"BIOMARKERS OF DEGENERATIVE MYELINATION AND SYNAPTIC DYNAMICS"

VCU # 12-070

Applications

- Useful diagnostic for TBI
- Prognostic for determining treatment course
- Diagnostic marker for rehabilitation progress
- Potential diagnostic use for myelin-based neurodegenerative conditions
- Research tool

Advantages

- Responsive to TBI during the acute phase

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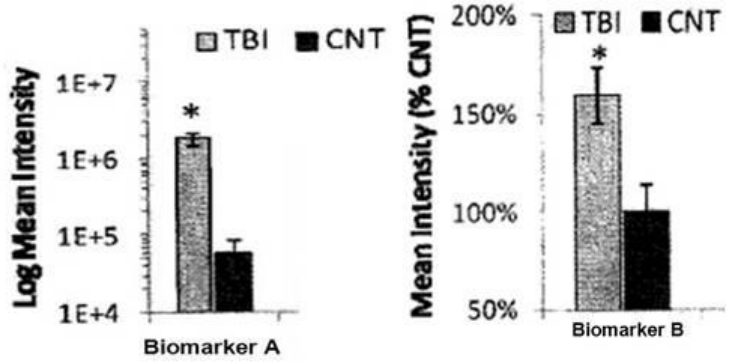
Market Need

Traumatic brain injury (TBI) is a long-lasting disease process underlain by evolving degenerative and reparative mechanisms in the brain. One of the major limitations for TBI patient care is that insults and outcomes vary greatly across individuals. TBI treatments are severely limited based on lack of knowledge of individual-specific neuronal impact. Thus new biomarkers are needed which selectively inform on and help treat biochemical processes relevant to the individual, especially in real-time.

Technology Summary

Here are presented two separate biomarkers with noticeably increased biological responses to TBI. The first biomarker shows degenerative myelination and remyelination dynamics after TBI. The second biomarker (B) reflects degenerative synaptic dynamics indicated by an increase in its cytosolic concentration following TBI. These two biomarkers have the potential to be used to diagnose and monitor secondary insults after TBI (only rat data on whole brain tissue has been collected up to this point). In particular, biomarker A is potentially useful for any myelin-based neurodegenerative conditions. Both biomarkers A & B are responsive to TBI during the acute phase, and have the potential to determine a personalized course of treatment for neurotrauma patients.



Technology Status

Patent Pending.

Research on both biomarkers is still underway, with the most recent study being conducted on cortical impact rat models.

This technology is available for licensing to industry for further development and commercialization.