CORES DAY 2021

THURSDAY, SEPTEMBER 30th, 10am-2pm

https://pheedloop.com/CoresDay2021/site/home/

Perelman School of Medicine University of Pennsylvania

Children's Hospital of Philadelphia RESEARCH INSTITUTE

THE WISTAR INSTITUTE

Please note that registration is required for this event. Please click here to register for free at any time and receive an event access code.

2021 SPONSORS

Children's Hospital of Philadelphia
RESEARCH INSTITUTE

Children's Hospital of Philadelphia Research Institute

Breakthroughs. Everyday.

For almost a century, Children's Hospital of Philadelphia Research Institute has advanced breakthrough treatments and innovations that have changed lives and pushed pediatric scientific knowledge forward. It's truly amazing what an elite scientific research institution can accomplish with an engaged professional community, the shared resources on a premier academic campus, and the commitment to excellence at a world-renowned children's hospital. From laboratory discoveries, to new public policies, to health gains, we want to give every child the best opportunity for a bright future.

https://www.research.chop.edu/

Perelman
SCHOOL OF MEDICINE
UNIVERSITY of PENNSYLVANIA

The Perelman School of Medicine

We are dedicated to the highest standards of patient care, education and research.

The University of Pennsylvania is the oldest and one of the finest medical schools in the United States. Penn is rich in tradition and heritage and at the same time consistently at the forefront of new developments and innovations in medical education and research. Since its founding in 1765 the School has been a strong presence in the community and prides itself on educating the leaders of tomorrow in patient care, biomedical research, and medical education.

At Penn academic excellence, as well as compassion for the patients we are privileged to serve, are stressed. Skillful compassion is truly a hallmark of the Penn learning experience. The Perelman School of Medicine at the University of Pennsylvania consistently ranks among the top five in US News and World Report's rankings of research-oriented medical schools.

https://www.med.upenn.edu/psom/

THE WISTAR INSTITUTE

The Wistar Institute

Discovering the future of medicine

Wistar is a world leader in early stage discovery science in the areas of cancer, immunology and infectious disease. The Institute is committed to accelerating research advances from bench to bedside through brilliant science and distinctive approaches to collaboration among scientific investigators and academic and industry partners. Wistar's single-minded focus is on making discoveries that will change the future of human health.

https://wistar.org/

https://pheedloop.com/CoresDay2021/site/sponsors/

CORES DAY SCHEDULE

Registered and interested in a core facility? Login via the Virtual Event Portal to view core facility presentations and participate in live chat Q&A sessions.

- **Each chat box will be monitored live by core facility personnel during the scheduled presentation time. Please feel free to leave your questions or comments in the chat for the duration of the session, or to contact the core directly outside of this time.**
- **Please note that all sessions in each time slot will take place simultaneously.**
- **Missed a session? Core facility presentations will be made available online in the future.**

Please click core facilities linked below to view presentations

CORE FACILITY NAME									
10:00 - 10:20am	Cell Center Services Facility (UPenn)	Electron Microscopy Resource Lab/Beckman Center for Cryo-EM (UPenn)	IBI Bioinformatics Core Facility (UPenn)	Metabolomics Core Facility (UPenn)	The Office of Clinical Research (UPenn)	Referral Center for Animal Models of Human Genetic Disease (UPenn)	Stem Cell Xenograft Core Facility (UPenn)	Translational and Correlative Studies Laboratory (UPenn)	
10:30 - 10:50am	Aquatic Zebrafish Core (CHOP)	Bioinformatics Shared Resource (Wistar)	Comparative Medicine Services Core (CHOP)	Cytomics & Cell Sorting Core Resource Laboratory (UPenn)	Human Pluripotent Stem Cell Core (CHOP)	Metabolomic Core (CHOP)	Vector Core Facility (UPenn)		
11:00 - 11:20am	Animal Facility Shared Resource (Wistar)	Biostatistics and Data Management Core - BDMC (CHOP)	Center for Applied Genomics Core Services (CHOP)	Comparative Pathology Core (UPenn)	Flow Cytometry Facility (Wistar)	Information Services Advisory Center - ISAAC (UPenn)	Microbial Culture and Metabolomics Core Facility (UPenn)	Transgenic Core (CHOP)	
11:30 - 11:50am	Biostatistics Analysis Center (UPenn)	Corporate Info. Services Enterprise Research Applications (UPenn)	Flow Cytometry Core (CHOP)	Genomic Analysis Core Facility (UPenn)	iLab (UPenn)	Molecular Pathology and Imaging Core Facility (UPenn)	Proteomics and Metabolomics Shared Resource (Wistar)	Small Animal Imaging Facility (CHOP)	Transgenic and Chimeric Mouse Core Facility (UPenn)
12:00 - 12:20pm	BioRepository Resource Center (CHOP)	Genomics Shared Resource (Wistar)	Human Immunology Core Facility (UPenn)	Pathology Core (CHOP)	Proteomics Core (CHOP)	Research Information Services (CHOP)			
12:30 - 12:50pm	Bioanalytical Core (CHOP)	Cell and Developmental Biology Microscopy Core Facility (UPenn)	eagle-I (UPenn)	Extracelluar Vesicle Core Facility (UPenn)	Imaging Shared Resource (Wistar)	Molecular Screening and Protein Expression Shared Resource (Wistar)	OCRC Tumor Biotrust (UPenn)	Translational Core Laboratory - TCL (CHOP)	
1:00 - 1:20pm	Biomedical Research Support Facility (Wistar)	Cell and Animal Radiation Core Facility (UPenn)	Center for Human Phenomic Science - CHPS (UPenn)	Clinical Research Computing Unit - CRCU (UPenn)	Gnotobiotic Mouse Core Facility (UPenn)	Neurons R Us (UPenn)	Research Vector Core (CHOP)		
1:30 - 1:50pm	Center for Human Phenomic Science - CHPS (CHOP)	Chemical and Nanoparticle Synthesis Core Facility (UPenn)	CHOP Microbiome Center (CHOP)	Clinical Vector Core (CHOP)	Histotechnology Shared Resource (Wistar)	Neurobehavior Testing Core Facility (UPenn)	Next Generation Sequencing Core Facility (UPenn)		

Animal Facility Shared Resource (Wistar)

Denise DiFrancesco, AS, RLATG, CMAR, ILAM, Managing Director (difrancesco@Wistar.org)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESSCJFQO2D8LDHSU

The Wistar Animal Facility facilitates research through humane and efficient management of animal populations. The vivarium operates as a modified barrier facility and is equipped with a quarantine and procedure room, holding rooms with biosafety cabinets, small animal imaging instrumentation (IVIS SpectrumCT imaging system), and additional support areas. Wistar's Animal Care and Use Program is fully accredited by AAALAC International since 1998, has an assurance on file with the Office of Laboratory Animal Welfare at the NIH, and is a registered USDA research institution.

https://wistar.org/research-discoveries/shared-resources/animal-facility

Aquatic Zebrafish Core (CHOP)

Christoph Seiler, PhD, Core Director (seilerc@chop.edu)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESRXXITZZ4WQXE4G

The Aquatic Zebrafish Core provides services using the small vertebrate zebrafish as a model for human disease and to study gene function.

There are numerous reasons to model a disease in a fish, including the rapid, five-day development of zebrafish and the ability to image whole organs in vivo and perform time-lapse analysis. Also, zebrafish models give us the ability to complete drug screens by simply adding your drug to 100uL of fish water, perform behavioral analysis, and make it easy to create knock-outs and transgenic lines.

