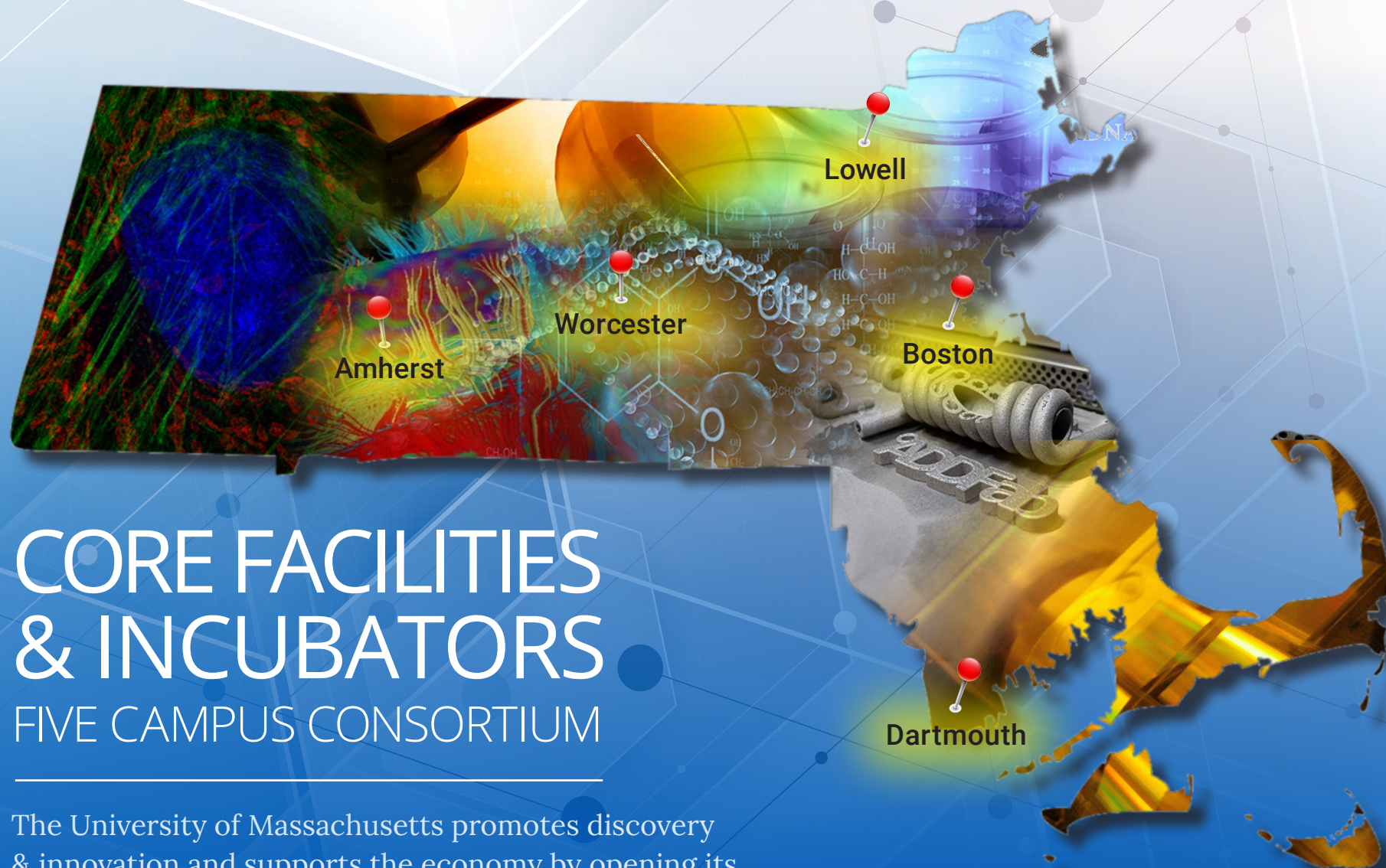




University of
Massachusetts



CORE FACILITIES & INCUBATORS

FIVE CAMPUS CONSORTIUM

The University of Massachusetts promotes discovery & innovation and supports the economy by opening its world-class research facilities and instrumentation to industry, government, and the community.



Meet Our Experienced Directors!



AMHERST

Andrew Vinard
Core Facilities Director
S307 Life Science Laboratories
240 Thatcher Road
Amherst, MA 01003
avinard@umass.edu
(413) 577-4582

umass.edu/ials/core-facilities



DARTMOUTH

Catherine Palmer
Office of Research Administration
285 Old Westport Road
Dartmouth, MA 02747
cpalmer1@umassd.edu

umassd.edu/research



LOWELL

Karen Hamlin
Executive Director
Core Research Facilities
One University Avenue
Lowell, MA 01854
karen_hamlin@uml.edu
(978) 934-6522

uml.edu/Research/CRF



BOSTON

Serena Wang
Senior Program Manager
Finance & Operations
Venture Development Center
100 William T. Morrissey Blvd.
Boston, MA 02125
Serena.Wang@umb.edu

umb.edu/orsp/research_core_facilities



WORCESTER MEDICAL SCHOOL

Susanna Perkins
Director, Research Cores & Operations
55 Lake Ave North
Worcester, MA 01655
susanna.perkins@umassmed.edu
(508) 856-8255

umassmed.edu/research/cores

UMASS CORE FACILITIES

The University of Massachusetts has more than 90 core research facilities across the state that are available to researchers from government, academia, and industry on a fee-for-service basis. These shared resources offer a wide range of services to the research community, including cutting-edge technologies, high-end instrumentation and technical support for basic, translational and clinical research.

The capabilities available at each facility are as unique as the researchers found at each location. Our expertise ranges from life sciences to material sciences, nanofabrication to biomanufacturing, robotics to mechanical prototyping, chemistry to high-performance computing, and more. The listing below is in alphabetical order.



3D Printing (Worcester-Medical School)

Nate Hafer | Nathaniel.hafer@umassmed.edu

Provides expert engineering support and consultation to transform your imagination and ideas into functional 3D models with the use of additive manufacturing and laser cutting. Printing technologies include FFF and SLA with a wide variety of polymers including flexible, rigid, and high strength.

AAV Large Scale Manufacturing (Worcester-Medical School)

Sylvain Cecchini | sylvain.cecchini@umassmed.edu

Providing large-quantities of high quality recombinant adeno-associated virus for gene therapy research. The technology and processes are developed to be "GMP transferable" to facilitate the transition from bench to bedside.

