“Determining the functional role of CUL9 during the early stages of human corticogenesis”

The cullin-ring ligase (CRL) family of E3 ubiquitin ligases plays a critical role in regulation of early developmental processes, including synapse formation and axon guidance. However, Cullin-9 (CUL9) has proven to be a unique CRL with an elusive function. My data suggest a role for CUL9 in the early neural induction phase of cortical differentiation. CUL9 protein levels are induced during cortical glutamatergic differentiation. Interestingly, knockdown of CUL9 protein levels by lentiviral transduction in human pluripotent stem cells (hPSCs) caused abnormal cortical differentiation. Specifically, hPSCs with depleted CUL9 levels formed enlarged embryoid bodies and fewer neural rosettes with expanded lumenal areas. This phenotype was accompanied by elevated PAX6 levels, a transcription factor key in regulating hNPC properties, in CUL9 knockdown human neural precursor cells (hNPCs) and cortical glutamatergic neurons. We hypothesize that CUL9 may be critical for proper neural rosette formation and subsequent neurogenesis through its regulation of substrates key for neural cell fate.

9:00 am – 9:45 MRB IV

Bagels provided