The Zebrafish Core serves all researchers at Children's Hospital of Philadelphia and the University of Pennsylvania as well as outside organizations. We aim to make the zebrafish model accessible to everyone – from clinicians without their own labs to principal investigators with well-established projects.

https://www.research.chop.edu/aquatic-zebrafish

Bioanalytical Core (CHOP)

Ganesh S. Moorthy, PhD, Director, Bioanalytical Core Laboratory (moorthyg@chop.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESY41I1EHHX8TR8Z

The Bioanalytical Core laboratory is a part of the Center for Clinical Pharmacology. Our Core provides quantitative determination/concentration of drugs and metabolites in various biological samples (blood, serum, plasma, urine, ultrafiltrate, micro-dialysate, dried blood samples, and tissue homogenates) from preclinical and clinical studies. We support the Center for Clinical Pharmacology's efforts by developing and validating robust ultra-performance liquid chromatography/tandem mass spectrometry methods and utilizing and expanding the application of novel microsampling assays to facilitate pediatric clinical trials, large multi-center trials, and preclinical trials.

https://www.research.chop.edu/bioanalytical-core

Bioinformatics Shared Resource (Wistar)

Andrew Kossenkov, PhD, Scientific Director (akossenkov@wistar.org)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES6SHOJ2RYLY74P2

The Wistar Bioinformatics Facility continuously develops new and efficient approaches to data analysis as a response to emerging research needs. Facility functions include: statistical analyses and computational modeling for all types of high-throughput data, advanced bioinformatics tools for integrative cancer biology, and high-throughput data management

https://wistar.org/research-discoveries/shared-resources/bioinformatics-facility

Biomedical Research Support Facility (Wistar)

Livio Azzoni, MD, PhD, Managing Director (azzoni@wistar.org)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESSU13LH5L0VB08Q

The Wistar Biomedical Research Support Core (BRSC) provides a robust infrastructure to support mechanistic, patient-oriented research. The BRSC manages the resource commitment associated with clinical studies, including supporting compliance with regulatory directives governing research in Human Subjects. This includes data collection, storage and extraction, data quality control, site monitoring, regulatory reporting, and connection with statistical teams for data analysis. Services include phlebotomy, tissue microarrays, collection of pathological specimens and support for clinical studies.

https://wistar.org/research-discoveries/shared-resources/biomedical-research-support-facility

BioRepository Resource Center (CHOP)

David Stokes, PhD, Institutional Director, Biorepository Core Facility (stokesdg@chop.edu)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESFVKTETPX3P00LK

The Biorepository Resource Center (BioRC) improves the breadth and access to biobanked specimens and information resources across the CHOP community of investigators. With a capacity for approximately 2 million to 3 million samples, the facility serves all of CHOP's biobanking needs, avoiding specimen duplication, preserving precious materials, and providing organized data and materials. The BioRC storage facility is located in a 2,956 square foot, temperature-controlled, card-accessed facility in Colket Translational Research Building (CTRB). The BioRC's laboratory space, also located in the CTRB building, is outfitted for specimen accession, processing, and temporary storage. The BioRC operates under the following principles:

- An Operational Committee, which coordinates central and investigator-specific biobanking resources and programs at CHOP, governs and approves requests to utilize the BioRC.
- BioRC facilitates integration and enhancement of access to information about biorepository specimens and resources.
- BioRC assists investigators in developing new projects that require the collection and processing of shareable samples not currently available, or helps investigators with existing projects who would like to migrate storage and management of their shareable banked specimens and data to the BioRC.
- BioRC institutes and follows best-practice standard procedures for collection, processing, and storage of samples to ensure high quality specimens and data for all CHOP investigators.

https://www.research.chop.edu/biorepository-resource-center

Biostatistics Analysis Center (UPenn)

Scott Appel, MS, Acting Co-Director, Senior Triage and Consulting Manager (appelsc@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESNXD28CAOTBM3OT

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

Biostatistics and Data Management Core (CHOP)

Linda Sprouse, Project Administrator (sprousel@chop.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESNJI39Q2X70XJFI

If you need to ensure your study includes valid, statistically sound data and results, then the Biostatistics and Data Management Core (BDMC) at Children's Hospital is here to help! Our team of highly motivated and experienced biostatisticians is committed to collaborating with investigators to meet their studies' unique biostatistics and data management needs. We can assist you in designing experiments, planning of clinical protocols, analyzing and interpreting data, and presenting and disseminating results. And our data management team members have expertise in designing case report forms, developing databases, creating data management plans, developing metrics to report on study progress, and delivering high-quality datasets for analysis. The BDMC offers the unique advantage of experience with Biologics License Application submissions. We are eager to work with you if you need guidance with clinical trial start-up, oversight, and regulatory submission. We are available for free limited consulting for your data management and statistical questions.

https://www.research.chop.edu/biostatistics-data-management

Cell and Animal Radiation Core Facility (UPenn)

Khayrullo Shoniyozov, PhD, Technical Director (Khayrullo.Shoniyozov@pennmedicine.upenn.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES7A9JWK7LG7QIGO

The Cell and Animal Radiation Core (CARC) is one of the most advanced cell and animal radiation research facilities in the US, from providing basic cell and animal radiation needs, to 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 (the latter including FLASH radiotherapy) on cells, explant tissues, rodent models and canine patients. A dedicated team of Physicists also provides expert dosimetry and treatment planning capabilities. The CARC instrumentation consists of two Image Guided SARRP 200 Small Animal Radiation Research Platforms (Xstrahl), a research proton beamline (IBA, Roberts Proton Center), X-RAD 320ix cabinet x-ray irradiator (Precision X-Ray) and two Cs gamma-ray irradiators (Shepherd Mark I).

https://www.med.upenn.edu/carc/

Cell and Developmental Biology Microscopy Core Facility (UPenn)

Andrea Stout, PhD, Technical Director (astout@pennmedicine.upenn.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES58CLIRGJJAZBCR

The Cell & Developmental Biology (CDB) Microscopy Core is located in the Perelman School of Medicine at the University of Pennsylvania. Our facility houses eleven light microscopes, a scanning electron microscope (SEM), and two image analysis workstations. We are open to the entire University of Pennsylvania community as well as to researchers from other institutions and companies in the area. Our services include assisted imaging sessions, in-depth training on our microscopes, and consultation on sample preparation or image analysis.

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

Cell Center Services Facility (UPenn)

Tapan Ganguly, PhD, Core Director (gangulyt@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESZ6ZTNEGD5F8HKU

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/

Center for Applied Genomics Core Services (CHOP)

Renata Pellegrino, PhD, CAG Technical Laboratory Director (silvar@chop.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESL0W1LMF3PMEK61

CAG Biorepository Core

Established in 2006, the CAG Biorepository is one of the world's largest and most diverse pediatric biobanks, hosting more than 600,000 biological samples that have been genotyped or sequenced in CAG's CLIA and CAP-accredited high-throughput centers. The core is supported by a minus -20C automated storage instrument with a capacity of storing 1.7 million samples and is welcoming the arrival of a -80C instrument capable of hosting 1.5 million samples this fall. This core offers support services in DNA and RNA extraction from a myriad of sample types, as well as general biobanking services for large and ongoing collection efforts.