Additive Manufacturing & Materials Test Lab (Lowell)

Karen Hamlin | Karen_Hamlin@uml.edu

The lab offers training, testing, and standards development in the areas of additive fabrication, cold spray, and others. Available equipment includes Instron 3367, Danatronics Echo 9 galvanic corrosion tester, salt spray corrosion tester, Identron impact tester, Fischer poroscope, Falex wear tester, Zeiss Axioscope.



Next Generation Sequencing (NGS) & Genomics Lab at UMass Lowell

Advanced Digital Design and Fabrication (Amherst)

David Follette | follette@umass.edu

Cutting-edge 3D printing in metals and polymers for fabrication, research, training, and education. Printing technologies include DMLS, DED, SLS, FFF and Polyjet.

Advanced Digital Design and Fabrication (Boston)

Filip Cuckov | Filip.Cuckov@umb.edu

Rapid prototyping in a variety of materials with several types of 3D printing and CNC milling machines. Major equipment includes GCC LaserPro Spirit LS; Objet30; Roland MDX-540SA; Markforged Mark 2; and Roland MDX-40A; and Formlabs Form 2.

Advanced MRI Center (Worcester-Medical School)

Shaokuan Zheng | shaokuan.zheng@umassmed.edu

Includes a Philips Ingenia CX dStream 3.0T system, and RF coil labs supporting MRI imaging for humans and large or small animals.

Analytical Chemistry (Lowell)

Wendy Gavin | Wendy_Gavin@uml.edu

Offers a wide-variety of analytical chemistry services, instruments, and technical expertise including GPC, HPLC, LC/MS, Surface Plasmon Resonance (SPR). The ACL provides quantitative and qualitative analysis, purity testing, and method development.

Animal Imaging (Amherst)

Amy Burnside | aburnside@umass.edu

Designed to assist members of the research community on UMass and other five college campuses to conduct research using live animal imaging technologies. Equipment is capable of fluorescence and luminescence imaging independent of or concurrent with CT imaging.

Animal Imaging for Live Small Animals-SAI (Lowell)

Mingli Hou | Mingli_Hou@uml.edu

The Small Animal Imaging lab (SAI) provides live, small animal imaging services utilizing a Bruker MRI, Mediso PET/CT and SPECT/CT, and IVIS Spectrum.

Animal Models (Amherst)

Wei Cui | wcui@umass.edu

Provides transgenic, gene targeting, and mouse surgery service and training, performs microinjections of DNA into fertilized embryos to generate transgenic mice. Uses cutting-edge technologies, CRISPR/Cas9 genome editing, to generate gene knock-out or knock-in mice or other animal models.

Animal Resources Core Facility and Vivarium (Boston)

arcf@umb.edu

Houses mice, rats, axolotl and zebrafish; purchases animals; trains researchers regarding proper animal care and use; monitors the safety of all personnel with laboratory animal contact; and provides technical and veterinary services and mouse breeding management. Includes a Barrier Suite and Perkin Elmer IVIS Lumina XRMS Series III.

“A key challenge for a biotech startup is access to infrastructure and personnel. The UMMS core facilities provide cost-effective access to a wide range of services including cutting-edge technologies, high-end instrumentation and technical support for basic, translational and clinical research. Ankaa Therapeutics has been able to tap into the resources in the small molecule drug discovery, proteomics and structure-based drug design core enabling us to be capital efficient. Leveraging us to better seek additional financing to build out the company.”

–Juswinder Singh, Founder and CFO, Ankaa Therapeutics

Atomic Force Microscopy (Amherst)

Alex Ribbe | aeribbe@polysci.umass.edu

Provides analytical and high resolution scanning probe based microscopy. This includes Atomic Force Microscopy (AFM) related techniques such as tapping mode, contact mode or conductive AFM as well as force measurements.

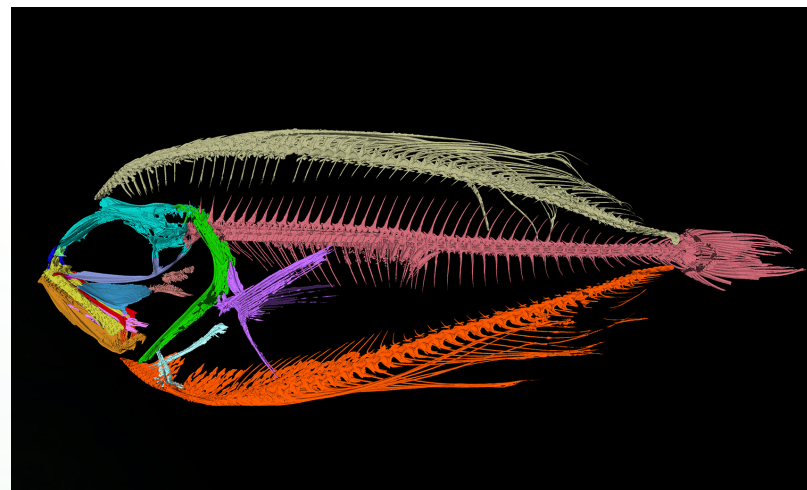


Image was generated with data from the Bruker Skyscan 1276 uCT in the Animal Imaging facility at UMass Amherst.

Bioinformatics (Worcester-Medical School)

Alper Kucukural | alper.kucukural@umassmed.edu

Facility evaluates, selects, and implements when needed the best of breed computational solutions for the analysis of biological data. This allows those who generate the data to be able to analyze it using state of the art methods by reducing the computational expertise required to apply these methods.

Biophysical Characterization (Amherst)

umasscores@umass.edu

Interactions between biological macromolecules like proteins, nucleic acids, lipids and their complexes, and small molecule interactions with these macromolecules.

Bioproduction/Separation (Amherst)

umasscores@umass.edu

Equipment for expression, separation, and isolation of biomolecules allowing users to culture cells including bacterial, yeast, insect, plant, and mammalian cells, and then separate biomolecules of interest ie. proteins, nucleic acids, natural products, and metabolites.

Bone Analysis Core (Worcester-Medical School)

Jae-Hyuck Shim | jaehyuck.shim@umassmed.edu

Bone imaging services, bone histology and histomorphometry services utilizing a microCT35 Scanco camera.

Broad Spectrum Molecular Imaging (Boston)

Walter Buchwald | Walter.Buchwald@umb.edu

Spectral assessment of a wide variety of biological materials ranging from tissues to complex mixtures in the very far IR, near IR, visible and UV spectral ranges featuring a SENTERRA II confocal raman microscope.

