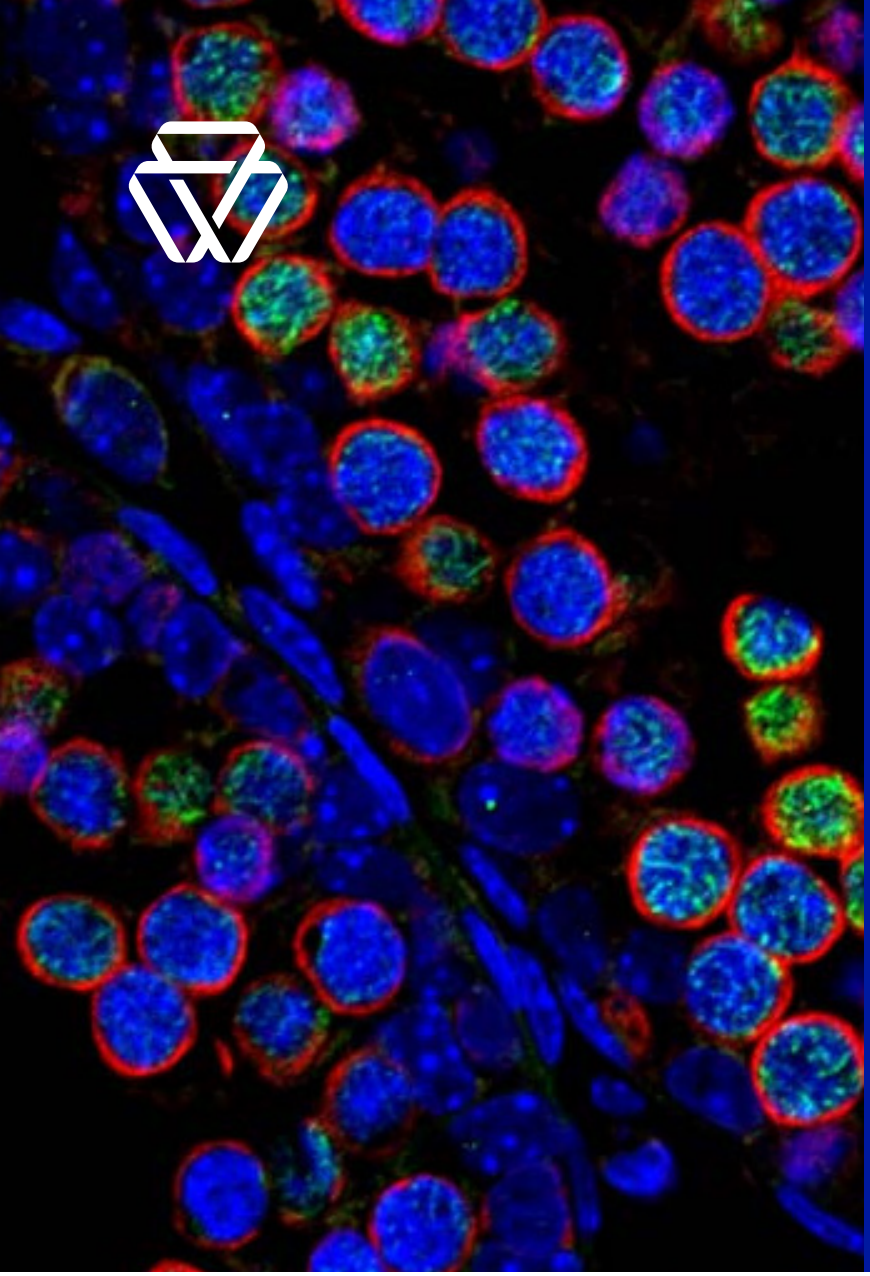

Innovation Centers advance research with state-of-the-art technical expertise

Whitehead Institute's Innovation Centers are scientific facilities that provide state-of-the-art equipment and unique expertise in a broad range of technical areas. The approaches and methods that they help develop are often key to our laboratories' investigations — and thus have a major impact on scientific discovery. Here are snapshots of their capacities.

Increasingly, biomedical research produces vast troves of data; making full use of that information is a major challenge. The **Bioinformatics and Research Computing Center (BaRC)** works at the intersections of biology and computer science, helping Institute researchers analyze and interpret their data-rich experiments. BaRC facilitates a growing array of projects across the Institute, often catalyzing research that simply could not be undertaken without its participation.

Understanding the roles of the human genome's 20,000+ protein encoding genes requires exploring how genes are regulated. The **Genome Technology Center** uses an array of tools — such as Transcription factor binding mapping, chromosome conformation capture, and gene expression analysis — to do that. Whitehead Institute has been recognized as helping to pioneer the expanding use of many tools that enable researchers to track gene activity.

The **Functional Genomics Innovation Center** helps investigators uncover genes involved in diverse cellular processes using adaptations of the CRISPR/Cas9 system to target many genes in a single experiment. Beyond supporting Institute labs with design and implementation of pooled screening approaches, the Center helps develop new ways to apply CRISPR/Cas9 machinery and other screening technologies to new model systems.

The **Quantitative Proteomics Center** is at the forefront of advancing, adapting, and implementing cutting-edge technologies to analyze global protein profiles using mass spectrometry. With the rapid technological progress of mass spectrometers, coupled with AI-based software algorithms and powerful computer servers, the Center is enabling researchers to better understand proteins' role in human diseases and to conceive novel therapies.

The **Metabolite Profiling Center** supports researchers studying metabolism, the chemical reactions that enable organisms to live and function. Most of the projects it supports involve studying the action of small molecules by looking at many different biological systems. For example, recently it helped Institute researchers engineer yeast to create a more efficient biofuel from an underutilized part of corn plants.

The **Flow Cytometry Center** helps researchers sort cell types and analyze their functions. The work often starts by engineering cells to have a molecular tag that makes them emit light with a specific wavelength, so that specialized machines can detect and sort cells with wavelengths. This enables researchers to, for example, screen the cell population for specific genes or to clone the cells for future experiments.

The **W.M. Keck Microscopy Facility** offers ten advanced light microscopes capable of a variety of imaging applications. It enables researchers to observe cells and tissue at high resolution and high throughput, and to observe phenomena over time. In addition to imaging mammalian cells and tissues, the Keck Facility enables researchers to study non-biological materials and model organisms such as plants, planarians, zebrafish, and fruit flies.

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