

Perelman
School of Medicine
UNIVERSITY of PENNSYLVANIA

BIOMEDICAL RESEARCH CORE FACILITIES

The Perelman School of Medicine is committed to advancing research and academic endeavors at both Penn and neighboring scientific communities. Our research core facilities offer a wide variety of services, ranging from high-throughput screening to cell sorting to high resolution electron microscopy. Through these diverse resources, we provide access to state-of-the-art equipment and instrumentation, technical expertise, training and education all designed to support innovative, cutting-edge research.



<https://www.med.upenn.edu/cores/>

Research Core Facilities

CATEGORIES



Biostatistics & Bioinformatics



Cells to Animals



Clinical & Community Toolbox



Imaging & Microscopy



Neurosciences



OMICS to Function



Repositories & Pathology



Stockrooms & Shops

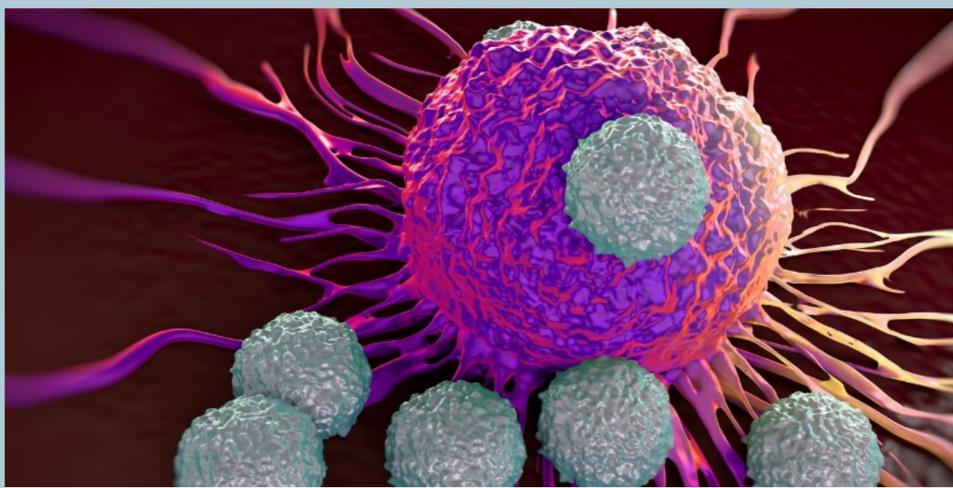


**Viruses, Vectors,
Particles & Chemicals**

Biostatistics & Bioinformatics



Bioinformatics Core (BIC) ♦ Biostatistics Analysis Center (BAC) ♦ Center for Biomedical Image Computing & Analytics ♦ Center for Biomedical Informatics in Translation (BIIT) ♦ Center for Preventive Ophthalmology & Biostatistics (CPOB) Biostatistical Consulting ♦ Cluster for Biomedical Image Computing (CUBIC) ♦ Human Immunology Core ♦ IBI Clinical Research Informatics Core (CIC) ♦ ITMAT Bioinformatics Facility ♦ ITMAT Community Outreach Using Health System Informatics (COHSI) ♦ ITMAT Study Design & Biostatistics Core (SDAB) ♦ LDI Health Economics Data Pool (HEDAP): Wharton ♦ LDI Health Services Research Data Center (HSRDC): Wharton ♦ Penn Genomic Analysis Core: Molecular Profiling Facility ♦ Translational Bio-Imaging Center (TBIC) / Center For Magnetic Resonance & Optical Imaging (CMROI) ♦ Viral Molecular High Density Sequencing Core



Cells to Animals



Animal Model Core Facility: Penn Vet New Bolton Center ♦ Cell and Animal Radiation Core ♦ Cell Center Services Facility ♦ Comparative Pathology Core Facility: Penn Vet ♦ CRISPR Cas9 Mouse Targeting Core ♦ Cytomics & Cell Sorting Resource Laboratory ♦ Flow Cytometry & Cell Sorting Facility ♦ Flow Cytometry Core: Penn Dental ♦ Gnotobiotic Mouse Facility ♦ Human Immunology Core ♦ IFI CyTOF Service Center ♦ Imaging Core Facility: Penn Vet ♦ Induced Pluripotent Stem Cell Facility ♦ Islet Cell Biology ♦ Microbial Culture & Metabolomics Core ♦ Mouse Cardiovascular Phenotyping Core ♦ Penn Diabetes Center RIA Biomarker Core ♦ Penn Vector Core ♦ Rodent Metabolic Phenotyping Core (RMPC) ♦ Small Animal Imaging Facility ♦ Stem Cell and Xenograft Core ♦ Transgenic and Chimeric Mouse Facility ♦ Transgenic Mouse Core Facility: Penn Vet



Clinical & Community Toolbox



Biostatistics Analysis Center (BAC) ♦ CEAR - Community Engagement & Research Core ♦ Center for Advanced Computer Tomography Imaging Services (CACTIS) ♦ Center for Advanced MRI & Spectrometry (CAMRIS) ♦ Center for Human Phenomic Science (CHPS) ♦ Center for Preventive Ophthalmology & Biostatistics (CPOB) Biostatistical Consulting ♦ Clinical Research Computing Unit (CRCU) ♦ Human Immunology Core ♦ Human Intervention Core ♦ IBI Clinical Research Informatics Core ♦ ITMAT Community Outreach Using Health System Informatics (COHSI) ♦ Kinetics Modeling & Simulation (KMAS) ♦ Mixed Methods Research Lab ♦ PET Center ♦ Referral Center for Animal Models of Human Genetic Disease: Penn Vet ♦ Viral Molecular High Density Sequencing Core

Imaging & Microscopy



CDB Microscopy Core ♦ Center for Biomedical Image Computing & Analytics ♦ Cluster for Biomedical Image Computing (CUBIC) ♦ Comparative Pathology Core Facility: Penn Vet ♦ Electron Microscopy Resource Lab ♦ Imaging Core Facility: Penn Vet ♦ Live Cell Imaging Core: Penn Dental ♦ Molecular Pathology & Imaging Core (MPIC) ♦ PET Center ♦ Radiology Research Core (RADCORE) ♦ Translational Bio-Imaging Center (TBIC) / Center For Magnetic Resonance & Optical Imaging (CMROI) ♦ Ultrasound Research Laboratory

Neurosciences



Brain Science Service Center ♦ Imaging Core Facility: Penn Vet ♦ Neurobehavior Testing Core ♦ Neurons R Us



OMICS to Function



High Throughput Screening Core ♦ Human Immunology Core ♦ Imaging Core Facility: Penn Vet ♦ Johnson Foundation Biophysical & Structural Biology Core (JFBSB) ♦ Metabolomics Core ♦ Microbial Culture & Metabolomics Core ♦ Next Generation Sequencing Core ♦ Penn Genomic Analysis Core: DNA Sequencing Facility ♦ Penn Genomic Analysis Core: Molecular Profiling Facility ♦ Viral Molecular High Density Sequencing Core

Repositories & Pathology



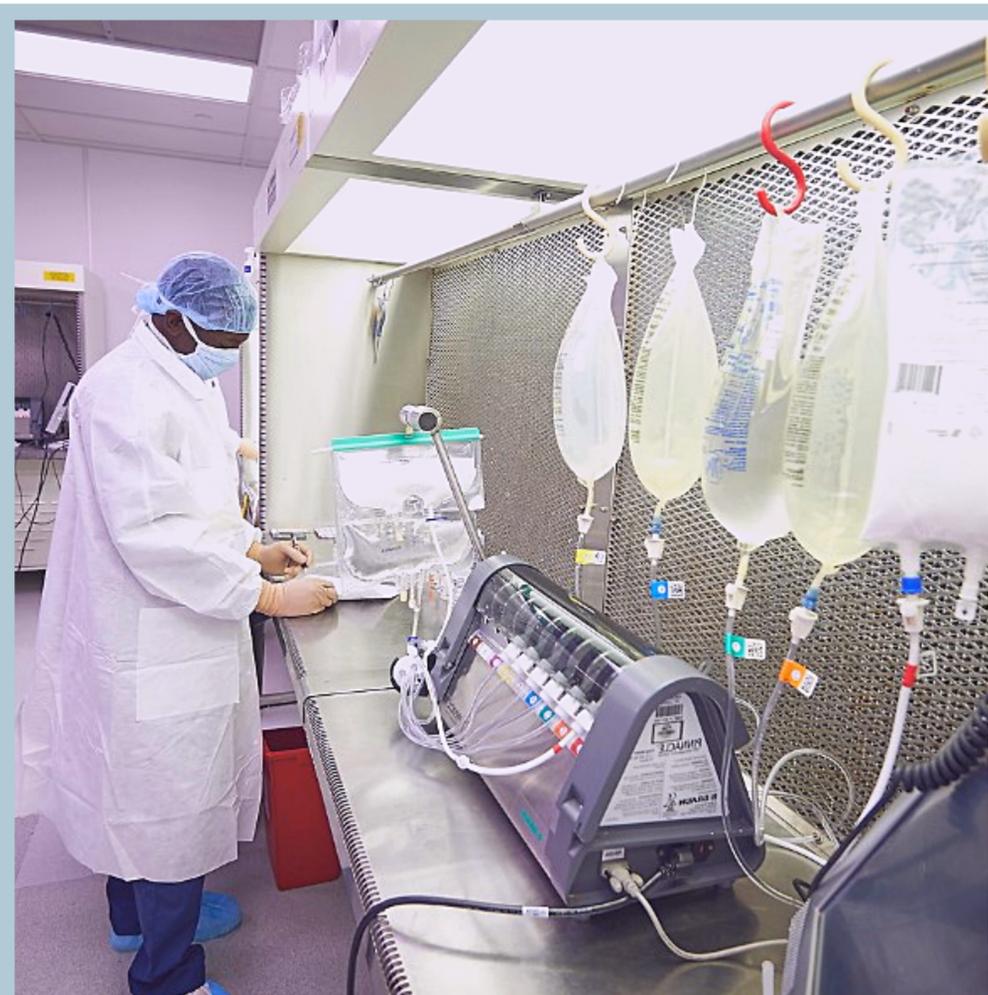
Acute Care Biobanking Microbiome Core ♦ Comparative Pathology Core Facility: Penn Vet ♦ Cooperative Human Tissue Network (CHTN) ♦ Histology Core: Penn Dental ♦ Host-Microbial Analytic & Repository Core (H-MARC) ♦ ITMAT Biobank ♦ Molecular Pathology & Imaging Core (MPIC) ♦ OCRC Tumor BioTrust Collection ♦ Referral Center for Animal Models of Human Genetic Disease: Penn Vet ♦ Stem Cell and Xenograft Core ♦ Tumor Tissue/Biospecimen Bank



