

Vermont Genetics Network - Regional Core Facility Database: 22 July 2008. <http://www.uvm.edu/~vgn/corefacilities>

Facility Name	Institution	Services	Description
Flow Cytometry	University of Connecticut Health Center	Cell Sorting Flow Cytometric Analysis	Fully equipped flow cytometry facility housing a FACSVantage SE, FACS Aria, 2-BD LSR II, 3-FACSCaliburs
		Cell Imaging Cell Sorting Molecular Imaging Optical Imaging	<p>http://flowcytometry.uhc.edu</p> <p>The FCCM Facility was developed to assist investigators with the use of several different sophisticated instruments designed to detect and measure fluorescent light emission. A BD FACSCalibur flow cytometer is available for analysis of cells and particles from each other based on size, internal complexity, and/or up to four different fluorescent signals. Cells labeled either internally or externally with fluorescent antibodies, calcium or pH specific probes, fluorescent proteins, or with DNA specific probes and dyes. Cells or particles can also be aseptically sorted to obtain pure populations for either further analysis or subsequent culture. A Leica SP2 laser scanning confocal microscope and an automated Zeiss Axiovert 200M driven by OpenLab software are available for imaging of live or fixed cells or other fluorescent materials. A spinning disk confocal and TIRF microscopy system will be added to the facility in 2008.</p>
Flow Cytometry/Confocal Microscopy Facility	University of Connecticut	Stem Cell Procurement Cell Culture	<p>The mission of the UConn Stem Cell Core (UCSCC) is to support human embryonic stem cell (HESC) research, with special attention to Connecticut and the neighboring region.</p> <p>These are our primary services:</p> <ol style="list-style-type: none"> 1. Culture and bank HESCs 2. Provide HESC culture training and technical support 3. Provide HESCs to UCSCC users 4. Track and quality control HESCs 5. Validate reagents for HESC culture 6. Derive new HESCs and make them available to UCSCC users
University of Connecticut Stem Cell Core	University of Connecticut Health Center		

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Facility Name	Institution	Services	Description
Advanced MRI Center	UMass Medical School	Functional Brain Imaging MRI Imaging Center	The new research dedicated MRI center includes a 3T Philips human whole body MRI system for human and animal research, clinical support space, as well as laboratory and office space. Specific areas of research include, but are not limited to, fMRI, cardiac MRI, interventional MRI, and Hyperpolarized Gas MRI.
Bioinformatics	UMass Medical School	Bioinformatics Data Analysis Microarray Proteomics	<p>Purpose Bioinformatics is at the interface between biology, informatics, and mathematics. Using methods from computer science, we analyze and interpret biological data in the form of gene sequences and cellular proteins, contributing new knowledge about the functioning of cells and living organisms.</p> <p>To DERC investigators, the Bioinformatics Core provides help and support in storing, visualizing, and analyzing biological data.</p> <p>Services Microarray and proteomics experimental design, data acquisition, management and analysis Analysis of microarray experiments Data mining and integration with public data resources Statistical genetics and SNP analysis Analysis pipeline scripting Analysis of promoter sequences for transcription factor binding sites Comparative genomics Life science focused web-based database development</p>
BSL-3	UMass Medical School	Secure environment to work in	The BL3 Core Lab is a campus-wide facility for safe or moderate risk pathogens in vitro. It is a self-contained laboratory with space and equipment to handle hazardous pathogens with BL3 containment as described in the CDC/NIH publication "Biosafety in Microbiological and Biomedical Laboratories". The lab has been specifically approved by the USDA and CDC for research airborne viruses such as the Hong Kong chicken flu, and for select agent research. The laboratory has a dedicated ventilation system that maintains a negative pressure with respect to the adjacent corridor and rooms, and which provides HEPA filtration of exhaust air at a remote location on the roof.

Facility Name	Institution	Services	Description
Clinical & Translational Research Support Core	UMass Medical School	participant recruitment, characterization of participants (e.g., psychological testing), participant tracking & assistance with IRB interactions (applications, amendments, progress reports, renewals, etc.)	<p>The Clinical and Translational Research Support (CTRS) Core provides assistance to funded research projects involving human participants to ensure that they have sufficient numbers of well-characterized individuals to fulfill the projects' primary aims. The CTRS Core also provides access and information resources that will support investigators of all types who have clinical and/or translational research interests. Our Core currently provides the following services:</p> <ol style="list-style-type: none"> 1. Recruitment of participants; 2. Assessment/characterization of participants; 3. Tracking of recruited participants across multiple projects and maintenance of a database of specialized populations; 4. Coordination of interactions with the UMMS IRB, which includes assisting investigators to submit clear and complete applications and follow-up IRB communications.
Clinical Trials Unit	UMass Medical School	Clinical Study Support and Resources	<p>The Clinical Trials Unit (CTU), a dedicated ambulatory service unit for clinical study support and resources, is under the direction of the Director of Clinical Research in the Office of Research. The CTU works collaboratively with clinical investigators to ensure high quality and efficient study initiation and can provide support throughout the life cycle of a study. This includes:</p> <ol style="list-style-type: none"> 1. Provision of dedicated space: includes 4 exam rooms, an infusion room with 2 recliners, open workstations for CTU users, a small laboratory for spinning, freezing, packaging, and shipping of study specimens; 2. Study coordination: four (4) fulltime, experienced research nurse coordinators who are able to recruit, screen, enroll and manage study conduct over the life cycle of the study or clinical trial <p>Regulatory Support for study initiation through the services of one regulatory coordinator who can assist investigators with IRB submissions and FDA communications for IND and IDE</p>

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Crystallography Core Facility	UMass Medical School	Data Collection	<p>The X-ray Crystallography Lab is a core facility with operations at UMASS Medical School's Lazare Research and Biotech II buildings. The laboratory provides facilities and resources for conducting research, advanced teaching, and comprehensive data processing. The facility is jointly funded by user fees, departmental contributions and the Office of Research. Facilities include two detectors (R-AXIS IV, MAR 180) and generators (RU-300 and RU-300HR). The in-house UNIX computing environment supports data processing, 3-D visualization and design. To allocate time on one of the detectors, see the online scheduler. There are six faculty members associated with the facility. Course work includes graduate classes and professional training.</p>

