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Traumatic injury research working to improve the lives of citizens and soldiers

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New studies presented today offer vivid examples of how advances in basic brain research help reduce the trauma and suffering of innocent landmine victims, amateur and professional athletes, and members of the military. The research was presented today at Neuroscience 2012, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health.

From the playing field to the battlefield, neuroscientists are gaining better understanding of what happens to the brain when it suffers traumatic injury or repeated hits. While the chronic learning and memory deficits that often accompany such damage have been resistant to treatment, opportunities for effective early intervention to minimize long-term damage may be on the horizon. Scientists are also creatively applying new insights into how our brain senses odors, to better detect landmines and help both soldiers and civilians avoid becoming casualties of war.

Today's new findings show that:

- United Kingdom soldiers who sustained blast-related traumatic brain injuries were more likely to have injuries in the brain stem and cerebellum than were civilian victims of non-blast traumatic brain injuries. Damage to the "white matter" in the brains of both groups could only be detected using an advanced form of magnetic resonance imaging (David Sharp, PhD, MBBS, abstract

315.04, see attached summary).

- Frustrated by the lack of treatments for chronic neurological problems that frequently follow traumatic brain injury, scientists searched the brain for potential therapeutic targets and focused on inflammatory pathways. Now, they may have averted memory problems in brain-injured mice by giving them a widely available dietary supplement derived from tobacco that appears to suppress inflammation (Fiona Crawford, PhD, abstract 315.02, see attached summary).
- Scientists report developing a transgenic mouse with enhanced capacity to smell the explosives used in landmines, with the hopes they can be deployed to detect landmines in affected areas (Charlotte D'Hulst, PhD, abstract 815.09, see attached summary).

Another recent finding shows that:

- Scientists using mice to study the effect of a single encounter with a model of military blast injury found the effects of blast winds alone—which can reach 330 miles per hour—appear sufficient to induce a brain injury. They also discovered that immobilizing the head may help reduce the severity of injury (Ann McKee, MD, see attached speaker's summary).

"These studies are particularly outstanding for how they take some of the most complex and cutting edge science of our time and translate it into practical applications that can have an enormous, visible impact on people's lives," said Jane Roskams, PhD, of the University of British Columbia, an expert on brain repair and neural regeneration. "That one day a mere mouse might save a child from losing a limb while walking across an old mine field, or a simple dietary supplement could make life more bearable for a brain injury victim shows why the field of neuroscience is attracting so much interest these days."

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More information:
www.sfn.org/am2012/pdf/press/InvisibleWounds.pdf

Provided by Society for Neuroscience