Modifiers

1 position in full-time form of study

Supervisors: MUDr. Petr Džubák, Ph.D., Mgr. Jana Václavková, Ph.D.

33. Utilization of the Space of Unprecedented Covalent Inhibitors

1 position in full-time form of study

Supervisor: MUDr. Petr Džubák, Ph.D.

34. Research and Development of Agents for Cancer, Neurodegenerative and Infectious Diseases

5 positions in full-time form of study

Supervisors: prof. Juan DeSanctis, Ph.D., doc. MUDr. Marián Hajdúch, Ph.D., MUDr. Petr Džubák, doc. RNDr. Milan Urban, Ph.D., Viswanath Das, M.Sc., Ph.D.

35. New Chemoinformatics Approaches to Fragment-Based Drug Discovery

1 position in full-time form of study

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

36. Role of Axonal Transport and Pathology in Neurodegeneration

2 positions in full-time form of study

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

37. Systems Approaches to Understanding Aging and Neurodegeneration

2 positions in full-time form of study

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

38. DNA Replication in Human Pathophysiology

1 position in full-time form of study

Supervisor: Ing. Pavel Moudrý, Ph.D.

39. Epigenetic Biomarkers of Age

1 position in full time form of study

Supervisor: prof. Mgr. Jiří Drábek, Ph.D.

Application deadline:

15 May 2024

Date and location of the entrance examination:

5 June 2024 – start at 10:00 a.m., Institute of Molecular and Translational Medicine, Faculty of Medicine and Dentistry, Palacký University Olomouc, Hněvotínská 5, Olomouc, alternatively online.

Anticipated maximum number of admitted students:

Full-time form: max. 25 students

Part-time form: max.5 students

Examination format: oral (onsite or online)

Contents of entrance exam:

- basics of individual fields - molecular and translational medicine
- 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.