		Library Services Genomics Bioinformatics	<p>Data and Information Processing, Hardware and software training, Graphics and visualization resources, Consultation on structure analysis.</p>
Deep Sequencing Core	UMass Medical School		<p>The Deep Sequencing Core provides a next-generation sequencing platform for investigators using Massively Parallel Signature Sequencing (MPSS), also known as Parallel Sequencing by Synthesis, or "Deep Sequencing". The core analyzes genomic DNA, DNA fractions (e.g. Chromatin Immunoprecipitation), cDNA and RNA samples by generating libraries of small tagged fragments which are simultaneously sequenced in parallel using a Solexa (Illumina) 1G Genome Analyzer. Deep Sequencing generates a large number of short overlapping sequences as well as quantifying the occurrence of each individual sequence within the library. The Deep Sequencing Core also provides assistance with sample preparation and bioinformatics analysis</p>

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Facility Name	Institution	Services	Description
Digital Imaging Core	UMass Medical School	Provides high resolution multi-mode, digital microscopic imaging and image analysis	The Core Digital Imaging Facility provides high-resolution multi-mode light microscopy services to UMass Medical School researchers and investigators at other academic and commercial institutions. Services include wide-field and spinning disk confocal microscopy, fluorescence recovery after photobleaching measurements, live cell imaging, digital deconvolution of microscopy images and image analysis. Training and technical assistance are provided in a user friendly environment.
Electron Microscopy Core Facility	UMass Medical School	Cell Imaging Cryo-Electron Microscopy Molecular Imaging Spectroscopy Electron Microscopy	The Core Electron Microscopy Facility provides state-of-the-art methodologies and instrumentation for researchers at UMass Medical School and the surrounding research community. It is located in the lower level of the Medical School (SA-114). The facility is equipped with one scanning and three transmission electron microscopes together with the ancillary equipment required to carry out all key ultrastructural procedures from the tissue to the molecular level.
Flow Cytometry	UMass Medical School	Cell Imaging Cell Sorting Data Analysis Flow Cytometric Analysis Microscopy Optical Imaging	The Flow Cytometry Facility provides a wide variety of cytometry services for internal and external investigators with state-of-the-art cell sorting and analyzing capabilities. We currently have three FACSCaliburs, two 4 laser LSR IIs, a 3 laser FACSVantage SE DiVa cell sorter, a 3 laser Digital Dako MoFlo XDP hi-speed cell sorter, an all digital 3 laser 11 color FACSVantage SE DiVa cell sorter and a 14 color, 4 laser FACS Aria dedicated to BSL3 cell sorting. One LSR II and one Calibur are dedicated for customer use, after training, which we can provide.
Fly Kitchen	UMass Medical School	Media Preparation	Drosophila Media Core Facility

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Genomics Core Facility	UMass Medical School	Microarray Genomics	<p>The Genomics Core Facility at UMass Medical School is an excellent resource for the UMass and Worcester area research community featuring high-density microarray technology for both GeneChip and glass slide array processing.</p> <ul style="list-style-type: none"> • Sample preparation and Affymetrix instrumentation for Expression, Gene ST, Exon, and Tiling Arrays, as well as SNP chip and CustomSeq array hybridization and scanning. • Glass slide array scanning using the Agilent G6525BA Scanner. Expression, ChIP-chip, miRNA and DNA microarray. • Glass slide hybridization capabilities with the BioMicro MAUI Hybridization System • Genespring GX Analysis Software available <p>Genomics Core Facility University of Massachusetts Medical School Department of Molecular Genetics and Microbiology S5-116, S5-125, S5-129 55 Lake Avenue, North</p>
Human Embryonic Stem Cell Core Facility	UMass Medical School	Stem Cell Procurement Bone MicroCT Imaging	<p>The HESC Core facility will provide, to UMASS investigators on all campuses, undifferentiated stem cells; two NIH approved cell lines, H1 (male) and H9 (female), on mouse feeder layers. Our support services include:</p> <ul style="list-style-type: none"> • Quality controlled undifferentiated stem cells plated • Protocols for monitoring HESCs during studies • Advice on experimental design
Machine Shop	UMass Medical School	Design, manufacture and repair of biomedical lab equipment	<p>The UMMS Machine Shop is a support service dedicated to assisting research in a technical/mechanical manner. Although all types of basic laboratory apparatus are manufactured and repaired on a regular basis, we specialize in design and fabrication of equipment that is not commercially available. No job too big or too small, too simple or too complex.</p>

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Molecular Biology Core Lab (MBCL)	UMass Medical School	DNA Fragment Analysis,	The MOLECULAR BIOLOGY CORE LABS provide DNA fragment analysis, Genotyping, and SPR services. The MBCL is also home to the UMass Oligonucleotide program which provides discounted oligos to researchers.
Morphology	UMass Medical School	F.I.S.H. Immunohistochemistry In Situ Hybridization Microscopy	Established in 1981, the Morphology Core Facility is a DERC (Diabetes and Endocrinology Research Center) Research Core Laboratory. Major funding for the Morphology Core is provided by a Diabetes and Endocrinology Research Center grant from the National Institutes of Health. Dr. Bruce Woda, MD, Professor of Pathology Department is the core director. The Morphology Core Facility is a state-of-the-art, fully equipped histology lab that provides histology services in support of investigators at UMass Medical School, including <ul style="list-style-type: none"> • routine histological preparations. • special stains, • immunohistochemistry. • frozen sections. The core provides advice on techniques that are appropriate in submitting and evaluating morphologic preparations.
New England Center for Stroke Research (Nec UMass Medical School)		Fabrication 3D Printer, X-ray guided surgery and vascular intervention	This facility is imaging and image guided therapeutic intervention. Services include: 1. Fully equipped sterile angiographic suite to support fluoroscopy guided intervention 2. Hemodynamics laboratory for in vitro investigation into the efficacy cardiovascular devices. 3. Xper CT for 3-D reconstruction of vascular tree and soft-tissue imaging.

