

## **Microbiota Modulates the Intestinal Regeneration in the Sea Cucumber *Holothuria glaberrima***

The microbiota has been shown to play important roles in many developmental and physiological processes. However, little is known of the role of microbiota on regeneration of new organs following loss or injury. This proposal aims to extend our knowledge of the role of the microbiota in regenerative processes by studying its effects during intestinal regeneration. As the intestinal lumen forms, the regenerating organ is in direct contact with the environment microbiota and those organisms have already been shown to influence the digestive tract morphology and physiology during embryological development, two characteristics make these animals particularly suitable for these experiments. Because sea cucumbers are well-known to regenerate their digestive system, my approach is to focus on the role that microbiota may have during the intestinal regeneration of these echinoderms. Previously, using sterile conditions, antibiotics and antifungal agents to modify the microbiota, I have evaluated effects over well-known events during intestine regeneration, and found delayed intestine growth, due mainly to decreased dedifferentiation and ECM remodeling. As we are using antibiotics, currently, I am assessing the effects of antibiotics on host tissue, with experiments to discard the effects by toxicity rather than the elimination of bacteria. As future experiments, I will characterize the microorganisms that are been affected using these drugs, and changes on microbiota during the treatments. Also, I will identify the host genes that are under the control of the microbiota in normal and regenerating animals by performing transcriptomic analyses, specifically, of genes involved in immune responses.