A little bit nervous: the role of neurons in organ formation, regeneration, and disease

All organs in the body are contacted by the nervous system through peripheral nerves, and these nerves are essential for proper organ function. In adults, loss of these nerve contacts can lead to death of the organs' cells (atrophy), and when tumors in the head or neck disrupt peripheral nerves patients are especially at risk. While these nerve contacts play key roles in adult health and disease, excitingly they may also contribute to the earliest stages of organ development. Organs receive their nerve supply during the earliest stages of development, far preceding organ function, suggesting they play instructional roles in how the organs will develop. Based on our current studies in glandular systems, we will explore the impact of nerves on mammalian development, homeostasis and disease, and discuss their potential as therapeutic targets.