Stockrooms & Shops



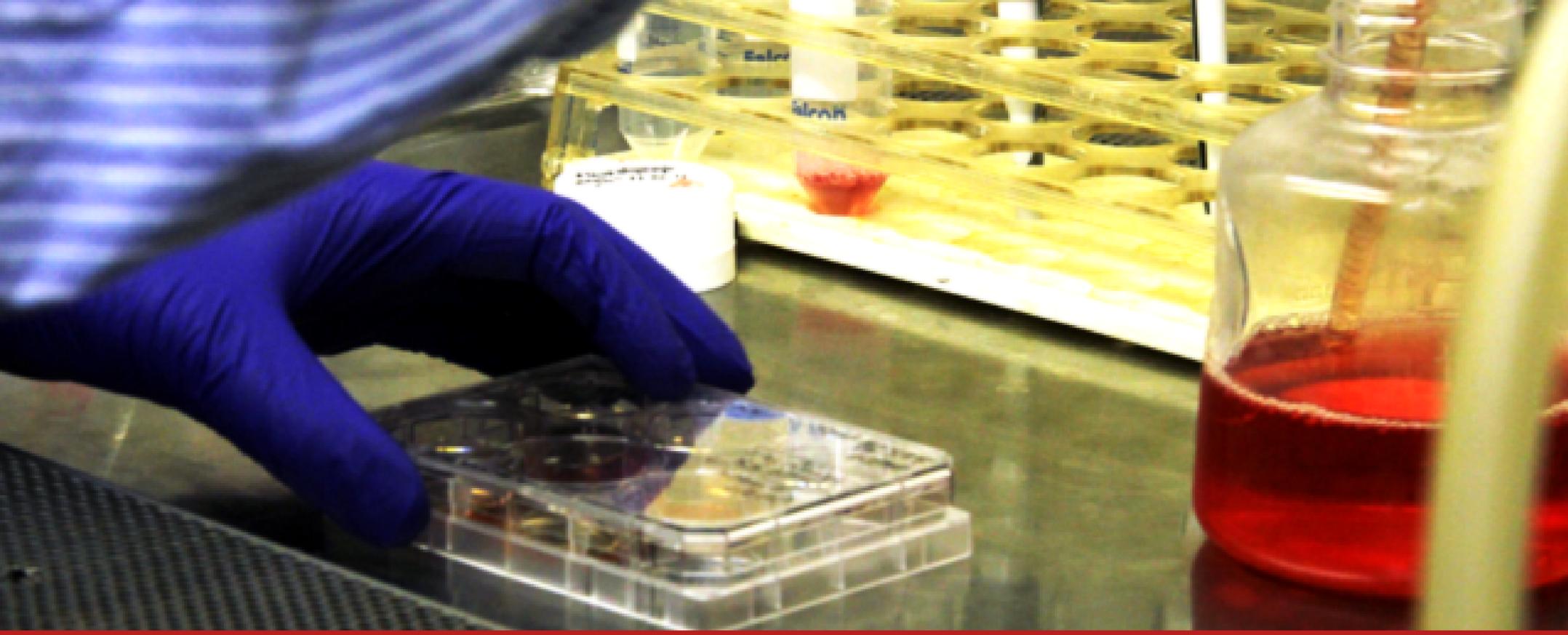
Cell Center Stockroom ♦ MINS Machine Shop ♦ Nuclear Medicine Physics & Instrumentation Group ♦ Penn Electronic Design Shop ♦ Research Instrumentation Shop



Viruses, Vectors, Particles & Chemicals



CFAR Virus & Reservoirs Core ♦ Chemical & Nanoparticle Synthesis Core ♦ Extracellular Vesicle Core Facility: Penn Vet



Acute Care Biobanking Microbiome Core

The goals of the Acute Care Biobanking Core, which is part of the PennCHOP Microbiome Program, are to encourage and facilitate microbiome-focused research in the pathogenesis, diagnosis and treatment of patients with critical illness. Many patients who are critically ill are subject to processes and complications with microbially-driven or infectious mechanisms. The Core will assist in research by providing de-identified samples with linked clinical metadata to support research in this area, collect specimens as needed in support of microbiome research, and offer support for development of such research in the critical care setting.

<https://pennchopmicrobiome.chop.edu/cores/acute-care-biobanking-core>

Animal Model Core Facility: Penn Vet New Bolton Center

The Animal Model Core at Penn Vet New Bolton Center at the intersection of science and the rapid advancements in health care technology is an ecosystem supporting the continuum from discovery to invention to innovation in medical translation. We are invested in understanding the value proposition of emerging technologies under consideration and how they target unmet clinical needs. This process informs animal model development to enhance scientific rigor during in vivo studies in experimental or naturally occurring disease models. Studies can be iterative starting on a small scale leading towards pivotal non-clinical IND/IDE-enabling trials in support of FDA or OUS-FDA submissions. The core hosts PIs, trainees and sponsors during clinical procedures to support and enrich their experience in a cross-functional team setting. Penn Vet New Bolton Center's deep and multifaceted subject matter expertise and logistical capabilities in translational research directly impacts PIs, sponsors and associated faculty to continue to pioneer, enhance and support the translational research enterprise at UPenn.

<https://www.vet.upenn.edu/research/core-resources-facilities/animal-model-core-core/>

Bioinformatics Core (BIC)

The Bioinformatics Core (BIC) of the Institute for Biomedical Informatics (IBI) provides professional bioinformatics services that include data analysis and consultation to Penn Biomedical research community. The BIC core is also dedicated to the building of efficient pipelines that handle various biomedical data including Next-Generation Sequencing (NGS) data. Since its establishment four years ago, BIC has been serving 50 research groups from 20 Penn institutes and departments, helped the funding of multiple NIH grants, and co-authored in 20+ publications.

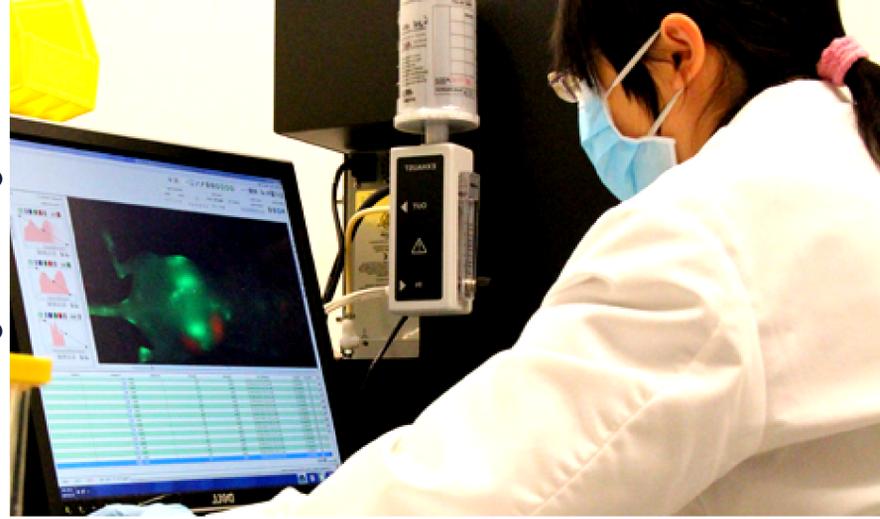
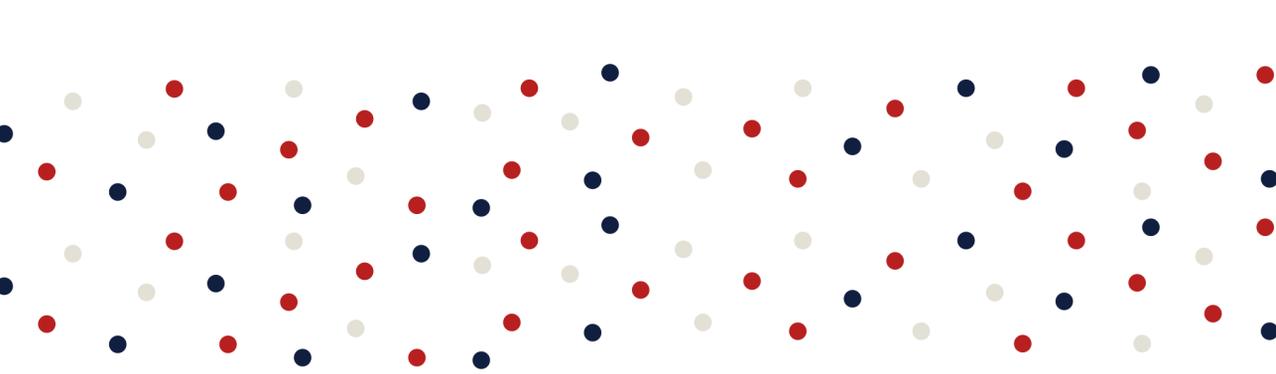
<https://bioinfo.med.upenn.edu/>

Biostatistics Analysis Center (BAC)

The Biostatistics Analysis Center (BAC) is a University of Pennsylvania service center, offered by the Perelman School of Medicine's Department of Biostatistics, Epidemiology, and Informatics (DBEI). The BAC is staffed by professionally-trained biostatisticians and biostatistical programmers, and provides a wide range of biostatistical and epidemiological consulting services to the University's biomedical research community, as well as externally.

<https://www.cceb.med.upenn.edu/bac>





Brain Science Service Center

The interdisciplinary Brain Science Center in the Penn Mahoney Institute for Neurosciences provides infrastructure support for research on human cognition, perception, affect, disordered cognition, and extension to preclinical models. By consolidating state-of-the-art methodological expertise in these domain areas as services, the Brain Science Center seeks to facilitate cutting-edge research using a largely shared set of methods and tools for elucidating brain-behavior relationships in health and disease.

<http://pennbrain.upenn.edu>

CDB Microscopy Core

The Cell & Developmental Biology (CDB) Microscopy Core provides personalized assistance on all aspects of imaging, from tips on sample preparation to training on one of our microscopes to assistance with image data analysis. Our facility currently houses seven confocal microscopes, a Bruker Vutara 352 super-resolution system, a Zeiss Z.1 Lightsheet system, three widefield light microscopes, and several computers dedicated to image processing and analysis. In addition, we offer scanning electron microscope (SEM) sample preparation and imaging.

<https://www.med.upenn.edu/cdbmicroscopycore/>

CEAR - Community Engagement & Research Core

The Community Engagement and Research Core (CEAR Core) aims to facilitate and build capacity for community-based research and community engagement, while enhancing the translation of research and technological developments to key public health and community stakeholders. The CEAR Core offers consultation on community engagement, training in participatory research methods, and assistance with the development, implementation, and evaluation of community translation activities. This Core is part of the Penn Institute for Translational Medicine and Therapeutics (ITMAT).

<http://www.itmat.upenn.edu/cear.html>

Cell and Animal Radiation Core

The Cell and Animal Radiation Core (CARC) is one of the most advanced cell and animal radiation research facilities in the US, essentially modeling state-of-the-art radiation modalities currently used in the clinic. The CARC provides “turn-key” services to users for performing precision, image-guided radiotherapy with both Photons and Protons (including FLASH proton radiotherapy) on cells, rodents and larger animals. A dedicated team of Physicists will also provide expert dosimetry and treatment planning capabilities. The CARC instrumentation consists of two image-guided SARRP 200 Small Animal Radiation Research Platforms (Xstrahl) capable of irradiating rodent tissues from 1 mm-20 mm in diameter; a research proton beamline (IBA, Roberts Proton Center); one X-RAD 320ix cabinet x-ray irradiator (Precision X-Ray); and two Cs gamma-ray irradiators (Shepherd Mark I), suitable for whole-body radiation of rodents.

Cell Center Services Facility

The Cell Center Services Facility provides basic cell culture training and services in various cell culture and related procedures e.g. Mycoplasma and Endotoxin testing. The services include cell culture at various scales, expansion of primary cells, seed cell cultures from on-site cell bank, cell storage; large scale growth of hybridoma and other cell lines followed by antibody purification by protein G column or recombinant protein production; EBV induced transformation of lymphocytes. It offers hybridoma generation by cell fusion and screening and, the transfection of mammalian cells. The facility prepares specialized cell culture media, Drosophila media and, various tissue culture and molecular biological reagents.

<https://genetics.med.upenn.edu/cores/cell-center-services/>



Cell Center Stockroom

The Cell Center Stockroom is a division of the Genetics Core Facilities (GCF). The GCF is a University service center, established in 1973 to provide consultation, training, and services in the areas of cell culture and hybridomas. The Stockroom serves University of Pennsylvania investigators and affiliate institutions by coordinating relations with various suppliers of molecular biological research materials. This involves not only bulk purchasing of these products, but the negotiation of discounts and convenient delivery arrangements. There are over 1,100 products on-site for immediate delivery in the Stockroom. Special ordering of non-regularly stocked products is available from 28 bioreagent vendors with discounted pricing and overnight delivery.

