VAN ANDEL INSTITUTE

Business Development / Technology Transfer

Applications

- Large-scale production of norrin protein for research and therapeutic use
- Norrin protein may serve as an anti-angiogenic agent for the treatment of disease

Benefits

- Bioactive form of the protein
- High purity
- High yield

VARI IP-00165

Patent Status: Pending
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Expression and Purification of Functional Norrin Protein

This norrin protein production method makes large-scale protein generation more cost effective, increasing the viability of using norrin as an anti-angiogenic therapeutic agent.

Background

The Wnt signaling pathway plays an important role in embryonic development, cell proliferation, and adult tissue homeostasis. Norrin is a cysteine-rich growth factor encoded by the Norrie disease protein (*NDP*) gene, which functions like a Wnt protein as it can activate the canonical Wnt pathway. Research has shown norrin plays a specific and important role in angiogenesis of multiple organs, including the eye. Recent studies demonstrate that norrin can suppress retinopathy *in vivo* and exhibits protective properties in retinal neurons. As such, norrin could be used for treating retinal vascular diseases. Unfortunately, production of functional norrin is exceedingly challenging and costly since it is difficult to achieve high purity and high yield using current methods.

Technology

Scientists in the Laboratory for Structural Sciences at Van Andel Research Institute (VARI) developed methods for producing properly folded, bioactive norrin that is both of high purity and amenable to production in large quantities. Large-scale production of norrin protein can facilitate its use as a clinical treatment not only for retinopathies, but also for other diseases exhibiting abnormal angiogenesis, such as tumorous cancers.

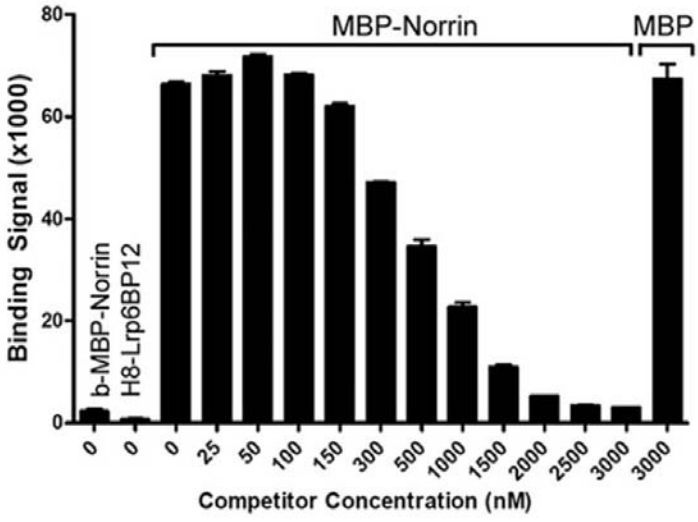

Figure 1: *MBP-Norrin to Lrp6BP12 binding.* The binding affinity for the interaction between MBP-Norrin and Lrp6 BP12 was determined by a homologous competition assay using12 nM Lrp6 BP12 and 120 nM biotinylated MBP-Norrin. The two leftmost bars are negative controls with only single proteins. The rightmost bar shows the signal from the reaction with MBP as a negative competitor control.

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Through biomedical research and science education Van Andel Institute is committed to improving the health and enhancing the lives of current and future generations.