Renata Pellegrino, PhD, CAG Technical Laboratory Director (silvar@chop.edu); James Snyder, CAG Biorepository Laboratory Manager (snyder3@chop.edu)

CAG Sequencing Core

Our Sequencing lab fully equipped with state-of-art technology, high capacity robots/liquid handling systems and experienced staff members. Sequencing operations are integrated with our Biorepository and Bioinformatics teams to keep all stages of a collaborator's studies connected. The CAG sequencing lab offers cutting edge technologies in the Genomics field: Novaseq, BulkRNAseq, Whole Genome Sequencing (WGS), Whole Exome Sequencing (WES), Single Cell 10xGenomics, Bionano, Miseq, Fluidigm confirmation, Sanger Sequencing (including fragment analysis).

Renata Pellegrino, PhD, CAG Technical Laboratory Director (silvar@chop.edu); Fernanda Mafra, PhD, CAG NGS Laboratory Manager (mafraf@chop.edu)

CAG Genotyping Core

Established in 2006, the CAG Genotyping Laboratory is fully equipped with state-of-art technology and experienced staff members. Our lab is integrated with our Biorepository and Bioinformatics group, keeping all stages of collaborator's studies connected.

Renata Pellegrino, PhD, CAG Technical Laboratory Director (silvar@chop.edu); Maria Lemma, CAG Genotyping Laboratory Manager (garrism@chop.edu)

https://chop.ilab.agilent.com/service_center/show_external/5056?name=center-for-applied-genomics-core-services

Center for Human Phenomic Science (CHOP)

John Krall, LCSW, Administrative Director (krallj@chop.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESLZY35LVGZLMCA7

The Center for Human Phenomic Science (CHPS) provides the resources, environment, operations, and training to support and promote high-quality clinical and translational research by qualified investigators. It launched with the support of the Clinical and Translational Science Award, a National Institute of Health Roadmap initiative. CHPS merged the General Clinical Research Centers at Children's Hospital of Philadelphia and University of Pennsylvania Health System, and then introduced new programs and services. CHPS has child and adult specific facilities at CHOP and UPHS respectively, as well as joint components. It is the Center's policy to charge for services provided to investigators for the purpose of supporting the program and expanding the current services available. All protocols are approved by the CHPS Resource Committee. For more information, please contact John Krall, CHPS Administrative Director. Roberts Center for Pediatric Research, Room 9323, 2716 South Street, Philadelphia, PA 19146 # 267-425-1790

https://chps.research.chop.edu/

Center for Human Phenomic Science (UPenn)

Amanda Brock, MSN, MBE, RN, ONC, CMSRN (Amanda.Brock@pennmedicine.upenn.edu)**; Carl Shaw, MEd, MBE** (shawcarl@pennmedicine.upenn.edu)**; Terry Scattergood, RN** (Theresa.Scattergood@pennmedicine.upenn.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SEST4IOVK5PY437CH

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.

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

Chemical and Nanoparticle Synthesis Core Facility (UPenn)

Andrew Tsourkas, PhD, Core Facility Director (davitj@sas.upenn.edu)**; Kido Nwe, PhD, Technical Director** (kidonwe@seas.upenn.edu)**; Davit Jishkariani, PhD, Associate Technical Director** (davitj@sas.upenn.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES0M8NSRLVY3BM0I

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. Moreover, the CNSC also collaborates with research centers such as the High Throughput Experimentation Center (HTE) of the Department of Chemistry. As a result, together with HTE, CNSC is positioned to offer not only the synthesis and scale-up of the desired chemical/nanoparticle but also a rapid reaction optimization including the expeditious discovery of new reaction conditions as well as fast, late-stage derivatization of lead candidates. Together with Upenn startup AlphaThera, CNSC offers site-specific antibody labeling.

https://www.itmat.upenn.edu/cnsc/

CHOP Microbiome Center (CHOP)

Kyle Bittinger, PhD, Analytical Core Director (bittingerk@emaill.chop.edu)**; Ahmed Moustafa, PhD, Sequencing Core Director** (moustafaam@chop.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESUJPJWDE6OMOUDC

Looking for help with sequencing and analytics to advance your project? The CHOP Microbiome Center is the sequencing and analytical resource of the PennCHOP Microbiome Program, providing end-to-end solutions for microbiome research.

Our sequencing lab offers expertise in next-generation DNA sequencing for microbiome studies, working with customers to provide optimized workflows and protocols customized for each study. Our analytical lab provides expertise in bioinformatics and statistical analysis of microbiome data. We develop an analytical plan specific to your project and can integrate microbiome data with other data sources, such as metabolomics or dietary intake information.

CHOP Microbiome Center services are available to researchers at CHOP, University of Pennsylvania, other academic institutions, and industry.

https://www.research.chop.edu/chop-microbiome-center

Clinical Research Computing Unit (UPenn)

Stephen Durborow, BS, Director, Research Technologies & Research Development & Internal Operations QA (RT, RDQA) (sdurboro@pennmedicine.upenn.edu)**; Christopher Helker, MSPH Director, Clinical Data Management (CDM)** (chelker2@pennmedicine.upenn.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES9GCG3WY2XCFEI8

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

Clinical Vector Core (CHOP)

Johannes van der Loo, PhD, Core Director (vanderlooj@email.chop.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESB5DCNCIMHMCNSZ

The Raymond G. Perelman Center for Cellular and Molecular Therapeutics has established state-of-the-art Current Good Manufacturing Practices (cGMP) clinical vector manufacturing suites for adeno-associated virus (AAV) and lentiviral (LV) vectors. Directed by a leading expert in preclinical and clinical vector production and characterization, our goal is to help realize the enormous promise of gene transfer therapy to address unmet medical needs. The Clinical Vector Core manufactures clinical and pre-clinical adeno-associated virus (AAV) vectors of serotypes 1, 2, 5, 6, 8, and 9, and Lentivirus (LV) vectors. Novel or modified serotypes will require development prior to scale-up. Products for clinical use are manufactured in compliance with cGMP for Phase 1 and 2 clinical trials. To support pre-clinical work, including pharmacology and toxicology studies, we offer products manufactured using a GMP-comparable process. Research-grade products for proof-of-principle and bridging studies are also offered, in addition to support for long-term stability and device compatibility studies and investigational new drug (IND) submission. The Clinical Vector Core is a not-for-profit core that welcomes projects from academia, industry, and government on a first-come, first-serve basis.

https://www.research.chop.edu/clinical-vector

Comparative Medicine Services Core (CHOP)

Geary R. Smith, DVM, MS, Technical Director and Testing Facilities Manager (smithgr@chop.edu)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES101NXRZFQBX0IP

The mission of the Raymond G. Perelman Center for Cellular and Molecular Therapeutics Comparative Medicine Services Core is to partner with and guide Children's Hospital of Philadelphia-based and external investigators through the process of translating their wet bench research to clinical care.

Since its inception, CHOP Research Institute has held a bench-to-bedside philosophy that emphasizes bringing basic research ideas to the clinic so they may improve the lives of our patients and their families. Completing preclinical investigations and submitting Investigational New Drug and Premarket Approval Applications to the U.S. Food and Drug Administration to initiate first-in-human trials are essential steps toward enacting this philosophy.

