Glial cell derived neurotrophic factor

Glial cell derived neurotrophic factor (GDNF) and N-cadherin interact to transduce intracellular signals. However, the specific molecular mechanisms of this interaction are unclear.

GDNF is a small protein that potently promotes the survival of many types of neurons.

This gene encodes a highly conserved neurotrophic factor. The recombinant form of this protein was shown to promote the survival and differentiation of dopaminergic neurons in culture, and was able to prevent apoptosis of motor neurons induced by axotomy. The encoded protein is processed to a mature secreted form that exists as a homodimer. The mature form of the protein is a ligand for the product of the RET (rearranged during transfection) protooncogene. In addition to the transcript encoding GDNF, two additional alternative transcripts encoding distinct proteins, referred to as astrocyte-derived trophic factors, have also been described. Mutations in this gene may be associated with Hirschsprung's disease.

The most prominent feature of GDNF is its ability to support the survival of dopaminergic and motorneurons.

These neuronal populations die in the course of Parkinson's disease and amyotrophic lateral sclerosis (ALS). GDNF also regulates kidney development and spermatogenesis, and it affects alcohol consumption.