The term “Neurodegenerative Diseases” (NDDs) identifies a heterogeneous group of disorders characterized by progressive degeneration of the structure and function of the central or peripheral nervous systems. Despite the current knowledge, the whole picture of neurodegeneration is still missing. Innovative extensive approaches in the molecular analysis like massive high-throughput sequencing (DNA, RNA) and proteomics, would allow to show us the involvement of multiple cellular pathways in a given pathogenic process. As examples, transcriptomics studies showed that misregulated microRNAs seem to justify several neurodegenerative processes, suggesting that alterations in miRNA regulatory pathways may contribute significantly to NDDs pathogenesis. Considering the growing interest in the potential of miRNAs, it is also plausible that these findings may lead to develop miRNAs therapeutics for NDDs. On these grounds, the big challenge of this Special Issue is to further explore the novel molecular hypotheses that underline the degenerative features of NDDs.

Maria Liguori, Guest Editor