"Do alternative developmental trajectories influence adult cellular responses?"

Abstract: We typically envision cell fate trajectories during development as being linear pathways where a cell progressively differentiates into its final fate. However, modern lineage tracing has revealed that a seemingly homogeneous cell population is frequently comprised of cells that took very different developmental paths. Our long-term goal is to discover whether cells remember differential developmental trajectories on the molecular level into adulthood and whether this history influences tissue homeostasis, injury, and disease. Here, I will discuss how "different roads sometimes lead to the same castle" during heart development and our progress on understanding how alternative trajectories might affect heart function and regeneration.

Kristy Red-Horse is an Associate Professor in the Department of Biology at Stanford University. Dr. Red-Horse's laboratory uses cardiovascular development as a model to study the signals that instruct cell fate and guide morphogenesis during organ formation in the mammalian embryo. The current focus of the lab is to fate-map the different cellular sources that give rise to the coronary arteries of the heart and to identify the molecules that direct their migration and differentiation. The long-term goal is to use this information to better understand and treat cardiovascular diseases. Dr. Red-Horse received her PhD from the University of California, San Francisco and was a Postdoctoral Fellow at Genentech, Inc. and Stanford University. Honors include New York Stem Cell Foundation Robertson Investigator, Terman Fellow, Searle Scholar and Brown Faculty Fellow.