

Weill Cornell Medicine Core Facilities

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Advanced Biomolecular Analysis Core (ABAC)

The Advanced Biomolecular Analysis Core (ABAC) provides cutting-edge and novel proteomic methods along with powerful new technologies for mass spectrometric imaging of biological samples and high throughput metabolomics. The core provides opportunities for adopting emerging methods and developing entirely novel ones. They are dedicated to furthering the reach and accuracy of analytical methods and to sharing our expertise with the Weill Cornell community. Services include proteomic analysis, mass spectrometric MALDI imaging of lipids, peptides and metabolites, and targeted high-throughput analysis of small molecules.

Applied Bioinformatics Core

The Applied Bioinformatics Core (ABC) is a central service group that specializes in providing data management and analysis support to large genomic centers and research groups. The objective of the core is to provide analytical capabilities to support and advance biomedical research. This core has ample expertise analyzing biological data from diverse types of experiments including, but not limited to, high-throughput genomic assays, building standardized workflows as well as customized, in-depth analyses with emphasis on thorough quality control and statistical rigor.

Citigroup Biomedical Imaging Center

The Citigroup Biomedical Imaging Center (CBIC) at Weill Cornell Medicine is a state-of-the-art 15,000 square foot research facility housing the Biomedical Imaging Core Facility of the College. Major equipment includes two 3.0 Tesla magnetic resonance imaging and spectroscopy (MRI/MRS) system; a 7.0 Tesla/30cm bore pre-Clinical MRI/MRS system; a combined positron emission tomography and computed tomography (PET/CT) system; a pre-clinical MicroPET/SPECT/CT system; a multispectral optical imaging system, a pre-clinical ultrasound system, a medical cyclotron facility for production of radiotracers; and radiochemistry laboratories for ligand synthesis. The center has been carefully designed to facilitate complementary use of all imaging modalities.

Epigenomics Core Facility

The Epigenomics Core Facility of Weill Cornell Medicine provides an array of epigenomics and bioinformatics research resources and services that include DNA methylation profiling, protein-nucleic acid association, single cell transcriptomics, immune profiling and epigenomics, and bioinformatics analysis. Core resources and services include sample preparation services and data generation on the Illumina NovaSeq 6000 and MiSeq platforms.

Flow Cytometry

The WCM CLC Flow Cytometry Core Facility offers state-of-the-art fluorescence activated cell sorting (FACS) instruments and services, and expertise in their applications, to the Weill Cornell

Medicine community and to outside investigators. The facility also provides consultation on project design and data analysis, and offers educational workshops, seminars and training.

Genomics Resources Core Facility

The Genomics Resources Core Facility (GRCF) at Weill Cornell Medicine (WCM) provides genomics technologies and related high throughput technologies to the basic and translational research and clinical communities including WCM, New York Presbyterian Hospital, Hospital for Special Surgery and external collaborators. The full-range and high quality of Next Generation Sequencing (NGS) services include experimental design, sample manipulation, instrumentation, data analysis/interpretation and validation. The goal of the GRCF is to provide cutting-edge high-quality services at affordable costs to the entire research community.

Institutional Biorepository

The Institutional Biorepository Core (IBC) was launched in 2017 to provide Weill Cornell Medicine (WCM) investigators with a mechanism to attain high-quality human biospecimens for their research needs. Services include solid tissue acquisition and processing, biofluid processing, nucleic acid extraction, and biospecimen storage.

Metabolic Phenotyping Center

The Metabolic Phenotyping Center offers an extensive range of services for comprehensive metabolic phenotyping in the mouse. Ambient temperature and light-controlled Promethion metabolic cages assess oxygen consumption and carbon dioxide production as well as activity, body weight and food and water intake in real time. An additional ambient temperature and light-controlled incubator is available for longer term temperature exposure studies. Lean and fat mass can be quantified via EchoMRI, radiative heat with FLIR infrared thermography and food absorption efficiency using oxygen bomb calorimetry of feces.

Complementing these analyses, whole body glucose metabolism can be assessed via glucose, insulin and pyruvate tolerance tests as well as glucose stimulated insulin secretion. To further investigate hepatocellular biology, they offer primary hepatocyte isolations.

Microbiome Core Lab

Located at the Jill Roberts Institute for Research in Inflammatory Bowel Disease of Weill Cornell Medicine, the Microbiome Core Lab specializes in providing institutional access to high-quality, affordable, user-friendly microbiome sequencing to enrich clinical and basic research. The services provided include 16S sequencing, metagenomic sequencing, and bioinformatics analysis.

Microscopy and Image Analysis Core Facility

The Imaging Core Facility strives to assist users with all their microscopic imaging needs, from the conception of an idea, to final image analysis and presentation. This core has confocal,

multiphoton, electron, automated optical, and widefield microscopy services available. Additionally, there are four workstations with several different image analysis programs.

Nuclear Magnetic Resonance (NMR)

The WCM Nuclear Magnetic Resonance (NMR) Core Facility provides state-of-the-art biological and chemical nuclear magnetic resonance resources and services, and expertise in their analytical, structural and biochemical applications, to the Weill Cornell Medicine community and to outside investigators. Services include sample preparation, NMR data collection and data analysis. The core facility also provides consultation on project design and data analysis, and offers seminars, training and educational workshops.

Proteomics and Metabolomics Core Facility

The Weill Cornell Medicine Meyer Cancer Center Proteomics and Metabolomics Core Facility offers mass spectrometry-based analysis of proteins, peptides, metabolites and other biochemical molecules, to Weill Cornell Medicine users as well as external users from academic institutions and commercial enterprises. Proteomic services include protein identification, protein quantitation, protein expression profiling, and protein interaction analysis.

High Throughput and Spectroscopy Center

This is a shared resource between Weill Cornell Medicine and Rockefeller University. The High Throughput and Spectroscopy Center (HTSRC) guides researchers in drug discovery by improving the efficiency of their bioassays, identifying compounds and genetic modulators of function, and in utilizing core technologies typically applied to biochemical analyses. The HTSRC has a collection of 389,728 compounds, automated liquid transfer devices, compound databases, and supports a broad diversity of assay development techniques, typically found in early drug discovery programs. The Center also has spectroscopic and calorimetric equipment for use in studies of the structure, function and interactions of biological and organic molecules.

Organic Synthesis Core

This is a shared resource between Weill Cornell Medicine and Memorial Sloan Kettering Cancer Center. The facility excels in all areas of chemistry that interface with biology and medicine. This incorporates a translational mind and an understanding of biological problems. Together, facility personnel have expertise that spans all aspects of organic synthesis. These include but are not limited to complex carbohydrate vaccine synthesis and development, combinatorial chemistry, high throughput synthesis and purification, chemical library design and synthesis, virtual screening, molecular modeling, natural and unnatural product synthesis, natural product extraction/fractionation and structure determination. Recent projects in the facility pushed synthesis limits to reach nanotechnology and inorganic complex synthesis.