

Fluid biomarkers of extracellular matrix remodelling across neurological diseases

Neurological diseases constitute a major health and socioeconomic issue. Despite an enormous amount of research going on globally, the prevalence and mortality of neurological disorders are still rising. This has placed a big pressure on health-care systems for biomarker development to be able to detect early stages of the disease and to predict clinical outcomes in patients. The fact that biochemical changes in the brain can be reflected in blood or cerebrospinal fluid paves the way for the fluid biomarkers to become beneficial, cost-effective, and easily accessible tools in neuroscience. The ambition of this thesis was to investigate if measurements of extracellular matrix proteins in human body fluids have a potential to characterize neurological conditions. The findings presented in this thesis suggest that several extracellular matrix proteins may serve as novel cerebrospinal fluid biomarkers for outcome prediction following traumatic brain injury. In addition, they showed a novel diagnostic biomarker potential to differentiate vascular dementia from Alzheimer's disease, the two most common types of dementia with largely overlapping symptoms. Moreover, their levels in cerebrospinal fluid may represent complex biochemical changes of brain's extracellular matrix in patients with idiopathic normal pressure hydrocephalus and in patients who received cranial radiotherapy. These findings may lead to a better understanding of the role of extracellular matrix remodelling across neurological diseases and may contribute to the management and development of future therapies.

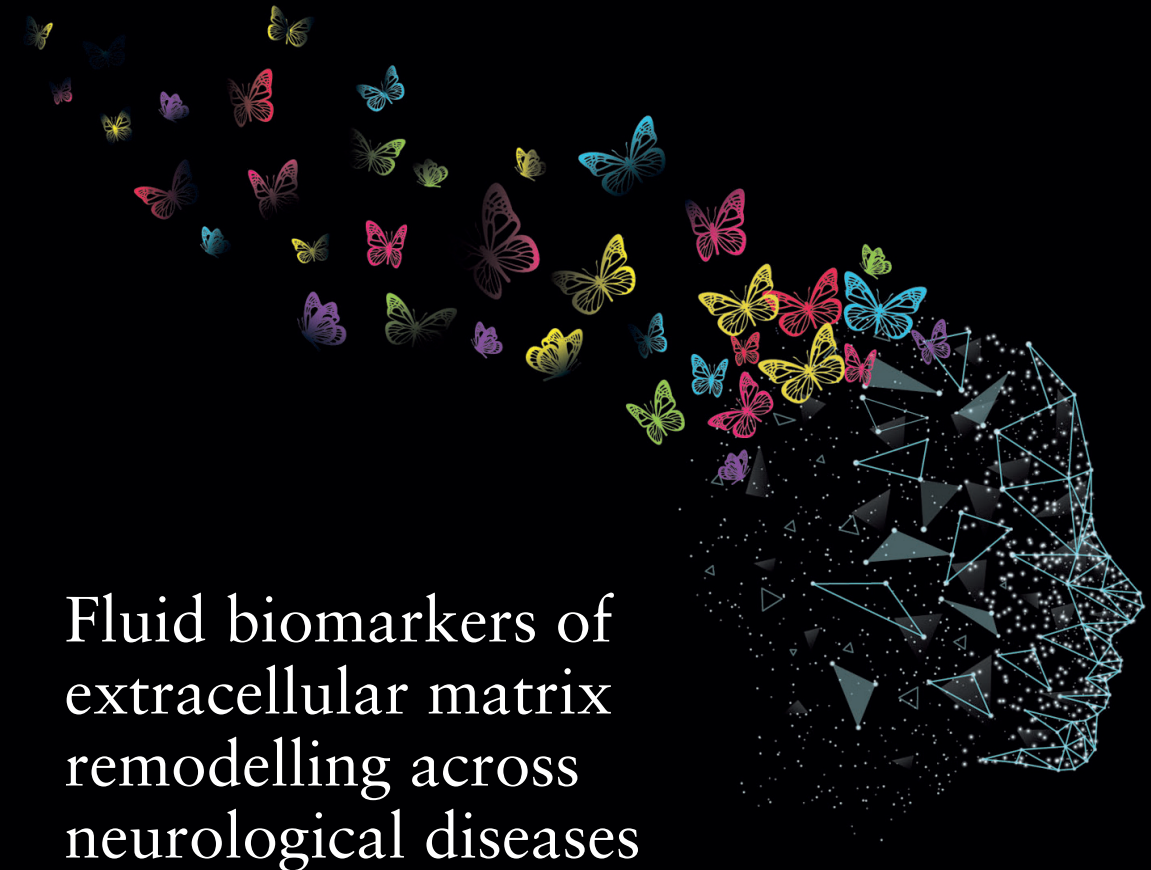


Karolina was born in Katowice, Poland. She completed exchanged Bachelor's programmes in Dermatology at the University of Bydgoszcz, Poland, and in Pharmacy at the University of Bologna, Italy. She received two Master's degrees – one in Biomedicine (Skövde, Sweden) and another in Medical Research (Uppsala, Sweden). In addition, she conducted research in Forensic Chemistry at Penn State University, PA, USA. During a research position at the Neurochemistry Laboratory at the University of Gothenburg (Sweden), Karolina found herself fascinated about neuroscience and pursued a career as PhD student in the same research group.

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