

Core Research Facilities, Research Support Facilities and Other Resources

Office of Animal Resources

<http://research.uiowa.edu/animal/>

The University of Iowa under the auspices of the Vice President for Research maintains a centralized animal care program with administrative responsibility assigned to the Office of Animal Resources. Animal facilities are located in multiple campus locations and can accommodate multiple species of animals. The facility and program has been accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) since November 1994, is a registered research facility with the United States Department of Agriculture (USDA No. 42-R-0004) and has a PHS Animal Welfare Assurance (A3021-01) on file. The centrally-managed staff is composed of trained animal caretakers, veterinary technicians and veterinarians. The Institutional Animal Care and Use committee reviews all research and teaching protocols involving the use of animals and fulfills its other mandated responsibilities.

Biochemistry Stores

<http://stores.biochem.uiowa.edu>

Biochemistry Stores is a part of the Biochemistry Department of the College of Medicine at the University of Iowa. As a research supply storeroom purchasing and dispensing over \$3 million per year in inventory, the Stores serve all University of Iowa research laboratory units, units of the University of Iowa Hospitals and Clinics, University of Iowa students, the nearby Veterans Affairs Medical Center, and any other facilities having funding through the University of Iowa. Biochemistry Stores stocks a broad range of research chemicals, labware, glassware, expendables, and other necessary research supplies, and uses high sales volume to negotiate the purchase of the highest quality inventory at the lowest possible prices, and dispense on a walk-in basis, in a quick and efficient manner.

Bioengineering Facility

<http://www.healthcare.uiowa.edu/corefacilities/bioengineering/>

The Carver College of Medicine Bioengineering Services offers both a maintenance unit for patient care and research equipment, as well as a design unit. The maintenance unit repairs electronic equipment and performs preventative maintenance. Design services include custom electronic design and fabrication. Equipment is built to highly-professional standards to ensure quality performance and reliability.

Biological Safety Level III Laboratories

http://www.healthcare.uiowa.edu/bsl3_lab_core/

The Carver College of Medicine's Animal Biological Safety Level III Laboratory Facilities provide researchers with state-of-the-art laboratories in which to safely study biological safety level III pathogens, agents, toxins and select- and non-select agents regulated by both the Centers for Disease Control and Prevention and the U.S. Department of Agriculture. The labs have been designed to safely accommodate research, clinical and diagnostic procedures with animal housing areas designed to accommodate rodents and other small animals. In addition to the animal areas, each laboratory contains 3 to 4

individual rooms for virology, microbiology and molecular biology work. Both facilities allow up to approximately 20 researchers to work simultaneously in the 2 laboratories.

Biomedical Research Store

<http://www.healthcare.uiowa.edu/hybridomacore/>

The Biomedical Research Store provides University of Iowa research investigators easy procurement of common molecular and cell biology enzymes, reagents and kits. Large volume contracts enable the store to negotiate very low prices as well as eliminate all shipping and packaging fees.

Biostatistics Consulting Center

<http://www.public-health.uiowa.edu/biostat/biocon.html>

The Biostatistics Consulting Center is a unit within the Biostatistics Department of the College of Public Health. The Center offers expert statistical consulting and data management services to health science researchers at The University of Iowa Colleges of Medicine, Dentistry, Nursing, and Pharmacy. Full-time and student consultants from the Biostatistics Consulting Center work with investigators during all phases of health science research: proposal development, study design, data form or questionnaire development, data entry, data management, statistical analysis, and report preparation. Departmental faculty members are available as consultants to Center staff and to all faculty, staff and students of the health sciences colleges.

Center for Biocatalysis and Bioprocessing

<http://www.uiowa.edu/~biocat>

The Center for Biocatalysis and Bioprocessing (CBB) is the state of Iowa's primary contract research facility for fermentation and bioprocessing. The CBB consists of more than 50 faculty members and more than 300 researchers, including graduate and undergraduate students, postdoctoral scientists, technicians, and visiting faculty and industrial scientists. The principal areas of study include biocatalyst fundamental properties, bioremediation, bioprocessing, new biocatalyst discovery, novel biocatalyst applications, biosensing technology, and reactive agent development. Confidential collaborations with clients enable our laboratory to produce products and develop processes for industry, government, and academia.

