Research Group: Planarian Lab

Project: Tumor formation in homeostatic and regenerating planarians

Brief description: The relation between cancer development and tissue regeneration has long been hypothesized, with some studies suggesting that regenerative tissues are less prone to tumor formation. Freshwater planarians, known for their whole-body regenerative capacity, offer a unique model to study this connection. These animals rely on the presence of pluripotent adult stem cells (neoblasts) to regenerate and maintain tissue homeostasis. Despite of the presence of continuous stem cell division, planarians rarely form tumors. However, their exposure to carcinogens can lead to the formation of both benign and malignant tumors.

Objective: Your TFM project will aim to determine the occurrence of tumor development in regenerating and non-regenerating planarians exposed to diverse chemical and genetic insults. You will study the incidence of tumor formation at the cellular, molecular and genomic levels in regenerating versus non-regenerating specimens.

Technical skills:

- Molecular Biology: total RNA extraction; cDNA synthesis, *in vitro* transcription, riboprobe synthesis, PCRs, plasmid purification, …
- Functional characterization: dose dependence response, microinjection of dsRNA/carcinogens, planarian amputation, whole-mount immunostaining of stem cells, whole-mount in situ hybridization, …
- Imaging: confocal microscopy, planarian in vivo imaging, image processing.
- Planarian culture: maintenance, cleaning and feeding.

Director(s) IQS: Dra. Loli Molina