

Supervisor's assessment

TITLE: Physiological and pharmacological aspects of tryptophan and serotonin homeostasis in the fetoplacental unit

AUTHOR: Mgr. Rona Karahoda

SUPERVISOR: Prof. PharmDr. František Štaud, Ph.D.

Mgr. Rona Karahoda started her PhD studies at the Department of Pharmacology and Toxicology in October 2016 after finishing her master course at the Faculty of Pharmacy, Hradec Kralove. She joined my newly formed "Placenta in health and disease" team in 2017 and started working on the physiological and pharmacological aspects of serotonin homeostasis in the fetoplacental unit. Subsequently, she extended her research and described the tryptophan catabolism in both human and rat placenta over the course of gestation. Apart from fundamental physiological and pharmacological research, she was also involved in a clinical study investigating possible links between maternal inflammation, tryptophan placenta homeostasis and fetal neurodevelopment.

Rona is a highly talented and motivated student quick in grasping new concepts and ideas, and keen to learn new methods/technologies. She has mastered several advanced experimental techniques, such as qPCR, droplet-digital PCR, western blot analysis, placental explants. In addition, she has singlehandedly or in collaboration introduced several new modern experimental methods in my labs, including isolation of primary trophoblast cells or isolation and separation of placental membranes.

In 2019-2020, Rona spent a 5-month internship in the laboratory of Prof. Christiane Albrecht (University of Bern, Switzerland) working on the steroid synthesis and metabolism in the human placenta. This stay has so far resulted in one published paper and two manuscripts under preparation – Rona is the first author of all these publications.

To date, Rona has authored 9 publications (6 times as the first author) in respected international journals and recorded 37 citations (without self-citations) of her work. These include not only descriptive physiological studies on tryptophan homeostasis in gestation, but also a paradigm-shifting work on serotonin handling by the human and rat placenta and a recently accepted clinical study linking prenatal inflammation with placental tryptophan metabolism and preterm birth. The quality of published work can be expressed as a cumulative IF = 40,32 (all papers) and average IF = 5,1 (of 4 original papers, directly related to her dissertation, where Rona is the first author). During her PhD studies, Rona has presented her work at ten national and international conferences – mainly in the form of oral presentations.

Rona Karahoda has been awarded several prizes for young investigators: at the 2019 International Federation of Placenta Associations Conference in Buenos Aires, Argentina, Rona received the YW Loke New Investigator Travel Award and was shortlisted among 10 finalists for oral presentation. In 2020, Rona, together with other team members, won the prestigious Angelini University Award. In May 2021, she was nominated for the Dimitris N. Chorafas Foundation Award. One of her papers, published by Wiley Publishing House, was shortlisted by journal editors, for Acta Physiologica Award 2022. On June 24 2021, Rona was announced as the winner of 2020 Carl Ludwig Award by the Scandinavian Physiological Society.

Apart from being a gifted scientist, Rona is also an extremely nice and friendly person, bringing a lot of positive energy and enthusiasm to the daily activities of our group. Rona shows a high degree of leadership being able to pass her motivation and enthusiasm to other students which is a great asset for teamwork. So far, Rona has co-mentored five undergraduate diploma/Erasmus students.

Rona is open to discussions, new challenges and “out-of-the-box” ideas; she has been extremely helpful when writing-up our grant proposals for AZV and GACR and bringing new directions for our research.

To summarize and conclude, I see Rona Karahoda as an experienced, established, and confident early carrier researcher with a great potential for research and/or academia. With her dissertation, she demonstrates extensive theoretical knowledge and practical skills, the ability to work with professional literature, to obtain new experimental data using modern methods and subsequently analyse and present them in high-quality scientific journals. The dissertation thesis of Rona Karahoda thus meets the requirements for doctoral theses in the field and complies with the requirements of the Higher Education Act (111/1998 Coll.). I strongly recommend that this thesis be accepted as a basis for further proceedings for the award of the Ph.D. degree.

Hradec Kralove 2021-06-20

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