Kade Scoresby, Class 2025

Campus: CHI-St. Joseph's, Bryan, TX
Research area: Lymphatic biology, the role of lymphangiogenesis in the regulation of ALS pathogenesis
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Kade Scoresby is a medical student in the class of 2025 at Texas A&M University School of Medicine who is conducting a research project under the mentorship of Mariappan Muthuchamy PhD, a Professor in the Department of Medical Physiology at Texas A&M University School of Medicine. Their MSE research project will explore the effects of skeletal muscle lymphangiogenesis on mice with amyotrophic lateral sclerosis (ALS). ALS is a neurodegenerative disorder characterized by upper and lower motor neuron degeneration causing muscle weakness, atrophy, and eventual paralysis. Excessive neuroinflammation is one of the important processes in promoting ALS pathogenesis and symptoms. Since the lymphatic system plays an essential role in the regulation of tissue inflammatory status, we hypothesized that lymphatic function would be compromised in ALS animals and that improving lymphatic function in muscle fibers will decrease inflammatory status and improve skeletal muscle function. Preliminary data from Dr. Muthuchamy's lab group has demonstrated that lymph transport function is significantly decreased in the lower limbs of ALS mice compared to control mice. Though vascular endothelial growth factor has been reported as a therapeutic potential for neurodegenerative diseases, the role of lymphangiogenesis is not yet understood in the ALS pathogenesis (Pronto-Laborinho et al 2014). Our proposed study will investigate whether increased lymphangiogenesis improves neuromuscular junctions in ALS mice. Transgenic mice with a mutation that conveys ALS phenotype will receive an adeno-associated virus (AAV) vector containing VEGF-D in their skeletal muscle fibers, specifically in the tibialis anterior muscle. Neuromuscular junction function will be evaluated in control, pre-symptomatic, and symptomatic ALS mice . The results of this study are anticipated to illuminate a potential therapeutic approach for ALS in humans by targeting the lymphatic system.