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Peptide-HPLC	UMass Medical School	Gel chromatography, HPLC, Assay Development, Amino acid analysis, Peptide-protein conjugation	This facility provides large-scale (preparative) and small-scale analytical gel chromatography and HPLC (reverse-phase, ion exchange and sizing). Peptide hydrolysis and automated amino acid analysis are also performed using state of the art instruments with high sensitivity and accuracy. We also devise extraction procedures and HPCL-based assay prodecures for the quantitation of any substance that can be detected by spectrophotmetric methods. For antibody production, we prepare peptide-protein conjugates using methods shown to yield the highest immunogenicity.
Proteomic Fractionation Group	UMass Medical School	2D-PAGE Assays and Measurements Biochemical Analysis Microarray SDS-PAGE Western Blot	The Proteomic Fractionation Group (PFG) at UMass Medical School is a state-of-the-art proteomics laboratory that serves both UMass and external investigators in their proteomic fractionation needs. The focus of the lab is the reproducible and quantitative analysis of complex protein mixtures derived from whole organisms, tissues, cells, sub-cellular fractions or partially purified mixtures.
Proteomics & Mass Spectrometry Facility	UMass Medical School	Assays and Measurements Mass Spectrometry Protein Sequencing Proteomics Fatty acid analysis, Lipidomics, Metabolomics, Small molecule analysis	A dynamic resource for state of the art proteomic and mass spectrometric analyses that support the research, educational and clinical programs at UMMS. It also provides services to academic and industrial researchers at other institutions. Proteomics is a major focus in the facility with a comprehensive range of techniques utilized for protein identification, characterization and quantification. The facility has expertise and instrumentation for small molecule analysis by mass spectrometric techniques.

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Proteomics Mass Spec Shrewsbury	UMass Medical School	Protein Sequencing Proteomics	The lab is equipped with the latest instrumentation for protein/peptide mass spectral analysis. Our equipment includes a Shimadzu Biotech Axima TOF2 (Matrix Assisted Laser Desorption tandemTime -of-Flight (MALDI-TOF-TOF) mass spectrometer, and Axima QIT (Quadrupole Ion Trap Matrix Assisted Laser Desorption Time-of-Flight (MALDI-QIT-TOF) mass spectrometer. In addition to these we have a Finnigan Electrospray LCQ Deca Ion Trap mass spectrometer (ESI LC/MS/MS). The lab provides highly sensitive protein identifications from 1D and 2D gels as well the identities of site-specific modifications for both academic and corporate clientele.
shRNA Library Core	UMass Medical School	Provides Clones	UMMS has purchased the complete collections of human and mouse retroviral and lentiviral short hairpin RNA (shRNAmir) libraries from Open Biosystems, and has negotiated with them to distribute individual clones to UMMS researchers (ONLY) at a reduced price.
Small Animal Imaging Core	UMass Medical School	Small animal SPECT, CT and Pet Imaging	With the installation of both cameras, the Bioscan NanoSPECT/CT and the Philip Mosaic PET small animal cameras, UMMS and extramural investigators now have the opportunity of using radioactive agents labeled with SPECT radionuclides such as 99mTc, 111In ,123I 125I and PET radionuclides such as 18F, 64Cu, 68Ga, to follow the pharmacokinetics and biodistributions in mice, rats, rabbits, cats and marmoset monkeys and other small animals of proteins, peptides, oligomers, nanoparticles, and other biomarkers of interest. The CT component of the NanoSPECT camera will provide registration for both cameras and, in addition, can be used without radioactivity for high resolution anatomical imaging.

			Small animal SPECT, CT and Pet Imaging

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		Assays and Measurements Library Services	<p>The facility headed by Dr. Hong Cao has allowed UMMS scientists a unique opportunity to apply the tools and principles of chemistry to understand the processes of living cells.</p> <p>The screening facility assists researchers in developing high-throughput (HT) screening assays, performs HT screens of chemical libraries to identify new small molecules that can be used to probe biological processes of interest.</p>
Small Molecule Screening Facility	UMass Medical School		<p>The facility coordinates the screening efforts of UMMS researchers, providing access to diverse chemical libraries and state-of-the art instruments including robotic compound transfer, liquid-handling equipment, imagers and plate readers.</p> <p>The information from all screens performed at the facility is collected and stored in a central database.</p> <p>The Cheminformatics database allows researchers to rapidly evaluate and compare results of their screens and can also be used in the future to classify the function of lead structures and biological targets.</p>
Transgenic Animal Modeling Core	UMass Medical School	Cell Culture Nucleic Acid Extraction Tissue Culture Transgenics	<p>The Transgenic Animal Modeling Core produces genetically altered mice and rats in a timely and cost-efficient manner. Services include gene targeting in embryonic stem cells, blastocysts microinjections to generate chimeric mice, pronuclear DNA injections and lentiviral injections into oocytes to generate transgenic mice and rats, rederivation of rodents to pathogen-free status, cryopreservation of sperm and embryos, IVF assistance, modified speed congenics, and more. The Transgenic Animal Modeling Core has generated over 100 gene-targeted mice and 300 different types of transgenic mice for UMMS investigators in the past 8 years.</p>

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		Laser Capture Microdissection	
		Human tissue samples, Frozen Sections, Formalin-fixed tissue sections	The UMass Memorial Cancer Center's Tissue Bank is an institutional Core facility aimed at improving the research endeavors of the basic, clinical, and translational cancer scientists. The overarching goal of the facility is help facilitate the science underway to improve the understanding of the underlying causes of the different types of cancer through the use of human tissue.
UMass Tissue Bank Core	UMass Medical School		One vital component of the Tissue Bank is the archival collection of formalin-fixed, paraffin embedded tissue samples that can be connected to clinical information dating back to 1993. The second major component of the Tissue Bank is a dynamic tissue collection, annotation, storage and distribution service, which collects fresh tissue samples for rapid processing/snap freezing immediately after surgery. When possible, surrounding healthy normal tissue samples are also processed and stored for reference purposes.
			Looking to meet the complex needs of the research community, tissue micro arrays will be available from the bank in the near future.
Cytogenetics Service	The Jackson Laboratory	F.I.S.H.	The Cytogenetics Service offers preparation of metaphase chromosomes and karyotyping (by G-band analysis), labeling probes by Nick Translation, and performing fluorescent in situ hybridization (FISH) to map genes, identify transgene integration sites, and detect chromosomal rearrangements. In addition, spectral karyotyping (SKY) services are also available.
Electron Microscopy Service	The Jackson Laboratory	Protocol Development/Clinical Trial Coordination Electron Microscopy Immunogold Labeling	The EM Service offers both SEM (Scanning electron microscopy) and TEM (Transmission electron microscopy) as well as sample preparation for both types of EM. The EM Service is equipped with a Hitachi S3000N Variable pressure Scanning electron Microscope and a JEOL 1230 Transmission electron Microscope, both with digital image capture capability.

