



San Antonio Nano Tech Forum

SANTF Networking Series

- Title:** Magnetic Nanoparticle Based Approach for Externally Controlled Corneal Endothelial Repair, *Lauren Cornell, Anthony Johnson, David Zamora*
- Speaker:** **Dr. David Zamora**
Ocular Trauma and Vision Restoration, U.S. Army Institute of Surgical Research, Ft. Sam Houston Texas TX
- Venue:** **Mamacitas, IH-10 and Callaghan**
- Date:** **Wednesday, October 22, 2014**
- Time:** **6.30 – 7.00 PM – Social Hours (Cash bar)**
7.00 PM Dinner
7.30 Technical Presentation
- Registration:** \$20 registration (cash or check at the door) includes dinner.

Abstract:

During operations in Iraq and Afghanistan, 16% of battlefield evacuations were from eye trauma. If the corneal endothelium is damaged, regenerative potential is limited. A corneal graft may not be suitable for soldiers with inflamed graft beds, thus an alternative form of therapeutic recovery is needed. A nanotechnology based approach for guiding cells to the injured area using super paramagnetic iron oxide nanoparticles (SPIONPs) and an external magnetic force was identified. This work examines the health effects of SPIONPs on bovine corneal endothelial cells (CEC), in the presence and absence of magnetic force, to determine if high SPIONP loading is feasible. Commercially available CECs were seeded at 21,000 cells per well. The CECs were exposed to SPIONP concentrations from 0 to 10^8 nanoparticles per cell. The viability and structure of CECs was assessed over 3 days. A two tailed t test showed significant differences ($p < .01$) between highly SPIONP loaded cells exposed to magnetic force as compared to those not exposed. The cytoskeleton structure was unaltered and viability was minimally affected. These results demonstrated cell health was maintained with high SPIONP loading and thus, there is potential for developing an ocular therapeutic platform for externally controlled CEC guidance.

Please RSVP to: info@santf.net. Please check our website (www.santf.net) for complete program details and upcoming meeting schedule.