

Expression of Interests (Eoi)

COOPERATION OFFER CALLS of HORIZON EUROPE 2023/24

[Maj Institute of Pharmacology, Polish Academy of Sciences, Kraków, Poland \(IP PAS\)](#)

[Department of Pharmacokinetics and Drug Metabolism](#)

WE SEEK FOR OTHER PARTNERS INTERESTED IN THE FOLLOWING CALLS:

[HORIZON-HLTH-2023-DISEASE-07-01](#): European Partnership on Rare Diseases (deadline: 19 September 2023)

[HORIZON-HLTH-2024-DISEASE-03-13-two-stage](#): Validation of fluid-derived biomarkers for the prediction and prevention of brain disorders (deadline for a pre-proposal: 19 September 2023)

[HORIZON-HLTH-2024-TOOL-05-06-two-stage](#): Innovative non-animal human-based tools and strategies for biomedical research (deadline for a pre-proposal: 19 September 2023)



**MAIN AREAS OF EXPERTISE OF THE DEPARTMENT OF PHARMACOLOGY AND DRUG METABOLISM
IN THE CONTEXT OF THE CALL**

- **measurement of drugs and their metabolite concentration in biological material** (plasma, brain, other tissues) using high-performance liquid chromatography (HPLC) with UV or fluorimetric detection and liquid chromatography coupled to LC/ESI-MS/MS tandem mass spectrometry;
- **determination of monoaminergic neurotransmitters and their metabolite levels** in plasma and brain structures, using high-performance liquid chromatography (HPLC) with electrochemical (coulometric) detection;
- **in vitro measurement of cytochrome P450 enzyme activity**, using recombinant cytochrome P450 enzymes, liver and brain microsomes, lymphocyte cells, hepatocytes and neuronal cells. Determination of specific substrates related to cytochrome P450 enzymes and their metabolites formed during enzymatic reaction using high performance liquid chromatography (HPLC) with UV or fluorimetric detection and liquid chromatography coupled to tandem mass spectrometry (LC/ESI-MS/MS);
- **measurement of brain and liver expression of cytochrome P450 genes**, nuclear receptors and transcription factors (Western blotting, qRT-PCR);
- **determination of serum hormones and cytokines** (ELISA).

BRIEF DESCRIPTION OF IP PAS

Maj Institute of Pharmacology, Polish Academy of Sciences specializing in neuro- and psychopharmacology. Scientific investigations focus on the nervous system disorders and the search



for new biologically active substances that act on the central nervous system and can be used in the treatment of neurological and psychiatric conditions. The Institute's research priorities include **depression, schizophrenia, chronic pain, drug and natural rewards and addiction**. Further, study areas involve **anxiety, post-traumatic stress disorder, neurodegenerative and immunoendocrine processes and phytochemistry**. The Institute's scientific activity promotes the search for innovative therapeutic strategies and biomarkers of certain pathological processes in the central nervous system using genomics, proteomics and transcriptomics. Modern infrastructure and broad spectrum of *in vitro* and *ex vivo* research technics, such as flow cytometry, mass spectrometry, confocal and fluorescence microscopy, optogenics, microdialysis, chromatography, immunohistochemistry, modern electrophysiological methods, transgenic models and bioinformatics tools, available in the Institute, enable study of brain function at multiple levels.

OUR COMMITMENT

We are interested in joining the existing or planned consortium. Our experience and commitment will help with many research tasks. We have a strong methodological background and use advanced techniques to help achieve the necessary expected outcomes. Our expertise is extensive, as described above.

Expected Outcomes:

[HORIZON-HLTH-2023-DISEASE-07-01](#): European Partnership on Rare Diseases (deadline: 19 September 2023) - We are able to determine the pharmacokinetic parameters of new drug candidates, their metabolism and the effect on the metabolism of other drugs (DDI) in *in vitro* and *in vivo* tests/models in the liver, brain, lymphocyte cells and other tissue. Our involvement will be required in the first stages of the project.

[HORIZON-HLTH-2024-DISEASE-03-13-two-stage](#): Validation of fluid-derived biomarkers for the prediction and prevention of brain disorders (deadline for a pre-proposal: 19 September 2023) - We are able to perform comprehensive proteomic and transcriptomic analyzes of patient samples.

[HORIZON-HLTH-2024-TOOL-05-06-two-stage](#): Innovative non-animal human-based tools and strategies for biomedical research (deadline for a pre-proposal: 19 September 2023) - We are able to provide innovative solutions in the field of cell culture in 3D, in particular, we offer willingness and assistance in developing spheroidal hepatocyte and neuronal cell cultures. In addition, we can determine the long-term effects of the new substances/compounds on these created systems, in particular, their impact on cell viability, function, and metabolism.

CONTACT PERSON

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