



Vuslat Juska, *Ultrasensitive simultaneous detection of multiple Alzheimer's disease biomarkers by a miniaturized on-chip silicon ultra-micro-device based on a universal antifouling interface: Alzheimer's Disease Biomarkers (ADBs)-on-a-chip*

ADBs-on-a-chip aims to develop a multiplexed biosensing device for Alzheimer's disease (AD) which is a formidable health challenge and has emerged as a profound health crisis in our aging societies; the estimated dementia population in Ireland by 2045 is 150,000. Furthermore, AD has the highest percentage contribution to dementia cases (60-70 %). ADBs-on-a-chip will be an electrochemical device capable of detecting the core clinical biomarkers. This device will have an antifouling coating which will be highly resistant to biofouling when sensor surfaces are exposed to bodily fluids e.g., blood, serum, etc. This innovative approach will allow the development highly accurate diagnostics.

The existence of AD biosensing platform such as a system proposed in my DOROTHY project will contribute to improving diagnosis of the disease. AD is a highly devastating neurodegenerative disease. Early or timely diagnosis of disease can improve the quality of life of persons with AD, their carers and families. There is no doubt that this project has the potential to impact on healthcare, the economy, and the community.

My DOROTHY project aims to combine the two individual expertise e.g., silicon micro technologies of Tyndall National Institute, University College Cork, and bioelectronics surfaces of Northwestern University in the USA with high specificity. Clearly, ADBs-on-a-chip of my Dorothy project will serve as an outstanding platform for diagnostics and bioelectronics.