

KNOW RNA Research Centre in Poznań

invites for the lecture that will be given by



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on

**What makes some individuals fitter than others:
The developmental underpinnings of stress resilience**

Abstract: Stress is a systemic physiological and behavioral response to what an organism perceives as threat. Resilience to the same stressful event varies within a population. While resilient individuals recover efficiently, others are susceptible to the same stressors. However, it remains challenging to identify resilience in mammalian embryos to determine if stress resilience is established as a trait during development or acquired later in life. In order to analyze the temporal dynamics of the establishment of stress resilience, we developed a new behavioural platform in zebrafish larvae. Using this paradigm, we found that genetically identical populations of zebrafish exhibit variable stress-responsive behavior from very early stages of development. Further, this attribute is a stable and heritable trait. Resilient larvae showed higher expression of resilience-associated genes such as neuropeptide Y and miR218, and larvae with mutations in these factors had a greater likelihood of being susceptible to stress. Unbiased transcriptome analysis revealed that multiple factors of the innate immune complement cascade were downregulated in resilient larvae in response to stressors. Pharmacological inhibition and genetic knockouts of critical complement factors led to an increase in resilience. Hence, resilience is established early during development as a stable trait, and neuropeptides and the complement pathway play positive and negative roles in determining resilience respectively.

The lecture will take place on **Friday, October the 14th, 2022, at 9.15**, online via MS Teams.