The Comparative Medicine Services Core is currently developing the capacity for Good Laboratory Practice (GLP) compliance. Fully GLP-compliant services will begin in the second quarter of 2021; however, all preclinical programs require in-depth planning and discussion. Therefore, we encourage you to contact us as soon as you believe you have a drug or device that will eventually require human clinical trials prior to use in patients. The Comparative Medicine Services Core comprises highly trained veterinary, regulatory, and quality assurance professionals capable of completing and overseeing a variety of studies working with animal models. We adhere to the highest standards of animal welfare, procedure reproducibility and validation, and customer service.

https://www.research.chop.edu/comparative-medicine-services-core

Comparative Pathology Core (UPenn)

Enrico Radaelli, DVM, PhD, DECVP, Faculty Director (enrada@vet.upenn.edu)**; Charles Assenmacher, DVM, MSc, DACVP, Technical Director** (chasse@vet.upenn.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES61QMFAN4N0IF9X

The Comparative Pathology Core (CPC) is an established core facility within the Department of Pathobiology at the University of Pennsylvania, School of Veterinary Medicine (Penn Vet), and a fully integrated shared resource within the Abramson Cancer Center (ACC). The main objective of the CPC is to provide expert pathological characterization of experimental animal models to fulfill the growing needs of researchers performing in vivo studies as part of their basic and translational research endeavors. In this context, the CPC supports the local research community at the University of Pennsylvania, including the School of Medicine and Abramson Cancer Center, as well as closely related institutes such as Children's Hospital of Philadelphia, and the Wistar Institute. To accomplish its mission and ensure accurate extrapolation, interpretation, and translation of preclinical animal data, the CPC offers the expertise of board-certified veterinary pathologists and access to a state-of-the-art platform for histology services, molecular staining of tissue samples, and digital pathology. CPC pathologists possess a comprehensive understanding of the diverse experimental strategies used in preclinical research and have developed unique expertise in experimental laboratory animal pathology.

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

Corporate Information Services Enterprise Research Applications (UPenn)

Jessica Chen, Senior Manager, CRIS (Jessica.Chen@pennmedicine.upenn.edu)**; Jamie Howell, Senior Application Analyst, DART, Enterprise Research Applications** (Jamie.Howell@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESY4HZ75YY9A7NJW

PMACS/DART (Penn Medicine Academic Computing Systems/Digital Academic Research Transformation), was formed in 2012 with the goal of providing computing services for the Perelman School of Medicine's departments, centers, and institutes. PMACS/DART has matured into a 140+ department of technology professionals providing a wide range of services including:

- Desktop Support
- Server Administration
- Storage Management
- Both High Performance Computing (HPC) and Limited Performance Computing (LPC)
- Software Development
- Web Design and Development
- Database Development
- Enterprise Application Development and Support
- Consulting services that provide options to best support research initiatives

PMACS/DART is focused on delivering state of the art technology solutions in the most cost-conscious manner in support of the education, administrative and research needs of the Perelman School of Medicine.

https://www.med.upenn.edu/dart/

Cytomics & Cell Sorting Core Resource Laboratory (UPenn)

Derek Jones, PhD, Technical Director (jonesder@pennmedicine.upenn.edu)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESOJSODU4WCKL833

The Flow Cytometry and Cell Sorting Resource Laboratory is currently recognized as one of the largest and most comprehensive flow cytometry laboratories in the US, and is designated a laboratory of exceptional merit by the National Cancer Institute. Using state-of-the-art technology, the resource provides a broad array of instrumentation, support, education, and consultation to the research community at the University of Pennsylvania. A wide variety of cell sorting applications are supported, from high-speed multicolor (up to 14 colors) cell sorting to low-speed, large nozzle, improved viability sorting. Additionally, a wide variety of cell analysis services (up to 28 parameters) are offered, from traditional analog, easier to use tabletop analyzers to many-laser, many-color, high-speed, fully-digital modern instrumentation.

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

eagle-I (UPenn)

Neetu Rajpal, Resource Miner (Neetu.Rajpal@Pennmedicine.upenn.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES54GDSM7BL5L44V

Eagle-i is a searchable database of biomedical research resources. You can browse or search for resources at the University of Pennsylvania, Children's Hospital of Philadelphia, the Wistar Institute, Monell Chemical Senses Center, University of the Sciences in Philadelphia and the growing network of over 28 institutions participating in eagle-i.

https://eagle-i.itmat.upenn.edu/

Electron Microscopy Resource Lab/Beckman Center for Cryo-EM (UPenn)

Vera Moiseenkova-Bell, PhD, Faculty Director (vmb@pennmedicine.upenn.edu)**; Sudheer Molugu, PhD, EMRL Director** (Sudheer.Molugu@pennmedicine.upenn.edu); **Stefan Steimle, PhD, Beckman Center Director** (stefm@sas.upenn.edu)**; Inna Marrynyuk MS, Ultrastructure Services** (Inna.Martynyuk@pennmedicine.upenn.edu)**; Biao Zuo MD, Ultrastructure Services** (biaozuo@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESMWHL8FPCAYLMVT

The Electron Microscopy Resource Lab (EMRL) at the Perelman School of Medicine, University of Pennsylvania, is a training and service facility dedicated to providing both conventional transmission electron microscopy (TEM) of cells and tissues and state of the art cryo-electron microscopy (cryo-EM) and cryo-electron tomography (cryo-ET) for structural investigation of macromolecules and cells. The core facility offers services to University of Pennsylvania research groups and external academic research groups in the greater Philadelphia area.

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

Extracelluar Vesicle Core Facility (UPenn)

Rachel DeRita, PhD, Core Facility Director (rmderita@vet.upenn.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESKUK9LDG84U7E5U

The Extracellular Vesicle (EV) Core Facility located on PennVet's campus in the Rosenthal building at 3800 Spruce Street provides comprehensive and/or selected services in the necessary isolation, quantification and characterization of EVs. Extracellular vesicles (EVs) are membrane-enclosed nanoparticles released from all cell types and contain active biomolecules such as nucleic acids and proteins. They play an integral role in intercellular communication and as they are found in most all bodily fluids and are characteristic of the cells they came from, and are attractive targets for non-invasive biomarkers for diagnostics and evaluating clinical therapeutic responses. They also have the potential to be vehicles for therapeutic delivery to target cells. Isolation of EVs is based on either size exclusion using high-performance (SEC-HPLC) or gravity fed (e.g. iZon column) liquid chromatography, or density using high-speed ultracentrifugation and density gradient separation. We can accurately characterize EV particle size distribution and concentration using resistive pulse sensing techniques (nCS1, Spectradyne, LLC) and also offer comparative nanoparticle tracking analysis (NTA) using the ZetaView Instrument by Particle Metrix. Immunophenotyping of EV protein markers can be accomplished using chip array (ExoViewTM) techniques. The EV Core additionally provides 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.