Cell Culture (Amherst)

James Chambers | jjchambe@umass.edu

Two cell culture facilities for both biological and bio-engineering approaches. Biosafety cabinets, incubators and general wet lab supplies.

Center for Survey Research (Boston)

Trent Buskirk | csr@umb.edu

A full-scale academic survey research center that conducts basic and applied research contributing to knowledge and understanding of important social issues. CSR maintains a professional interviewing staff, computer assisted telephone facilities and survey sampling capacity, as well as the ability to conduct mail- and web-based surveys.

Center for Human Health & Performance (Amherst)

Michael Busa | mbusa@umass.edu

Exercise Intervention and Outcomes

Diagnostic testing capabilities include: exercise performance, VO2 max, exercise stress testing, strength testing, body composition (including abdominal obesity) and bone density evaluation.

Human Motion

Assessment of human movement (free living and robot assisted) and human and robotic testing of sensor technologies.

Living Science

Evaluate biosensor performance in healthy participants or participants who are at risk for chronic disease while living in a natural environment.

Room Calorimeter

Capability to measure 24 hour human energy expenditure for purposes of movement sensor calibration and validation, and to conduct studies requiring assessment of energy balance and energy metabolism.

Sleep Monitoring Lab

Rebecca Spencer | rspencer@psych.umass.edu

Equipped with partial and whole-head EEG systems for recording sleep physiology (sleep staging). A central control room will allow for on-line observation of sleep and monitoring of sleep in populations from infants to the elderly.

Clinical Research Center (Worcester-Medical School)

Danielle Howard | Danielle.howard@umassmed.edu

CRC is dedicated to efficient, reliable and high-quality study support for UMass clinical investigators to utilize the services as needed such as exams rooms for study visits, laboratory equipment and experienced staff to assist with clinical trial and research support services. Also offered is assistance with budget, contracts and regulatory expertise to support the management and conduct of clinical research.

Center for Personalized Cancer Therapy Genomics (Boston)

Jill Macoska | Jill.Macoska@umb.edu

Offers massively parallel sequencing with the HiSeq 2500 and MiSeq platforms, next-generation sequencing library preparation from RNA and DNA, single cell sequencing on the 10X Chromium platform; and nucleic acid quality assessments using Bioanalyzer, Tapestation, Nanodrop and Qubit assays. Additional instruments include a Nanostring nCounter Analysis System, and a QuantStudio 12K Flex Real-Time PCR.

Computational Modeling (Amherst)

umasscores@umass.edu

Provides consultative and collaborative service in computational and molecular modeling.

Conquering Diseases (Worcester-Medical School)

Ann Han | Ann.han@umassmed.edu

Conquering Diseases is an easy to use web-based search tool to find, share and save clinical studies relevant to patients. It also provides educational resources to help patients and families learn about and find clinical studies.

Crystallography (Worcester-Medical School)

William Royer | william.royer@umassmed.edu

Provides instrumentation for determination of crystal structures using X-Ray diffraction techniques.



The Human Motion facility at UMass Amherst.

Data Science (Worcester–Medical School)

Jomol Mathew | jomol.mathew@umassmed.edu

Provides services such as compliant access to data, data innovation research, and spearheading data collaborations.

Deep Sequencing (Worcester–Medical School)

Ellen Kittler | nemo@umassmed.edu

2nd Largest sequencing facility in the Northeast offering next generation MPSS sequencing for whole-genome analysis, Chip-SEQ, small RNA profiling & gene expression applications with Illumina Genome Analyzer

Device Characterization (Amherst)

David Follette | follette@umass.edu

A full suite of mechanical testing capabilities, including tension, compression and torsion fatigue testing, surface roughness measurement, 3D scanning, and surface hardness measurement.

Device Fabrication–Cleanroom (Amherst)

Qiangfei Xia | qxia@ecs.umass.edu

Designed to have CMOS processing technologies to serve as a key enabler towards personalized healthcare and preemptive medicine. Specifically, we aim to develop smart and miniature devices, circuits and systems with biomedical applications such as biosensing, DNA sequencing and smart implanting.

Drosophila Resource (Worcester–Medical School)

Andreas Bergmann | andreas.bergmann@umassmed.edu

Supplies required for Drosophila research.



Nanofabrication Class 100 Clean Room at UMass Lowell.

Electron & Imaging Microscopy/ Materials Characterization (Lowell)

Earl Ada | Earl_Ada@uml.edu

Provides services, technical expertise, scanning and transmission electron microscopes and ancillary equipment for the characterization of nano-engineered materials, microelectronics, photonics, biomaterials, and others in life sciences, drug discovery, environmental and energy applications. Instruments include JEOL SEM, Zeiss Fib-SEM, TEM, Confocal Laser Scanning, LSCM, AFM, and Stereo microscopes.

“As a senior R&D engineer at Raytheon, it’s very fortunate to be able to access the state of the art tools in CRF at UMASS Lowell. CRF has greatly helped to resolve various technical challenges on our projects. Raytheon’s engineers and management are very happy utilizing CRF.”

–KC Hwang, PhD, Raytheon Company

Electron Microscopy (Amherst)

Alex Ribbe | aeribbe@polysci.umass.edu

Transmission (TEM) and Scanning (SEM) Electron Microscopes as well as related sample preparation equipment.

Electron Microscopy (Boston)

Alan Abend | Alan.Aabend@umb.edu

Scanning (SEM) and Field Emission (FESEM) Scanning Electron Microscopes and technical expertise for the characterization of nano-engineered materials, microelectronics, and others.

Electron Microscopy (Worcester–Medical School)

Greg Hendricks | www.umassmed.edu/cemf

Scanning & Transmission electron microscopes coupled with ancillary equipment required for key ultra- structural procedures from the tissue to the molecular level.

Electronic Materials (Amherst)

Volodymyr Duzhko | duzhko@mail.pse.umass.edu

Offers a range of state-of-the-art analytical instruments for characterization of optical, electronic, electrical, and electrochemical properties of materials as well as tools for solvent-based fabrication and characterization of such optoelectronic devices as solar cells, light-emitting diodes, and field-effect transistors in the inert atmosphere of glove boxes.

Environmental Analytical Facility (Boston)

Alan Abend | Alan.Aabend@umb.edu

Analytical instrumentation and sample processing featuring IRMS, GC-MS, ICP-MS, SEM, FTIR, UV-Vis, and ED-XRF.

