

Speaker: Sabrina L. Spencer, University of Colorado-Boulder

Date: Wednesday, April 13, 2022

Time: 11:30 AM to 1:00 PM

Host: Bonnie Berger

Title: Proliferation-quiescence control in normal and drug-treated cancer cells

Abstract: How do mammalian cells make the choice between proliferation (cell-cycle progression) and quiescence (cell-cycle exit)? Correct execution of the proliferation-quiescence decision is important in many biological settings, from developmental processes to adult tissue homeostasis, and dysregulation of this decision occurs in nearly all cancer types. Yet despite clear medical relevance, we have a limited understanding of the inputs that control the choice between proliferation and quiescence in normal cells and how cancer cells rapidly rewire this program to escape targeted cancer therapies. To tackle these issues, we have developed cutting-edge experimental and computational methods, including novel fluorescent biosensors, multi-day time-lapse microscopy, and automated single-cell tracking, providing us a longitudinal, multigenerational view of cell-cycle behavior. In this seminar, I will cover two areas of my lab: 1) The characterization of a spontaneously quiescent subpopulation of cultured human cells that are triggered by internal cell stress and are resistant to certain drug treatments; 2) The causes and consequences of rapid cancer cell adaptation and escape from quiescence upon treatment with targeted MAPK therapies.