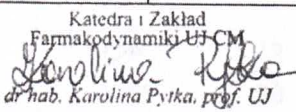


Annex no 1 to the Rules for submitting research topics
for admission to the Doctoral School of Medical and Health Sciences programmes
for the academic year 2022/2023

Research topic submission form by holders of a post-doctoral habilitation or professor degree for the doctoral programme in the discipline of medical sciences, <u>pharmaceutical sciences</u>, health sciences <i>Underline the applicable</i>	
Title/degree Full Name	Dr hab. Karolina Pytka, prof. JU
Submitter <i>please select the relevant category</i>	<p><u>JU Medical College employee with a professor or post-doctoral habilitation degree who has declared that their academic achievements correspond at least 75% with the doctoral programme discipline in which the topic is submitted</u></p> <p><input type="checkbox"/> a person with a professor or post-doctoral habilitation degree who does not fulfil the conditions specified in the previous section and is employed in a university or academic institution in Poland, and who has declared to affiliate at least 25% of their academic achievements to the discipline relevant for the doctoral programme, and who will present the consent of the person fulfilling the criteria specified in point 1a to act as the auxiliary supervisor</p>
Date of obtaining a) doctoral degree	25.02.2013
b) post-doctoral habilitation degree	26.02.2018
c) professor degree	-
Place of employment:	Department of Pharmacodynamics, JU MC
E-mail address:	karolina.pytka@uj.edu.pl
Contact phone:	+48 12 62-05-538
Academic achievements: List of max 5 publications from the last 3 calendar years	<ol style="list-style-type: none"> 1. Gluch-Lutwin M, Sałaciak K, Gawalska A, Jamrozik M, Snieciowska J, Newman-Tancredi A, Kołaczowski M, Pytka K. The selective 5-HT_{1A} receptor biased agonists, F15599 and F13714, show antidepressant-like properties after a single administration in the mouse model of unpredictable chronic mild stress. <i>Psychopharmacology (Berl)</i>. 2021 Aug;238(8):2249-2260. doi: 10.1007/s00213-021-05849-0. Epub 2021 May 10. 2. Sałaciak K, Pytka K. Revisiting the sigma-1 receptor as a biological target to treat affective and cognitive disorders. <i>Neuroscience & Biobehavioral Reviews</i>. 2022 Jan;132:1114-1136. doi: 10.1016/j.neubiorev.2021.10.037. 3. Sałaciak K, Pytka K. Biased agonism in drug discovery: Is there a future for biased 5-HT_{1A} receptor agonists in the treatment of neuropsychiatric diseases? <i>Pharmacology and Therapeutics</i>. 2021. doi: 10.1016/j.pharmthera.2021.107872 4. Sałaciak K, Gluch-Lutwin M, Siwek A, Szafarz M, Kazek G, Bednarski M, Nowiński L, Mitchell E, Jastrzębska-Więsek M, Partyka A, Wesołowska A, Kołaczowski M, Szkaradek N, Marona H, Sapa J, Pytka K. The antidepressant-like activity of chiral xanthone derivatives may be mediated by 5-HT_{1A} receptor and

	<p>β-arrestin signalling. <i>Journal of Psychopharmacology</i>. 2020 Dec;34(12):1431-1442. doi: 10.1177/0269881120959605</p> <p>5. Pytko K, Dawson N, Tossell K, Ungless MA, Plevin R, Brett RR, Bushell TJ. Mitogen-activated protein kinase phosphatase-2 deletion modifies ventral tegmental area function and connectivity and alters reward processing. <i>European Journal of Neuroscience</i>. 2020 Jan 27. doi: 10.1111/ejn.14688.</p>
Impact Factor summary	183.191
Web of Science Core Collection index	769
Hirsch index	15
Number of promoted PhD degree holders:	2 (auxiliary supervisor)
Number of promoted MA degree holders:	8
Proposed research topic	Investigating the effect of HBK-15, a multimodal compound with antidepressant-like properties, on executive functions in rodents.
Please provide reasons for the topic-discipline compliance (max. 100 words)	The project aims to assess the effect of HBK-15 on the executive functions in rodents. The compound has shown unique properties in our previous studies, i.e., it induced rapid antidepressant-like and procognitive effects in rodents. The knowledge gained during the project will form the basis for the future synthesis of new, fast-antidepressants that will also improve cognition, which is often impaired depressed individuals. This, in turn, could lead to the development of new drugs.
A brief description of research methods (max. 250 words)	<p>The project includes research on HBK-15, a multimodal compound that showed rapid antidepressant-like, anxiolytic-like, and procognitive effects in our previous experiments in rodents. However, the effect of the compound on executive functions in rodents has not been investigated yet. Considering the above, this project will investigate the influence of HBK-15 on executive functions in rodents and the cellular mechanisms responsible for these effects.</p> <p>The project will use animal tests to assess the influence of HBK-15 on executive functions in rodents, i.e., working memory, cognitive flexibility, and attention. The project assumes performing stereotaxic surgeries and intracerebral administration to determine the mechanism of action of the compound. Moreover, the levels and expressions of selected proteins essential for regulating memory processes will be determined. For this purpose, immunohistochemical, immunoassays, and real-time PCR methods will be used.</p>
Expected place for the project implementation:	Department of Pharmacodynamics, JU MC
Tasks description for the PhD student	<p>The scope of the doctoral student's duties will include:</p> <ul style="list-style-type: none"> • conducting <i>in vivo</i> experiments (tests assessing executive functions in rodents, stereotaxic surgeries, intracerebral administration) • tissue collection • performing transcardial perfusion • performing immunohistochemical experiments, ELISA, and real-time PCR on collected tissues • data analysis and preparation of abstracts on conferences, publications, and reports