More information about the core, our services and pricing and other resources can be found at our website, www.vet.upenn.edu/extracellular-vesicle-core Any other questions, comments or feedback may be directed to Dr. DeRita at rmderita@upenn.edu.

www.vet.upenn.edu/extracellular-vesicle-core

Flow Cytometry Core (CHOP)

Florin Tuluc, MD/PhD, Director (tuluc@chop.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESWD26WI2W9YSU35

The Flow Cytometry Laboratory at CHOP provides access to state of the art instrumentation for flow cytometry and cell sorting applications to the research community at Children's Hospital of Philadelphia and University of Pennsylvania. The laboratory is located in suite 1207 on the 12th floor of the Leonard and Madlyn Abramson Pediatric Research Center. Nine analyzers (two Cytek Aurora, CytoFlex LX, CytoFLEX S, LSRFortessa, LSR II, FACSCalibur, two Accuri C6) and five cell sorters (a brand new Cytek Aurora CS sorter, a Beckman-Coulter MoFlo Astrios EQ, Becton-Dickinson FACSAria Fusion, Becton-Dickinson FACSJazz, and Union Biometrica BioSorter) are operated in the lab either by staff or by trained users. The two Cytek Aurora spectral cytometers are both equipped with five lasers and are capable of analyzing over forty fluorochromes in a sample. One of the Cytek Aurora analyzers has a temperature-controlled 96 well plate loader for medium-throughput analysis. CytoFlex LX is a six lasers, 21 fluorescence parameters instrument, able to automatically load samples from 96 well plates. A CytoFLEX S cytometer (4 lasers, 13 colors, plate loader) is also available. LSRFortessa is equipped with five lasers and it is capable of detecting 18 colors. LSR II has UV, violet, blue and red lasers and can detect up to 15 colors. FACSCalibur and the two Accuri C6 cytometers have blue and red lasers and four color detectors. Aurora CS, MoFlo Astrios EQs, FACSAria Fusion and FACSJazz are electrostatic droplet sorters encased in a biosafety class 2 cabinets and they are used on an everyday basis for processing samples requiring containment at Biosafety Level 2 or lower. The BioSorter (Union Biometrica) equipped with blue and yellow green lasers is available for analyzing and separating large particles (C. elegans, zebrafish larvae, pancreatic islets, Drosophila imaginal discs, hepatocytes, adipocytes). An Evos FL Auto fluorescence imaging system, a Countess FL II cell counter, a cell washer, centrifuges shakers and other small equipment are also available in our lab. Flow cytometry analysis software (FlowJo, FCS Express) are offered to users through site license or internet dongles. The staff has the expertise for performing a variety of flow cytometry applications, including sample processing for surface and intracellular staining, functional assays, complex multi-color flow cytometry analyses, intracellular calcium assays, side population assays etc. Individualized training for operating the analyzers, cell sorters, the imaging system and the cell counter is provided upon request.

3615 Civic Center Boulevard, Abramson Research Building, Room 1207, Philadelphia, PA 19104

https://www.research.chop.edu/flow-cytometry

Flow Cytometry Facility (Wistar)

Jeffrey Faust, MBA, Managing Director (jsfaust@Wistar.org)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESC6CMUVZSU5WG6L

The Wistar Flow Cytometry Shared Resource provides its users with the technological resources and professional assistance for high quality, multiparameter flow cytometry analyses and sorting. Facility personnel aid Wistar investigators in creating efficient and cost-effective experimental designs, through optimizing cytometry-specific reagent and fluorochrome selection, and offer advice and assistance in operation of analysis instruments. Technical support is also provided for analyses of flow and imaging cytometry data for publication, presentation, and inclusion in grant applications, management of cytometric data (storage, archiving, and retrieval), and management of a site license for low-cost analysis software. Non-Wistar investigators, both academic and commercial, can access the facility for cell sorting services, as well as analysis performed by facility personnel.

https://wistar.org/research-discoveries/shared-resources/flow-cytometry-facility

Genomic Analysis Core Facility (UPenn)

Tapan Ganguly, PhD, Core Director (gangulyt@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESAVO1YQQC4F6B7B

As part of the Penn Genomic Analysis Core, an Abramson Cancer Center Shared Resource, 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 and Next-Seq along with consultation, experimental design and data analysis. The NGS service includes library preparation to sequencing to data analysis. Both amplicon-based and capture-based enrichments are offered for targeted sequencing. The capillary sequencers also enable Human Cell Line Authentication, microsatellite genotyping and fragment analysis for VNTR, SNaPshot etc. The molecular biological services include PCR, cloning, subcloning, mutagenesis, construct preparation and, plasmid DNA preps at different scales. As part of the Penn Genomic Analysis Core, an Abramson Cancer Center Shared Resource, 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 and, Affymetrix CytoScan and OncoScan platforms provide 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://med-upenn.corefacilities.org/service_center/show_external/4515 https://genetics.med.upenn.edu/cores/genomic-analysis-core/

Genomics Shared Resource (Wistar)

Sonali Majumdar, MS, Managing Director (smajumdar@Wistar.org)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESSM5UBD41DFLT56

The Wistar Genomics Facility serves as a hub for consultation and scientific interaction relating to nucleic acid-based methods. It provides expertise and support to insure the best possible outcomes for genomic related projects. The Facility supports several state-of-the-art platforms for a wide variety of nucleic acid-based studies, including massively parallel sequencing as well as routine capillary sequencing. The facility also supports: transcriptomic projects including RNA-Seq, ChIP-Seq and small RNA-Seq; gene expression studies using Quant-Seq(3' RNA-seq) and low input sequencing; single Cell-Seq (10x Genomics); and targeted gene expression studies using the nanoString nCounter platform.

https://wistar.org/research-discoveries/shared-resources/genomics-facility

Gnotobiotic Mouse Core Facility (UPenn)

Maayan Levy, PhD, Co-Director (maayanle@pennmedicine.upenn.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESD5M7W25XBPRR9N

The Gnotobiotic Mouse Facility Core at the University of Pennsylvania is part of the PennCHOP Microbiome Program. The core provides germ-free mice, technical support and access to several experimental setups that are needed for a variety of studies. The core personnel assist with consultation, training, and specialized technical services. The core is equipped with state-of-the-art isolators and isocage system as a solution for short period studies (ranging from days to 2–3 weeks), where experimentation with germ free mice can be done at multiple simultaneous conditions. In addition, specialized testing equipment can be introduced into isolators and isocages upon request. The core maintains several common strains of germ-free mice at different ages that are available upon request, and provides re-derivation services for generating customized germ-free and gnotobiotic mouse strains. All animal protocols approved by the Institutional Animal Care and Use Committee (IACUC).

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

Histotechnology Shared Resource (Wistar)

Fangping Chen, HT (ASCP), Managing Director (fchen@wistar.org)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESHL4MO467NONFTJ

The Wistar Histotechnology Facility provides services for fixing, processing and paraffin or OCT-embedding of all types of tissues for light microscopy (e.g. routine stains, immunohistochemistry or in situ hybridization). The Facility staff performs routine hematoxylin and eosin staining, as well as specialized staining and slide preparation for immunohistochemistry and in situ hybridization. Frozen sectioning is also available, including consultation regarding freezing and fixing techniques to optimize experimental results.

https://wistar.org/research-discoveries/shared-resources/biomedical-research-support-facility/histotechnology-facility

Human Immunology Core Facility (UPenn)

Eline Luning Prak, MD/PhD, Director (luning@pennmedicine.upenn.edu)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESBYJ6VUQRN6VOPH

The Human Immunology Core (HIC) is a one-stop shop for translational immunology research at UPenn. The HIC offers purified cell subsets from healthy human apheresis donors and performs blood (peripheral blood mononuclear cell) 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 (multiplex bead assays), flow cytometry and immune repertoire profiling (next-generation sequencing of antibody and T cell receptor gene rearrangements in bulk and single cell formats). Finally, the HIC provides scientific consultations in clinical trial sample processing, regulatory compliance, immunology assay design and validation, data analysis and pricing estimates and methods for grant applications.

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

Human Pluripotent Stem Cell Core (CHOP)

Deborah L. French, PhD, Core Director (frenchd@email.chop.edu)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESS5NF3VRLUPP62H

The pluripotent stem cell and genome editing technologies represent exciting new tools for studying human disease. Having unlimited supplies of cells that either express or are genetically manipulated to express genes of interest provides investigators with human model systems to study disease mechanisms and identify new therapies.

