

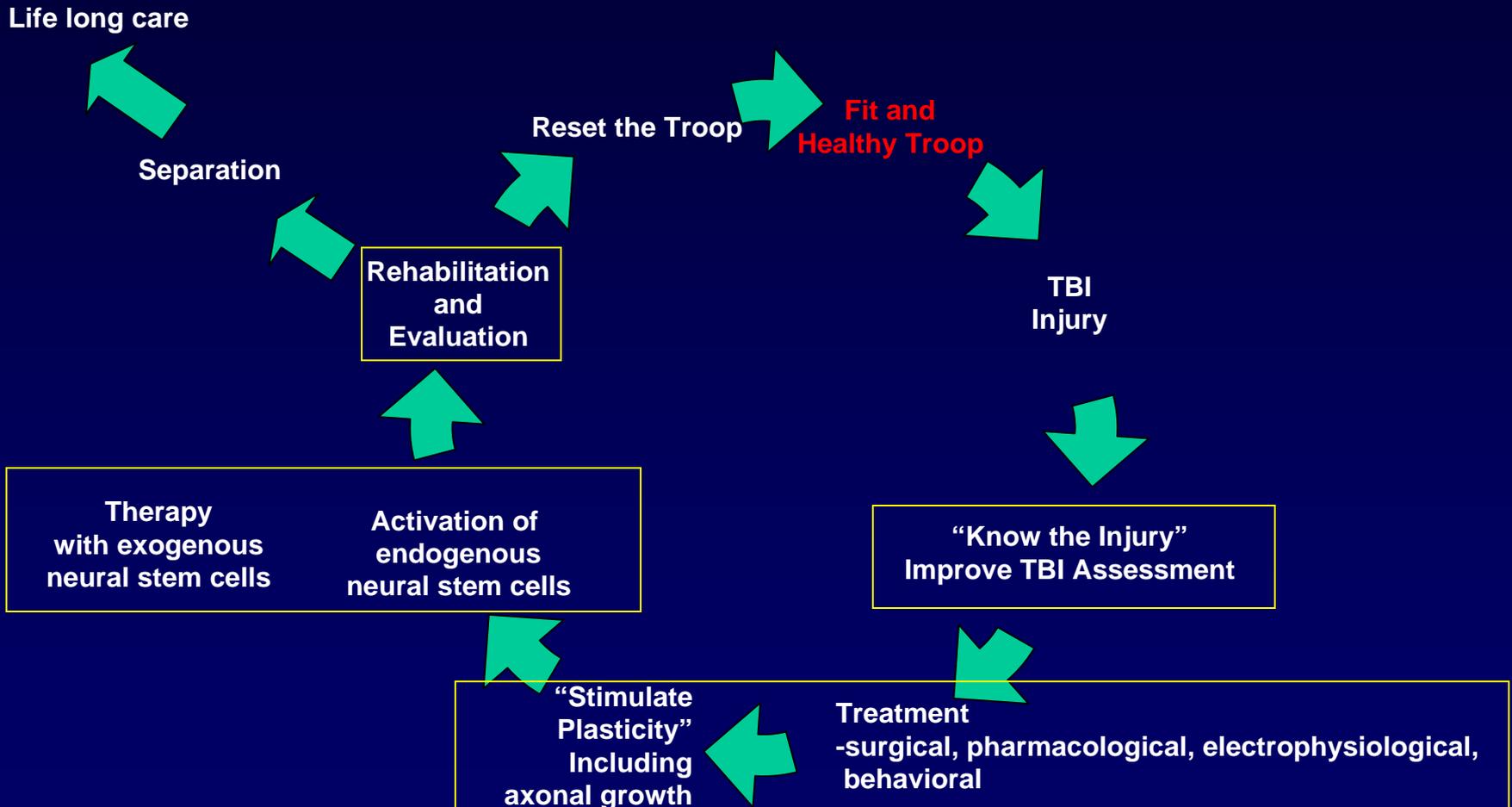
USU Center for Neuroscience and Regenerative Medicine

**USU Discussion Group Briefing
August 6, 2008**

Background

- Traumatic brain injury (TBI) and post traumatic stress disorder (PTSD) are disease entities of high incidence in both Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).
- Our current understanding of the pathophysiology of these injuries does not provide military medicine with an adequate arsenal of therapeutics to handle the wide range of injuries we are presently seeing.
- Immediate challenge is to develop more accurate and precise diagnostic tools, novel approaches to increase neuroplasticity, and when appropriate use regenerative medicine to tackle brain injury at the organ, cellular and molecular level.

