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Photosensitivity as a Preclinical Assessment for Treatment of Post-Traumatic Headache

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**Institution Receiving Award:** IOWA, UNIVERSITY OF  
**Program:** PH-TBI  
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**PUBLIC ABSTRACT**

The proposed research addresses Neurosensory and Rehabilitation Research Award Focus Area "Vision Dysfunction," as well as "Pain Management." The overall objective will be to use photosensitivity as a way to measure post-traumatic headache and to thereby improve the diagnosis and development of treatment strategies. Unfortunately, headache with associated photosensitivity is prevalent in both active-duty personnel and Veterans who have suffered traumatic brain injury (TBI). The high incidence of these often debilitating symptoms underscores the need to study these problems in animals in order to develop new and effective treatments for post-TBI headaches. We hypothesize that modeling TBI in mice will cause migraine-like photosensitivity and that treatment with two classes of promising pharmacological agents will reduce this photosensitivity. Members of the first class inhibit a small protein, the calcitonin gene-related peptide (CGRP), which has been firmly established to play a key role in migraine. Both antagonists of the CGRP receptor and antibodies that can block the activity of CGRP — which have proven effective in migraine clinical trials as acute and preventative treatments, respectively — will be tested. The apparent low toxicity of the CGRP antibodies is...