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Agonistic TrkB Antibody for Glaucoma Treatment

McGill University is seeking a company interested in commercializing 1D7, an agonistic TrkB monoclonal antibody (mAb) for the treatment of Glaucoma. Glaucoma is the second largest cause of blindness worldwide. In 2008, there were 14.7 million people affected with Glaucoma in the seven major markets and the prevalence of this disease is expected to remain stable. Anti-glaucoma preparations posted 5.2 billion dollars in sales in 2008. Therapies for Glaucoma consist primarily of agents that decrease Intra-ocular pressure (IOP). 1D7 is an alternative neuroprotective approach to disease treatment.

Description

Brain derived neurotrophic factor (BDNF) receptors, TrkB and p75NTR, are expressed in the retina. However, exogenous BDNF does not provide retinal ganglion cells (RGCs) with long-lasting neuroprotection *in vivo* during optic nerve axotomy or glaucoma rat models of neurodegeneration. The Inventors have identified a monoclonal antibody 1D7, specific for the D2-D3 domain of TrkB, which has agonistic activity. 1D7 mAb affords long-lived TrkB activation, and delayed RGC death in rat models of acute and chronic retinal injury *in vivo*. Importantly, using non-invasive retinal imaging the inventor shows that treatment with 1D7 preserves the retinal structure and in particular maintains the layers consisting of neurons and neuronal fibers in both the optic nerve axotomy (acute) and Glaucoma (Chronic) animal models.

Advantages

- Offers a competitive advantage over alternative therapies as it targets the TrkB receptor a new mechanism of action centered on protecting retinal cells from damage
- Improves treatment options before surgery as this therapeutic antibody may potentially be used in combination with existing Intraocular pressure lowering agents.
- Long patent life—most therapeutics presently on the market will come off patent in the next 4 years.

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