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Image created at the
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Outgrowth

People's Choice Award

The peripheral nervous system is capable of regeneration; however, often times, the regeneration is limited and incomplete. Injury sustained to the peripheral nervous system is acquired through physical insult to the nerves, or through pathophysiological manifestations called neuropathies. My work involves investigating biochemical pathways that may act as 'brakes' preventing the regeneration of axons. For instance, a cellular growth pathway may have a regulatory mechanism preventing excessive growth in cells as a way of protecting them from growing out of control. Blocking of this regulatory system, synchronized within the period of axonal regeneration, could improve growth of neurons as well as improve functional recovery. This image is a dissociated sensory neuron in culture from the dorsal root ganglion of a rat. In order to test the efficacy of drugs and siRNAs, we administer the agent in culture with sensory neurons and evaluate the outgrowth of neurite projections by immunohistochemical staining for neurofilament. Increased neurite outgrowth following treatment is an indication that the treatment may improve outgrowth in a living animal. Finding treatments that aid the recovery of axons in assays such as this are paramount to developing clinical treatments that can aid in recovery of peripheral nerve damage.