# Therapy Development for TBI and Related Symptoms

## Anti-Lysophosphatidic acid (LPA) Antibody Treatment for Protection Against Blast-Induced Polytrauma

LPA is a bioactive lysophospholipid released from activated platelets, astrocytes, choroidal plexus cells and microglia and is reported to play major roles promoting inflammatory processes through signaling events mediated through specific G-protein coupled LPA receptors. Investigators at WRAIR in collaboration with Lpath, Inc. (the manufacturer of anti-LPA antibodies, 504B3), are evaluating the role of 504B3 in ameliorating the deleterious effects of blast-induced neurotrauma. Although in initial experiments, intravenous administration of 504B3 did not appear to protect against the neurobehavioral or neuropathological abnormalities induced by blast exposure, it did greatly reduce retinal injury caused by these insults. The lack of efficacy in this model of blast TBI differs from positive findings seen with other brain injury models and is likely attributable to insufficient amounts of anti-LPA antibody reaching the brain after intravenous administration since immunoassays showed only trace amounts of anti-LPA antibody in brain and cerebrospinal fluid samples. To circumvent the blood-brain barrier, these investigators are currently testing the efficacy of intranasal administration as an alternative means to safely deliver therapeutic doses of anti-LPA antibody to the brain.