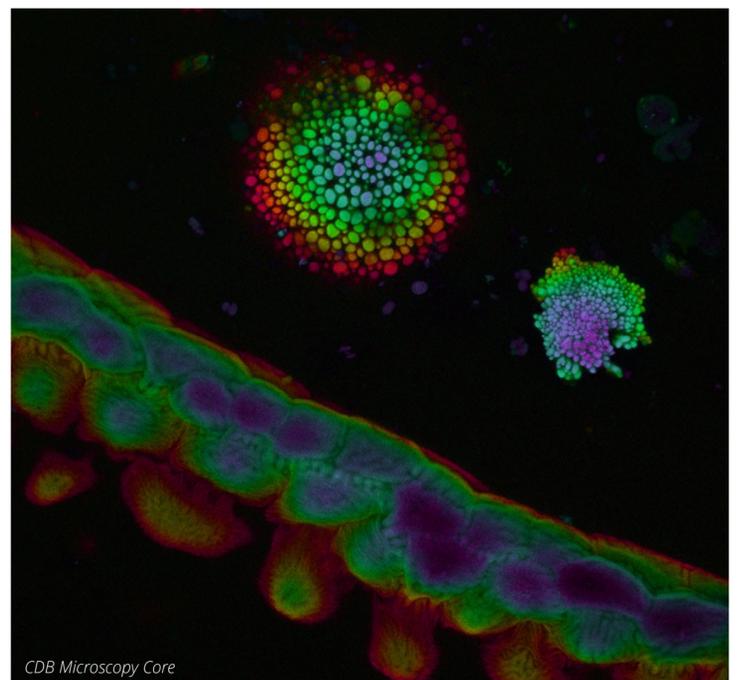
<https://genetics.med.upenn.edu/cores/cell-center-stockroom/>



Center for Advanced Computer Tomography Imaging Services (CACTIS)

The CACTIS mission is to oversee proposed research protocols that involve human, animal, phantom or specimen studies in an effort to achieve two goals, to ensure that all research performed on the CT scanners comply with CACTIS and University policy, and Federal Regulations, and to determine if CACTIS can maintain the resources required to carry out each research protocol, including personnel, software, hardware and scan time. Additionally, CACTIS oversees the day-to-day operations of all CT procedures associated with research protocols, provides information regarding the use of the CT facilities to the research community at the University of Pennsylvania, provides CACTIS users with all of the policies of the institution governing research, and ensures that CACTIS is in compliance with these policies. The service center strives to support the Perelman School of Medicine's research endeavors by providing CT research services for a fee designed only to cover actual costs.

<https://www.pennmedicine.org/departments-and-centers/department-of-radiology/radiology-research/core-facilities/cactis-lab>



Center for Advanced MRI and Spectrometry (CAMRIS)

The overall mission of CAMRIS is to provide oversight in the responsible use and application of Magnetic Resonance in research through leadership, education, and guidance. These principles are manifested in the development of new research and collaborations inside and outside the Radiology Department which can translate into advanced clinical techniques; training in safe and efficient use of this investigative tool and dissemination of current, accurate and evolving MR Technology; scheduling upgrades of MR Systems and facilities; scheduling systems operations and personnel within the MR department; and receiving and acting on recommendations pertaining to the administration of CAMRIS Facilities.

<https://www.med.upenn.edu/camris/>

Center for Biomedical Image Computing & Analytics

CBICA focuses on the development and application of advanced computational and analytical techniques that quantify morphology and function from biomedical images, as well as on relating imaging phenotypes to genetic and molecular characterizations, and finally on integrating this information into diagnostic and predictive tools in an era of personalized medicine. Computational methods can contribute significantly to automated, reproducible and quantitative interpretations of biomedical images. One of CBICA's main goals is to translate advanced computational and analytical imaging methods to the clinic, by providing a forum in which interactions between researchers and clinicians facilitate the bidirectional flow of ideas, algorithms and data between the laboratory and the clinic.

<https://www.med.upenn.edu/cbica/>

Center for Biomedical Informatics in Translation (BIIT)



BIIT coordinates biomedical informatics for ITMAT, the academic home of Penn's CTSA. BIIT promotes strong collaboration among all informatics groups within Penn, The Children's Hospital of Philadelphia (CHOP) and the University of Pennsylvania Health System (UPHS), catalyzing the pursuit of enterprise-wide transformational goals. BIIT has been promoting enterprise-wide transformational strategic planning and institutional developments, while also focusing on the practical applied informatics needs of research investigators. In particular, resource development efforts are being targeted towards essential informatics infrastructure and applied informatics services for the wider research community.

<http://www.itmat.upenn.edu/biit.html>

Center for Human Phenomic Science (CHPS)



The Center for Human Phenomic Science (CHPS) was formed with the receipt of the Clinical and Translational Science Award (CTSA), an NIH Roadmap initiative. The CHPS has child and adult specific components at the Children's Hospital of Philadelphia (CHOP) and University of Pennsylvania, respectively, as well as joint components. The CHPS merged the General Clinical Research Centers (GCRCs) at both institutions, and introduced new programs and services. The goal of the CHPS is to provide the resources, environment, operations, and training to support and promote high-quality clinical and translational research by qualified investigators. For specific information regarding the CHPS at CHOP please visit: <https://chps.research.chop.edu/>

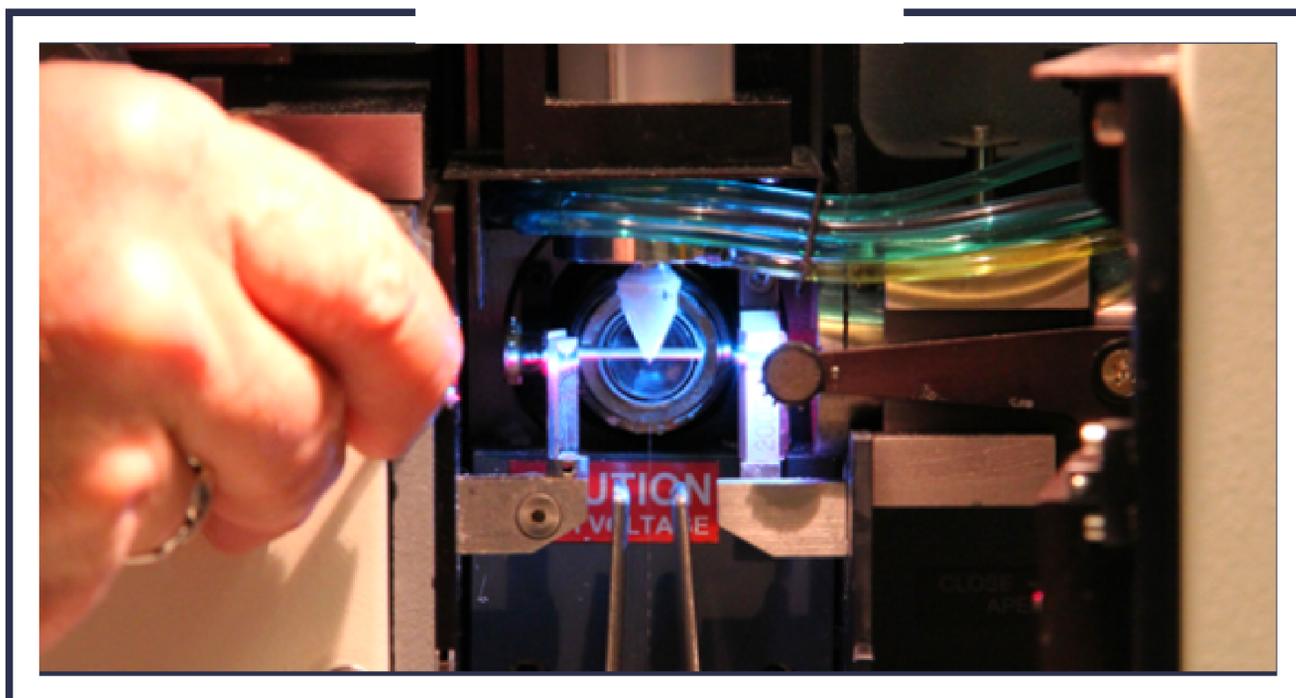
<https://www.med.upenn.edu/chps/>

Center for Preventive Ophthalmology & Biostatistics (CPOB) Biostatistical Consulting



The CPOB Consulting Service supports consultation and collaboration in the areas of biostatistics and epidemiology to Penn vision scientists. Biostatisticians and data management experts provide advice on study design, and offer services in sample size determinations, data management, data analysis, data interpretation, and data presentation. They are active participants in the development and writing of grant applications and manuscripts. Consulting personnel are CPOB members. In addition to their methodological and technical expertise, consultants are knowledgeable about ocular conditions under study in the Penn vision community, about the commonly used measures that are unique to vision research (visual acuity, refractive error, visual field indices, etc) and the specialized statistical analysis techniques required for many experimental designs used in vision research (correlated data techniques to handle appropriately data from two eyes of the same subject). The majority of the projects are patient-oriented researchers; however, the CPOB Consulting Service also works on data analysis with bench laboratory scientists.

<https://www.med.upenn.edu/cpob/biostatistical-consulting.html>





CFAR Virus & Reservoirs Core

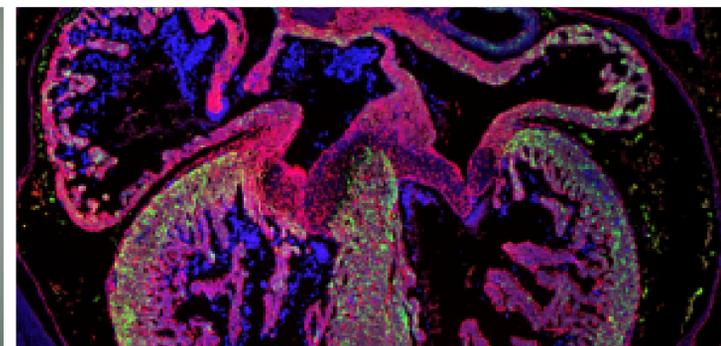
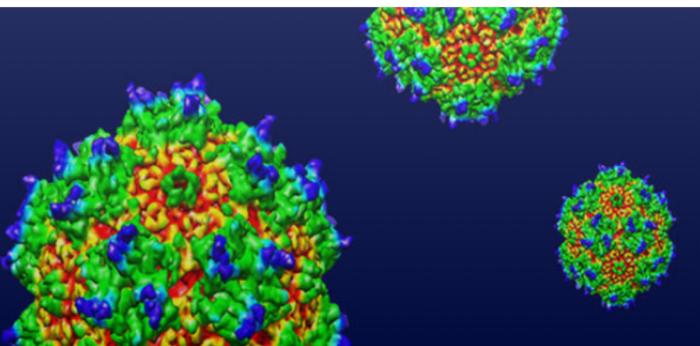
The core facility provides comprehensive Viral and Molecular support to serve the needs of Penn/Wistar/CHOP investigators in the area of basic, translational and clinical HIV research. In addition to an offering of standard services, we are available to develop customized viral and molecular support services as needed in collaboration with CFAR investigators, training for new personnel, and consultation, training, and mentoring as needed. The facility offers virology and molecular support services, as well as Deep Sequencing support and single genome amplification services.

<https://www.med.upenn.edu/cfar/virus-reservoirs.html>

Chemical and Nanoparticle Synthesis Core (CNSC)

The CNSC supports researchers by providing in-house expertise in medicinal chemistry, metal chelate chemistry, polymer synthesis, nanoparticle production and surface functionalization, and site-specific antibody labeling. Our chemists provide custom, problem-specific support for researchers in medical, chemical, and materials science fields. Specific services include: consultation and assistance with the design of chemical/medicinal compounds, in-house synthesis of chemical/medicinal compounds, custom nanoparticle design and synthesis, custom nanoparticle surface functionalization, polymer and dendrimer synthesis, and site-specific antibody labeling. In addition to custom services, the CNSC also provides a Catalog of pre-made reactive metal chelates for radiolabeling and other imaging applications, reactive near-infrared imaging agents, hydrophobic and hydrophilic nanoparticles.

<http://www.itmat.upenn.edu/cnsc/>



Clinical Research Computing Unit (CRCU)

The Clinical Research Computing Unit (CRCU) is an Academic Clinical Research Organization that expertly provides the full range of services essential for the conduct of clinical research projects, including Phase I-IV, multi-center, randomized, clinical trials, registry, and cohort studies. The CRCU employs proven technologies and tools to ensure superior data quality. We can also provide custom development solutions when appropriate for project needs. The CRCU has extensive experience in managing multi-institution research networks as the data coordinating center and offer expert staff with a prime focus on quality data. The CRCU specializes in study design and development, site management and training, data collection, processing, quality control, regulatory requirements and reporting, database development, administration, security, data storage and proposal development.

