RAPID-Dx is CVB’s flagship biomarker discovery collaborative – fast-tracking the advancement of objective diagnostics for PTSD and TBI.

Developing biomarker-based diagnostics is essential to shifting diagnosis & treatment of PTSD and TBI from a syndromic, symptom-based approach to a biological, mechanistically-based one that targets the effects of trauma at their molecular roots. Many potential biomarkers published in the literature have not been independently replicated or advanced through a qualification process for regulatory approval and use.

RAPID-Dx is collecting data and performing studies necessary to discover and replicate biomarkers and qualify successful and relevant candidates for development as clinical diagnostics.

RAPID-Dx is bringing together large, well-characterized cohort studies of PTSD and TBI. To accelerate the biomarker discovery process, investigators will collaborate and share large biomarker and imaging legacy datasets in a centralized, cloud-based data platform, the BRAIN Commons, for interrogation by a multi-disciplinary group of experts in clinical, biomarker, and computational research. RAPID-Dx will also support the large-scale analysis of stored biosamples on high-precision, validated biomarker platforms to generate data for well-powered, multi-modal biomarker discovery to fuel systems biology modeling efforts of disease. Key stakeholders in the biomarker development and qualification process, including regulatory experts and industry affiliates, have been engaged early on to ensure impactful biomarker discoveries can be translated to clinical application.

RAPID-Dx Goals:

- Developing a roadmap for the discovery and development of PTSD & TBI diagnostics
- Evaluating the performance of the most advanced, validated bioassay platforms
- Identify the most promising bio-fluid and imaging biomarkers in PTSD and trauma-related disorders based on published literature
- Leveraging legacy PTSD & TBI biomarker datasets and bio-fluid samples that are available for analysis
- Developing statistical analysis plans for biomarker discovery and replication
- Utilizing the Brain Commons to share results with the community

“The fastest way to help Veterans living with TBI and PTSD is to break down the traditional siloes of science and scientific resources.” “By joining RAPID-Dx, we are affirming our commitment to a new type of radically collaborative science defined by data sharing and coordination of efforts toward our shared goal of finding clinically-useful diagnostics and treatments for these invisible wounds of war. There is no doubt in my mind that coordinated team science will accelerate progress toward diagnosis and treatments. We are thrilled to be working with Cohen Veterans Bioscience.”

- Rachel Ramoni, DMD, ScD, Chief Research and Development Officer at the Veterans Health Administration
Currently, there are no objective diagnostic tests for PTSD.

What is a Biomarker?
The term “biomarker” refers to an indicator of a biological state or condition that can be objectively measured, and can be used to assess normal biological processes, disease pathology, progression of disease, or responses to therapeutics. Biomarkers shouldn’t be confused with medical symptoms, which are often subjective and can involve an individual’s perception of the condition on their own health.

Biomarkers must undergo a rigorous process of discovery, replication, and validation to be useful
- The vast majority of biomarkers published in the literature have not been independently replicated or validated.
- Many biomarker studies are underpowered due to a lack of resources and other factors.
- Few studies have taken a systems biology approach to identify combinations of markers that might be better biomarkers for complex diseases such as PTSD and TBI.

Biomarkers of PTSD or TBI may include genetic, endocrine, metabolic, and proteomic biomarkers, as well as changes in the brain seen using imaging techniques.

PTSD is a subjective, clinical diagnosis – and there are over 600,000 ways to combine symptoms in the DSM-V that result in the same general diagnosis of PTSD.

PTSD is incredibly heterogeneous, with multiple symptom categories and multiple symptom possibilities within each category. This adds to the complexity of diagnosing individuals if their reported symptoms are the only tool you have to work with. Despite extensive research to characterize psychological, genomic, and physiologic risk and etiologic factors for disease, there are currently no specific diagnostic biomarkers for PTSD. Biomarker identification is one of many priorities at CVB. We are working on developing and validating various kinds of biomarkers to help with the identification and advancement of PTSD- and TBI-related solutions.