Cancers develop in complex tissue environments, which they depend upon for sustained growth, invasion and metastasis. Different tissue and tumor microenvironments are populated by diverse cell types including innate and adaptive immune cells, fibroblasts, blood and lymphatic vascular networks, and specialized organ-specific cell types, which collectively have critical functions in regulating tumorigenesis. An example of an exquisitely organ-specific microenvironment is the brain, with a number of critical tissue-resident cells playing key roles in regulating brain cancer initiation, development and metastasis. Dr. Joyce and her team explore how reciprocal communication between cancer cells and diverse immune and stromal cell types in the tumor microenvironment regulates each of the key stages of disease progression, as well as the response to therapeutic intervention. The team then exploits this knowledge to devise novel and effective strategies to therapeutically target the tumor microenvironment, with a special emphasis on brain cancers.