<https://www.cceb.med.upenn.edu/crcu>

Cluster for Biomedical Image Computing (CUBIC)

The Cluster for Biomedical Image Computing (CUBIC) is a Linux-based High Performance Computing resource available to faculty conducting research related to medical imaging and informatics. There are over 150 compute nodes with more than 5000 Intel Xeon CPUs and 58TB of RAM, over 100 GPUs, and 600TB of storage in the cluster. The facility management structure is designed to encourage data sharing and use of common software on this powerful resource, particularly in the development of new software and the application of imaging to new domains. Please contact "request@cbica.upenn.edu" for more information

<https://www.med.upenn.edu/cbica/cubic.html>





Comparative Pathology Core Facility: Penn Vet



The Comparative Pathology Core (CPC) at the University of Pennsylvania School of Veterinary Medicine aims to provide the expertise of our board-certified veterinary pathologists to support investigators utilizing animal models to study disease. The Comparative Pathology Core, an Abramson Cancer Center shared resource, provides expert pathological characterization and validation of mouse and other animal models used in biomedical research by offering the expertise of board-certified veterinary pathologists and access to state-of-the-art histology, immunohistochemistry, and digital pathology services.

<https://www.vet.upenn.edu/research/core-resources-facilities/comparative-pathology-core>

Cooperative Human Tissue Network (CHTN)



The CHTN is a prospective human tissue procurement service within the Department of Pathology at HUP, that assists investigators with collection, processing and preservation of research samples. Our staff will personalize sample acquisition and processing to meet project requirements. Samples (malignant, normal, diseased, etc.) and biofluids can be preserved in a range of methods (fresh, frozen, fixed, etc.).

<http://pathology.med.upenn.edu/research/centers-and-institutes/cooperative-human-tissue-network>

CRISPR Cas9 Mouse Targeting Core



The CRISPR/Cas9 targeting core at the Perelman School of Medicine has been fully operational since February of 2017. Jorge Henao-Mejia M.D., Ph.D. has served as Scientific Director of and Leonel Joannas as the Technical Director. The core is located in the Institute for Immunology and the Scientific and Technical Directors are part of the IFI. In addition, this recently established core is composed of 2 laboratory technicians that work under our guidance. The mission of the CRISPR/Cas9 targeting core is to streamline procedures to facilitate the use of the CRISPR/Cas9 genome editing technology by the larger UPenn/CHOP community to rapidly and economically generate novel mouse genetic tools. This core has had a significant positive impact in the community. Since we established this technology in campus we have generated over 200 new mouse models for 115 users at UPenn/CHOP and nationwide. In addition, our R&D efforts in this area should enable UPenn/CHOP to remain at the forefront of this technology.

<https://pathbio.med.upenn.edu/crispr/site/>

Cytomics and Cell Sorting Resource Laboratory



The Cytomics and Cell Sorting Resource Laboratory is dedicated to providing Penn investigators access to high-quality, cost-effective flow cytometric services, as well providing the scientific expertise necessary to effectively integrate this technology into their research projects. One of the Resource lab's primary missions is teaching this technology, consulting with investigators regarding integration of this technology into their research paradigms, and providing technical support to regular users. The facility offers training for investigator performed analysis on all bench-top analyzers, and cell sorter training is also available upon staff approval. A newly-integrated single cell genomic pipeline allows users to perform RNA-seq library preparation immediately after sorting. The facility can advise and/or collaborate on implementing advanced data analysis methods for large-scale or high-dimensional experiments in conjunction with Dr. Wade Rogers. Investigators may also access commercial data analysis software either by licensing through the facility (for a quarterly fee). Recognizing the complexity of cytomics, the Cytomics and Cell Sorting Resource Laboratory has developed an educational program to enable investigators to make optimal and efficient use of the technology. This training and consultation program is a model for other shared resource labs throughout the country.

<https://pathbio.med.upenn.edu/pbr/portal/flowcyto/>

Electron Microscopy Resource Lab



The Electron Microscopy Resource Lab is a research core organized into three interdependent facilities. The Ultrastructure lab offers training as well as a pay-per-service to Standard-EM and Immuno-EM for cellular ultra-structures of tissue samples. Cryo-EM Screening and Training offers training on Microscopes and ancillary equipment for Negative Stain Imaging, Single-Particle Cryo-EM and Cryo-Tomography of large complexes and cells. The Beckman Center for Cryo-EM offers a pay-per-service for high-resolution data collection of prescreened and well-qualified samples for single particle analysis and Tomography using Titan Krios microscope with Gatan K3 camera.

<https://www.med.upenn.edu/electronmicroscopyresourcelab/>



Extracellular Vesicle Core Facility: Penn Vet

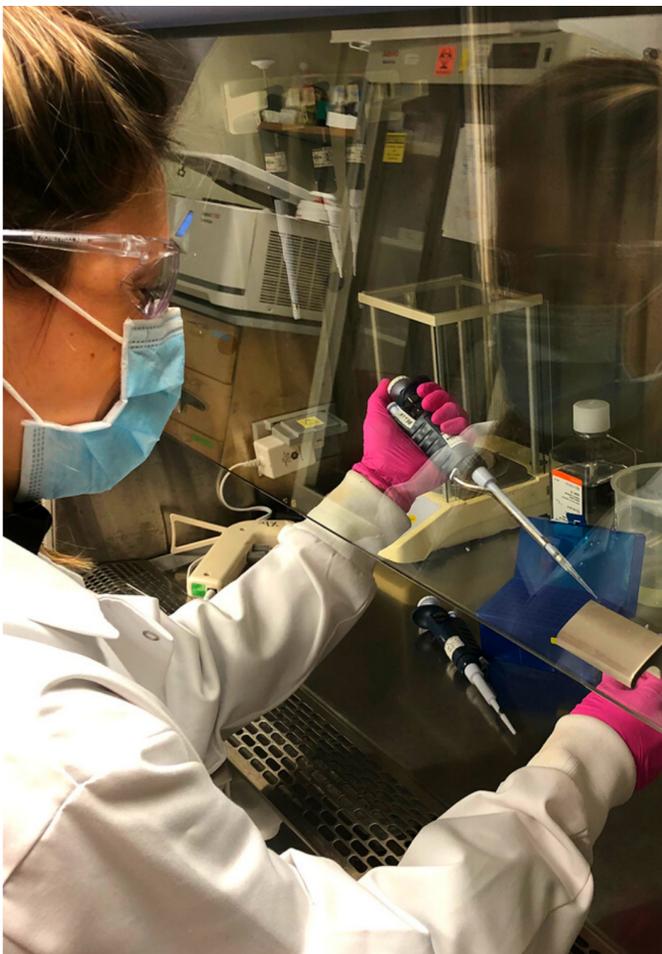
The Extracellular Vesicle (EV) Core Facility located in the Rosenthal building at 3800 Spruce Street provides comprehensive or selected services in the necessary isolation, quantification and characterization of EVs. Isolation of EV is based on size exclusion using high-performance (SEC-HPLC) or gravity fed (e.g. iZon column) liquid chromatography, ultracentrifugation, and/or density gradient ultracentrifugation. We can accurately characterize EV particle size distribution and concentration using resistive pulse sensing techniques (nCS1, Spectradyne, LLC). Immunophenotype can be accomplished using nanoscale flow cytometry and/or chip array (ExoView™) techniques. We additionally provide services in training and education for individuals and lab groups in all methods above and study design consultation to ensure that your EV work is of the highest quality and prepared for high impact publication in this exciting and rapidly growing field.

<https://www.vet.upenn.edu/research/core-resources-facilities/extracellular-vesicle-core>

Flow Cytometry Core: Penn Dental

The Penn Dental Medicine Flow Cytometry Core features a Becton Dickinson LSR II flow cytometer equipped with four lasers. The Blue laser can be used to detect forward and side scatter and 4 colors (eg., FITC/Alexa 488, PE, PerCP-CY55, PE-CY7), the red laser can be used to detect 2 colors (e.g., APC and APC-CY7), violet laser can be used to detect 2 colors (e.g., Pacific blue, Am cyan) and a UV laser which can also be used to detect 2 colors (e.g., INDO1 blue, Indo1-violet/DAPI). The instrument is located in Room 330 in the Levy Building (240 South 40th Street).

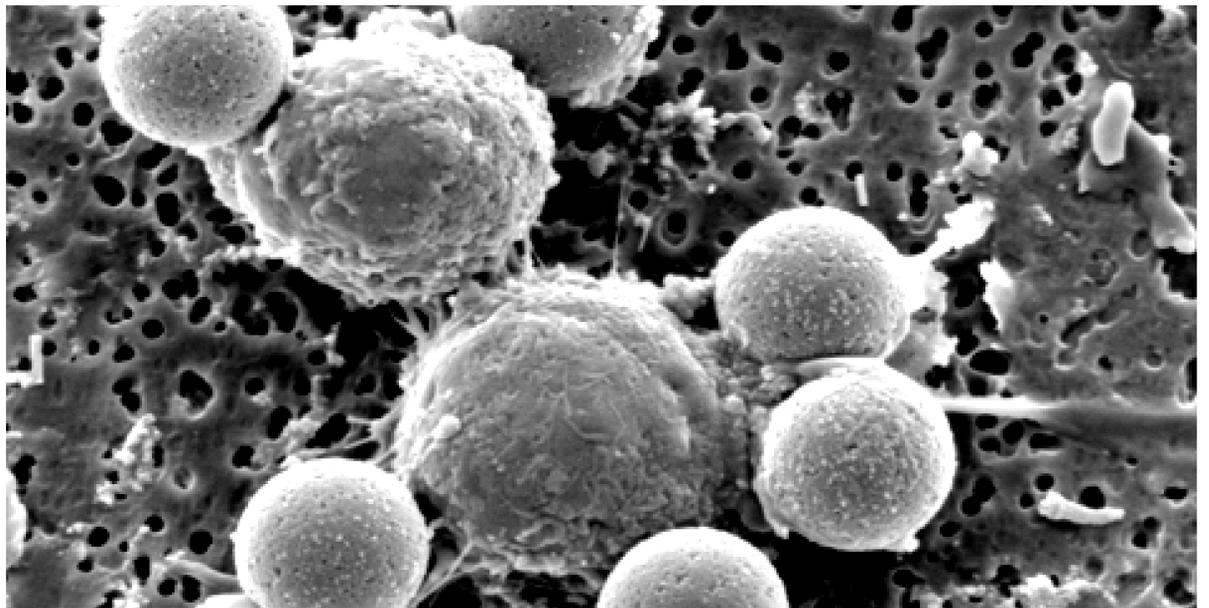
<https://www.dental.upenn.edu/research/core-facilities/>



Gnotobiotic Mouse Facility

Our core, which is part of the PennCHOP Microbiome Program, provides access for researchers to small experimental isolators for a variety of in vivo studies using germ-free mice. The core personnel provide technical support for germ-free experiments. A new addition to the core is a state-of-the-art Isocage system.

https://med-upenn.corefacilities.org/service_center/show_external/4311



High-Throughput Screening Core

The UPenn High-throughput Screening Core (HTSC) in the Perelman School of Medicine provides Penn and non-Penn scientists routine fee-for-service and services plus collaboration, including (1) Distribution of lentivirus based shRNA and cDNA plasmid DNA clones; (2) technical expertise in developing biological assays (i.e. biochemical-, cell-, and high-content) in miniaturized, multiwell microtiter plates that are laboratory automation compatible; (3) high-throughput chemical & functional genomic screening, including data analysis and interpretation. Our goal is to use cutting biological models to discover genes and small molecules that enable scientists to further study the functions of poorly understood proteins, signaling pathways, and cells in complex biological process relevant to human physiology and disease.

https://www.med.upenn.edu/cores/assets/user-content/documents/HTSC_overview_27May2015.pdf



