“Patients with post-concussive central vestibular impairment demonstrate over-activation of brain regions providing input to the primary vestibular cortex.”

Dr. Jason Allen, Russell Gore, Michelle LaPlaca, and Anna Trofimova investigated the pattern of brain activation in patients who have post-concussive vestibular dysfunction. It is estimated that up to 3.8 million concussions occur in the United States each year. Vestibular symptoms, such as dizziness and imbalance, are among the most frequent post-concussive complaints. Patients with vestibular impairment may compensate through an overreliance on other somatosensory inputs, such as visual cues, leading to somatosensory dependency. While these changes may be beneficial in the acute phase, persistent dependency on these pathways may become pathologic and maladaptive during vestibular recovery, leading to syndromes such as ‘visual vertigo,’ which are characterized by inappropriate responses such as dizziness to visual environmental motion and other somatosensory cues. In this study, patients and healthy controls watched 30-second video clips of videos that either provoked visual vertigo symptoms or were neutral in content (Figure 1). Provocative videos selectively activated the frontal eye fields, visual association cortex, and parietal lobe adjacent to the primary vestibular cortex in patients with post-concussive vestibular impairment (Figure 2). Activation in these areas was not seen in control subjects viewing the same videos. These results support the hypothesis that over-activity of these regions, all of which supply input into the primary vestibular cortex, may contribute to the symptoms of post-concussive visual vertigo.
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Message from the Director:

CABI has continued to expand our technical offerings to our users. CABI now has a functioning 32-channel EEG rig available for users. This fall, we welcomed a new Research Scientist, Vishwadeep Ahluwalia. Vish’s expertise in Medical Physics has been a welcome addition to CABI. He will be especially helpful this summer when CABI upgrades the Siemens Trio to a Prisma magnet. The last day to scan on the Trio is June 13th. We expect the Prisma to be ready to use on August 6th. CABI will host our 3rd annual Callosum Neuroscience Poster Session on April 3rd. All members of the Atlanta Neuroscience community are invited to present and attend. Finally, CABI will offer workshops this summer and fall on various neuroimaging topics.