Dr. Kaela S. Singleton's research interests are driven by three key questions: How are mature, unique neurons generated and maintained in the brain? How do pathologic mechanisms disrupt molecular and cellular events during neuron generation and development? And why do rare genetic diseases preponderantly affect the nervous system of children? During her seminar she will address these questions by focusing on both her predoctoral and postdoctoral research. As a graduate student Dr. Singleton defined the role of Sox11, a prominent transcription factor in mammalian and non-mammalian neural development, using RNA-sequencing and protein mapping both in vivo and in vitro. Her postdoctoral research addresses the molecular and cellular events disrupted in Menkes disease, a progressive form of childhood neurodegeneration that is triggered by dysregulation of copper. She is investigating mitochondria integrity in Menkes disease using mouse and Drosophila models in order to shed light on how the brain protects itself from but also becomes susceptible to copper. Collectively, Dr. Singleton aims to use her training in cellular and molecular neuroscience as well as pedagogy and mentorship to understand how neurons and future generations of scientists develop into mature, unique individuals.