DEPARTMENT OF DEFENSE - CONGRESSIONALLY DIRECTED MEDICAL RESEARCH PROGRAMS

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HIOC Derivatives for the Treatment of Trauma-Induced Vision Loss

Principal Investigator: IUVONE, PAUL MICHAEL
Institution Receiving Award: EMORY UNIVERSITY
Program: VRP
Proposal Number: VR170139
Award Number: W81XWH-18-1-0700
Funding Mechanism: Technology/Therapeutic Development Award
Partnering Awards:
Award Amount: $1,501,167.00

View Technical Abstract

PUBLIC ABSTRACT

Retinal damage followed by vision loss caused by traumatic blast-related injury, sports injury, or other blunt force trauma to the eye is a serious public health issue, affecting military personnel and the general public. Traumatic blast injury from improvised explosive devices (IEDs) is the most common cause of casualties in the Global War on Terror. To prevent vision loss from trauma, treatment must be started quickly during a critical period before irreversible neuronal degeneration is initiated. The goal of the proposed research is to develop new pharmaceutical treatments for trauma-induced vision loss that can be administered on the battlefield, in field hospitals, or in ambulances. We are developing small molecule therapeutics that can be administered by systemic injection, get into the retina and brain from the blood stream, and protect from trauma-induced vision loss. We have a lead compound, , N-[2-(5-hydroxy-1H-indol-3-yl)ethyl]-2-oxopiperidine-3- carboxamide (HIOC), which has shown to be effective in preventing vision loss caused by blast injury to the eye and brain. In order to improve the potency of HIOC, we seek to study the activity of

a family of HIOC derivatives that are designed to have superior penetrance into the retina and brain. We anticipate that these drugs will provide battlefield deliverable therapy to prevent trauma-induced vision loss. We further anticipate that these drugs will be useful for the treatment of other vision-threatening and neurological disorders.

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