Expectations towards the PhD student: specific skills and experience (the description of expectations cannot indicate a specific candidate).	Expectations towards the PhD student: <ul style="list-style-type: none"> • experience in conducting experiments on animals • knowledge of psychopharmacology and pathomechanisms of memory disorders • experience in performing immunoassays and PCRs • sufficient knowledge of the English language allowing reading scientific literature, writing publications, and presentation of results at scientific conferences 	
Temporary availability of the PhD student (number of hours/weeks) necessary for the project implementation	32 h/week	
Does the research project require PhD student's independent performance of medical procedures?	<u>NO *</u>	<u>YES *</u>
Does the research project require PhD student's professional licence?	<u>NO *</u>	<u>YES *</u> <i>explain below briefly why and what sort of professional licence is required</i>
Does the research project have funding for at least the first year of the project?	IT DOES NOT REQUIRE FUNDING * <u>a statement of reasons should be attached</u>	<u>YES *</u> <u>please complete funding declaration</u>
Date 12.05.2022	Katedra i Zakład Farmakodynamiki UJ CM  dr hab. Karolina Pytka, prof. UJ Submitter's signature	

* underline the applicable

** if the research topic requires the independent performance of medical procedures by a PhD student, then following the admission conditions (Annex to Resolution no 3/I/2022 of the JU Senate of 26 January 2022 - Detailed terms and procedure for admission to the Doctoral School of Medical and Health Sciences at the Jagiellonian University in the academic year 2022/2023), the candidate must have the professional licence, which should be indicated below.

The submitted research topic must not duplicate thematically or conceptually with any current project prepared by the PhD student under the supervision of the person submitting the research topic.

The completed form must be printed, signed in appropriate places, scanned and sent by electronic mail **by 30 April 2022**

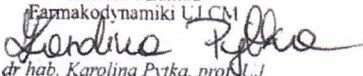
to:

in the discipline - medical sciences: rekrutacja.nmedyczne@cm-uj.krakow.pl

in the discipline - pharmaceutical sciences: rekrutacja.nfarmaceutyczne@cm-uj.krakow.pl

in the discipline - health sciences: rekrutacja.nozdrowiu@cm-uj.krakow.pl

The email should include the title of the proposed research topic.

STATEMENT OF THE PERSON SUBMITTING THE RESEARCH TOPIC for research projects that require funding	
Title/degree Full Name	Dr hab. Karolina Pytka, prof. JU
<p>I declare that I will provide funding for the research project</p> <p>entitled: <i>Investigating the effect of HBK-15, a multimodal compound with antidepressant-like properties, on executive functions in rodents.</i></p> <p>during at least the first year of the project.</p>	
Source of funding <i>Indicate the type, number and title of the grant or research from the statutory grant, and the completion date</i>	<p>National Science Centre, Poland, Sonata bis (UMO-2019/34/E/NZ7/00454):</p> <p><i>Dual action of HBK-15 – unraveling cellular mechanisms underlying its fast antidepressant-like and procognitive effects</i></p> <p>Completion date: 13.04.2026</p>
Date	12.05.2022
Signature	<p>Katedra i Zakład farmakodynamiki UJCM</p>  <p>dr hab. Karolina Pytka, prof. JU</p>