PROGRESS IN NEUROSCIENCE PINS

Seminar Series of the
Brain & Mind Research Institute
Weill Cornell Medical College (WCMC)
&
The Graduate Program in Neuroscience of
WCMC and Sloan Kettering Institute

Thursday, 2/5/15, 4 PM, coffee at 3:45 PM
Weill Auditorium
Followed by BMRI Faculty Meeting

"Parkinson's Disease: Lost in Translation"

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Abstract:

Parkinson's disease (PD) is due, in part, to the progressive loss of dopamine neurons in the substantia nigra pars compacta, which leads to bradykinesia, rigidity, rest tremor and postural instability. Degeneration of other neuronal populations and/or neuronal dysfunction due to the accumulation and aggregation of α-synuclein, the major protein constituent of Lewy Bodies and Lewy Neurites leads other clinical features including autonomic dysfunction, anxiety, depression, abnormalities of sleep, cognitive impairment, among others. Fresh insights into the pathogenesis of PD have come from understanding the genetic underpinnings of PD. Mutations in parkin, PINK1 and DJ-1 cause autosomal recessive PD. Defects in mitochondrial quality control contribute substantially to the demise of DA neurons due to parkin, PINK1 or DJ-1 inactivation. Mutations in α-synuclein, leucine-rich repeat kinase 2 (LRRK2) and eukaryotic translation initiation factor 4 gamma-1 (EIF4G1) cause autosomal dominant PD through defects in protein proteostasis. Understanding the changes in mitochondrial quality control and protein protestasis may provide clues to disease pathways that result in Parkinson's disease and offer disease modifying therapies for this common age-related progressive neurodegenerative disorder.

Recent relevant publications:

Shin, J.-H., H.S. Ko, H.C. Kang, Y. Lee, Y.-I. Lee, O. Pletinkova, J.C. Troncoso, V.L. Dawson and T.M. Dawson. "PARIS (ZNF746) Repression of PGC-1α Contributes to Neurodegeneration in Parkinson's Disease." Cell, 144:689-702 (2011)

Lee, Y., S.S. Karuppagounder, J.-H. Shin, Y.-I. Lee. H.S. Ko, D. Swing, B.D. Lee. H.C. Kang, L. Tessarollo, V.L. Dawson and T.M. Dawson, "Parthanatos Mediates AIMP2 Activated Age Dependent Dopaminergic Neuronal Loss." Nature Neuroscience, 16:1392-1400 (2013).

Martin, I., J.W. Kim, B.D Lee, H.C. Kang, J.-C. Xu., H. Jia, J. Stankowski, M.-S. Kim, J. Zhong, M. Kumar, S. Andrabi, A Pandey, T.M. Dawson*, V.L. Dawson*. "Ribosomal protein s15 phosphorylation mediates LRRK2 neurodegeneration in Parkinson's disease" Cell, 157:472-485 (2014).

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