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Facility Name	Institution	Services	Description
Equipment Repair Service	The Jackson Laboratory	Instrumentation	The Equipment Repair Service provides technical support and maintenance of the wide variety of shared scientific equipment and common equipment rooms. In-house repair of PI instrumentation is also available. Custom fabrication of new fixtures and devices, or modification of existing instrumentation is also offered as part of the service.
Genome Sciences, Scientific Services Department	The Jackson Laboratory	Genomics DNA Analysis Data Analysis Genotyping Nucleic Acid Extraction	DNA Sequencing (ABI3730), genotyping with SNP or SSLP technology, genome scans for genetic mapping and breeder selection, genetic map building, custom genotyping projects, high quality genomic DNA available from inbred mouse strains, custom high throughput DNA preparation for in-house genotyping applications, consultation and data analysis. Some services are limited to in-house clients, others available to outside - see http://jaxmice.jax.org/services/index.html model development and other research services.
Glassware Service	The Jackson Laboratory	Glass Washing/Autoclaving	The Glassware Service provides for cleaning and sterilizing of laboratory glassware and associated instruments. The central facility has 2 Steris Century Pre-vac Autoclaves, 2 Steris Reliance 400 Washers, several ovens, an acid-wash station, and a pipette plunger. Personnel also support the several autoclaves in shared equipment rooms throughout the laboratory complex.
Histology Core	Maine Medical Center Research Institute	Immunohistochemistry Microscopy	Tissue processing, sectioning (frozen, paraffin, plastic), routine stains, specialty stains, immunohistochemistry
Histology Service	The Jackson Laboratory	Immunohistochemistry Tissue Processing, Sectioning and Staining	The Elizabeth Fekete Histology Laboratory provides a centralized service for the preparation of murine tissues for light and fluorescent microscopy. Routine and specialized histological methods are available.

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Light and Confocal Microscopy Service	The Jackson Laboratory	Laser Capture Microdissection Cell Imaging Electron Microscopy	The Microscopy Service is open twenty-four hours per day. Instruments may be used under supervision of the Staff, or trained users may work independently. The Service has a full wet bench, cell biology and molecular biology, and complete tissue culture facilities. The Light Microscopy Staff is prepared to help you design and analyze your experiment. The following instrumentation is available for use: 2 Fluorescent Stereomicroscopes; 2 Upright microscopes capable of brightfield, darkfield, fluorescence, DIC; Leica SP2 Multiphoton microscope; Leica SP5 Spectral Confocal Microscope; Imaging Workstations; Arcturus XT LCM; Zeiss Inverted Microscope
Mouse Transgenic Facility	Maine Medical Center Research Institute	Animal Husbandry Genotyping Stem Cell Procurement Transgenics mouse embryo cryopreservation and re-derivation	The Mouse Transgenic Core Facility provides a series of high quality services related to mouse genetics, manipulation of mouse embryos, re-derivation and cryopreservation, and the stocking and distribution of shared mouse strains. Transgenic mouse lines are generated by microinjection, and chimeric mice are made by blastocyst injection of embryonic stem cells.
Phenotyping Sciences	The Jackson Laboratory	Western Blot SDS-PAGE RNA Integrity RNA analysis Real-time PCR Proteomics Protein Extraction Nucleic Acid Extraction Microarray Mass Spectrometry Flow Cytometric Analysis DNA Analysis Data Analysis Cell Sorting Cell Culture Biochemical Analysis 2D-PAGE	The Phenotyping Sciences is composed of four core labs including Protein Chemistry, Gene Expression, Flow Cytometry and Molecular Biology. The Molecular Biology Service engineers constructs for the generation of KO and transgenic mice.

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Reproductive Sciences	The Jackson Laboratory	Cell Culture Stem Cell Procurement Tissue Culture Transgenics Gamete Cryopreservation	Reproductive Sciences is composed of Importation, Cryopreservation, Cell Biology and Microinjection groups. These groups provide a variety of services including creation of genetically modified mice, cryopreservation, recovery of cryopreserved mouse strains, rapid expansion of lines using in vitro fertilization, rederivation of imported mouse lines and maintenance of a repository of publicly distributed cryopreserved embryos, sperm and ovaries. In addition to providing these services, the Reproductive Sciences group maintains an active research program focused on the development, refinement and implementation of assisted reproductive technologies that can be used to manage strains more effectively and an education program designed to facilitate the transfer of these technologies to the scientific community.
The Jackson Laboratory - Computational Scien	The Jackson Laboratory	Data Analysis Biostatistics Bioinformatics Scientific Software Development	The Computational Sciences core is an interdisciplinary group of bioinformatics software engineers, biologists, and mathematicians providing statistical consulting, data analysis, method development, algorithm design, software engineering, LIMS development, high performance computing, regional compute grid development, data resources, analysis tools and tool integration, and experimental design services to biomedical research investigators at The Jackson Laboratory. The CS core also manages the TJL liaison office to the NCI caBIG program.

			Regional Compute Resources, Scientific Software Development High Performance Computing Laboratory Information Management Systems (development/support)

Facility Name	Institution	Services	Description
The Jackson Laboratory - Necropsy Service	The Jackson Laboratory	Necropsy	<p>Necropsy Service The Necropsy Service performs necropsies on mice from both production and research animal facilities for diagnostic pathology purposes as part of TJL's routine monitoring to ensure the health status of its mice. Mice may also be sent to us from research colonies for either surveillance purposes or as part of a research project in which specific tissues need to be harvested. Training is provided to Researchers and their staff who wish to learn to perform their own necropsies. In addition to necropsies and tissue collection for histological processing, we can collect blood smears for staining and do fluid collection for PCR, hematology analysis and microbiology culturing. We also collect tumors for inclusion in the Tumor Database, photograph mice prior to necropsy and take X-rays as needed.</p>
Viral Vector Core Facility	Maine Medical Center Research Institute	Recombinant viral vector	<p>The Viral Vector Core was established at MMCRI in 2004. The objective of the core is to provide high quality viral vector services to support research performed at MMCRI. Viral vectors are produced in a dedicated BL2 facility within the MMCRI building. Vector systems currently being used include adenovirus, retrovirus and lentivirus. The Core operates on a fee-for-service basis for both MMCRI and external investigators.</p>

