Our research group is investigating the signaling and biological functions of endoplasmic reticulum located CDNF/MANF neurotrophic factor families, both within and outside of the nervous system. We are also interested in the therapeutic potential of these proteins and their active fragments in various diseases. We recently developed MANF knockout mice, which develop severe insulin-deficient diabetes due to progressive postnatal reduction of the insulin producing β-cell mass. We have now identified novel fragments of MANF being protective to neuronal cells and capable of enhancing the proliferation of insulin producing β-cells, thus providing new, disease-modifying therapeutic avenues for diabetes and CNS disorders.

Professor Mart Saarma, Drs. Maria Lindahl, Merja Voutilainen, Mikko Airavaara and Li Ying Yu
Institute of Biotechnology, University of Helsinki

New MANF fragments for diabetes

UH researchers have now identified a fragment of MANF that is

- Easier to manufacture
- Crosses cell membranes
- Exhibits β-cell protective effects similar to full length MANF

MANF fragment may thus offer an easy to use, safe and the first disease modifying treatment for patients suffering from T1D and T2D.

Patents

2 patent families pending, details available under an NDA; published application WO2018202957A1

Key Publications


Data available under NDA

- In vitro β-cell proliferation in islets of 12 week old mice: comparison to full length MANF and comparison of chemically synthesized fragment to E coli produced fragment
- In vitro β-cell proliferation in islets of 4-5 month old mice: comparison to full length MANF
- in vitro β-cell proliferation in islets isolated from 1-year old mice with little regenerative capacity: comparison to full length MANF
- Experiment with repeated systemic administration of MANF fragment in streptozotocin-induced diabetic mouse model ongoing: measurement of blood glucose and serum insulin