Dr. Roland Kaunas is associate professor in the Department of Biomedical Engineering at Texas A&M University. His laboratory focuses on the engineering of micro-tissues containing mesenchymal stem cells as vehicles for regenerating musculoskeletal tissues and as in vitro models for studying bone tumor biology. This work employs sophisticated microfluidic platforms, custom bioreactors, and novel scaffolding strategies involving composites of natural and synthetic polymers.

Dr. Kaunas’ group also studies how mechanical stresses and strains, such as tensile stretch and fluid shear stress, regulate cell function in vascular tissues including arteries, capillaries and lymphatics. This work involves integration of experiments and theory to elucidate the roles of intracellular contractility, applied forces and scaffold material properties on cell architecture and transduction of mechanical stimuli into intracellular signals leading to changes in cell behavior.