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Brown University Transgenic Core	Brown University	Transgenics	<p>The Transgenic Mouse and Knockout Core generates transgenic animals for Brown University, affiliated hospitals and regional investigators. The facility includes stand-alone microinjection facility capable of handling both pronuclear and blastocyst microinjections. An ES cell facility is attached to the core. Its function is to perform gene-targeting manipulations with vectors supplied by investigators. The facility also advises investigators on optimal strategies for the construction of vectors. With the exceptions of vector construction and screening the cells lines, the core handles all aspects of the production of transgenic animals. The facility is responsible for all supporting activities, such as the preparation of feeder cells or the maintenance of necessary mouse colonies. The core also advises investigators on follow up breeding regimens and analysis of the transgenic animals</p> <p>---</p> <p>The Facility generates transgenic and KO mice and offers rederivation services http://www.brown.edu/Departments/Molecular_Biology/transgenic.html</p>
COBRE for Perinatal Biology - Mol bio and hist	Women and Infants Hospital of Rhode Island	<p>Cell Imaging Cell Sorting Flow Cytometric Analysis Immunohistochemistry Instrumentation Microscopy Molecular Imaging Optical Imaging Real-time PCR</p>	<p>We utilize contemporary approaches in cell and molecular biology to address important issues in the development of the mid-to-late gestation fetus.</p> <p>---</p> <p>We offer facilities, training and support to users.</p>

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Genomics and Proteomics Core Facility	Brown University	Data Analysis Flow Cytometric Analysis Genomics Microarray Real-time PCR RNA analysis RNA Integrity Sequencing	The Genomics and Proteomics Core Facility at Brown University is part of the COBRE Center for Cancer Signaling Network and its facilities are located at the Laboratories for Molecular Medicine at 70 Ship Street in Providence, RI. The facility offers state of the art equipment in genomic and proteomic research, as well as technical expertise, support and consultation on experimental design in these areas to all interested investigators through the director of the Core Facility. Please feel free to contact Christoph Schorl (Christoph_Schorl@brown.edu) with any questions and/or suggestions at 401-863 2875 or by email. I am looking forward to collaborating on exciting scientific projects with many of you in the future.
Biochemical Analysis and Biorepository Core	University of Vermont	Biochemical Analysis	--- Ultra centrifugation, qPCR configuration for high throughput and TLDA arrays Despite the diverse research interests of the Biochemistry Faculty, many use similar physical biochemical methods to understand various research problems. These methods include, but are not limited to: fluorescence spectroscopy, mass spectrometry, nuclear magnetic resonance (NMR) spectroscopy, total internal reflection fluorescence (TIRF) spectroscopy, analytical ultracentrifugation, ultraviolet/visible/circular dichroism (UV/Vis/CD) spectroscopy, stopped-flow and quench-flow kinetics, and X-ray diffraction.

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Biochemistry Core	University of Vermont	Assays and Measurements	<p>The Biochemistry Core Laboratory provides investigators with a wide range of laboratory support and access to a well-equipped research laboratory suite. The GCRC laboratory personnel assist in coordinating aspects of obtaining research samples in an efficient, accurate manner as well as aiding investigators in fulfilling unique laboratory requirements dictated by their protocol*.</p> <p>Another resource provided by the Biochemistry Core Laboratory is the measurement of various hormones and proteins by radioimmunoassay employing either gamma or beta emitting isotopes. Carefully maintained quality control systems are in place for each assay or analysis. In addition to the methods and technologies currently in place, new techniques and innovative methods may be incorporated by the GCRC Biochemistry Laboratory to meet the specific needs of your protocol.</p>
Bioinformatics Core	University of Vermont	Bioinformatics	<p>The Biochemistry Core lab manager can also assist investigators with special research pricing for ancillary tests that are to be done by the FAHC laboratory. These reduced prices are available</p> <p>The goal of the Bioinformatics Core is to provide informatics and statistical support for the design and analysis of molecular biological experiments. To accomplish this goal we meet with investigators to identify consensus needs and then develop "pipelines" consisting of support services that efficiently satisfy these needs. Our current emphasis is on Affymetrix GeneChip and enzyme kinetics experiments, the latter based on analysis of protein functional characteristics in the context of information about sequence, structure, and phylogeny. We continue to work to identify emerging consensus needs, for example, in the areas of laboratory information management/exchange and proteomics.</p>
Biostatistics	University of Vermont	Biostatistics	<p>The VCC Biostatistics Shared Resource provides consultative and collaborative support to VCC investigators in the general areas of study design, data collection and quality control, data processing, data management, statistical methods development, statistical analysis and interpretation, and manuscript preparation.</p>

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Facility Name	Institution	Services	Description
Cell Imaging	University of Vermont	Cell Imaging	This facility is designed to provide state-of-the-art, quality-assured, morphologically-oriented services to investigators. It houses sophisticated microscopic equipment that provide digital images that can be subsequently processed and analyzed by available computer-based methods.
		Molecular Imaging Single Crystal X-ray Pattern Analysis X-Ray Crystallography	The Center for X-Ray Crystallography is the hub for high-resolution structural biology at the University of Vermont. X-ray crystallography allows biological and biomedical researchers to visualize proteins, RNA, DNA and their complexes at atomic resolution. The molecular details of specimens as small as DNA binding domains and as large as the ribosome have been elucidated via this powerful method. The CXX provides resources for all stages of macromolecular structure determination
Center for X-Ray Crystallography	University of Vermont		--- Additional Services: * screening of samples for 'crystallizability' via dynamic light scattering * automated high-throughput (robotic) screening for crystallization conditions * crystal incubation at various temperatures from 4C to 30C * preparation of heavy-atom and anomalous derivatives (including high-pressure noble gas infusion) * collection and reduction of x-ray diffraction data (cryogenic or room temperature)
Clinical Research Management	University of Vermont	Protocol Development/Clinical Trial Coordination	The Clinical Research Management Core enhances clinical research by monitoring the participation process, providing centralized data management oversight, and by working closely with investigators during the development analysis prior to publication. The Clinical Research Management Core is in essence the 'operations office' for all clinical trials conducted by VCC investigators.
Cryo-Electron Microscopy Facility	University of Vermont	Electron Microscopy Cryo-Electron Microscopy	The research of the cryo-EM laboratories focuses on the three-dimensional structure determination of macromolecular assemblies using electron microscopy combined with image processing. The facility is open to laboratories at UVM who have extensive experience in cryo-electron microscopy. (There are no resources to provide training or service.)