Central Microscopy Research Facilities

<http://www.uiowa.edu/~cemrf>

The main laboratory of the Central Microscopy Research Facilities (CMRF) is located in Eckstein Medical Research Building and offers services and equipment at three other campus locations. The Facilities provide instrumentation and technical assistance to research programs involving the use of light and confocal microscopy, scanning and transmission electron microscopy, freeze fracture and elemental microanalysis. The CMRF also provides all solutions, supplies, and training necessary for investigators involving microtomy, including specialized staining and embedding techniques, negative staining, metal coating, autoradiography, cryo-fixation, and cryomicrotomy, enzyme cytochemistry, immuno-cytochemistry, in situ hybridization, morphometry and stereology, the preparation of material science samples for both TEM and SEM including elemental microanalysis, and other procedures. The CMRF supports both the

experienced and novice investigator, and provides training to for independent use of resources. Alternatively, all or parts of a project can be handled by the staff.

Comparative Pathology Laboratory

<http://www.healthcare.uiowa.edu/cpl/>

The Comparative Pathology Laboratory provides veterinary pathology services and support to scientists investigating animal models of disease. The CPL Facility is directed by a veterinary pathologist, a Diplomate of the American College of Veterinary Pathologists, trained in comparative pathology. In addition, the CPL retains the services of pathologists with expertise in specific organ and animal-model pathology. Pathologists contribute to experimental design, model section/application, interpretation of data, and pathological interpretation.

Crystallography Facility

<http://www.healthcare.uiowa.edu/corefacilities/crystallography/>

The Crystallography Facility provides necessary support and infrastructure to enable individual investigators to initiate structural studies. This includes facilities for protein characterization (dynamic light scattering), crystallization (technical advice, environmental rooms and stocks of special crystallization materials), data collection (facility is fully equipped for data collection and processing) and structure determination and refinement (computer programs for data analysis and structure determination). The Carver College of Medicine has also invested in a 1/10 share in the 4.2.2 synchrotron beam line located at the Advanced Light Source in the Ernest Orlando Lawrence Berkeley National Laboratory. Reserved time is available at this remote facility and enables researchers to carry out crystallographic structure determinations faster at much higher quality.

DNA Facility

<http://dna-9.int-med.uiowa.edu/>

The University of Iowa DNA Facility, centrally located in the Eckstein Medical Research Building, provides a broad spectrum of services and resources designed to make the techniques of recombinant DNA technology readily available to the University of Iowa research community. The primary objective of the DNA core's services is to enable investigators to obtain accurate results from the samples they provide. The services are operated with equal emphasis given to quality, expediency and affordability. Trained scientists who are able to offer technical support, training, and consultation related to sample preparation and data interpretation staff the core. The activities and services of this core focus around seven major areas of support: DNA sequencing and genotyping, custom oligonucleotide synthesis, DNA microarray using both the Affymetrix GeneChip system and the custom spotted array using the microscope slide format, molecular biology computing, real-time PCR, genome sequencing, and Biacore molecular interaction.

Electron Spin Resonance Facility

<http://www.healthcare.uiowa.edu/corefacilities/esr/>

The Electron Spin Resonance Facility provides expertise and instrumentation to pursue research questions dealing with oxygen free radicals, singlet oxygen, nitric oxide and the

array of related oxidants and antioxidants that influence the overall redox environment of cells, tissues, and whole organisms.

Flow Cytometry Facility

<http://www.healthcare.uiowa.edu/corefacilities/flowcytometry/>

The 1,000-square foot Flow Cytometry Facility is located in the Eckstein Medical Research Building (EMRB). The Facility has one magnetic-based and six laser-based instruments whose major purpose is the identification and isolation of various cell populations. The laser-based instruments accomplish this by the use of antibodies to which various colors or dyes have been attached and are directed at molecules known to exist on the cell surface. By using several colors attached to different antibodies, one can identify and purify cells that express any given configuration of various molecules. The facility provides scientific and technical personnel who are available for consultation in designing experimental protocols.

Gene Targeting Facility

<http://www.healthcare.uiowa.edu/corefacilities/gtcf/>

The Carver College of Medicine Gene Targeting Facility provides technical and research services to investigators on the University of Iowa campus and elsewhere for the generation of gene knockout mouse models. These services include: consultations on developing strategies for gene targeting and design of targeting construct, generation of targeted embryonic stem cells, microinjections of targeted embryonic stem cells, embryo transfer and generation of chimeras, and breeding of chimeras for germline transmission to pass on the designed genomic changes to the next generation.

