



US DEPARTMENT OF DEFENSE

# BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

## Diagnosics and Biomarkers

### Incapacitation Prediction for Readiness in Expeditionary Domains - an Integrated Computational Tool (I-PREDICT)

Current challenges exist in anticipating the human injury response to physical stressors associated with blast exposure, such as blast and acceleration forces, vibration, and blunt traumas. To address these challenges, researchers at the ONR have developed an integrated physiologically-relevant human body model and associated software tool titled “Incapacitation Prediction for Readiness in Expeditionary Domains - an Integrated Computational Tool (I-PREDICT)”. I-PREDICT uses a model based on material properties of human tissues and experimentally derived strain rates to predict injury outcomes in response to specific blast related stressors. The purpose of this predictive modeling tool is to predict the probability of immediate incapacitation and short-term disability in response to multiple physical stressors contributing to medical response planning, injury prevention, and treatment planning. In addition, I-PREDICT can be utilized to perform preliminary design, testing, and validation of personal protective equipment (PPE) contributing to injury mitigation planning capabilities. Predictive modeling tools such as I-PREDICT will contribute to reduced injuries, substantial cost and time savings, and the development of more effective PPE.