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Dana Medical Library	University of Vermont	Library Services	<p>The Dana Medical Library (http://library.uvm.edu/dana) serves the information needs of the Academic Health Center at the University of Vermont. The Academic Health Center is comprised of the faculty, staff and students at UVM's College of Medicine and the College of Nursing and Health Sciences, as well as the physicians and other health care providers at Fletcher Allen Health Care. The Library also meets the health sciences information needs of the citizens of the state of Vermont. Located off of a concourse connecting the University and the hospital, the Library has 20,000 square feet housing 45 computer terminals, 1,300 health sciences journals (many available electronically), and approximately 23,000 books covering all major areas of health and medicine.</p>
DNA Analysis	University of Vermont	Molecular Imaging DNA Analysis	<p>The DNA Analysis Core Facility expedites cancer research by providing fast, inexpensive, user-friendly DNA analysis services to the members of the Vermont Cancer Center. Facility staff help users troubleshoot difficult sequencing problems (i.e. homopolymeric runs or regions of refractory secondary structure) and assist with experimental design in all services provided to help investigators minimize costs.</p>

Facility Name	Institution	Services	Description
	Engineering and Mathematical Sciences Research University of Vermont	Light Scattering Microscopy Rheology Small-Angle Neutron Scattering Spectroscopy Thermal Analysis Ultrasonic Imaging X-ray Diffraction and Scattering	<p>Teaching and research facilities of the Materials Science program are primarily located in Votey Hall (Electrical and Mechanical Engineering) and Cook Physical Sciences Building (Physics, Chemistry). Votey and Cook are adjacent to one another and are located on the central campus of UVM.</p> <p>Many of the faculty in the Materials Science Program have developed individual laboratories to conduct their chosen research topics. In those laboratories the capabilities to perform a variety of experimental investigations including thin film growth, polymer studies, nondestructive studies, micromechanical measurements, and chemical synthesis have been developed. The Materials Science Program shares the Chemistry Department Facilities and Microscopy Imaging Center. Individual departments also maintain user laboratories which include the sophisticated characterization facilities listed below.</p> <p>Light Scattering Small-Angle Neutron Scattering X-ray Diffraction and Scattering Material Processing Micromechanical Force Measurements Microscopy</p>

Facility Name	Institution	Services	Description
Experimental Pathology Translational Research	University of Vermont	Nucleic Acid Extraction Microscopy In Situ Hybridization Immunohistochemistry F.I.S.H.	<p>Overview:</p> <p>The focus of our laboratory is to develop and support translational research projects within the Department of Pathology; increasingly we are collaborating with the wider FAHC/UVM research community. We employ in situ hybridization (ISH), immunohistochemical (IHC), and molecular techniques to examine chromosomal changes, and altered gene and protein expression patterns in pathology specimens. ISH and IHC techniques allow the correlation of aberrant expression patterns directly with tissue morphology; nucleic acids extracted from patient samples are analyzed primarily via PCR assays. The identification of molecular changes that might be useful for diagnostics, as prognostic indicators of disease aggressiveness, or that may predict response to therapy regimens is a high priority. Current projects include investigation of the role of human papillomaviruses (HPV) in cervical and other cancers; the role of HPV testing in the cervical screening program; and a variety of ISH and IHC studies of breast, ovarian, prostate, thyroid and</p>
Flow Cytometry Center	University of Vermont	Flow Cytometric Analysis Cell Sorting	<p>This facility provides state-of-the-art analytical flow cytometry capabilities to researchers. Investigators can use flow cytometry to analyze cells or cellular components for a wide range of immunologic, intracellular, genetic, and morphological characteristics. The facility features a BD LSRII analytical flow cytometer that is capable of simultaneously collecting data from up to thirteen parameters in parallel. The facility also houses a BD FACSAria high speed cell sorter capable of sorting 2 and 4 ways, as well as into microtiter plates.</p>

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Facility Name	Institution	Services	Description
Glass Blowing Shop	University of Vermont	Glass Washing/Autoclaving Glassblowing	Fabrication and repair of glassware used for scientific research
Glassware Facility	University of Vermont	Glass Washing/Autoclaving	The Glassware Facility is a full service glass washing/autoclaving facility. It will pick up materials which need washing/sterilization and return when complete
Informatics Core	University of Vermont	Data Analysis	<p>The GCRC Informatics Core is available to investigators with protocols on the GCRC and to those who request support for more limited services such as assistance with data entry or analysis. The Informatics Core Manager will assist the researcher in setting up the data entry process including Microsoft Access database design, and in analyzing and interpreting the data. The Informatics Core facility consists of a file server on a Local Area Network accessible by PCs on the GCRC, remote PCs on the Internet, or remote PCs by modem. Some of the software is accessible only from PCs on the GCRC. Flat-bed (color) and document-feeding (black-and-white) scanners are available, with software for image manipulations and Optical Character Recognition.</p> <p>The Informatics Core facility is a part of the Fletcher Allen Computer Network. All GCRC PCs are configured with Microsoft Office Professional 97 and Internet Explorer. A FAHC NT computer account, which the Informatics Core Manager can assist you in obtaining, is necessary to access the Informatics Core computers. Remote users access the GCRC File Server secu</p>