Histology Core: Penn Dental

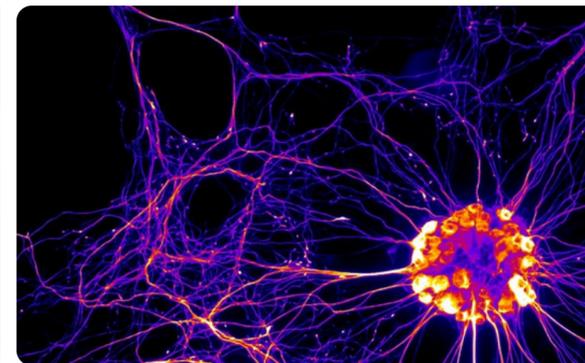
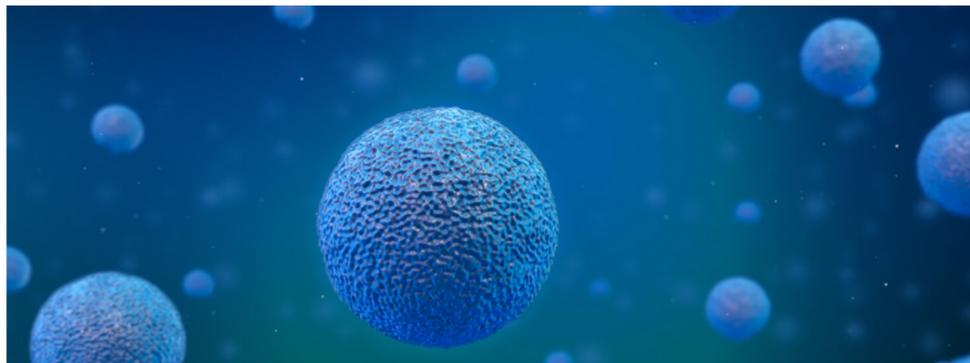
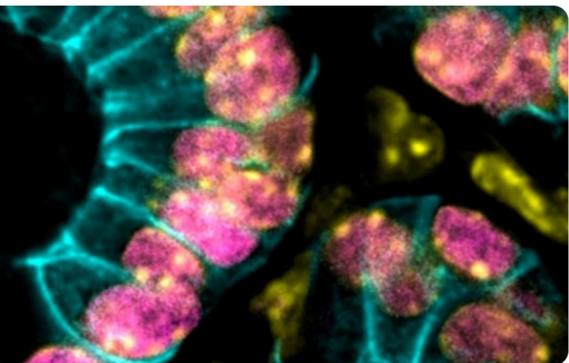
The aim of the histological core in Penn Dental School is to provide high quality histological services as well as training in histological techniques to investigators with Penn Dental School, Penn Medical School and external institutes. Our goal is to assist investigators with tissue processing, embedding, sectioning, histological staining, guidance and support for result analysis.

<https://www.dental.upenn.edu/research/core-facilities/>

Host-Microbial Analytic and Repository Core (H-MARC)

The Host-Microbial Analytic and Repository Core (H-MARC) is a core within the Division of Gastroenterology. We provide services which represents the intersection between the host and their microbes in both preclinical and clinical human subject research. Specifically, a human biospecimen repository with associated clinical metadata, instrumentation/access to critical analytic services to characterize expression (i.e. genomics, transcriptomics, metabolomics, microbial culture, etc.) in both microbes and their mammalian hosts, as well as expertise to extend pre-clinical in vitro and animal model research into the human clinical domain.

https://www.med.upenn.edu/molecular/core_molecular.shtml



Human Immunology Core (HIC)

The Human Immunology Core (HIC) provides wet bench expertise and infrastructure support for early phase clinical trials and other investigations. The HIC offers purified cell subsets from healthy human apheresis donors. HIC staff are internally and externally qualified to perform blood (PBMC) and tissue processing for viable cryopreservation following validated standard operating procedures. The HIC also offers a wide range of immunological assays including digital ELISA, ELISA, ELISPOT, Luminex, flow cytometry and immune repertoire profiling (NGS of BCR and TCR rearrangements in bulk and single cell formats). The HIC also offers investigators expertise and guidance in clinical trial sample processing, regulatory compliance, immunology assay design and validation, data analysis and grant writing support.

<https://pathbio.med.upenn.edu/hic/site/>

Human Intervention Core

The Human Intervention Core, which is part of the PennCHOP Microbiome Program, offers a wide array of services to assist with the design and implementation of microbiome studies. The core can assist with longitudinal studies as well as pilot studies. Pilot studies can be rapidly implemented with human intervention core staff, project managers and research coordinators.

<https://pennchopmicrobiome.chop.edu/cores/microbiome-human-intervention-core>

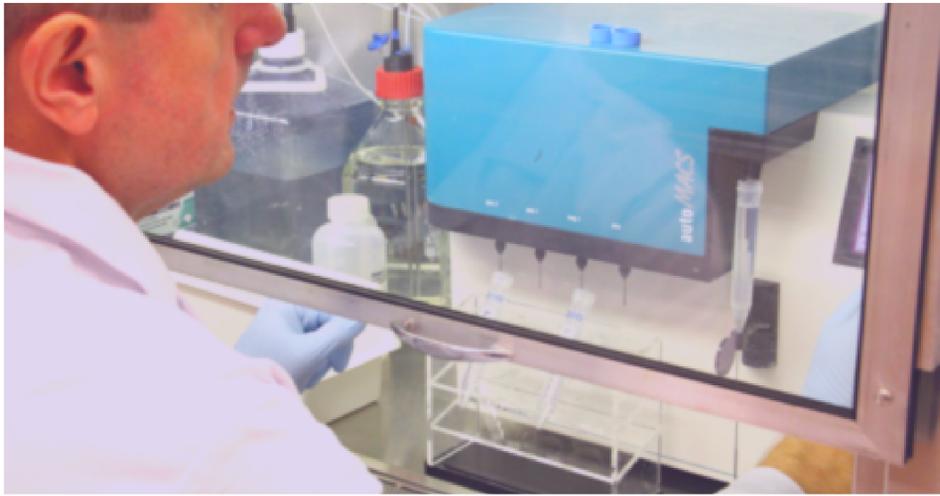
IBI Clinical Research Informatics Core (CIC)

The Institute for Biomedical Informatics (IBI) Clinical Research Informatics Core (CIC) assists faculty, staff, and students with conducting research projects using electronic health record data. The CIC facilitates access to clinical data and performs data analysis using artificial intelligence, ontologies, natural language processing, machine learning, and visual analytics. The CIC's mission is to provide innovative research services by applying data science to clinical data in order to learn actionable healthcare knowledge and develop impactful solutions for improving patient care.

Services include facilitating access to Penn Medicine clinical data resources, performing data analysis using diverse computational methods, and providing tools for exploratory data analysis/visualize with priority access to the IBI Idea Factory for immersive display of data and research results.

<https://ibicic.med.upenn.edu/>





IFI CyTOF Service Center

CyTOF enables multi-parametric high-dimensional single cell analysis of >40 markers per cell, with minimal background and compensation issues. The CyTOF Core offers a wide variety of CyTOF-related services including reagent distribution, consultation, antibody-conjugation, and data acquisition.

<https://www.med.upenn.edu/ifi/cytofmasscytometer.html>

Imaging Core Facility: Penn Vet

The Penn Vet Imaging Core (PVIC) provides access to cutting-edge optical imaging capabilities for researchers at the University of Pennsylvania, Perelman School of Medicine, Children's Hospital of Philadelphia, and Wistar Institute. The PVIC includes instruments and expertise to perform widefield, confocal, multiphoton/intravital imaging, fluorescence lifetime imaging, high content live cell screening, long term single cell imaging, second harmonic imaging, structured illumination super resolution, and total internal reflection fluorescence (TIRF) microscopy, as well as software tools for image analysis. The core also has an adjacent (in and out) ULAR approved facility to house animals for long term live animal studies.

<https://www.vet.upenn.edu/research/core-resources-facilities/imaging-core>

Induced Pluripotent Stem Cell Facility

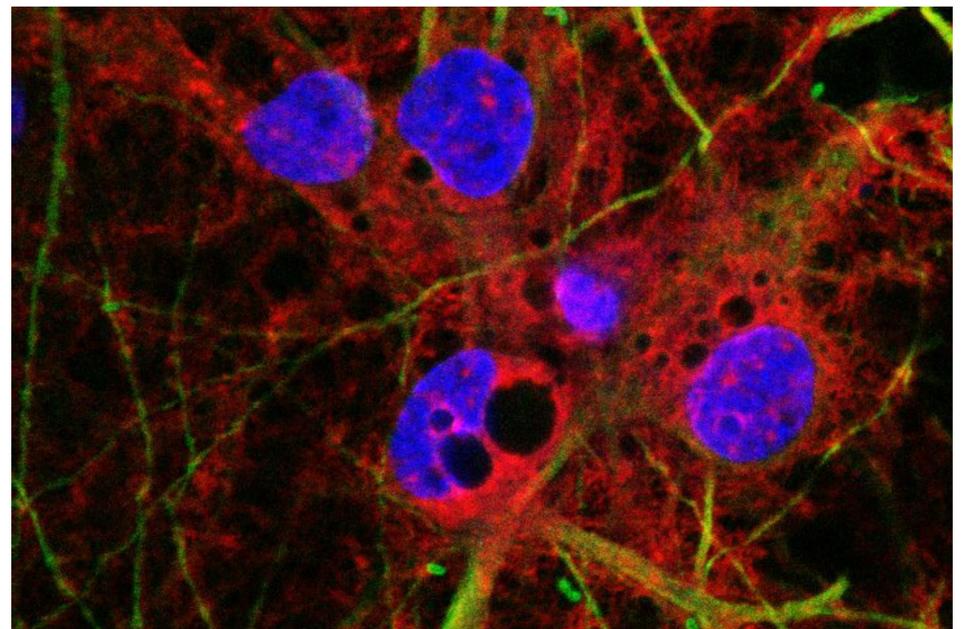
Our mission is to provide resources for disseminating human pluripotent stem cell technology within UPenn and surrounding research communities. Our services include derivation of patient-specific iPSCs, genome engineering of stem cell lines using CRISPR/Cas9 technology, and lineage specific differentiation of iPSCs/hESCs in 2D and 3Dborganoid culture. The Core has a large collection of patient-derived iPSC lines and cell lines of the gastrointestinal tract (esophageal, pancreatic and intestinal) available to users. The core is also committed to training investigators in stem cell culture techniques and providing quality tested stem cell reagents to users. Please contact the Core director Wenli Yang, PhD (wenliyan@penmedicine.upenn.edu) if you are interested in any of our services or technologies.

<https://www.med.upenn.edu/ipscscore/>

Islet Cell Biology

The objective of the Islet Cell Biology Core is to provide state of the art support including experimental design, islet isolation, and performance of and/or training in an expansive range of assays for physiological, metabolic, and morphometric assessment of pancreatic islets as well as many other tissues and cell types. We offer islet isolation and culture, free intracellular Ca²⁺ measurements, quantitative oxygen consumption of pancreatic islets, electrode based closed cell respirometry, and access to Agilent's Seahorse Extracellular Flux Analyzer XFe96.