Fabric Discovery Center (Lowell)

Cheryl Gomes | Cheryl_Gomes@uml.edu

Dedicated space for design, prototyping, pilot manufacturing and testing of high-tech fabrics, flexible electronics and medical textiles. Available equipment includes roll-to-roll processing, 3D printing, multicomponent fiber extrusion lines, textile assembly (knitting, weaving, braiding), and textile finishing including coating, printing, sewing and bonding. A wide range of mechanical, thermal, flammability, and durability testing equipment and services are also available.

Flow Cytometry

Provides the latest technologies in flow cytometry to the area research community. Fluorescence based flow cytometric analysis and microscope-based high-throughput imaging instrumentation is available. Analysis equipment is accessible to trained users 24/7 and fluorescence assisted cell sorting is offered by appointment. Instrument training, experimental design, scientific consultation and sample processing are also offered.

(Amherst)

Amy Burnside | aburnside@umass.edu

(Boston) Live cell sorting and cell counting featuring the FACS Aria III.

Catherine McCusker | catherine.mccusker@umb.edu

(Lowell)

Jack Lepine | Jack_Lepine@uml.edu

(Worcester-Medical School)

Carol Schrader | carol.schrader@umassmed.edu

Gene Expression Biomarker Core

(Worcester-Medical School)

Kahraman Tanriverdi | kahraman.tanriverdi@umassmed.edu

Rapid, cost-effective high throughput gene expression, complete miRNA and proteomic analyses by using gold standard RT-qPCR with the combination of custom Integrated Fluidic Circuit technology from Fluidigm.

Genomics

Provides next-generation DNA sequencing services, NGS library preparation, DNA and RNA quality assessment, DNA and RNA isolation, qPCR, single cell sequencing on C1 single-cell auto prep system.

(Amherst)

Ravi Ranjan | ranjan@umass.edu

(Boston)

Jill Macoska | Jill.Macoska@umb.edu

(Lowell)

Jack Lepine | Jack.Lepine@uml.edu



Mass. Cryo-Electron Microscopy facility at UMass Medical School-Worcester.

High Frequency Sensor Development (Amherst)

Robert Jackson | jackson@ecs.umass.edu

Provides world class measurement capability for frequencies into the Terahertz range. It will be used for high frequency spectral analysis of materials and for testing high-speed communications technologies.

High-Throughput Gene Expression/Biomarker (Worcester-Medical School)

Jane Freedman | jane.freedman@umassmed.edu

Provide high throughput/rapid gene expression and complete miRNA profiling analysis by using gold standard qRT-PCR with the custom Integrated Fluidic Circuit technology from Fluidigm.

Human Magnetic Resonance Center (Amherst)

Jacque Kurland | jkurland@comdis.umass.edu

Brain and whole body structural and functional imaging and spectroscopy for academic and industry-based research.

Humanized Mouse (Worcester-Medical School)

Michael Brehm | michael.brehm@umassmed.edu

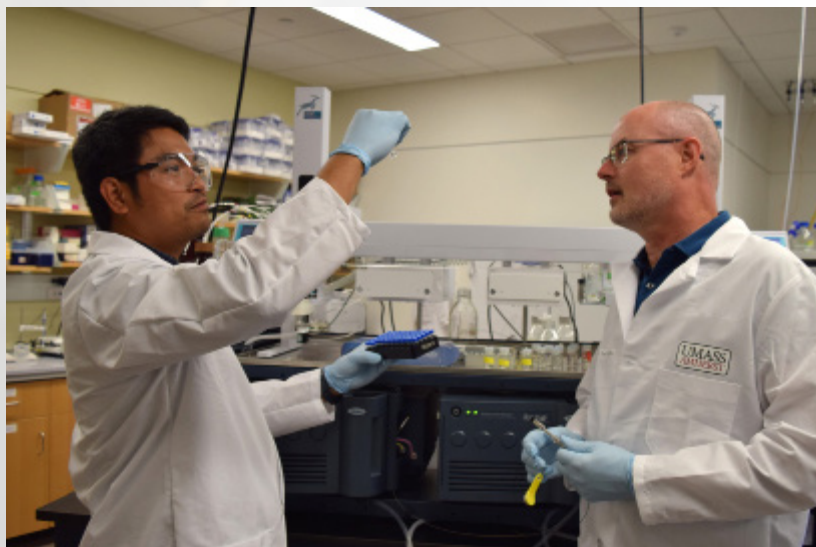
Immunodeficient mice that can be engrafted with human cells/tissues for analysis of function.

Image Processing & Analysis (Worcester-Medical School)

M. Salman Shazeeb | mohammed.shazeeb@umassmed.edu

Matthew Gounis | matthew.gounis@umassmed.edu

iPAC provides image analysis tools and expertise for pre-clinical and clinical imaging studies of different types of diseases from different instruments.



Mass Spectrometry at UMass Amherst.

Imaging (Boston)

Alexey Veraksa | Alexey.Veraksa@umb.edu

High-resolution 3D imaging of biological specimens using Zeiss LSM 880 confocal laser scanning microscope as well as upright and inverted fluorescence microscopes.

Investigational Drug Services (Worcester-Medical School)

Gopal Patil | gopal.patil@umassmed.edu

High quality pharmaceutical services and supports research activities for all clinical trials at UMMS.

Laser Confocal Microscopy (Dartmouth)

Maolin Guo | mguo@umassd.edu

The Zeiss LSM 710 confocal microscope system can collect transmitted light images (bright field and DIC) as well as conventional and confocal fluorescence images. Four lasers are available covering the 405 nm to 633 nm range.

Light Microscopy (Amherst)

James Chambers | jjchambe@umass.edu

Nikon Center of Excellence providing instruments that enable a broad range of light microscopy methods and applications.

LyoBay Lyophilization Lab (Lowell)

Wendy Gavin | Wendy_Gavin@uml.edu

State-of-the-art, non-GMP, pilot scale, manufacturing facility for the R&D of biopharmaceutical products requiring a lyophilization process step. The LyoBay pilot scale facility can assist researchers in bringing laboratory scale

materials to a highly optimized, non-GMP pilot scale utilizing cutting edge lyophilization equipment and technology (SP Scientific LyoConstellation S20) in a Class 100 cleanroom.

Massachusetts Center for Cryo-Electron Microscopy (Worcester-Medical School)

Chen Xu | chen.xu@umassmed.edu

Titan Krios & Talos Arctica, Vitrobot, Gatan K3, cameras, Phase plate solution & tomography software

Mass Spectrometry (Amherst)

Stephen Eyles | eyles@biochem.umass.edu

Analytical mass spectrometry equipment, providing analytical services and expertise in mass spectrometry.