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Facility Name	Institution	Services	Description
Instrumentation and Modeling Facility	University of Vermont	Fabrication Instrumentation	<p>Division of Instrumentation & Technical Services</p> <p>Turning Ideas into Instruments</p> <p>For over thirty years, the Instrumentation & Model Facility (IMF) has been the University of Vermont's centralized source for custom instrumentation design, development and fabrication. We provide the most innovative, high quality, cost effective, and timely custom instrumentation services available to university researchers, educators and support staff, other universities, state government, healthcare institutions, and inventors in local firms developing emerging technologies.</p> <p>IMF staff of engineers and instrument makers can either take your ideas and basic requirements and turn them into an instrument, or fabricate apparatus from your detailed specifications and drawings. We have a complete machine shop with CADD/CAM, welding, and finishing capacity for a variety of materials along with expert electronics design and fabrication capability. This service is available at reasonable rates with estimates provided if requested.</p>
Library Facilities 1	University of Vermont	Library Services	<p>With more than 1 million volumes, the University of Vermont's main library is the largest in Vermont. Of greater interest, however, for students doing computer-based research are the extensive databases, links to other library systems, popular new cyber cafe and wireless Internet access. For scholars interested in original documents and manuscripts, the Special Collections department offers many treasures. Other libraries on campus include the Dana Medical Library in the Given Health Sciences Complex and the Physics and Chemistry Library in the Cook Physical Sciences building.</p>

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Facility Name	Institution	Services	Description
Mass Spectrometry	University of Vermont	Single Crystal X-ray Pattern Analysis	<p>The Proteomics Facility of the Vermont Genetics Network (VGN) is an interdisciplinary core facility in collaboration with the Department of Biology, Department of Chemistry, and the College of Medicine of University of Vermont. The facility provides a central resource of proteomics measurements to identify, characterize and quantify the proteins present in different biological and biomedical samples by using the state-of-the-art mass spectrometry. We are striving to establish a highly efficient research and educational environment for sharing ideas, experiences, and knowledge of proteomics in the application of systems biology, biomedical and clinical studies.</p>
Microarray	University of Vermont	Microarray Genotyping RNA Integrity	<p>The DNA Microarray Core Facility was initiated by the Vermont Genetics Network and recently established at UVM in collaboration with Vermont Cancer Center and the UVM College of Medicine. This facility utilizes the Affymetrix GeneChip system that includes hybridization and fluidics stations and a scanner. An Agilent 2100 Bioanalyzer is also available for RNA analysis. Affymetrix GeneChip expression analysis arrays are available for human, mouse, rat, yeast and other organisms. The microarray core is also equipped with a variety of tools for data analysis, networking and database management. Data are analyzed using the Microarray Suite, DMT, Micro DB and Genespring software packages. The Microarray Core provides RNA expression-profiling services including quality testing of RNA, hybridization to GeneChip probe arrays, image processing, primary data analysis, data delivery, and access to Bioinformatics tools, which are managed by the Bioinformatics Core. Seminars are arranged for an overview of the Affymetrix probe array technology and data analysis</p>

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Facility Name	Institution	Services	Description
Microscopy Imaging Center	University of Vermont	Cell Imaging Immunohistochemistry Instrumentation Laser Capture Microdissection Microscopy	<p>The Microscopy Imaging Center (MIC), is a College of Medicine Core Facility designed as a multi-user resource for the collection and analysis of biological images for clinical and research applications. The MIC consists of ten microscopy-based imaging systems. At the light and electron microscopic levels, it provides state of the art, quality assured, morphologically oriented services. The MIC is operated on a fee for service basis and provides professional consultation and assistance with equipment use, experimental design and interpretation. We are located in Room 203 of the Health Science Research Facility.</p> <p>---</p> <p>Equipment available: Transmission and scanning electron microscopes, confocal scanning laser microscopes, atomic force microscope, laser capture microdissector, laser scanning cytometer, widefield upright and inverted microscopes, paraffin microtome, cryostats, ultramicrotomes, and image analysis software.</p>

Facility Name	Institution	Services	Description
Neuroscience COBRE - Cellular and Molecular University of Vermont		2D-PAGE Assays and Measurements Cell Culture Data Analysis Immunohistochemistry In Situ Hybridization Laser Capture Microdissection Library Services Mass Spectrometry Microscopy Nucleic Acid Extraction PCR Arrays Protein Extraction Proteomics Real-time PCR RNA analysis SDS-PAGE Spectroscopy Tissue Culture Western Blot	<p>Consulting Services The core director is available for consultation on molecular biology techniques or project planning. Construct design, cloning or screening strategies, mutagenesis, PCR/RT-PCR approaches and library construction are among the services available.</p> <p>Training Services The core director and technician are available to train laboratory personnel or principal investigators in molecular biology/cell culture techniques. The goal of this service is to train personnel to be able to work independently on specific techniques.</p> <p>Technical Services The Core Director and technician are available to perform experiments to generate preliminary data for grant applications or complete data for one-time projects.</p> <p>---</p>
Neuroscience COBRE - Imaging and Physiolog University of Vermont		Optical Imaging	<p>This core is available to all researchers at UVM, UVM affiliates and also researchers outside of UVM. Please contact us for further information.</p> <p>Consultation The director is available for consultation on optical experiment design including dye choice, filter and camera selection, image processing and analysis and sample preparation.</p> <p>Training The director will train frequent users in all aspects of instrument use, image processing and analysis.</p> <p>Support The director will perform experiments for/with the occasional user for whom complete instrument training is impractical. If the group or individual becomes a more frequent user, complete training will be recommended.</p>

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NMR Facility	University of Vermont	2d Spectra Acquisition and Interpretation Spectroscopy	<p>The facility has both Bruker(ARX console with xwinnmr software) and Varian(Unity Inova console with vnmr6.1 software) 11.7 telsa (500 MHz) liquid state NMR platforms. The Bruker has an additional low resolution solid state capability while the Varian has an additional z-axis PFG capability. Both 5 and 10 mm direct as well as inverse detection probes with temperature ranges from -80oC to +80oC are available. The following is a partial list of nuclei which have been observed: 1H, 2H, 7Li, 11B, 13C, 14N, 15N, 17O, 19F, 27Al, 29Si, 47Ti, 51V, 79Br, 81Br, 87Rb, 91Zr, 97Mo, 109Ag, 119Sn, 129Ze, 195Pt. Academic new user training and walk up user accounts are available at an annually expense adjusted rate (currently \$10/hour). Organic structure, configuration, and conformation elucidation service is available at no additional charge by special arrangement with the facility manager. This collaborative service typically utilizes COSY, TOCSY, ROESY, HMQC, HMBC, and 2DJ experiments to prove most 1J, 2J and 3J homonuclear and heteronuclear couplings, as</p>

