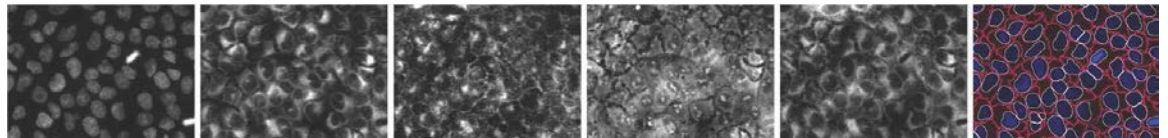




Tackling World Health Problems by Analyzing Cell Images



Images contain tremendous information about the state of cells, tissues, and organisms. We work with biomedical researchers around the world to extract metrics from cell images, particularly in high-throughput screening experiments testing drugs and genetic perturbations. As the cell systems and phenotypes of interest become more complex, so are the computational approaches needed to properly extract the information of interest; we continue to bridge the gap between biologists' needs, such as 3D organoid models, and the latest in computational science, such as deep learning algorithms.

Beyond measuring features that biologists specify, we extract even more from images through profiling experiments using the Cell Painting assay, where thousands of morphological features are measured from each cell's image. We are working to harvest similarities in these "profiles" for identifying how drugs and genes affect cells, identifying the functional impact of cancer-associated alleles, discovering disease-associated phenotypes, and identifying novel therapeutics. Ultimately, we aim to make perturbations in cell morphology as computable as genomics data.

All novel algorithms and approaches from our laboratory are released as open-source software, including CellProfiler, CellProfiler Analyst, and cytominer.

Dr. Anne Carpenter

Broad Institute

Host: Dr. Mikko Taipale

Date: Monday Oct. 15, 2018

Time: 4PM

Place: MSB 2172