The selective degeneration and death of specific classes of neurons is the defining feature of human neurodegenerative disease. Yet what determines neuronal morbidity is still poorly understood. In many cases causative genes are widely, if not ubiquitously expressed so why should one neuronal type or network be more affected than another? One solution to this impasse is that neurodegeneration is strongly influenced by toxicity or mutant protein expression in both neuronal and non-neuronal cells in the vicinity of the vulnerable neurons.

a) Compare and contrast cell autonomous and non-cell autonomous mechanisms in neurodegenerative disease.

b) Discuss in detail (using primary sources) how cell autonomous and non-cell autonomous mechanisms could contribute to neurodegeneration in Parkinson's disease.

c) Briefly describe the current understanding of the neurobiological basis for Parkinson's disease and current therapeutic approaches to halt or reverse disease progression (2-3 pages max). Given your new appreciation for non-cell autonomous mechanisms, devise a novel therapeutic approach to improve the treatment of Parkinson's. Your approach should be supported by evidence from primary literature.