



Career Development Award

Project

«Developing nanopore as a diagnostic tool for the direct detection of post-translational modifications on neurodegenerative disease peptides»

Granted amount CHF 200'000

Starting date 1.10.2023

Duration 24 months

Main applicant

PhD Chan Cao
Department of Inorganic Chemistry
University of Geneva
Quai Ernest-Ansermet 30
1205 Genf



Lay summary of the project

Protein post-translational modifications (PTMs) play crucial roles in biology and have emerged as reliable biomarkers. However, protein PTMs analysis lags behind due to the lack of efficient and sensitive techniques.

Nanopore has shown to be a powerful solution for the detection of protein PTMs at single-molecule level, as we have demonstrated during phase 1.

In phase 2, we first aim to isolate the peptides that we have studied by using various enzyme digestion of clinical samples. Second, by measuring patient samples at different stages of Parkinson's disease (PD) using our nanopore platform, we target to correlate the PTMs appearance and abundance with stage of PD. Furthermore, we propose to expand the methodology for detecting potential biomarkers for Alzheimer disease.

This project holds the unique advantages of using nanopore as an efficient tool for detection of biomarkers, and therefore advance diagnostics of neurodegenerative diseases and the development of relevant therapeutic approaches.