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Cerebrospinal and Serum Alpha-synuclein Species as Potential Biomarkers for Parkinson's Disease

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Developing effective treatments for neurodegenerative diseases is one of the greatest medical challenges of the 21st century. Parkinson's disease (PD) and dementia with Lewy bodies (DLB) are very common neurological disorders of the elderly. Although many of these clinical entities have been recognized for more than a hundred years, it is only during the past fifteen years that the molecular events that precipitate the diseases have begun to be understood. Mutations in the alpha-synuclein gene cause early-onset PD, often associated with dementia. Neuropathologically these diseases are characterized by the presence of Lewy bodies, intraneuronal inclusions mostly composed of alpha-synuclein protein fibrils. Despite the progress that has been made in understanding the underlying disease mechanisms of PD and DLB, there remains an urgent need to develop methods for use in diagnosis. The development of reliable surrogate markers for the presence and abundance of alpha-synuclein lesions (Lewy bodies) in the brain would naturally facilitate a more streamlined work-up during the early care of PD and DLB patients, and importantly, allow for the biologically guided evaluation of future drug trials aimed at neuroprotection in the synucleinopathies. In this seminar, I will present the progress which has been made so far by our group to explore the use of CSF α -synuclein and its modified forms as biomarkers for PD and related disorders.

Biography:

Omar El-Agnaf is acting Executive Director at Qatar Biomedical Research Institute (QBRI) and Director of Neurological Disorders Research Center at QBRI. His primary research concerns neurodegenerative disease. Since he moved to the region, he has assembled an excellent research team and has been successful in attracting an array of scientific funding from prestigious international funding agencies. Dr. El-Agnaf is frequently invited as a speaker at international scientific and clinical meetings and is currently a member of the editorial board of several international journals. His track record of basic and translational research productivity is characterized by publications in high-ranking scientific journals. He is considered a pioneer in the field of Parkinson's disease and related neurodegenerative diseases. Several inventions have emerged from his research and provided new insights into the molecular pathogenesis of neurodegenerative diseases and have offered new opportunities for the development of novel diagnostic and therapeutic tools for Parkinson's disease and related disorders. His research has also been translated into clinical studies to evaluate novel markers as diagnostic tools for neurodegenerative diseases. He has been granted 8 patents and 6 under consideration, and published more than 120 refereed articles, with 52 h-index and total citations >8,600.