Mass Spectrometry (Boston)

The Environmental Analytical facility provides IRMS, GC-MS and ICP-MS. The Proteomics facility provides LC-MS as well as access to NMR, UV-Vis, FT-IR and AFM.

Mass Spectrometry (Worcester-Medical School)

Scott Shaffer | scott.shaffer@umassmed.edu

State of the art proteomics, metabolomics & mass spectrometry imaging analyses. Analysis platforms include 4 Orbitraps (ESI), 2 QQQ (ESI), 1 Q-TOF (ESI, MALDI, DESI), 1 LTQ (ESI) and 1 TOF-TOF (MALDI)

Materials Characterization and Trace Analysis (Lowell)

Earl T. Ada | Earl_Ada@uml.edu

Offers a wider range of instruments and technical expertise for the characterization of materials including optical profilometry, dynamic light scattering (DLS), and trace analysis using ICP-OES and ICP-MS (atomic mass spectrometry). Applications include nano-engineered materials, microelectronics, photonics, biomaterials, and others with applications in life sciences, drug discovery, environmental and energy research.

“*Having the access to Mass Spectrometry Core Facility resources was very beneficial for us and allowed VCC, Inc. to broaden the scope of R&D projects, provided necessary scientific backing, and helped to allocate resources of our small organization more efficiently. We are looking forward continuing to participate in your program in the year 2020.*”

—VCC, Inc.

Media Prep (Worcester-Medical School)

Rachel Lamson | rachel.lamson@umassmed.edu

Liquid and plate form custom media and laboratory buffers using standard or customer-modified recipes.

mHealthLab (Amherst)

Deepak Ganesan | dganesan@cs.umass.edu

Prashant Shenoy | pshenoy@cs.umass.edu

Develops algorithms and processes for large scale wearable sensor networks to support the development of novel hardware.

Molecular Biology Core Lab (Worcester-Medical School)

Ellen Kittler | nemo@umassmed.edu

DNA fragment analysis, Genotyping & SPR services. Host to the Oligonucleotide program providing discounted oligos.

Morphology (Worcester-Medical School)

Yu Liu | yu.liu@umassmed.edu

Histology services including routine histologic preparations, special stains, immunohistochemistry & frozen sections.

Mouse Behavioral Core (Worcester-Medical School)

David Weaver | david.weaver@umassmed.edu

Facilities, equipment, and training necessary to characterize behavior in wild-type and genetically modified mice.

Mutagenesis (Worcester-Medical School)

Michael Brodsky | michael.brodsky@umassmed.edu

Targeting genome alterations in human cells & model organisms.

Nanofabrication-Cleanroom (Amherst)

John Nicholson | jnicholson@research.umass.edu

Device design, fabrication process formulation, photomask layout advice, and prototype testing utilizing traditional and novel approaches to microfabrication and nanofabrication of electronic devices, sensors, microfluidic devices, and nanomaterials test structures.

Nanofabrication/Cleanroom (Boston)

Matthew Bell | Matthew.Bell@umb.edu

Supporting research in microelectronics, electronic materials, nanotechnology, MEMS, biomedical and optical devices. Our staff provides professional suggestions and ideas to lab users on their projects, including planning, design, and integration for fabricating devices. Features Class 100 Cleanroom.

Nanofabrication/Class 100 Cleanroom (Lowell)

Thomas Ferraguto | Thomas_Ferraguto@uml.edu

State-of-the-art, 4,200 ft² Class 100 clean room equipped with over 40 pieces of process and analytical instrumentation for complex research projects that require micro and nano scale fabrication. Technical expertise, foundry services, and use of equipment is available for dicing, stress measurements, deposition, deep silicon etch and photo lithography.

“The Voucher program enables Silicon Therapeutics to use the NMR core facilities at UMass Amherst, not only to perform routine drug discovery assays, but also to perform in-depth characterization of small molecule protein interactions by NMR. The goal is to integrate NMR data into our molecular dynamics simulations both to significantly advance our drug discovery pipeline but also develop novel and innovative methods in drug discovery.”

–Silicon Therapeutics

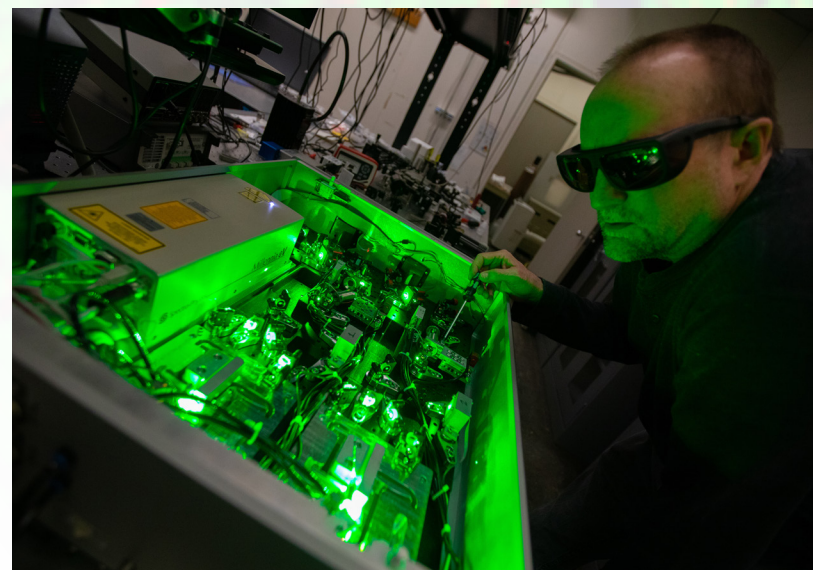
National Mouse Metabolic Phenotyping Center (Worcester-Medical School)

Jason Kim | jason.kim@umassmed.edu

NIH-funded Center as one of five centers in the US to make up the National MMPC Consortium that specializes in sophisticated physiological procedures and instruments to characterize mouse models of obesity, diabetes, and its complications.

The Center consists of the following five phenotyping Cores:

- Metabolism Core uses in vivo metabolic procedures and instruments to assess energy balance, insulin sensitivity and glucose metabolism, and conducts drug trial studies.



Broad Spectrum Molecular Imaging at UMass Boston.

- Analytical Core uses high throughput instruments to measure serum and tissue levels of metabolites, hormones, and cytokines.
- Islet Core uses in vivo and in vitro procedures to measure pancreatic function and insulin secretion.
- Cardiovascular Core uses in vivo imaging system to assess cardiac structure and function, and vascular phenotypes.
- Microbiome Core uses fecal collection and antibiotic treatment for gut microbiome analysis.