The Challenging Life Cycle of TBI Injury



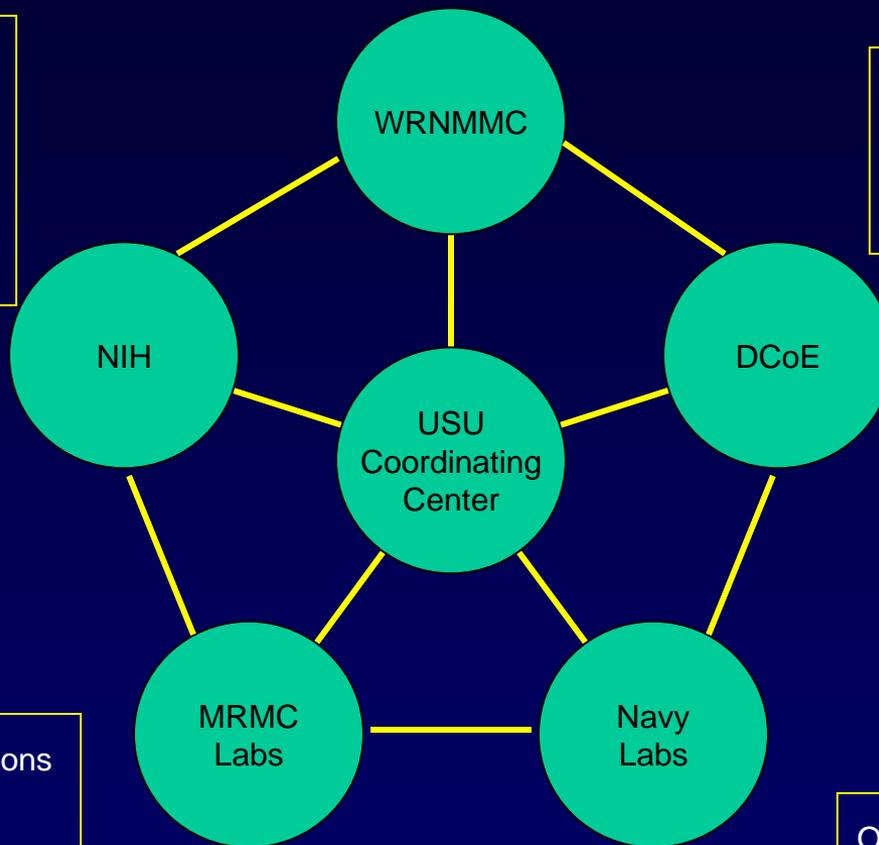
Proposed Areas of Research

- Improved Diagnostics
- Neuroregeneration
- Neuroplasticity
- Rehabilitation and Evaluation
- Biomarkers
- Neural Protection and Modeling

Center for Neuroscience and Regenerative Medicine

Focus of Research Programs

1. Regenerative Medicine
2. Diagnostic Imaging
3. Neuroplasticity
4. Rehabilitation
5. Biomarkers
6. Neural Protection/ Models



Leadership Teams assembled built by USU across the federal labs in the Capital Region

Secondary Network Connections to other universities, private entities, and public entities to collaborate using IPAs, and sabbaticals to transfer Ideas and technologies

Our mission is to focus the network's research on protection, assessment, diagnosis, treatment, and rehabilitation of TBI

Each Research Area will:

- Recruit faculty with expertise to apply to new TBI research endeavors
- Establish a network with existing labs in NCA
- Develop visiting scientist programs using IPAs and sabbatical positions to encourage outside scientists to bring expertise to our Center
- Work across research areas to advantage
- Identify gaps and innovative research needed to advance diagnosis, treatment, and/or rehabilitation for TBI patients

Neuroimaging and Diagnostics Research for TBI

Jim Smirniotopoulos/David Bluemke/Alan Koretzky

- Advance neuroimaging applications to facilitate diagnosis, treatment, and/or rehabilitation and evaluation of TBI patients
- USU, DCoE and NIH will develop novel biomarkers to be used as diagnostic tools in conjunction with imaging
- USU will bring new animal imaging to campus for model development

