Dr. Ophir Klein
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“Renewal and plasticity in oral and gastrointestinal epithelia”

My laboratory studies mammalian development and regeneration. We use mice as a genetic model system to elucidate the mechanisms responsible for normal and perturbed development of teeth, taste papillae, facial skeleton, gastrointestinal epithelia, and other organs, as well as stem cell function in these organs. We also use organoids as an in vitro system to study mechanisms that control development and renewal. One of our principal lines of research is to identify the processes underlying normal craniofacial development and renewal as well as to understand craniofacial and dental malformations, which are among the most common congenital abnormalities and have profound impacts on the lives of patients and their families. We intend to take advantage of the insights provided by our experiments to guide us in the use of stem cells in regenerating dental and craniofacial tissues. Another focus of the lab is the regeneration of the intestine and oral mucosa, and we also examine the development of other important mammalian organs. In addition to our laboratory experiments, we study cohorts of patients with craniofacial and dental birth defects using a variety of approaches, and we also are developing novel morphometric approaches to syndrome analysis.