The Core generates induced pluripotent stem cell (iPSC) lines from somatic cells including peripheral blood mononuclear cells, fibroblasts, and lymphoblastoid cell lines. These lines are generated using the latest non-integrating reprogramming methodologies that leave the genome intact. The Core has established standard operating procedures for:

- Pluripotent stem cell growth and maintenance
- Genome editing technologies including CRISPR-CAS9
- Differentiation to germ layer and derivative tissues of interest

The Core provides enrichment training courses for investigators interested in learning how to work with pluripotent stem cells and/or establish the pluripotent stem cell technology in their own labs.

The Human Pluripotent Stem Cell Core, established in 2008 by the Raymond G. Perelman Center for Cellular and Molecular Therapeutics at Children's Hospital of Philadelphia, serves the research needs of CHOP, the University of Pennsylvania, and outside academic communities in the field of human pluripotent stem cell biology.

https://www.research.chop.edu/human-pluripotent-stem-cell-core

IBI Bioinformatics Core Facility (UPenn)

Taehyong Kim, PhD, Principal Bioinformatician, Interim Core Director(taehyong@pennmedicine.upenn.edu)**; Paul Wang, PhD, Senior Project Director - Institute for Biomedical Informatics** (wangpaul@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESO2V21UF8K1V1U7

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 in 2015, BIC has been serving 80+ research groups from 20+ Penn institutes and departments, helped the funding of multiple NIH grants, and co-authored in 30+ publications.

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

iLab (UPenn)

Curtis Embree, Applications Analyst (Curtis.Embree@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES6E47Y1X4SCXZQH

iLab is the core management software used by PSOM, CHOP and Wistar. iLab is an online 'storefront' for the core's services; workflow; and business processes. iLab manages service requests (quotes and orders), equipment schedules, and billing for both internal and external core customers. iLab also manages purchase orders, reporting, auditing, etc.

https://www.med.upenn.edu/dart/iLab.html

Imaging Shared Resource (Wistar)

James Hayden, Managing Director (jhayden@Wistar.org)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES5MO8FA9G1I0HSG

The state-of-the-art Wistar Imaging Facility provides access to standard and advanced optical imaging systems designed to work with both fixed and live specimens. Researchers may be trained for unassisted use of all core instrumentation, while full service support by facility staff is also available for qualitative or quantitative image capture. The Facility offers expert technical assistance with experimental design to optimize imaging results as well as help with advanced image analysis solutions, enabling users to get the most out of the imaging technology.

https://wistar.org/research-discoveries/shared-resources/imaging-facility

Information Services Advisory Center (UPenn)

Jennifer Moody, MBA, Senior Manager, IS Advisory Center (Jennifer.Moody@pennmedicine.upenn.edu)**; Ray Talley, Senior Technical Analyst** (Orondae.Talley@pennmedicine.upenn.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESR3P0MUFLGH0FGU

The Information Services Advisory Center (pronounced “Isaac”) is designed to provide a personalized support experience for the Penn Medicine community. It can be challenging to find the right IS professional to contact and assist you, especially navigating complex issues. Isaac is an IS “concierge service”, where IS experts are available to assist with non-urgent questions related to reporting, IS security and policies, PennChart, clinical research, and other UPHS applications, email, and mobile. The team encompass years of experience across these areas, so you’ll be tapping into their collective wisdom to get the assistance you need. Not sure where to ask your IS question? Ask Isaac!

https://www.med.upenn.edu/evdresearch/isaac.html

Metabolomic Core (CHOP)

Itzhak Nissim, PhD, Core Director (nissim@email.chop.edu)

Presentation time: 10:30 - 10:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESTE8ASSXRLV69BI

The Metabolomic Core at CHOP (MC@CHOP) provides analytical services to advance understanding of metabolism in health and disease states. The Core’s state-of-the-art research facility allows investigators to carefully study the relationship between metabolome, fluxome, and disease states such as cancer, diabetes, inborn errors of metabolism, metabolic syndrome, urea cycle defects, traumatic brain injury, drug addiction, and sleep disorders, and more. MC@CHOP provides the analytical and theoretical wherewithal to investigate the impact of drugs on metabolism as well as the potential benefits and risks of a given drug treatment. The MC@CHOP staff includes scientists and research associates with more than 20 years of experience in operation of various mass spectrometry systems, high-performance liquid chromatography systems, enzyme assays, and data analysis. We provide investigators with a state-of-the -art resources that facilitate experimental and technical consultations as well as analysis of metabolites and metabolic pathways in humans and animal models, both in vivo and in vitro systems, to establish a better understanding of metabolomic and fluxomic statuses as well as understanding drug handling and mechanism of action.

https://www.research.chop.edu/metabolomic-core

Metabolomics Core Facility (UPenn)

Christopher Petucci, PhD, Technical Director (Christopher.Petucci@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESC22ZXWPHK89II7

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 and Metabolomics Core Facility (UPenn)

Elliot Friedman, PhD, Technical Director (elliotf@pennmedicine.upenn.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES6G3W2ZKQXPHVFU

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 of amino, bile, and short chain fatty acids. The facility offers training and usage for culture equipment; consultation regarding experimental design, and; anaerobic culture services. Examples of culture studies include isolation of microbial taxa from mammalian samples; interrogation of the physiology of microbial strains under different conditions (e.g., anaerobic/microaerobic/aerobic, differing nutrient limitations) using isolated strains or strains obtained from culture collections (another service offered by the core); co-culturing of defined microbial consortia to investigate microbe-microbe interactions, and; preparation of microbial products (live bacteria, heat-killed bacteria, bacterial supernatants) from single or defined-mixed microbial cultures for use in mammalian cell culture and/or animal model systems.

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

Molecular Pathology and Imaging Core Facility (UPenn)

Kate Bennett, Technical Director (bennk@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES9MK4MCJCQ8GC72

The Molecular Pathology and Imaging Core (MPIC) provides histological services, imaging and staining equipment, and technical expertise for the processing and analyses of all tissues, specializing in 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/CMSDLD/the-molecular-pathology-and-imaging-core-mpic.html

Molecular Screening and Protein Expression Shared Resource (Wistar)

Joel Cassel, Managing Director (jcassel@wistar.org)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES8U4L9GHZAZKPO2

The Wistar Molecular Screening and Protein Expression Facility fosters collaboration by providing expertise in biochemical and cell-based assay development for high-throughput screening and compound profiling. Such assays enable researchers to identify small molecule compounds which interact with a target protein of interest. These compounds can then be used as tools to further study the target proteins function and signaling pathways in cells. In addition, recombinant protein expression is offered in insect cells and other hosts on a case-by-case basis.

https://wistar.org/research-discoveries/shared-resources/molecular-screening-protein-expression-facility

Neurobehavior Testing Core Facility (UPenn)

W. Timothy O'Brien PhD, Core Director (obrienw@pennmedicine.upenn.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESWE7AYXDSOGM1M5

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).

https://www.itmat.upenn.edu/NBTC.html

Neurons R Us (UPenn)

Jai-Yoon Sul, PhD, Core Facility Director (jysul@upenn.edu)**; Lauren Carfolite, Lab Technician** (Lauren.Carfolite@Pennmedicine.upenn.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESJQC8948XL5YAW0

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 Facility (UPenn)

Jonathan Schug, PhD, Technical Director (jschug@pennmedicine.upenn.edu)

Presentation time: 1:30 - 1:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESJ21S0CX2PWWWAT

