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REGENERATIVE TECHNOLOGIES FOR COMBAT BURN INJURIES

Shanmugasundaram Natesan^a, Randolph Stone II^a, Rodney K Chan^a, Robert J Christy^a

^aUS Army Institute of Surgical Research, USA

Burns are a significant problem in combat casualty care. Since 2003, the USAISR burn center has cared for more than 992 military burn casualties and 4500 civilian burn victims. According to the American Burn Association (ABA), approximately 45,000 have burn injuries requiring medical treatment with about 3,500 cases resulting in death. Despite biomaterial advancements, the treatment of burn injuries by autologous skin graft remains largely the preferred standard-of-care. The major rate limiting step in treating these burn wounds is the regeneration of functional skin layers to avoid further complications and multiple revision surgeries. Some of the currently available artificial skin substitutes try to address this problem, unfortunately, they are less successful in large burn wounds. To address these shortcomings we are investigating the therapeutic benefits of adipose derived mesenchymal stem cells, acellular extracellular matrices and hydrogel based regenerative technologies to address the clinical shortcomings of current skin substitutes. We envision adipose derived stem cell based tissue engineered skin equivalents will provide beneficial effects to treat severe burn wounds and improve patient outcomes.

Biography

Natesan graduated from Central Leather Research Institute, Chennai, India, with the specialization in cell and biomaterials core. He began his professional career as post doctoral research associate at the Department of Extremity Trauma Research and Regenerative Medicine, US Army Institute of Surgical Research, Fort Sam Houston, Texas, US, in the year 2007. He has been actively involved in the stem cell based skin regeneration research. In June 2011 he became a Staff Scientist and presently he is a Research Scientist in the Department of Combat Trauma and Burn Injury Research, continuing his research in developing technologies for treating combat burn injuries.

shanmugasundaram.natesan.ctr@mail.mil

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