

Dr. Pfister's research has pioneered new approaches answering long standing questions on the critical role of biomechanics on the growth of neurons to the pathogenesis of blast and blunt traumatic brain injuries (TBI) at molecular, cellular and systemic scales. Through novel bioreactor design and biomechanical based methods, he demonstrated for the first time that axons rapidly grow under the continuous application of stretch at rates up to 1cm/day and 10cm in length. This work explored new knowledge impacting a new subfield in neuroscience and established efforts by several groups to exploit engineering of nerves for repair. This work resulted in three cover articles including a cover article in the Journal of Neuroscience, and was instrumental of the coveted NSF CAREER awarded in the very first attempt. In the area of brain injury, he created the first neuronal stretch injury device to study the mechanical implications of stretch on TBI, and extended this work through an innovative TBI animal model that can precisely control the biomechanical loading parameters. These remain unique models that can independently control the rate, magnitude and impulse of injury. His work has a great impact by linking the rate and impulse of load to the induction and progression of neuronal injury. Dr. Pfister maintains a diverse research group of students at all levels training together from undergraduate to postdoctoral scientists. He focuses on the inclusion of students with disabilities and regularly supports NJIT programs including three McNair Post-baccalaureate Achievement Program Scholars. In his roles he has promoted TBI research at NJIT, meeting with NJ legislators including Corey Booker and organizing workshops for the NJ Commission on Brain Injury Research. He is a strong advocate for the education and inclusion of persons with disabilities. At NJIT, he advocates for accommodation of students with disabilities and works for their inclusion in the lab. In the community he supports families of children with disabilities and ran a parent support group for over 10 years. He is a graduate of Partners in Policy Making for Families of Children in Early Intervention, Institute on Disabilities, Temple University. With his training, served as a parent advocate at The Woods School as well as local task forces and councils focusing on policy.