The Next-Generation Sequencing Core (NGSC) provides broad set of services for single-cell and bulk whole-genome, RNA-Seq, ATAC-Seq, BIS-Seq, Exome-Seq, ChIP-Seq, CLIP-Seq, etc. We can prepare libraries for RNA-Seq, smRNA-Seq, ChIP-Seq, Whole Exome, whole genome, as well as the full range of 10X single-cell kits. Our Illumina NovaSeq 6000 and MiSeq sequencers are available for self-service as well as full-service operations. We have experience with difficult, low input samples as well as sequencing novel library types. We are preparing to offer spatial transcriptomics using the 10X Visium platform in conjunction with the Molecular Pathology and Imaging Core (MPIC). 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://ngsc.med.upenn.edu/#/

OCRC Tumor Biotrust (UPenn)

Ehay Jung, MBA, Technical Director (euihye@pennmedicine.upenn.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESJHH3BB9TIUEB0Y

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/

The Office of Clinical Research (UPenn)

Laura Fluharty, Senior Director, Clinical Research, OCR Operations (lauraee@upenn.edu)**; Jason Molli, Director of Research Finance, OCR Finance** (molli@upenn.edu)**; Dawn Lundin, Director, Clinical Research Compliance, OCR Compliance** (lundinda@upenn.edu)**; Deanna Condit-DiDonato, Director, Sponsor Support Unit, OCR SSU** (deannad@upenn.edu)**; Patricia Eynard, Associate Director, Clinical Trial Contracting Unit, OCR CTCU** (peynard@upenn.edu)**; Mahesha Mitchell, Associate Director, Clinical Trial Contracting Unit, OCR CTCU** (Mahesha@upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESPHECOIUW86UWGZ

The Office of Clinical Research seeks to promote human research for the advancement of healthcare while ensuring the highest level of research participant safety and facilitating the highest quality research by: Realizing the best research standards through adherence to university and government research policies and regulations; Supporting investigators and research teams through process improvement, innovative technologies, and education and training initiatives; Propagating best operational practices to maximize the efficiencies of research activities; Collaborating with University organizations involved with human research. OCR can provide guidance and expertise with regulatory submissions and exemptions, contract support with external sponsors, research budgets and finance, training, research data management and systems, monitoring, clinicaltrials.gov and inspection support.

https://www.med.upenn.edu/ocr/

Pathology Core (CHOP)

Daniel Martinez, Director (martinezd@chop.edu)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESCTEDJLPMFVQ0CF

If you’re in need of advanced state-of-the-art pathology services to propel your research, you’ll want to meet with our experts at the Pathology Core Laboratory within Children’s Hospital of Philadelphia Research Institute. Backed by the comprehensive experience of our staff, our innovative core unites several pathology components into one facility to provide exceptional service that is efficient and cost-effective. Our array of services include:

- Basic histopathology, as well as histopathology for both paraffin-embedded and frozen tissue samples
- Research immunohistochemistry
- Tissue microarray
- Fluorescent microscopy
- Digital slide scanning services

We work extensively with researchers at CHOP and in the surrounding academic community and are eager to consult with you about how our services can facilitate your basic, translational, and clinical research. martinezd@chop.edu 267-426-5635 Ruth and Tristram Colket Jr. Translational Research Building Room A410 3501 Civic Center Blvd Philadelphia, PA 19104

https://www.research.chop.edu/pathology

Proteomics and Metabolomics Shared Resource (Wistar)

Hsin-Yao Tang, PhD, Managing Director (tangh@wistar.org)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESVDPPCCRMORXCI3

The Wistar Proteomics and Metabolomics Shared Resource provides high sensitivity proteomics, metabolomics and lipidomics analyses using state-of-the-art mass spectrometry instruments and methods. Proteomics analyses include quantitative in-depth global comparisons of proteomes using label-free integrated ion current, SILAC or TMT labeling; global quantitative comparisons of posttranslational modifications (PTMs) such as ubiquitination, acetylation, or phosphorylation; detailed characterization of individual purified proteins including PTMs; identification of components in protein complexes (e.g. pull-downs, RIME, proximity labeling) including estimation of stoichiometries (where appropriate); characterization of intact protein and peptide masses using either MALDI-MS or ESI-MS; and HPLC peptide mapping with UV detection. Metabolomics and lipidomics analyses include untargeted and targeted quantitation of polar metabolites from cells, biological fluids, conditioned media, or tissues; stable isotope tracer analysis using 13C-labeled tracers; untargeted quantitative profiling of lipids; targeted analysis of free fatty acids, total fatty acids (after saponification), and eicosanoids; and custom assays for relative and absolute quantitation of small molecules. Consultation with facility staff concerning experimental design and sample preparation is recommended to ensure optimal sample analysis.

https://wistar.org/research-discoveries/shared-resources/proteomics-metabolomics-facility

Proteomics Core (CHOP)

Hyoung Joo Lee, PhD (proteomics@chop.edu)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES7958L8DE8J4UUF

The Proteomics Core Facility (PCF) has established quality controlled protocols to quantitatively analyze whole proteomes, phosphoproteomes, ubiquitylomes, and/or lysine acetylomes at a deep level through a process of serial enrichment. Under development are refinements of statistical and bioinformatic analyses of proteomic results. It is also possible to tailor sensitive and specific methods for multiplexed protein quantification according to the investigator’s needs. Workflows for all protein and proteome analyses are unique to each project and can involve a range of multi-dimensional separation techniques coupled to the appropriate mass spectrometer. proteomics@chop.edu; Leonard and Madlyn Abramson Pediatric Research Center 806ARC 3615 Civic Center Blvd Philadelphia, PA 19104

https://www.research.chop.edu/proteomics-core-facility

Referral Center for Animal Models of Human Genetic Disease (UPenn)

Charles Vite, DVM, PhD, Core Director (vite@vet.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES27CGB66JL7O01J

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 Information Services (CHOP)

Nick Kight, RIS Outreach Manager (kightn@chop.edu)**; Michael Abanyie, Research Support Analyst Supervisor** (#267-426-9303)**; Robert Del Campo, RIS Assistant Director** (delcampo@chop.edu)

Presentation time: 12:00 - 12:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESDSNLAF41Z4PLDD

The Research Information Services (RIS) team is a technology partner focused on fulfilling the Research Institute’s mission to drive scientific breakthroughs by providing expert advice alongside innovative and effective technology-based solutions. RIS supports both administrative units and researchers with a wide portfolio of services that are accessible via the RIS website, a centralized resource for Research Institute faculty and staff. Services may also be requested through the IS Service Desk. RIS services include study technologies advisory, hardware support for desktops and laptops, website development including technical support for websites and other web-based applications, guidance in device purchase and disposal, support in managing file shares or shared folders, assistance with server backup services and obtaining data center hosting or database services, high-speed file transfer, and much more.

https://www.research.chop.edu/research-information-services

Research Vector Core (CHOP)

Xueyuan Liu, MS, Director (liuxu@email.chop.edu)

Presentation time: 1:00 - 1:20 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESVAIU8UQ81ZLIDD

The Research Vector Core (RVC) provides premium Good Laboratory Practice recombinant adeno-associated viral vectors and lentiviral vectors for use in basic research and preclinical studies. The RVC is dedicated to manufacturing top-of-the-line vectors utilizing a fine-tuned downstream process recognized internationally in industrial applications and academia. Capable of providing custom vector constructs at a variety of scales, the RVC offers state-of-the-art technology and support for investigators interested in conducting viral-based gene transfer.

