

Project 1.4 The influence of mothers' obesity on the brain function in offspring and the role of obesity-associated hormone Lcn2

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www: <https://neurogene2.nencki.gov.pl/>

Background:

Epidemiological studies indicate that maternal obesity before and during pregnancy is a risk factor for brain disorders in offspring, such as hyperactivity disorder, autism spectrum disorders, anxiety, depression, schizophrenia, and epilepsy. Although obesity is a growing health problem in societies, the mechanism that might affect fetal brain development during pregnancy is still underinvestigated. State-of-the-art and our preliminary results allow us to hypothesize that the Lcn2, obesity hormone, which expression is dysregulated in the brain and plasma of animals born by obese mothers, may shape offspring behavior and neuron function.

Aim:

Our study will provide essential clues whether the Lcn2 level regulated by obesity may impact offspring behavior and brain function. Furthermore, data obtained during project implementation may become an excellent starting point for future studies on Lcn2 as a diagnostic biomarker to assess the risk of offspring brain disease.

We plan an approach involving a broad spectrum of methods. We will use (i) the whole-body clearing method to identify organs and brain structures with altered expression of Lcn2 in offspring, (ii) behavioral studies to identify brain function vulnerable to mothers' obesity, and (iii) molecular biology and electrophysiology methods to dissect signaling pathway regulated by Lcn2 in excitatory neurons.

Two PhD positions are available, funded by NCN Opus grant.

Requirements:

- master's degree (or an equivalent) in biology, biotechnology, or related disciplines,
- strong scientific motivation,
- a scientific track record appropriate to the stage of your career,
- Fluency in English required for reading and writing scientific papers and presenting results,
- knowledge of standard molecular biology and biochemistry techniques,
- experience working with animals or knowledge of electrophysiological methods would be an advantage