



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

TBI Biomarkers

Plasma Metabolomics Biomarkers for Acute Mild Traumatic Brain Injury

Researchers at the University of California (Irvine, CA), the University of Rochester (Rochester, NY) and Georgetown University Medical Center (Washington, D.C.) conducted a study to identify biomarkers for TBI. Blood samples were collected from 62 college athletes, including 38 athletes diagnosed with at least one mild TBI (mTBI) within six hours of injury, and two, three, and seven days post-injury. Analysis of the blood plasma identified six metabolites that are present at different concentrations in athletes after injury compared to athletes without a TBI within the first six hours after injury and which continued to be present up to seven days postinjury (*Fiandaca et al., 2018*).

The six-metabolite panel was validated in a second cohort consisting of 84 individuals (31 with at least one TBI), including military personnel and sports injured individuals. This is the first panel of easily accessed, minimally invasive biomarkers of mTBI and would be readily adapted to a platform for field use. The replication in the military sub-cohort indicates that the panel could be, upon further validation, used as a preliminary adjunct for determination of withdrawing individuals from duty due to potential for impaired function.

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REFERENCES:

Fiandaca, M. S., Gross, T. J., Johnson, T. M., Hu, M. T., Evetts, S., Wade-Martins, R., . . . Federoff, H. J. (2018). Potential Metabolomic Linkage in Blood between Parkinson's Disease and Traumatic Brain Injury. *Metabolites*, 8(3). doi:10.3390/metabo8030050