https://www.research.chop.edu/research-vector-core

Small Animal Imaging Facility (CHOP)

Sergey Magnitsky, PhD, Technical Director (magnitsksm@chop.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES1KDRMVAYBMC83E

When you’re in need of radiological imaging for your research, look no further than the Small Animal Imaging Facility at Children’s Hospital. We’re a specialized and designated Core facility providing multi-modality radiological imaging for mice and rats. We provide a clean and state-of-the-art environment to conduct the imaging required for your longitudinal studies. Our core offers the following state-of-the-art services:

- Magnetic Resonance Imaging (MRI)
- Positron Emission Tomography/Computed Tomography (PET/CT)
- Optical Imaging
- Ultrasound
- Microimaging and NMR

We conduct research in all areas of preclinical anatomical imaging, functional imaging and molecular imaging. In addition, the core provides cardiac imaging – US; tumor development and response for a treatment – optical imaging; tumor detection and monitoring of a treatment response; detection of reactive oxygen species in neurological disorders – PET/CT; high-resolution images – CT; anatomical, diffusion, imaging, and contrast agent imaging; angiography; and functional brain imaging – MRI. Let our knowledgeable staff work with you to develop a plan designed to meet your small animal imaging needs. magnitsksm@chop.edu Ruth and Tristram Colket Jr. Translational Research Building Room C301, 3501 Civic Center Blvd Philadelphia, PA 19104

https://www.research.chop.edu/small-animal-imaging-facility

Stem Cell Xenograft Core Facility (UPenn)

Nico Skuli, PhD, Core Facility Director (nicskuli@pennmedicine.upenn.edu)**; Anthony Secreto, In-Vivo Services Coordinator** (asecreto@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES2QUOLO0YQEK7MU

The Stem Cell and Xenograft Core (SCXC) is a comprehensive resource laboratory and was established at the Perelman School of Medicine in 2008. The mission of the Core is to provide Investigators with a high-quality, cost-effective, and comprehensive resource to promote basic and translational research in the areas of cancer biology, infectious disease, immunotherapy, stem cell biology, and regenerative medicine. We offer services centered around 2 components: 1- An extensive repository of live and fully annotated cells from adult patients with hematologic malignancies (AML, ALL, CLL, 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. The SCXC remains unique amongst peer institutions with regards to the scopes of research, its scale, and its range of services.

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

Transgenic and Chimeric Mouse Core Facility (UPenn)

Jean Richa, PhD, Technical Director (jricha@pennmedicine.upenn.edu)

Presentation time: 11:30 - 11:50 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESRTJ7S22R825LMT

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 Core (CHOP)

Adele Harman, Technical Director (harmana@chop.edu)

Presentation time: 11:00 - 11:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES9415CQ3TGIZL2O

When it comes to using a mouse or rat genome to study human disease, you need the best experimental model available to advance your research and propel discovery. That's where we come in. The Transgenic Core at Children's Hospital Research Institute can build you complex mouse or rat models, genetically manipulating the mouse or rat genome to meet your specific research needs. This is accomplished by using cutting-edge and classical genetic engineering approaches. We have successfully created over 40 mouse lines using the CRISPR system, and more recently created our first CRISPR Knockout rat line. Our core features state-of-the-art services, including: CRISPR Cas9 mRNA microinjection and Cas9 RNP electroporation, DNA construct microinjection, Embryonic Stem (ES) cell microinjection, Strain rederivation and rescue, Embryo and sperm cryopreservation, importation and exportation, The Transgenic Core is a service sponsored by the CHOP Research Institution to enable investigators to drive cutting-edge basic and bench-to-bedside research. The mission of the Core is to provide a cost-effective fast method for generation and preservation of genetically altered mice for the research community. We also have a variety of equipment that enhance the level of our services while further supporting your research projects. Let us show you how we can help you to conduct your transgenic and gene targeting research efficiently and cost-effectively. Contact us for a consultation, or see how to get started.

https://www.research.chop.edu/transgenic

Translational and Correlative Studies Laboratory (UPenn)

Jeffery Finklestein, MSc, Research Specialist (Jeffrey.Finklestein@pennmedicine.upenn.edu)

Presentation time: 10:00 - 10:20 am

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SES4WNZFLEQ56O49T

The Translational and Correlative Studies Laboratory (TCSL) is the central correlative laboratory of the Center for Cellular Immunotherapies (CCI). The CCI is focused on coordinated interdisciplinary approaches for the discovery and development of core platform technologies for personalized cell and gene based therapies in cancer, autoimmune disease, infectious disease, and organ and bone marrow transplantation. The TCSL supports the CCI mission by providing cutting edge cellular, molecular and biochemical assays for evaluating and monitoring Phase I and Phase II clinical trials of cellular immunotherapies directed against cancer, infectious disease and autoimmune disease. The laboratory also works with Biotechs and Pharma, and non-CCI academic investigators engaged in translational, pre-IND studies, and clinical research. The laboratory receives and biobanks patient biological samples before and after infusion with cellular products, and performs assays on this material that includes flow cytometry, qPCR, dPCR, Luminex and ELISA, next generation sequencing, Nanostring GeoMx DSP and nCounter, and cellular assays. The correlative data is used to guide clinical trial interpretation, for reporting to the FDA and other authorities, and for scientific publication.

https://hosting.med.upenn.edu/tcsl/TCSL.html

Translational Core Laboratory (CHOP)

David Stokes, PhD, Technical Director (translationalcorelab@chop.edu)

Presentation time: 12:30 - 12:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESIGT0TZXPEZSMIB

The Translational Core Laboratory (TCL) supports basic, pre-clinical and clinical research for principal investigators from CHOP and the University of Pennsylvania. The CHOP TCL performs immunoassays for the quantitation of protein/peptide biomarkers, cytokines, hormones, and antibodies in various body fluids. The TCL also performs blood-chemistry assays and hematology assays. Testing can be performed on human, mouse, rat and non-human primate samples. In addition to the testing services, TCL can also assists in the overall design of research studies and trials with regards to sample type and volume requirements, sample collection guidance, storage time (analyte stability), assay platform selection, and the need for assay validation and lot-to-lot comparisons. Our cutting-edge, automated equipment used routinely in the TCL includes a Roche Cobas c311 Clinical Chemistry Analyzer, a Roche Cobas e411 Immuno-Analyzer, an Ella Automated Immunoassay System, a Meso Scale Discovery (MSD) QuickPlex SQ 120 multiplex immunoassay system, a Luminex 200 multiplex immunoassay system, and a Sysmex XT-2000iV Hematology Analyzer. translationalcorelab@chop.edu; 215-590-3338; Ruth and Tristram Colket Jr. Translational Research Building A-level, Room A450 3501 Civic Center Blvd Philadelphia, PA 19104

https://www.research.chop.edu/translational

Vector Core Facility (UPenn)

Kenton Woodard, PhD, Director (kentonw@upenn.edu)

Presentation time: 10:30 - 10:50 pm

https://pheedloop.com/CoresDay2021/virtual/?page=sessions&section=SESOJ4R6WWJUA96RJ

With over a decade of experience in the production of viral-based vectors, the Penn Vector Core has become an important technological resource for investigators, both within and external to Penn, interested in the use of viral-based vectors for gene transfer. The main objective of the Core is to provide investigators access to state-of-the-art adeno-associated viral vector technology for preclinical studies and other basic research applications.

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

2021

https://pheedloop.com/CoresDay2021/site/home/