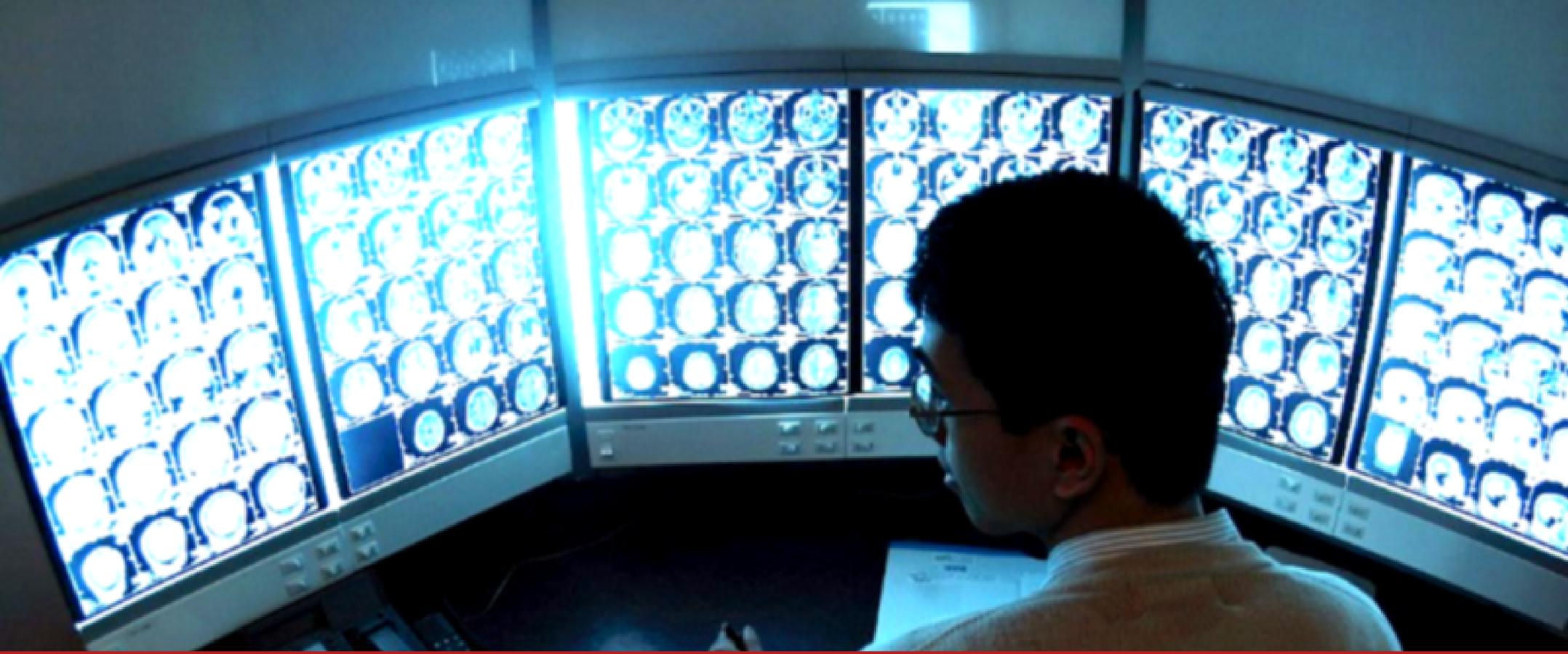
<https://www.med.upenn.edu/idom/drc/cores/cellbio.html>



ITMAT Biobank

The Penn Medicine BioBank supports researchers by providing centralized access to a large number of annotated blood and tissue samples. This bank of samples and linked data will be an invaluable resource to the Penn Medicine basic, translational, and clinical research communities. Ultimately, this approach will enhance knowledge regarding the genetic and pathophysiological basis of multiple disease processes and will permit improved preventive and therapeutic strategies. Through these studies, researchers hope to find new ways to detect, treat, and maybe prevent or cure health problems. Some of these studies may be about how genes affect health and disease, or how genes affect response to treatment. Some of them may lead to new products, such as drugs or tests for diseases.

<http://www.itmat.upenn.edu/biobank/>



ITMAT Bioinformatics Facility

The ITMAT Bioinformatics Facility provide project based bioinformatics support for ITMAT translational researchers. Our focus has been on providing the computational infrastructure and programming support needed to conduct high-throughput proteomics experiments. We also support other genomics high-throughput technologies to a lesser extent. The projects range from building Web applications for data analysis pipelines, scripting, clinical and basic science research support, and database and algorithm development. Recent efforts have focused on explorations of new models of computation, specifically cloud computing and GPUs, for use in genomic scale research.

<http://www.itmat.upenn.edu/bioinformatics.html>

ITMAT Community Outreach Using Health System Informatics (COHSI)

COHSI's mission is to promote the use of Penn Health System information resources in support of clinical research. COHSI goals include facilitating collection of data from operational information systems in the Penn health system, facilitating the creation of interventions in operational information systems in the Penn health system, fostering the use of information systems such as electronic medical record and computerized order entry in the conduct of clinical trials, enabling the use of Electronic Health Records, Computerized Order Entry Systems, Health System Administrative Databases, laboratory and other ancillary test information systems to provide primary data for epidemiological and health services research studies, and educating ITMAT investigators on the types and quality of data and limitations of its use for health system information systems. COHSI integrates outpatient, inpatient, and administrative databases, as well as an infrastructure of programmers and analysts with expertise accessing health system data.

<http://www.itmat.upenn.edu/cohsi.html>



ITMAT Study Design & Biostatistics Core (SDAB)

The Study Design and Biostatistics (SDAB) Core works closely with existing resources to provide targeted study design and biostatistics support to ITMAT/CTSA investigators. The Core serves as a direct provider of services, including protocol review, study design, proposal development, and performance of simple to potentially substantial complex analyses. SDAB integrates the support available with the HUP and CHOP Center for Human Phenomic Science (CHPSs), the expertise and resources of faculty in the Center for Clinical Epidemiology and Biostatistics / Department of Biostatistics and Epidemiology (CCEB/DBE), the Biostatistics Analysis Center (BAC), and the Biostatistics and Data Management Core (BDMC) at CHOP.

<https://www.itmat.upenn.edu/sdab/>



Johnson Foundation Biophysical & Structural Biology Core (JFBSB)

The Department of Biochemistry and Biophysics at the University of Pennsylvania is privileged to have a wide range of unique equipment and expertise to facilitate modern biophysical characterization and structural analysis of proteins and other biomolecules. These facilities, funded in large part through the generosity of the Johnson Foundation, are available for use by the research community at Penn and beyond.

<https://www.med.upenn.edu/jf/bsbcore/index.html>

LDI Health Economics Data Analyst Pool (HEDAP): Wharton

The Health Economics Data Analyst Pool (HEDAP) is a Penn service center supported and managed by the Leonard David Institute of Health Economics (LDI) to provide LDI-affiliated investigators access to high-quality, skilled data analysts. HEDAP recruits, trains, and manages a group of masters-level and PhD-level statistical analysts. These analysts work with multi-disciplinary investigators across funded projects using statistical software packages such as SAS, Stata, and R to manipulate and analyze health care data under the guidance of the investigators and other collaborators.

<https://ldi.upenn.edu/research-analytic-support>



LDI Health Services Research Data Center (HSRDC): Wharton

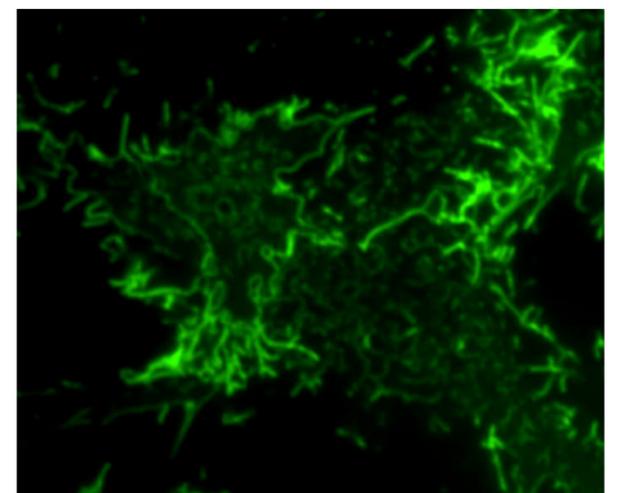
The Health Services Research Data Center (HSRDC) is a Penn service center supported and managed by the Leonard David Institute of Health Economics (LDI) that provides a secure environment for investigators analyzing protected health information (PHI). It coordinates the acquisition, storage, and analysis of data from private and government sources (e.g., Medicare, Medicaid, and others) and facilitates their use by researchers who seek to answer important questions regarding health policy and health care.

<https://ldi.upenn.edu/ldi-health-services-research-data-center>

Live Cell Imaging Core: Penn Dental

Penn Dental Medicine Live Cell Imaging Core features a Nikon A1R Laser Scanning Confocal Microscopy system. This powerful and versatile system offers a wide array of live cell imaging applications. The system is equipped with 4 laser lines to provide 6 different excitation/emission configurations; multiple photomultiplier tubes (PMTs), 32-channel spectral detector, full complement of microscope objectives, high speed image scanner, fully motorized stage and completely controllable environmental chamber. Moreover, users have access to NIS Elements AR software and 2D/3D deconvolution module offering sophisticated image analysis and processing features.

<https://www.dental.upenn.edu/research/core-facilities/live-cell-imaging-core/>





Metabolomics Core

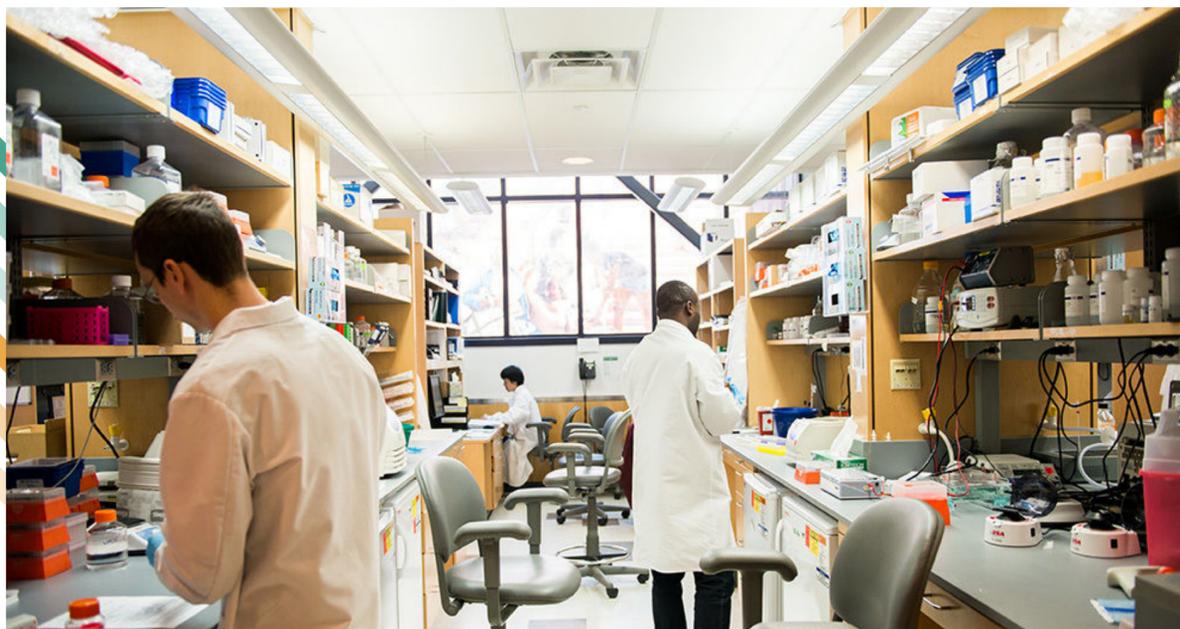
The Metabolomics Core is overseen by the Cardiovascular Institute and is a partnership with the Abramson Cancer Center and the Institute for Diabetes, Obesity and Metabolism at Penn. The Metabolomics Core provides expertise in targeted and untargeted metabolomics of biological samples using liquid chromatography/mass spectrometry. Our mission is to perform the assays and assist in the interpretation of the results. The core is available to the entire Penn research community, external research investigators, and industry.

<https://www.med.upenn.edu/cvi/metabolomics-core.html>

Microbial Culture & Metabolomics Core

The Microbial Culture and Metabolomics Core Facility, which is part of the PennCHOP Microbiome Program, features facilities and equipment for the aerobic and anaerobic culture of microbial species in both batch and continuous systems, as well as targeted metabolomic services. The facility offers training and usage for culture equipment; consultation regarding experimental design, and; anaerobic culture services. Working with researchers, the core will purchase, receive, and revive strains from commercial culture collections (i.e., ATCC, DSMZ). The facility can prepare glycerol stocks, liquid cultures, or gavage-ready suspensions for inoculation of animals with pure or define-mixed microbial communities.

<https://pennchopmicrobiome.chop.edu/cores/microbial-culture-and-metabolomics-core>



MINS Machine Shop

The Machine Shop serves the entire Penn community by designing and building novel instruments and apparatus for research to user specifications. The shop has been serving a wide range of laboratories in the Penn community for 50 years. The shop works with users to develop an initial project drawing, and will explore alternate designs to insure desired functionality. The shop will fabricate user devices to high tolerance, using state-of-the-art machine tools and materials, and can repair laboratory devices even if the devices were constructed elsewhere.

<https://www.med.upenn.edu/machinешop/>

Mixed Methods Research Lab (MMRL)

The goal of the Mixed Methods Research Lab (MMRL) is to foster the use of qualitative and mixed methods research methodologies with a focus on integrating key stakeholder perspectives and goals into research designs. The MMRL collaborates with investigators to address timely, pressing questions across diverse disciplines and works with investigators to provide conceptual as well as technical support for broad research programs, including clinical, community-based, and implementation science research questions.

