Translaminar Autonomous System For Study of Human Donor Eye

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Technology description

Researchers at the UNTHSC North Texas Eye Research Institute have developed a novel eye modeling system for modulating translaminar pressure in the study of human donor eyes. The first-of-its-kind model can dynamically and independently regulate both intraocular pressure (IOP) and intracranial pressure (ICP) in a donor posterior eye cup. The model provides an ex vivo paradigm for studying pathogenesis associated with ICP and translaminar pressure and allows perfusion of the eye with selected media for dynamic study of therapeutic compounds. The Translaminar Autonomous System has broad potential applications in traumatic brain injury, vision impairment, intracranial pressure research and testing therapeutic agents.

Market Need:

Applications for use of the model include study of glaucoma (elevated IOP, lowered ICP), traumatic brain injury (elevated ICP), and visual impairment associated with long-term exposure to microgravity (elevated ICP, elevated IOP). The system offers significant advantages over models that are limited to the study of IOP, or that cannot simulate dynamic modulation of ICP. The model facilitates study of human donor eyes and reduces the need for research in animal models.

Advantages

Dynamically study IOP and ICP at the same time in a noninvasive manner utilizing an ex-vivo human donor eye.
Simple adjustment and regulation of translaminar pressure gradients.
Use of perfusion media maintains health of tissue over extended periods of time for testing novel therapeutics.
Potential applications beyond glaucoma, including traumatic brain injury and microgravity-associated visual impairment.

Institution

University of North Texas Health Science Center

Inventors

Tasneem Sharma, PhD (tasneem.sharma@unthsc.edu)

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com