Working Group

- Gerard Reidy
- Michael Xydakis
- Lou French
- Mike Roy
- Alice Smith
- Fletcher Munter
- Scott Moran
- Armbrustmacher

Neuroplasticity to Improve TBI Outcomes

Sharon Juliano/Jordon Grafman

- Investigate mechanisms surrounding plasticity in the context of TBI pathology and neurologic function
- Design pre-clinical and clinical trials to address the potential for neuroplasticity recovery of function
- Integrate with neuroimaging analysis of circuitry and plasticity

Working Group

- Sue Bausch
- Jack Tsao
- Bruce Schoneboom
- Zigmunt Galdzicki
- Mike Schell
- Luke Johnson
- Xin Xiang

Neuroregenerative Potential in TBI

Regina Armstrong/TBA

- Investigate repair potential of endogenous neural stem cells in response to TBI
- Determine impact of exogenous stem cells for cell replacement and/or altering endogenous cell and tissue responses to TBI
- Examine features of TBI lesion environment that modulate repair potential

Working Group

- Brian Schaefer
- Will Watson
- Aviva Symes
- Sharon Juliano
- Ying-Hong Feng
- Denes Agoston
- Martin Doughty
- Mary Lou Cutler

Rehabilitation Medicine for TBI

Paul Pasquina/Leighton Chan

- The Group will use the new diagnostic and rehabilitation tools to evaluate potential for treating TBI
- The Consortium will conduct a rehabilitation and natural history study with extensive cognitive testing and other screening measures

Working Group

- Mike Jaffee
- Lou French
- Paul Rapp
- Anthony Beutler
- Dave Benedek

Biomarkers for Use in TBI Diagnosis and Treatment

Brian Cox/Glenn Hortin

- Build a state-of-the-art research team to identify and evaluate new biomarkers
- Interact with Diagnostics and Rehabilitation and Evaluation groups for combined data applications to TBI
- Integrate with animal modeling for biomarker applications to TBI pathology

Working Group

- Teresa Dunn
- Harvey Pollard
- Greg Mueller
- Jeff Harmon
- Kris Kasper
- Joe Long
- Jennifer Rusiecki
- Mike Xydakis
- Fabio Leonessa
- Janis Carlton

Neural Protection and Modeling of TBI Features

Joe McCabe/John Hallenbeck

- Build a state-of-the-art research team to address the range of brain injury models to better understand the nature of the injuries and for use in assessing treatment and repair strategies
- Interact with neuroplasticity and neuroregeneration groups to evaluate contribution as neuroprotective strategies, and design combined approaches for repair
- Correlate animal and human TBI features, including neuroimaging

Working Group

- Geoff Ling
- John Wu
- Dave Burris
- Ann Marini
- Neil Grunberg
- Yumin Zhang
- Dick McCarron
- Joe Loprieto

Actions with Health Affairs

- At present USU is working with Health Affairs to establish pay bands for USU that will allow recruitment of the internationally recognized scientist to make this program flourish. Priority one is the expansion of the pay bands so that we can attract senior leaders in the fields outlined above.
- In anticipation of new pay bands USU has placed a POM action that will add additional resources to the USU budget to recruit and retain the faculty necessary to begin and continue the programs outlined above.
- The total request for the programs outlined above is \$70M for the FY08 DoD supplemental. This will be implemented as the appropriation arrives at USU and will support the program until the POM established program (bullet 4) is established and running.
- Sustaining of this program as outlined above will require a POM initiative for FY10 at the level of \$15M per year through FY15. Total commitment for FY10 through FY15 is \$90M

Time Lines

- Programs leadership teams to be set by July 15
- Directives for the teams established by Aug 7
- Meeting for Directors and Team Leaders and other program leaders to identify gaps
- Meeting of Team Leaders and working groups to develop plans to fill gaps
- Meeting to finalize program plans and interactions
- Plans with complete budgets by Nov 1
- Reviews and Comments by Jan 15
- Modifications by Mar 15
- Goal is to have all FY08 Supplemental Obligated by June 15, 2009

Discussions that are taking place

- Setting a Steering Committee
- Moving toward a topical IRB
- Vehicles for IPA are being set with DOD
- Space requirements are being addressed
- Recruitment strategies are being discussed
- Review strategies are being discussed
- MOU are being finalized with NIH and drafted with other DOD partners
- Briefing and meeting with other organizations with complementary interests, and identifying our areas of opportunity
- Setting administrative support in place to aid in running this Center