Gene Transfer Vector Core

<http://www.uiowa.edu/~gene/>

The overall objective of the Gene Transfer Vector Core (GTVC) is to support investigators in the use of gene transfer technologies. The Vector Core facility utilizes molecular biology techniques to engineer and develop viral vectors based on multiple vector systems necessary for gene transfer in research experiments or pre-clinical studies. Vector core staff and investigators allow for cross fertilization of ideas, technical advancements, and innovations in vector design. The Facility offers consultation and planning services, troubleshooting of existing projects, design and development of novel vectors, development of novel methods of virus production, generation of RNAi expression vectors, purification and concentration of recombinant viruses, maintenance and distribution of cell lines and stocks of recombinant reporter viruses.

Hardin Library for the Health Sciences

<http://www.lib.uiowa.edu/hardin/>

The Hardin Library for the Health Sciences is located on the health sciences campus of The University of Iowa. The library is spacious and provides seating for over 1000 individuals. The library is home to over 389,000 print volumes and currently receives almost 3,500 electronic journals. 122 publicly-accessible computers are located within the building. Users needing electronic access to the health science information are well served through Ovid which provides access to 15 health related databases; MD Consult; UpToDate; StatRef; and thousands of electronic periodicals. All of these resources are

available from anywhere on campus and remotely via the Internet. As part of the University of Iowa Library System, the Hardin Library uses InfoHawk the Aleph 500 integrated library system from Ex Libris. InfoHawk includes records for all monographic works and currently received Government Documents. The Hardin library is also home to the Information Commons, located on the second floor. This facility is a central support and delivery venue for courseware development, classroom instruction, health-related research, and independent learning. It boasts several high-end multimedia development workstations, two networked 50-seat electronic classrooms, information research workstations for searching health-related databases and the Internet.

Histology Research Laboratory

<http://www.medicine.uiowa.edu/Pathology/site/research/corelab/>

The Histology Research Laboratory provides services for the processing, embedding, sectioning, and tinctorial and immunohistochemical staining of tissues. Expertise in the handling of fresh, frozen and fixed cells and tissues is the building block of the laboratory.

Hybridoma Facility

www.biotech.iastate.edu/facilities/hybridoma

This facility is available for use by Carver College of Medicine investigators through a partnership with the Iowa State University Office of Biotechnology in Ames, Iowa.

The Hybridoma Facility of the Iowa State University Office of Biotechnology provides valuable resources for scientists who need monoclonal or polyclonal antibodies but do not have appropriate equipment or who are not experienced in antibody production techniques. Techniques are provided on an individual charge basis and include animal immunization; cell fusion and hybridoma culture maintenance; cell culture and maintenance of other cell lines used in biotechnology and virology labs; large-scale mammalian cell culture (bioreactor); blood sera collection; antibody purification and isotyping; cryopreservation and cryostorage of cell lines (-140° C); and ELISA tests.

Large-scale Digital Cell Analysis Facility

<http://www.uihealthcare.com/depts/cancercenter/research/digitalanalysiscore.html>

The Large Scale Digital Cell Analysis Facility provides for the development of new data analysis/visualization tools for use in biomedical research. The Facility can make phase-contrast or fluorescent cell digital movies from thousands of microscope fields acquired for up to one month. With further development it is expected that the Large Scale Digital Cell Analysis System (LSDCAS) will become an important tool for molecular imaging of living cells. LSDCAS is unique; no instrument with its capabilities is available anywhere else.

Magnetic Resonance Research Facility

<https://mri.radiology.uiowa.edu/>

The University of Iowa Magnetic Resonance (MR) Research Facility was established in August of 2004 with the acquisition of a Siemens Trio 3T scanner, shared between research and clinical usage. The Facility is also home to a research-dedicated Siemens Avanto 1.5T scanner, which was loaned to the University by Siemens Medical Solutions to support research studies. In 2007, an NIH/NCRR High End Instrumentation grant

supported the acquisition of a research-dedicated Siemens TIM Trio 3T scanner. The MRI Center has several computer systems available for research, in conjunction with its three scanners.

Mass Spectrometry Facility

<http://research.uiowa.edu/vpr/units/hrmsf.htm>

The High Resolution Mass Spectrometry Facility (HRMSF) provides information pertaining to the molecular weight, elemental composition, and molecular structure of a compound. The Facility performs high resolution mass spectrometry (HRMS) experiments or accurate mass measurements to determine the elemental formula of new synthetic molecules and natural products. The HRMSF can also perform tandem mass spectrometry (MS-MS) experiments, which are used to assist in the structure determination of unknown molecules. The Facility has two open access instruments (GC/MS and LC/MS) that are available to on-campus researchers who have been trained by the HRMSF staff.