<https://www.med.upenn.edu/fmch/mixed-methods-research-lab>



Molecular Pathology and Imaging Core (MPIC)

The Molecular Pathology and Imaging Core (MPIC) provides histological services, equipment, and technical expertise for the processing and analyses of digestive, pancreatic, and liver tissues as well as three-dimensional tissue culture models. The MPIC is part of the Center for Molecular Studies in Digestive and Liver Diseases

https://www.med.upenn.edu/molecular/core_morphology.shtml

Mouse Cardiovascular Phenotyping Core

The Mouse Cardiovascular Physiology Core provides services to assess cardiovascular function in mouse models and to provide validated surgical models of heart and vascular disease in mice to assess genetic or therapeutic interventions. We will work with investigators to design and implement the study along with any associated grant applications, animal protocol submissions and manuscript preparation. While the central focus of the facility is cardiovascular research, the techniques employed are often useful to investigators in other fields. Our Core staff will work with you to assess your needs and provide the necessary technical training and scientific assistance in animal protocol preparation. The Core runs on a fee-for-service model. Accordingly, investigators will be responsible for the costs incurred for their projects and prior animal protocol approval by Penn IACUC.

<https://www.med.upenn.edu/cvi/mouse-cardiovascular-phenotyping-core/>

Neurobehavior Testing Core (NTC)

The Neurobehavior Testing Core (NTC) provides equipment and services to investigate behavior phenotypes of models related to neurological and other disorders. The core is utilized by scientists across disciplines that are interested in the behavioral consequences of unique physiological disruptions (e.g., metabolic, drugs etc.). We provide assessment of many domains of behavior including, but not limited to, sensory, motor, social, communication, affect-related behaviors and learning and memory. The NTC was established in 2012 through generous startup funds from the Penn School of Medicine, the Institute for Translational Medicine and Therapeutics (ITMAT), Center for Sleep and Circadian Neurobiology (CSCN) and Penn Medicine Neuroscience Center (PMNC).

<http://www.itmat.upenn.edu/NBTC.html>

Neurons R Us (NRU)

The NRU (NeuronsRUs/Brain Cell) Core supplies suspensions of neuronal cells prepared from rodent brain for various downstream applications, including primary cell culture. The Core currently supplies rat or mouse cells isolated from cortex or hippocampus either in suspension or plates. Custom dissection services are available for other brain regions or for user-supplied genetically modified mice.

<https://www.med.upenn.edu/neuronsrus/>

Next Generation Sequencing Core (NGSC)

The Next-Generation Sequencing Core (NGSC) provides a full set of services related to single-cell and bulk whole-genome, RNA-Seq, ATAC-Seq, BIS-Seq, Exome-Seq, CHIP-Seq, CLIP-Seq, etc. We recently acquired an Illumina NovaSeq 6000 in addition to our NextSeq and MiSeq sequencers - which all feature self-service as well as full-service operation. We have experience with difficult, low input samples as well as sequencing and analyzing novel library types. We have a small Oxford Nanopore sequencer which allows for full-length RNA or cDNA sequencing as well as very long read (100KB) sequencing from genomes. Come see us for experimental design services prior to starting your experiment.

<https://genetics.med.upenn.edu/cores/next-generation-sequencing-core/>



Nuclear Medicine Physics & Instrumentation Group

Penn has a long history of development of nuclear medicine instrumentation in both SPECT and PET dating back to the pioneering work of David Kuhl, MD, in the 1970s. The Nuclear Medicine Physics and Instrumentation Research Group strives to continue this tradition in an environment that encourages the development of new technology and the collaboration between basic scientists and clinicians to evaluate new instruments and optimize their use for new applications in both clinical and pre-clinical (animal) imaging situations. The laboratory includes equipment to build, test and characterize detectors for PET imaging. In addition, the laboratory operates a cluster of high-powered Linux computers, which reconstruct, process, and analyze imaging data. Most recently, faculty has focused on the development of time-of-flight technology, which increases the signal-to-noise of reconstructed images for whole-body studies. The faculty also conducts research on SPECT imaging with an emphasis on applications to small animal and brain imaging. The Nuclear Medicine Physics and Instrumentation research group additionally oversees the operation of the cyclotron and imaging probe synthesis facilities.

<https://www.pennmedicine.org/departments-and-centers/department-of-radiology/radiology-research/labs-and-centers/quantitative/physics-and-instrumentation-group>



OCRC Tumor BioTrust Collection

The Ovarian Cancer Research Center (OCRC) has opened a Tumor BioTrust Collection (TBC) to the Penn research community on July 1, 2018. Specimens that are available through the OCRC TBC include gynecologic cancer specimens such as fresh and frozen tissues, plasma, serum, peripheral blood mononuclear cells, blood, formalin fixed paraffin embedded (FFPE) samples, and Tissue Microarrays (TMAs). All samples collected have clinical annotation including demographic patient profiles, pathological & clinical notations, treatment history, and detail disease information, etc. We are building and maintaining a centralized research database according to HIPPA specifications and Penn IRB standards.

<https://www.med.upenn.edu/OCRCBioTrust/>

Penn Diabetes Center RIA Biomarker Core

The Radioimmunoassay and Biomarkers Core offers a large number of high quality immunoassay, metabolite, and HPLC services to basic, translational, and clinical investigators performing diabetes and related metabolic disease research. The RIA/Biomarkers Core is housed within in a new state of the art-laboratory within the Institute for Diabetes, Obesity & Metabolism (IDOM) located on the 12th floor of the Smilow Center for Translational Research. Approximately 100 different diabetes, obesity and metabolism-related biomarkers from multiple species including human can be assayed using radioimmunoassay (RIA), enzyme-linked immunosorbent assay (ELISA, both absorbance and fluorometric), multiplex ELISA on the Luminex platform, and enzymatic and HPLC methods for an expanding variety of diabetes and metabolism related metabolites, hormones, catecholamines and cytokines derived from blood, urine, and tissue samples.

<https://www.med.upenn.edu/idom/drc/cores/ria.html>

Penn Electronic Design Shop

The Penn EDS (Electronic Design Shop) provide Electronic Design Services to the Penn research community and abroad. We support researchers with their electronic and embedded systems design needs also providing support with IoT (Internet of Things) as well instrumentation design for data collection devices. We provide electronic/embedded systems design to support laboratories with translational research interacting with mice, possums, and monkeys.

In addition, we support researchers by helping navigate the process of prototype to production run for their initial clinical trials. Our EDS provides firmware development and electronic consulting services that could help move an electronic device idea to a functional prototype and further to start the pre-production phase for device. We provide PCB (Printed Circuit Board) design and PCB assembly services as well as PLM (Product Life Management) electronic device documentation for CMs (Contract Manufacturers) to build production grade electronic devices.

<http://web.sas.upenn.edu/electronicshop>



Penn Genomic Analysis Core: DNA Sequencing Facility

As part of the Penn Genomic Analysis Core the DNA Sequencing Facility offers sequencing services on three platforms, gold standard Sanger sequencing on ABI capillary sequencers, next-generation sequencing (NGS) on Ion Torrent PGM and S5 and, Illumina MiSeq along with experimental design and data analysis. The NGS service includes library preparation for multiple applications including targeted sequencing, RNA-Seq and Exome-Seq. The capillary sequencers also enable microsatellite genotyping and fragment analysis for VNTR, SNaPshot and Human Cell Line Authentication. The molecular biological services include PCR, cloning, subcloning, mutagenesis, construct preparation and, plasmid DNA preps at different scales.

<https://www.med.upenn.edu/genetics/dnaseq/>

Penn Genomic Analysis Core: Molecular Profiling Facility

As part of the Penn Genomic Analysis Core the Molecular Profiling Facility provides full service whole genome and targeted molecular profiling of DNA and RNA on multiple platforms. The Core supports quantitative RNA profiling (gene expression) on Affymetrix GeneChips and high-throughput Gene Titan instruments, Fluidigm BioMark HD and, ABI QS 12K real-time PCR machine. DNA profiling (genotyping) is offered on Affymetrix SNP GeneChip and high-throughput Gene Titan instruments, Fluidigm BioMark HD and, ABI QS 12K. Agilent aCGH platform provides genome-wide chromosomal analysis. The users benefit from consultation and training available throughout their projects, including during experimental design and budget development, sample accrual, data management and analyses and, manuscript preparation.

<https://genetics.med.upenn.edu/cores/genomic-analysis-core/>

Penn Vector Core

The University of Pennsylvania (Penn) Preclinical Vector Core is a World-recognized resource for investigators requiring viral vectors for preclinical studies and other basic research applications such as gene therapies for acquired and inherited diseases. The mission of the Preclinical Vector Core is to provide the greatest service to the community through the production of high quality vectors and the widespread distribution of improved vector technologies. The Core has evolved considerably since its establishment over two decades ago, both in scope and capacity, as dictated by the needs of a changing field. The main objective of the Core is to provide investigators access to state-of-the-art adeno-associated viral vector technology.

<https://gtp.med.upenn.edu/core-laboratories-public/vector-core>

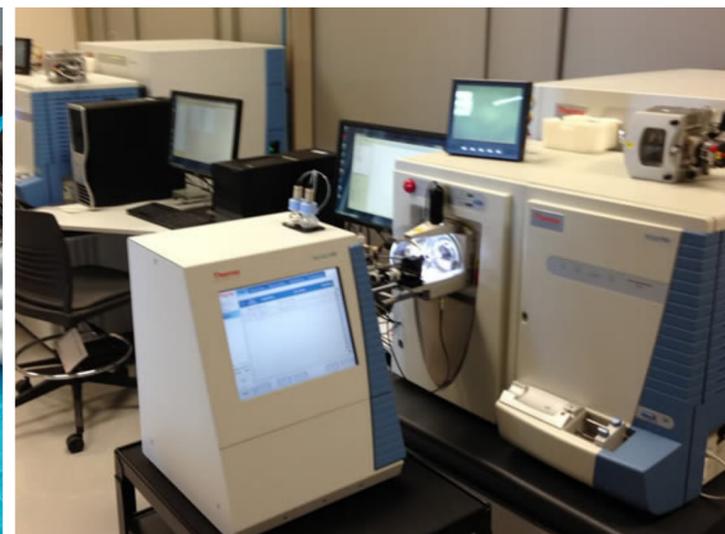




PET Center

The PET Center is dedicated to continuing the advancement of molecular imaging and seeks to build a network of collaborators to conduct translational research using existing and new radiotracers to help better understand the diagnosis, physiology and treatment of multiple diseases. The center strives to educate referring clinicians and their patients about the emerging benefits of PET/CT diagnostic procedures, other radiotracer imaging methods and radionuclide therapies as tools in their research and clinical practice. The PET Center is committed to providing opportunities and mentoring for individuals interested in pursuing work or collaborations within the molecular imaging field. The PET/CT Center includes 4 scanners as well as a cyclotron facility.

<https://www.pennmedicine.org/departments-and-centers/department-of-radiology/radiology-research/core-facilities/pet-center>



Radiology Research Core (RADCORE)

The Radiology Research Core (RADCORE) formally known as the Clinical Imaging Core (CIC) was initiated in the fall of 2009 as part of a new Abramson Cancer Center (ACC) shared resource with the primary focus being a tumor response assessment core (TRAC). Since then, our core has grown offering numerous other services such as imaging anonymization/upload, clinical research coordinator services, data management, regulatory services and most recently, the development of a research biopsy review service throughout the University of Pennsylvania.

<https://www.pennmedicine.org/departments-and-centers/department-of-radiology/radiology-research/core-facilities/radcore>



Referral Center for Animal Models of Human Genetic Disease: Penn Vet

The mission of the Center is to discover, create, characterize, treat, and share naturally occurring hereditary disorders in dogs and cats that are orthologous to those found in human patients. We have expertise in discovering, characterizing, and developing therapies for genetic disease in dogs and cats, which serve as models of the same diseases that occur in children. We specialize in: molecular discovery of mutations, clinical phenotyping, biochemical and histological characterization, development of therapies which are translatable to human patients and preclinical trials in animal models of human disease.