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Facility Name	Institution	Services	Description
Nursing	University of Vermont	Bioinformatics Mass Spectrometry	<p>The Research Nurses at the GCRC implement and carry out your project and care for your subjects. The unit, which includes Inpatient rooms, and several multipurpose outpatient procedural rooms, is staffed according to need. The majority of research activity is performed Monday through Friday between the hours of 7:00 am and 3:30 pm. We provide and staff an outpatient area in addition to the inpatient component during these hours. The weekend, evening and night shifts are staffed with one Research Nurse on an as needed basis; with advance notice, additional staffing may sometimes be arranged to accommodate reasonable protocol needs including GCRC research needs in other hospital locations.</p> <p>Services Equipment</p> <p>In addition, there is a Physician's Assistant who is available to assist in conduct of protocols and medical management of research subjects. This service is primarily for those investigators who hold degrees other than the M.D. degree.</p>
Office of Animal Care Management	University of Vermont	Animal Husbandry Veterinary Services	<p>The Office of Animal Care Management oversees the operation of research animal facilities at the University of Vermont. The University's research animal facilities currently house approximately 10,000 animals of which over 98% are mice and rats. The majority of the research rodents are high-health status animals maintained under barrier conditions. Animal models facilitate discovery in the areas of infectious disease, endocrinology and metabolic disease, cancer and chemotherapy, immunology and respiratory disease, among others. The University of Vermont's Animal Care program is accredited by the Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC, International).</p>

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Facility Name	Institution	Services	Description
Physiology Core	University of Vermont	Protocol Development/Clinical Trial Coordination	<p>The Physiology Core Laboratory at the GCRC offers an extensive array of services with emphasis on the measurement of body composition, bone mineral density, energy expenditure, exercise capacity, muscle strength testing, spirometry, and anthropometrics. A physiologist is available to discuss the detailed procedures involved in measures you may be considering for inclusion in your protocol and to assist with testing. Moderate to high risk patients/subjects undergo exercise testing under the supervision of a cardiologist at our GCRC satellite facility within the Cardiology Outpatient Facility at 62 Tilley Drive, So. Burlington, VT.</p> <p>Physiology Core Services and Equipment Physiology Core Equipment at the Satellite Facility</p>
Protein Core Facility	University of Vermont	Mass Spectrometry	<p>Over the past several years, UVM has been the recipient of two NIH Shared Instrumentation Grants that have purchased a Voyager DE MALD-TOF Mass Spectrometer and an automated solid-phase peptide synthesizer (Symphony Cascade from Protein Technologies, Inc). We are now offering the following services:</p> <p>Custom made peptides A limited mass spectrometry service</p>

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Facility Name	Institution	Services	Description
Proteomics Facility	University of Vermont	Proteomics	<p>The Proteomics Facility of the Vermont Genetics Network (VGN) is an interdisciplinary core facility in collaboration with the Department of Biology, Department of Chemistry, and the College of Medicine of University of Vermont. The facility provides a central resource of proteomics measurements to identify, characterize and quantify the proteins present in different biological and biomedical samples by using the state-of-the-art mass spectrometry. We are striving to establish a highly efficient research and educational environment for sharing ideas, experiences, and knowledge of proteomics in the application of systems biology, biomedical and clinical studies.</p> <p>Goal</p> <ul style="list-style-type: none"> *To provide a mass spectrometry facility for analyzing proteins and peptides for proteomics studies *To provide the support for data analysis from the proteomics measurements *To provide training in proteomics methods, and experimental design *To provide technical support facilitating the research from the bench to the bedside
Tissue Procurement Core	University of Vermont		

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Facility Name	Institution	Services	Description
University of Vermont General Clinical Research Center	University of Vermont	Bioinformatics Functional Brain Imaging Mass Spectrometry Protocol Development/Clinical Trial Coordination	Our GCRC is one of approximately 80 centers nationwide that embody the GCRC Program which was established in 1960 and is funded by the National Institutes of Health through The National Center for Research Resources. The objective of the GCRC Program is to provide scientists the infrastructure necessary for the efficient and productive conduct of high quality clinical research. GCRCs strive to provide a conducive environment for studies of normal and abnormal body function and for investigations of the cause, progression, prevention, control, and cure of human disease. Use of the Centers for interdisciplinary, collaborative research and training in medical research is encouraged. GCRCs are available to investigators from all medical specialties and from the basic sciences. Investigators who receive their primary research funding from components of the NIH and investigators gathering pilot data for submission of grants to the NIH are the principal users of GCRCs. However, GCRCs may host investigations funded by other federal, state and local agencies. This facility provides state-of-the-art analytical flow cytometry capabilities to VCC researchers. Investigators can use flow cytometry to analyze cells or cellular components for a wide range of immunologic, intracellular, genetic, and morphological characteristics. The facility features an EPICS XL four-color analytical flow cytometer that is capable of simultaneously collecting data from up to eleven parameters in parallel.
Vermont Cancer Center Flow Cytometry Facility	University of Vermont	Flow Cytometric Analysis	

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Facility Name	Institution	Services	Description
Votey Inhalation Facility	University of Vermont	Optical Imaging Animal exposure to particulate and soluble aerosol antigens	<p>The Inhalation Facility at UVM was established by SCOR funding from NHLBI approximately 20 years ago by Dr. David Hemenway and has continued support on RO1s and PPG NIH grants from Drs. Brooke Mossman and Yvonne Janssen-Heininger. The facility utilizes 4 horizontal inhalation chambers with auxiliary support equipment for flow control and monitoring, including 4 Wright dust feed aerosol generators, 3 Timbrell dust feed aerosol generators, and a fluidized-bed aerosol generator.</p> <p>Airborne dust can be sampled and analyzed with Sierra and cascade impactors, Royco 225 light scattering particle detector, GCA RDM 301 mass monitor, CSI-NO2 chemi-luminescent air quality monitor, and the samples further characterized with a Sartorius 4 and 5 place electronic balance, a Cahn microbalance, a Zeiss Universal microscope with epiplan, phase contrast, brightfield and polarized-light optics, and a Zeiss Videoplan image analysis system with computer. Additional laboratory equipment includes a computerized milling machine and lathe capabilities for development</p>