

Neuroscience Center of Excellence

*Special Seminar
in Neuroscience*

Potential New Genes Involved in Ageing and Neurodegenerative Disorders



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According to the World Health Organization, progress in medical care, together with improved nutrition and hygienic conditions, has resulted in a demographic shift of the population towards older ages. With the increasing proportion of older people in the population, the long term care of patients affected by age-related disorders, including Alzheimer's and Parkinson's disease, will be a major burden to our health care system. In humans, ageing is manifested by an overall decline in the tissue homeostasis and in the inability of the organism to respond adequately to environmental stress. In view of this functional decline, age is considered one of the major risk factors for the development of chronic diseases, including conditions particularly debilitating and without any clinical therapy. From this prospective, there is a great need to understand the nature of ageing and whether the onset of age-related disorders can be delayed. In the past, ageing was considered simply a process of slow deterioration promoted by accidental environmental stress. On the contrary, it is now evident that ageing is a biological process tightly regulated by evolutionary conserved molecular pathways. Most of these programs involve signaling information from growth factors, nutrients, intracellular energy status and environmental cues, which can directly or indirectly alter the activity of intracellular sensors and, ultimately, cellular metabolism. Particularly interesting in this regard is the effect of some commercial drugs, such as rapamycin or resveratrol, on longevity, which further confirms that ageing can be modulated pharmacologically. Unfortunately, our understanding of the signaling pathways which promote lifespan extension is still elusive. Nevertheless, as the tuning of the same pathways that affect longevity can also delay brain pathologies, an attractive option emerges: we will likely be able to reduce the incidence of age-related disorders by tweaking ageing!