New England Center for Stroke Research (Worcester-Medical School)

Matthew Gounis | matthew.gounis@umassmed.edu

Neuroradiology facility that offers the latest technology in image guided intervention in developing minimally invasive treatments.

New England Robotics Validation and Experimentation Center - NERVE (Lowell)

Adam Norton | Adam.Norton@uml.edu

Interdisciplinary robotics testing, research, and training facility that evaluates robotic capabilities, human performance, and human-robot interaction. Additional resources include Motek M-Gait instrumented treadmill with motion capture (Qualisys and Motion Analysis), a variety of biometric sensors, and NIRx functional near-IR spectroscopy.

Next Generation Sequencing (NGS) & Genomics (Lowell)

Jack Lepine | Jack.Lepine@uml.edu

Provides Next-Generation DNA & RNA sequencing services and technical expertise including NGS library prep, DNA and RNA quality assessment, Fluorometric quantification of DNA/RNA/Protein, DNA & RNA isolation, PCR/qPCR, Qubit fluorometry, gene expression & drug development studies.

Nuclear Magnetic Resonance (Amherst)

Weiguo Hu | weiguoh@polysci.umass.edu

Jasna Fejzo | jfejzo@umass.edu

The facility provides high field NMR instruments and expertise to elucidate molecular structure, conformation, dynamics and interactions.

Nuclear Magnetic Resonance Spectroscopy (Lowell)

Wendy Gavin | Wendy.Gavin@uml.edu

A new, state-of-the-art JEOL 400 MHz NMR equipped with auto sampler and automatic tuning & matching. The instrument can perform temperature and kinetic studies as well as x-nuclei and 2D experiments. Self-use and service work are available.

Nutriceutical Formulation (Amherst)

David Prodanas | dprodana@foodsci.umass.edu

Isolates bioactives by supercritical CO₂, concentrate bioactives by reverse osmosis, thermally treat by ultrahigh pasteurization and agitating retort, produce emulsion systems by homogenization and encapsulate by freeze or spray drying.



SMASST Optic-Acoustic Test Tank at UMass Dartmouth.

Optical Imaging (Worcester-Medical School)

Mary Rusckowski | mary.rusckowski@umassmed.edu

Optical Xenogen IVIS 100 imager & Spectrum CT Imager for in vivo detection and quantification of cells.

PacBio (Worcester-Medical School)

Maria Zapp | maria.zapp@umassmed.edu

Northeast hub for PacBio work utilizing PacBio Sequel. Services include sample quality control and assessment, SMRTBell library construction and validation (genomic, amplicon, RNA, targeted), sequence analysis using 8M SMRTCells, and a variety of data analysis services (including ROI/CCS analysis, Iso-Seq analysis, HGAP assembly, DNA modification and motif detection, and custom applications).

Proteomics (Boston)

Jason Evans | Proteomics.Core@umb.edu

Offers a full range of proteomic services using an Orbitrap Fusion Lumos Tribrid MS including sample preparation, bottom-up protein identification, quantification of expression levels using both label free and TMT multiplexing strategies, PTM analysis, 2D fractionation, and top-down proteomic analysis.

Quantitative Methods (Worcester-Medical School)

Bruce Barton | bruce.barton@umassmed.edu

Clinical and basic research support in biostatistics, experimental design, data analysis, and data management.

Radiation Laboratory (Lowell)

Mary Montesalvo | Mary_Montesalvo@uml.edu

Provides controlled radiation environments and analytical measurement services and facilities for proton, neutron and gamma environments.

“We are excited to be working with the UMass Lowell Core Research Facilities team. The CRF staff has been very innovative in fabricating our device and will play a valuable role in helping us quantify our results. It’s great to have access to adjacent and coordinated nanofabrication and bio-molecular characterization capabilities, and especially your in-house experts.”

–George Kenney, Ph.D., DiallyFlux, LLC

RNAi (Worcester–Medical School)

Michael Green | lynn.chamberlain@umassmed.edu

Distribution of clones from both the Open Biosystems human & mouse shRNA lentiviral libraries and the Mammalian Gene Collection cDNA library.

RLASTIC (Worcester–Medical School)

Mary Rusckowski | mary.rusckowski@umassmed.edu

State-of-the-art single photon computerized tomography (SPECT), positron emission computerized tomography (PET) & X-Ray computerized tomography (CT) cameras for imaging small animals

Roll-to-Roll Fabrication and Processing (Amherst)

Jeff Morse | jdmorese@research.umass.edu

Provides a unique set of custom, moving web-based tools for the translation of advanced materials and nanomanufacturing processes to industrially relevant scalable platforms for the development of next generation life science innovations.

Scanning Electron Microscope (Dartmouth)

Milana Vasudev | milana.vasudev@umassd.edu

The Hitachi SU-5000 field emission SEM is a microscope used to observe micron/nano-scale structures (resolution of 0.5 nanometer (10-9 m)). The FESEM is equipped with a deceleration mode for improved imaging and avoiding the effects of charging. The SEM is equipped with a secondary electron detector, backscatter detector and an additional STEM detector.

SCOPE (Worcester–Medical School)

Christina Baer | christina.baer@umassmed.edu

Advanced quantitative light microscopy including super-resolution (SIM/ PALM), multi-photon, TIRF, confocal, and live-cell imaging.

Sensor Integration (Amherst)

Robert Jackson | jackson@ecs.umass.edu

Micro assembly, prototyping, and integration for RF, wire bonding, optics, PCB and wafer/die attach applications.

Skin Disease (Worcester–Medical School)

John Harris | john.harris@umassmed.edu

Support for conducting basic and translational research on mouse and human skin including acquisition of human skin, skin fluid, or skin cells for translational assays such as flow cytometry, ELISA, or single cell RNA sequencing.