<https://www.vet.upenn.edu/research/core-resources-facilities/referral-center-for-animal-models>

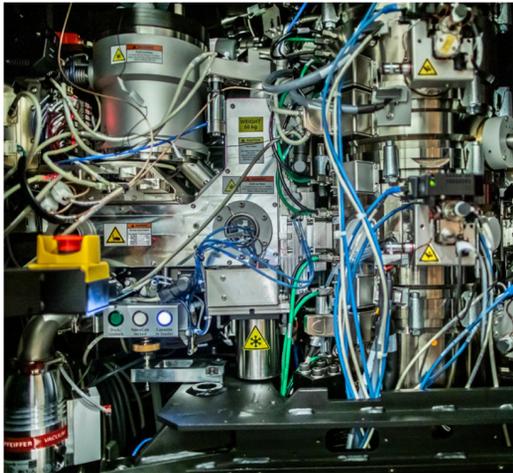




Research Instrumentation Shop (RIS)

The Research Instrumentation Shop [RIS] is a shared resource machine shop serving various University of Pennsylvania Schools and Departments. The RIS mission is to assist University researchers to design and construct both laboratory and clinical instruments. RIS provides mechanical and machining services to the University community.

<https://www.med.upenn.edu/ris/>



Rodent Metabolic Phenotyping Core

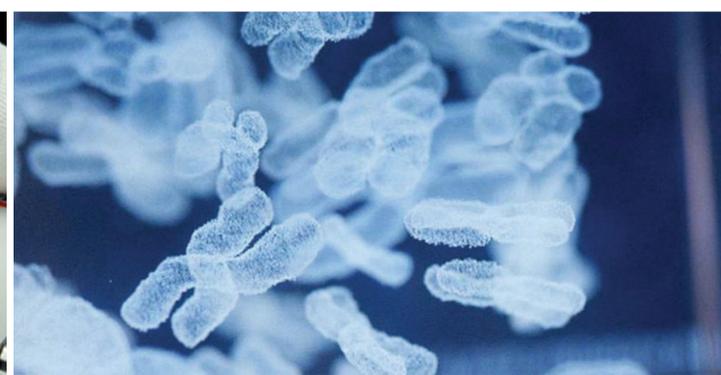
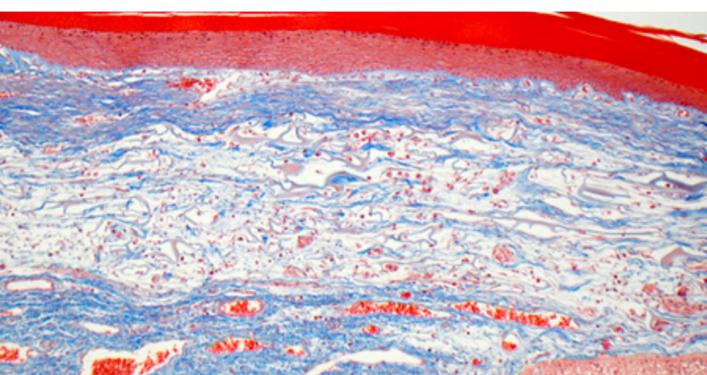
The Rodent Metabolic Phenotyping Core (RMPC, formerly MPPMC) is a state-of-the-art metabolic core directed by Dr. Joseph Baur. Our facility offers cutting edge technology and phenotyping services to allow investigators of the Penn Diabetes Research Center (DRC) to study metabolism in pre-clinical rodent models. Services include measurements of body composition (fat and lean mass) using NMR and DEXA, energy balance (food intake, locomotor activity, energy expenditure) using indirect calorimetry, and other in vivo metabolic phenotyping services (glucose clamps, insulin and glucose tolerance tests, telemetric monitoring). The core employs two highly skilled surgeons, Drs. Qingwei Chu, MD, MS, and Xiaoyan Yin, MD, both with more than 10 years of experience handling rodents, including the use of metabolic equipment.

<https://www.med.upenn.edu/idom/drc/cores/rodent.html>

Small Animal Imaging Facility

The SAIF combines state-of-the-art instrumentation and a nationally recognized staff to assist investigators with a wide range of imaging based experimental approaches. The SAIF currently provides a comprehensive suite of imaging modalities including magnetic resonance imaging (MRI), spectroscopy (MRS), optical imaging (including bioluminescence, fluorescence, and near-infrared imaging), computed tomography (CT), positron emission tomography (PET), single photon emission computed tomography (SPECT), and ultrasound (US). In addition, dedicated housing is available for mice and rats undergoing longitudinal imaging studies. Ancillary facilities and resources of the SAIF are devoted to radiochemistry and image analysis.

<https://www.pennmedicine.org/departments-and-centers/department-of-radiology/radiology-research/core-facilities/saif-small-animal-imaging-facility>



Stem Cell and Xenograft Core

The Stem Cell and Xenograft Core is a comprehensive resource laboratory committed to supporting translational research. We offer services centered around 2 components: An extensive repository of live and fully annotated cells from adult patients with hematologic malignancies (AML, ALL, MPN, MDS), and hematopoietic stem/progenitor cells from healthy donors (BM, CB, and FL). A full array in vivo services and xenograft models (PDX, humanized immune system), in a dedicated BSL-2 barrier space equipped with optical imaging, for applications ranging from immunotherapy, cancer biology, infectious diseases and regenerative medicine.

<https://www.med.upenn.edu/scxc/>

Transgenic and Chimeric Mouse Facility

The Transgenic & Chimeric Mouse Facility provides a centralized service to efficiently produce genetically altered mice for basic research. They include transgenic, chimeric and genome-edited mice carrying transgenes or gene “knockout” and “Knock-in” of specific interest. The Core also provides embryo and sperm cryopreservation as well as in vitro fertilization and re-derivation of live and cryopreserved lines, along with long-term storage of cryopreserved samples.

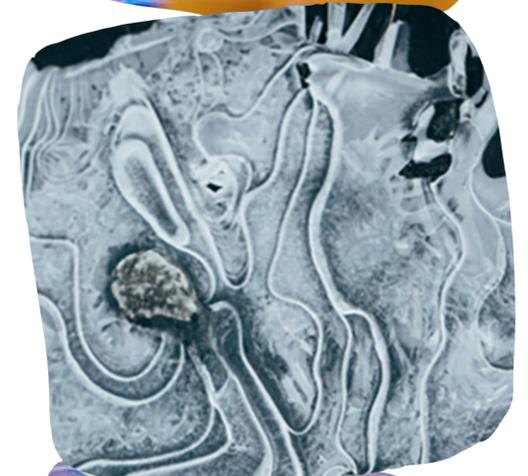
<https://genetics.med.upenn.edu/cores/tcmf/>



Transgenic Mouse Core Facility: Penn Vet

The Transgenic Mouse Core located in the School of Veterinary Medicine is a state-of-the-art fee-for-service facility that offers a full line of embryological manipulation services, focused on, but not limited to, murine model systems. These services primarily enable the generation of genetically modified murine models, as well as experimental research in germ cell function and early embryonic development.

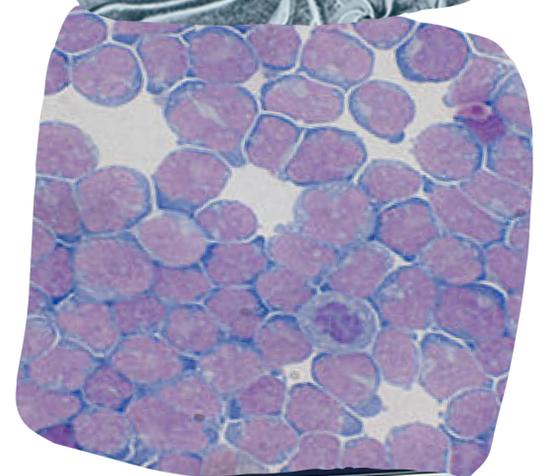
<https://www.vet.upenn.edu/research/core-resources-facilities/transgenic-mouse-core>



Translational Bio-Imaging Center (TBIC)/ Center For Magnetic Resonance And Optical Imaging (CMROI)

The Translational Bio-imaging Center mission is to act as a portal for the research community into the substantial Bio-medical imaging resources of the University of Pennsylvania. TBIC's goals include creating and maintaining access for the research community to state of the art Bio-medical imaging technologies, enabling research investigators to benefit from Bio-imaging expertise and experience that exists within the TBIC research community, and educating researchers about Bio-medical imaging options through targeted seminars, research fellowships, and established training programs. The Center For Magnetic Resonance And Optical Imaging (CMROI) is dedicated to the development and application of innovative, novel magnetic resonance and optical imaging techniques. The facility's core sections provide research and computing resources for numerous user, collaborative, and training projects. The focus of this resource is on developing instrumentation, methodologies, and data analysis techniques for the quantitative assessment of functional, structural, and metabolic parameters in humans with the use of multinuclear magnetic resonance, novel spectral, perfusion, functional, and optical imaging techniques.

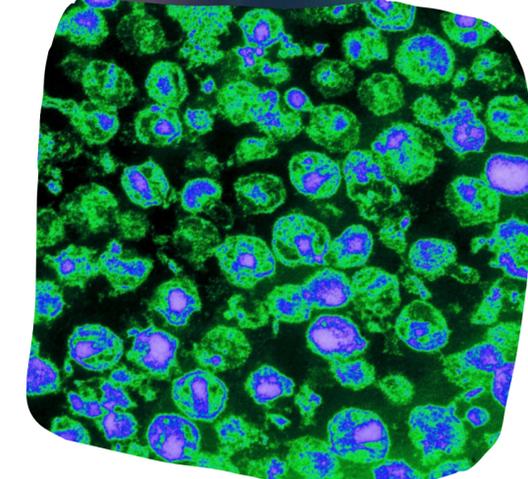
<http://www.itmat.upenn.edu/tbic.html>



Tumor Tissue/Biospecimen Bank (TTAB)

The Tumor Tissue and Biospecimen Bank (TTAB) is a centralized biorepository of human biosamples. TTAB is responsible for the collection, processing, and storage of human blood, fluid, and tissue at the University of Pennsylvania Health System. TTAB has a collection bench within the Surgical Pathology Suite at the Hospital of the University of Pennsylvania (HUP). Our collection bench sits adjacent to the frozen section teams managing clinical sample collection and allowing for tight integration of the tissue sample collection with the clinical pathology teams.

<http://pathology.med.upenn.edu/research/core-resources/tumor-tissue-biospecimen-bank>



Ultrasound Research Laboratory

The goals of the Ultrasound Research Laboratory are to develop new ultrasound technologies and clinical applications, to bridge the gap between technology and clinical applications, and to provide ultrasound imaging resources to other research groups within the Penn community and in other institutions. The laboratory consists of a core group of scientists, sonographers and technicians with expertise in ultrasound technology and computer programming. This group works with clinicians in multiple specialties; including radiologists, cardiologists and surgeons. Ultrasound Research Services, an arm of the laboratory, furnishes a state-of-the-art ultrasound scanner dedicated to research and serves the research community. There is a full-time sonographer and a part-time radiologist on staff to conduct clinical and pre-clinical imaging. The research laboratory has been a valuable resource to several groups working on diverse projects. These include studies involving the measurement of angiogenesis, vascularity, tissue elasticity, contrast agents, and the effects of various physical and pharmaceutical agents on blood flow and tissue vascularity. The studies span a range of clinical areas including research on cancer, cardiovascular disease and musculoskeletal disease.

<https://www.pennmedicine.org/departments-and-centers/departments-of-radiology/radiology-research/labs-and-centers/quantitative/ultrasound-research-laboratory>

Viral Molecular High Density Sequencing Core

We offer Illumina sequencing and bioinformatic expertise to assist researchers with gene therapy trial evaluations, viral integration profiling, CRISPR off-target analyses. We can also assist with bioinformatic analyses including RNAseq transcription profiling and 16S taxonomic assignments. These services are offered by the laboratory of Dr. Frederic Bushman in the Microbiology Department and as part of the CFAR consortium at PENN.

https://med-upenn.corefacilities.org/service_center/show_external/5129?name=viral-molecular-high-density-sequencing-core





Perelman
School of Medicine
UNIVERSITY of PENNSYLVANIA



<https://www.med.upenn.edu/cores/>