Our work is concerned with the formation, function and homeostasis of organs during vertebrate development. We are interested in understanding the cellular and molecular events that underlie cellular differentiation, tissue morphogenesis and organ function during the formation of the cardiovascular system (the heart and the blood vessels) as well as the liver and pancreas. Our initial approach consists of screening for mutations that affect these processes in zebrafish, a vertebrate model system that allows forward genetics as well as embryological studies. This talk will focus on the generation and regeneration of pancreatic beta cells.