Small Molecule Screening (Worcester–Medical School)

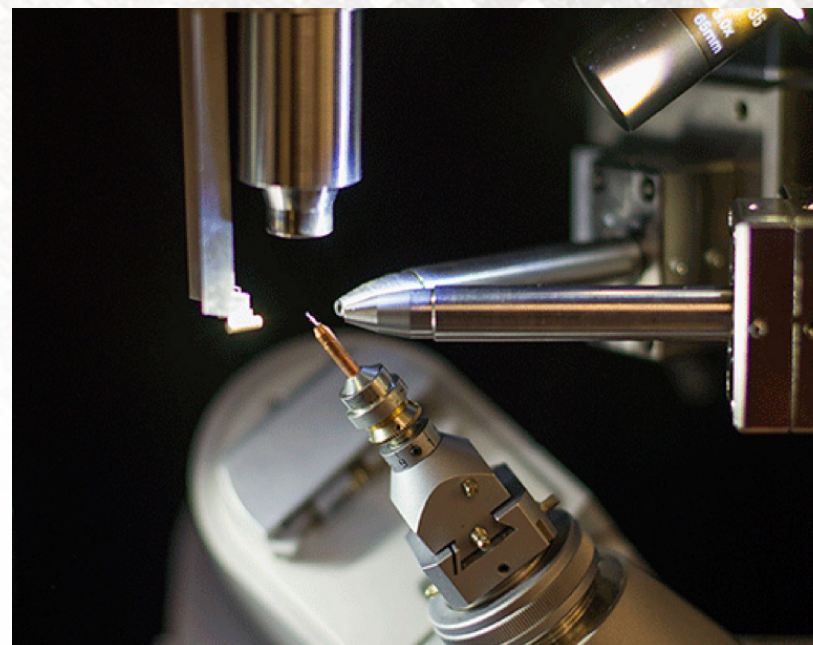
Sangram Parelkar | sangram.parelkar@umassmed.edu

Develop high-throughput screens to discover novel drugs & chemical probes utilizing in house 1M compound collection & detection technologies.

SMASST Optic-Acoustic Test Tank (Dartmouth)

Michael Marino | mmarino@umassd.edu

90,000 – gallon acoustic – optic test tank designed for development and testing of underwater measurement concepts and devices.



X-Ray Diffraction at UMass Dartmouth.



Caption at UMass Medical School-Worcester.

SMAST Seawater (Dartmouth)

Michael Marino | mmarino@umassd.edu

2,200 square foot lab allows scientists to conduct research on living marine and estuarine organisms under controlled conditions.

Structure Based Drug Design (Worcester-Medical School)

Celia Schiffer | Celia.Schiffer@umassmed.edu

Structural characterizations, including molecular modeling, small molecule docking and inhibitor design (using the Schrodinger structure based drug design suite), crystallographic studies, organic synthesis and characterization, structure activity relationship (SAR) and chemistry support.

Thermal Analysis & Mechanical Properties (Lowell)

Patrick Casey | Patrick_Casey1@uml.edu

A complete thermal analysis suite including Discovery TGA, Discovery DSC, Q800 DMA, and Instron 4466. Service level work and technical expertise are also provided.

Tissue Bank and Biorepository (Worcester-Medical School)

Karl Simin | karl.simin@umassmed.edu

Open access biorepository provides a dynamic collection, storage and distribution service for human samples.

Tissue Culture Supply & Enzyme Freezer (Worcester-Medical School)

Stephen Doxsey | stephen.doxsey@umassmed.edu

Supplies, restricted/modifying enzymes, Kits for DNA preparation & cleanup and related reagents.

Transgenic Animal Modeling (Worcester-Medical School)

Jaime Rivera | Jaime.Rivera@umassmed.edu

Produce genetically modified mice, rats, and stem cells in a timely and cost-efficient manner.

Umbilical Cord Blood (Worcester-Medical School)

Tiffany Moore Simas | TiffanyA.MooreSimas@umassmemorial.org

Provides cord blood units collected real-time from deliveries occurring at the UMMHC Labor & Delivery Maternity Unit.

Vector (Worcester-Medical School)

Guangping Gao | guangping.gao@umassmed.edu

Cutting-edge technologies to create and produce high quality viral vectors. Provide the most suitable & efficient gene transfer vectors for research applications.

“Calorique had been dealing with the challenge of getting a uniform thickness of coating on a particularly thin film e.g. 1-2 mil kapton. An electrical resistance of less than 5% variation was a very strict requirement for a defense project. Our visit to UMA and working in the equipment there educated us on how to make the fine controls to get to the right thickness. It had a huge immediate as well as long term economic impact for us. We want to continue the partnership with UMA.”

—Calorique, LLC

X-Ray Diffraction (Dartmouth)

David Manke | dmanke@umassd.edu

State-of-the-art dual source Bruker D8 Venture single-crystal diffraction system. Services include crystallization, data collection and structure determination.

X-Ray Scattering (Amherst)

Alex Ribbe | aeribbe@polysci.umass.edu

Instruments dedicated to the structural analysis of crystalline materials, the determination of highly periodic morphologies in self-assembled systems over a large length scale range.

INDUSTRY/STARTUP INCUBATOR SPACE



Amherst-Collaboratories

Andrew Vinard | avinard@umass.edu

IP free, affordable, rentable research laboratory spaces available for industry partners, including start-up companies emerging from faculty research projects, to partnerships with more established companies that seek space on campus to develop medical devices and healthcare/life science related product candidates.



Boston-Venture Development Center

vdc@umb.edu

Serves seed stage biopharma, life science, health IT and medical device startup companies, offering teams wet and dry laboratory workspace, business mentoring and connections and easy access to advanced scientific and engineering prototyping and characterization equipment and expertise.



Massachusetts Medical Device Development Center (M2D2) & Biotech Incubator

Lowell

MaryAnn Picard | MaryAnn_Picard@uml.edu

Worcester

Nate Hafer | nathaniel.hafer@umassmed.edu

Resources for small biotech and medical device startups, offering inventors, founders, and executives easy, affordable and coordinated access to world-class researchers and resources. M2D2 member companies receive preferred partner rates at the UMass Core Facilities. In addition to wet labs, office, and conference room space, the Center also provides assistance with business development, business planning, prototyping design & development, as well as support and advice for grant funding, venture investment, market research, and regulatory submissions.

Providing industry partners, entrepreneurs and startup companies affordable, shared laboratory space. Each campus has unique capabilities which can accommodate start-up companies or established industry partners that seek move-in-ready laboratory facilities on their campus. This shared space helps foster collaboration and innovation, as well as facilitates shared use of resources, equipment, and infrastructure.

MASSACHUSETTS Innovation Voucher Program

The program provides industry access to world-class equipment and laboratory facilities at significantly subsidized rates. With this State of Massachusetts incentive, companies can develop methods, test new devices, and create manufacturing prototypes at lower cost without a large, initial investment.

