

Ara Khachaturian, Ph.D.  
Executive Vice-President  
The Campaign to Prevent Alzheimer's Disease  
Chair, International Neurodegenerative Disorders Research Center

February 21, 2024

Dear Ara,

I am writing to express my enthusiastic support for the grant submission titled "Center for Artificial Intelligence and Quantum Computing in System Brain Research (CLARA) for the Horizon Europe Framework Programme: Teaming for Excellence (HORIZON-WIDERA-2023-ACCESS-01).

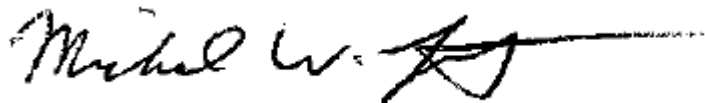
I am a computational biologist and molecular geneticist with faculty appointments within the Departments of Neurology and Pathology at Duke University with over 38 years of experience in research. My expertise is in the genetics and systems biology of neurodegenerative diseases with a focus Alzheimer's disease. I am interested in the genetic, molecular and clinical features of neurodegenerative diseases with a focus on translational research that addresses the early stage development of the disease. Relevant to your proposal is my work within our NIA sponsored Duke/UNC Alzheimer's Disease Research Center (ADRC; 2021-present), where I co-lead the Data Management and Statistics Core. In this role and in my NIH-funded research, I developed computational models relevant for the study of Alzheimer's disease. At Duke I have developed methods to use evolutionarily-based analytical methods to understand the complex relationships between genotype and phenotype in human health and disease with a specific focus on Alzheimer's disease and dementia. During my career at GlaxoSmithKline I invented novel biomedical analysis methods, developed data management and data integration approaches for genetic association studies, microarray and proteomics data and made numerous contributions in the areas of protein bioinformatics and evolutionary biology. I have led computational biology project teams working with multiple therapeutic areas on phases of drug discovery projects from target identification through the assessment of safety and efficacy in humans. I also have extensive experience in the interpretation of biological data including statistical analysis, algorithm development and mathematical modeling for systems biology. At GlaxoSmithKline and at Duke, my research has involved the analysis of "big data" (genome-wide association studies, whole genome sequencing data, large-scale transcriptomic and proteomic datasets, large clinical studies).

As we discussed, your proposal is highly innovative and impactful at both the scientific and international collaboration levels and will establish a unique resource for the field of neurodegeneration research, specifically, Alzheimer's disease. The proposal is highly interdisciplinary and includes substantial expertise in artificial intelligence/machine learning, quantum computing, neuroscience, molecular and clinical research. The project develops novel multiscale models that include the non-linear interactions between key components of the neuron and architecture of the brain. Scientifically, the focus on research programs that address protein dynamics, aggregation and modulation by small molecules, expanding systems biology with the clinical phenomenology of Alzheimer's disease to understand time and scale coupling and multiscale modeling constitute a highly impactful plan of work to focus on translational research to determine factors that will contribute to maintaining the optimal function of neurons for over 100 years. Key factors for the success of the collaboration include a well-defined strategic vision, partnership with world-class institutions including the Paris Brain Institute and the Leibniz Supercomputing Centre of the Bavarian Academy of Sciences and Humanities. The CLARA Testbed is a remarkable innovation to build the infrastructure to develop and test complex multiscale models in neuroscience to simulate the performance of neurons and the brain under specific conditions relevant to aging and Alzheimer's disease over vastly different time scales.

As a member of the Scientific Advisory Board of the International Neurodegenerative Disorders Research Center I would be delighted to consult with you and your team to provide human genetics and computational biology expertise to accomplish the aims of your proposal, most specifically for APOE biology and for systems biology methods development and application.

I wish you the best of luck with your grant application and I am ready to help with any questions that arise.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael W. Lutz". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Michael W. Lutz, PhD  
Professor  
Departments of Neurology and Pathology  
Duke University School of Medicine

Co-Director, Data Management and Statistics Core  
Duke & UNC Alzheimer's Disease Research Center ([Duke/UNC ADRC](#))

Joseph and Kathleen Bryan Research Building  
311 Research Drive  
Room 201-D  
Durham, NC 27710

[Michael.Lutz@duke.edu](mailto:Michael.Lutz@duke.edu)  
(919) 660-7621