Stem cells exist both in the developing embryo and in many organs of the adult organism. Differentiation of these cells is tightly regulated so that their progeny become increasingly specialized and lose the potential to revert or transform into other cell types. This regulation is very important both to maintain organ function and to avoid the possibility of uncontrolled cell growth, the basis of cancer. Our laboratory is interested in determining the molecular mechanisms that direct and stabilize cellular differentiation with the focus on post-transcriptional regulation and epigenetics. The goal is to control the differentiation and de-differentiation of cells in order to regenerate tissues for replacement therapies as well as develop novel means for treating cancer.