Nuclear Magnetic Resonance Facility

<http://www.healthcare.uiowa.edu/corefacilities/nmr/>

The Nuclear Magnetic Resonance Facility supports the biomedical research community with an 800 MHz instrument, a wide variety of techniques and the expertise to solve research problems. A full spectroscopic and interpretation service is offered, as well as assistance and training for researchers who perform their own experiments. Techniques for working with biological molecules in challenging media, high resolution spectra, and multidimensional spectra are Facility specialties.

Protein Facility

<http://www.protein.iastate.edu>

This facility is available for use by Carver College of Medicine investigators through a partnership with the Iowa State University Office of Biotechnology in Ames, Iowa.

The Protein Facility offers amino acid analysis, protein/peptide sequencing, large and small scale peptide synthesis (Fmoc), matrix-assisted laser desorption/ionization (MALDI) mass spectrometry, analytical ultracentrifugation, circular dichroism, SDS-PAGE/blotting, 2-D gel electrophoresis, isoelectric focusing (IEF), in-gel digestion/peptide mass fingerprinting, digital image acquisition and analysis using the Typhoon imaging system and the 2D gel documentation/analysis system, and preparative, analytical and micro-analytical high performance liquid chromatography (HPLC).

Proteomics Facility

<http://www.healthcare.uiowa.edu/corefacilities/proteomics/>

The Proteomics Facility, located on the third floor of Eckstein Medical Research Building, provides services and state-of-the-art instrumentation for discovery proteomics and in-depth analysis of peptides. Services currently available in the Facility include: large molecular weight determination, small molecular weight determination and quantitative analysis, protein identification, in-gel and in solution trypsin digestion and MSCOT mass fingerprint data searches and SEQUEST data searches. Facility equipment includes a

Thermo LTQ XL linear ion trap mass spectrometer with electron transfer dissociation (ETD) capabilities and incorporated high performance liquid chromatography system.

Small Animal Imaging Core Facility

<http://biomed-imaging.uiowa.edu/saic/>

The Small Animal Imaging Core (SAIC) is a core facility of the Iowa Institute for Biomedical Imaging (IIBI) and the Holden Comprehensive Cancer Center (HCCC). The purpose of SAIC is to provide a comprehensive service for non-invasive anatomical and physiological imaging of small animals (mice and rats) and other biological tissue samples. The core instrumentation consists of several imaging modalities that have been specifically purchased or modified for scanning small animals. Imaging services include microPET imaging, gamma camera scintigraphy, whole tissue biodistribution assays and autoradiography with activities underway to expand imaging capabilities to include SPECT/CT.

Stem Cell Facility

The Stem Cell Facility assists investigators pursuing studies which involve the use of embryonic stem (ES) cells to understand and eventually treat diseases amenable to this approach. The Facility has obtained three human ES cell lines from WiCell which are approved for investigations funded by NIH. The Facility has also signed a Core Memorandum of Understanding with WiCell to distribute any of these lines to investigators on campus at no cost to the investigator. Staff is available to assist investigators in the maintenance, passage, freezing and thawing of these cells. The Core is also developing protocols to differentiate human ES cells into more mature tissues such as skeletal and cardiac muscle and their precursors.

Tissue Procurement Core

<http://www.uihealthcare.com/depts/cancercenter/research/tissueprocurement.html>

The Tissue Procurement Core Facility makes available human tumor tissue for current cancer research studies and to store frozen human tumor tissue for current and future cancer research studies. The Facility provides research infrastructure in the form of a well-characterized bank of frozen and, routinely processed, neoplastic and normal tissues suitable for molecular genetic, biochemical and pathological studies.

Transgenic Animal Facility

<http://www.healthcare.uiowa.edu/corefacilities/transgenic/>

The Facility has, as its prime purpose, provision of centralized instrumentation and expertise in the generation, breeding and analysis of transgenic animals in support of research initiated by collegiate investigators. The Facility functions by providing supplies, well-maintained equipment, and consultant expertise. The transgenic animal facility is a fee-for-service core facility of the Roy J. and Lucille A. Carver College of Medicine. The main goal of the facility is to generate and subsequently identify transgenic mice requested by investigators in the biomedical sciences at the University of Iowa and Iowa State University.