

1. Record Nr.	UNINA9910261145003321
Autore	Rosalinda Guevara-Guzman
Titolo	Neurodegeneration: From Genetics to Molecules
Pubbl/distr/stampa	Frontiers Media SA, 2016
Descrizione fisica	1 online resource (264 p.)
Collana	Frontiers Research Topics
Soggetti	Neurosciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	<p>Chronic degenerative diseases are one of the major public health problems, particularly those affecting the nervous system. They are characterized by the degeneration of specific cell populations that include several pathologies which contribute significantly to morbidity and mortality in the elderly population. Therefore, in recent years, the study of neuroscience has gained significant importance. Most of these neurodegenerative disorders are the result of a complex interaction between genetic and environmental factors that generate progression and can even determine its severity. The presence of mutations in genes as LRRK2, SNCA, PARK7, PARK2 or PINK1 is associated with Parkinson's disease. Mutations in genes such as APP, PS1 and PS2 are associated with familial Alzheimer's disease; while HTT gene mutations are the cause of Huntington's disease. In most cases, this condition is inherited in an autosomal dominant pattern, which means one copy of the altered gene in each cell is sufficient to cause the disorder. It is known that these mutations can also alter the proteins function; however, it has not yet been possible to fully understand how some genetic changes cause the disease or influence the risk of developing these disorders. Most symptoms seen in these conditions occurs when specific nerve cells are damaged or die generating a loss in brain communication. Also many of these mutations generate aggregation of intracellular or extracellular proteins affecting cell function and eventually causing neuronal death. It is unclear whether the presence of</p>

these aggregates play an important role in nerve cell death during the development of neurodegenerative diseases, or if they are simply part of the response of cells to the disease. Other mutations affect the mitochondrial function generating alterations in energy production and promoting the formation of unstable molecules such as free radicals. Under normal conditions, the harmful effects caused by free radicals, are offset within the cell. However, in pathological conditions, the presence of mutations can alter this process by allowing the accumulation of radicals and damaging or killing cells. On the other hand, we also know that these diseases may not have a direct genetic component, thus, the study of sporadic type neurodegenerative diseases is much more complex. Histopathological lesions as well as the cellular and molecular alterations are generally indistinguishable from familial cases. For this reason, it is important to understand the genetic and molecular mechanisms associated with this type of pathologies. In this sense, this issue aims to understand the molecular processes that occur in the brain, and how these are influenced by the environment, genetics and behavior.