Founders

- *Kumble Subbaswamy*, Chancellor, UMass Amherst
- *Michael Malone*, Vice Chancellor of Research & Engagement UMass Amherst
- *Peter Reinhart*, Founding Director of the Institute for Applied Life Sciences, UMass Amherst
- *Christopher Dunn*, Special Advisor to the Chancellor UMass Amherst

Leadership

5 Campus Point Person: *Peter Reinhart*, Founding Director of the Institute for Applied Life Sciences, UMass Amherst

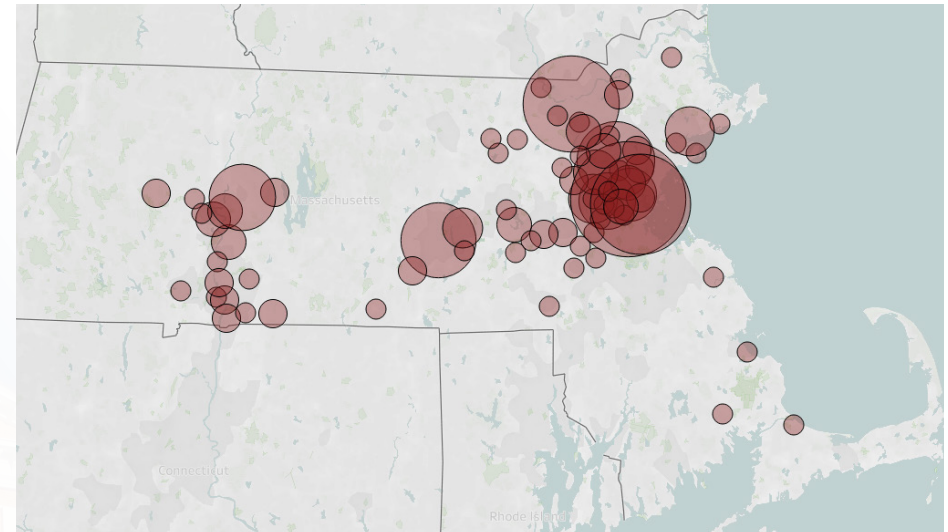
Amherst: *Michael Malone*, Vice Chancellor of Research and Engagement

Boston: *Bala Sundaram*, Vice Provost for Research and Strategic Initiatives

Dartmouth: *Ramprasad "Ram" Balasubramanian*, Vice Provost for Research and Academic Affairs

Lowell: *Julie Chen*, Vice Chancellor for Research and Economic Development

Worcester: *Terence Flotte*, Dean, School of Medicine



Companies receiving vouchers by location throughout Massachusetts. Approximately 300 SMEs located at the sites shown have received MA Innovation vouchers. The size of each circle indicates the number of companies receiving one or more vouchers, ranging from 1-30 companies for the regions highlighted.

Eligibility

- Companies of 10 or less receive a 75% discount off standard industry rates
- Companies of 50 or less receive 50% off standard industry rates
- Companies may apply for multiple vouchers with a cap of \$75K subsidy per startup/company per year
- Program is available at all UMass Core Facilities
- Companies headquartered & registered to do business in MA with 50 or less employees are eligible

LEARN MORE at massachusetts.edu/research/voucher-program



UMass Amherst

The flagship campus has capabilities that include metal 3D printing, roll-to-roll fabrication, inductively coupled plasma mass spec, analytical ultra centrifugation, x-ray diffractometry, super resolution microscopy, whole-room calorimetry, infrared motion analysis, sleep and behavioral observation labs, and a 3 Tesla human MRI/MRS. Enabling internal and external users the resources to enhance their R&D capabilities, address basic and translational questions, deliver technologies and product candidates more rapidly, receive advanced training, and become more competitive in obtaining state, federal, foundation, and private funding.
umass.edu/ials/core-facilities



UMass Boston

Facilities include a vivarium, which provide staffing with technical and veterinary services, genomics and proteomics, with the latest and most complementary technologies readily available. Other cores include: Imaging, mass spectrometry, fabrication, flow cytometry, and infrared/raman spectroscopy. Researchers specialize in biomedical, health, life and brain sciences. With easy access from the north and south shores of Massachusetts, the campus is close to city incubators, universities and Fortune 500 companies.
umb.edu/orsp/research_core_facilities



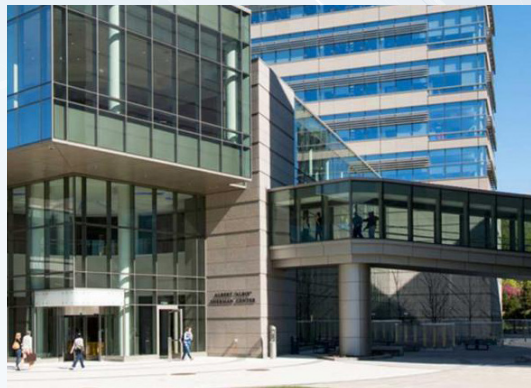
UMass Dartmouth

Offers instrumentation within Environmental Chemistry, Biomanufacturing and Mechanical Prototyping Lab at the Center for Innovation & Entrepreneurship. Chemistry and Biochemistry Departments offer a multitude of sophisticated analytical and biomolecular instruments.
umassd.edu/research



UMass Lowell

Providing stream-lined process to quick and easy lab access. Professional staff provide hands-on training and services. An integrated on-line reservation system that includes a searchable database of resources. State-of-the art instruments and resources available to academic, government and industry researchers. Supporting research in the fields of bioengineering, biomaterials, chemistry, green chemistry, material sciences, nanotech and nanofabrication, radiation sciences, robotics and much more.
uml.edu/Research/CRF




UMass Medical School-Worcester

Offers 45 facilities, including the second largest sequencing facility in New England, are host to the Northeast PacBio Hub, and are one of five centers across the country for Mouse Metabolic Phenotyping. New highly publicized cores include the Massachusetts Center for High Resolution Electron Cryo Microscopy.
umassmed.edu/research/cores

Let us
help you
**ADVANCE
YOUR
R&D**

Peter Reinhart, Editor
Lisa Korpiewski, Design and production
UMass Amherst, Spring 2021



“**A**s a small business seeking ways to compete and develop in a global market, the MA innovation voucher program has been an invaluable assistance to our company we have gained exposure to both knowledgeable staff and excellent capabilities that we would have not have been able to afford our own. This voucher program as enabled Volo Aero MRO to implement solutions and deliver 3D printed fixtures into our production processes quickly and efficiently. Utilizing this program we have opened our employees to the opportunities and applications of 3D printing, and aided our recruitment process. The voucher program will definitely assist us in our growth and profitability in the future few years.”

—Andrew Walmsely, President - Volo Aero MRO

massachusetts.edu/research/core-facilities