**Nerve Growth Factor therapeutic perspectives**Antonino Cattaneo, MD

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The Nerve Growth Factor (NGF) holds a great therapeutic potential for different disease indications, due to its pleiotropic actions on a diverse range of neuronal and non neuronal target cells. In the central nervous system, NGF acts principally on cholinergic neurons of the basal forebrain, which provide a widespread innervation to the cerebral cortex and mediate higher cognitive functions. A progressive loss of this neuron population occurs in Alzheimer's disease (AD) and, for this reason, NGF has been proposed for many years as a potential neuroprotective treatment for AD. However, NGF has a potent pain sensitizing activity, that stems from its action on sensory neurons. The nociceptive activity of NGF, also demonstrated in man, has hindered the therapeutic application of NGF. We have developed a painless NGF, a variant of NGF with identical neurotrophic properties and a much lower ability to activate pain sensitization. I will describe the properties of painless NGF and its neuroprotective and anti amyloidogenic actions to rescue neurodegeneration in a number of Alzheimer's models, illustrating how we envisage to pursue the development of this innovative molecule towards clinical testing in AD patients.