

Abstract:

Exposure to low gravity can have long term detrimental effects on the eye and vision. If space travel is to become commonplace, we must develop tools to heal the eye following damage. In the Tseng lab, we are interested in identifying and studying the mechanisms that induce regeneration of the eye. The Notch1 gene is involved in normal eye development but also plays a key role in maintaining neural stem cells. Using the clawed frog *Xenopus laevis* as a model, we seek to assess the role of the Notch signaling pathway in eye regrowth. By inhibiting Notch signaling during eye regrowth, we have determined that this pathway's activity is required for regrowth of the eye. Further experiments show that this is likely due to the requirement of Notch signaling for cell proliferation following injury. This project will help to define how a developmental mechanism can be used to induce successful regrowth.