University *of* Massachusetts
UMASS

Lowell

Worcester

Boston

Amherst

Dartmouth

2023-2024
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.

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

Core Facilities

The **University of Massachusetts** has more than 100 core research facilities across the state and throughout the UMass five campus system. These core facilities are comprised of state-of-the-art laboratories, high-end equipments and instrumentation; offering a wide range of services including cutting-edge technologies and technical support for basic, translational and clinical research. These shared resources are available to researchers from government, academia, and industry at competitive rates, on a fee-for-service basis.

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.

On the following pages you will find all resources are categorized by industry sectors:

UMass Amherst

Offers 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 on the flagship campus.

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.

UMass Chan Medical School Worcester

Offers 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, including the Massachusetts Center for High Resolution Electron Cryo Microscopy.

UMass Boston

Offers genomics, proteomics, vivarium (including technical and veterinary services), biophysical instrumentation, quantum, environmental analytical, FESEM, Artificial Intelligence, imaging, flow cytometry and NMR. Easy access from the north and south shores, and close to city incubators, universities and Fortune 500 companies.

UMass Lowell

Offers state-of-the art instruments and supporting research in the fields of bioengineering, biomaterials, chemistry, green chemistry, material sciences, nanotech and nanofabrication, radiation sciences, robotics, next-generation sequencing, and much more.

massachusetts.edu/ research/core-facilities

Massachusetts
Innovation Voucher Program

A state voucher program funded by the Massachusetts legislature that gives small and medium-sized businesses access to the University's leading-edge research facilities at reduced rates.

- **Available to Massachusetts based, small and medium sized businesses**
    - <10 FTEs=75% subsidy
    - <50 FTEs=50% subsidy

- **Access to >100 leading edge, core research facilities throughout the five-campus University of Massachusetts system**

- **Available to industry with competitive rates, on a fee-for-service basis**

- **Cutting-edge technologies, high-end instrumentation and technical support in biotechnology, life sciences, manufacturing, data sciences, bioinformatics, clean tech, and more**

- **IP Free:** Services and incubator space

- **Only one master agreement needed per campus for access to all core facilities on respective campus.**

2019–2022

Massachusetts Innovation Voucher Program
Economic Impact

The MIVP creates opportunities for early stage, small businesses in the high-tech industry to pursue new technologies and business ideas by making the cutting-edge technology and expertise available by the UMass system accessible. Participants **contribute to the state economy** by **creating jobs**, **producing economic output**, and **increasing tax revenues**.

AWARDED
1260
VOUCHERS

PARTICIPATING
310
BUSINESSES

TOTAL NEW TAX
$36M
REVENUE

INCREASE
>1K
EMPLOYMENT

TOTAL EFFECT
$364M
STATE ECONOMY

Industry/Startup Incubator Space

Amherst–Collaboratories
umasscores@umass.edu

Offering 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, move-in-ready laboratory space. Fostering collaboration and innovation through the use of resources, equipment, and infrastructure.*

Biotechnology, Life Sciences

AAV Large Scale Manufacturing (Worcester–Chan 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.

Advanced MRI Center (Worcester–Chan Medical School)
Manojkumar Saranathan| manojkumar.saranathan@umassmed.edu
M. Salman Shazeeb| mohammed.shazeeb@umassmed.edu
Includes a Philip's Ingenia CX dStream 3.0T system, BRUKER 7.0T preclinical 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, GC/MS, and LCMS, including a QQQ(ESI) and a QTOF(ESI). 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.

> "Our initial interest in IALS was for IP-neutral lab space so we could begin building out our tech and products, and own the value that we were creating. It helped that it was on campus and easy for students. We have toured other facilities, in Worcester and Boston, but the sheer quality of the core facilities, price for bench space, and voucher program made it an easy decision."
>
> Griffin O'Driscoll, CEO and CoFounder, Organicin Scientific of Amherst

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

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 AMI HT in vivo optical imaging system (IVIS), and MARS spectral CT.

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.

Biophysical Characterization (Amherst)
Stephen Eyles | eyles@biochem.umass.edu
Interactions between biological macromolecules like proteins, nucleic acids, lipids and their complexes, and small molecule interactions with these macromolecules.

Biophysical Instrumentation (Boston)
BIC@umb.edu
Accepts sample submission and provides access to instruments for characterizing biomolecular interactions and kinetics, behavior of biomolecules in solution, biomolecular structure, and thermodynamics of binding and denaturation.

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–Chan Medical School)
Jae-Hyuck Shim | jaehyuck.shim@umassmed.edu
Bone imaging services, bone histology and histomorphometry services utilizing a microCT35 Scanco camera.

Cardiovascular & Surgical Models (Worcester–Chan Medical School)
Timothy Fitzgibbons | timothy.fitzgibbons@umassmemorial.org
Mark Kelly | mark.kelly@umassmed.edu
Resources for creating and studying cardiovascular physiology, pathophysiology surgical and non-surgical models. With our central focus being cardiovascular research, offering a wide range of techniques for researchers, including Nash models, Adipose Denervation, Compound Delivery, Micro CT scan, Micro PET Scan, and Animal Model development.

> " *We're trying to rapidly develop cell therapies that might help cure autoimmune disease. The UMass Boston research cores and voucher program have been transformative for our drug development process and a deciding factor in where to build our lab. Having access to the equipment and expertise on campus to move our cell sorting, animal handling, and sequencing pipelines forward has expanded opportunities for us to validate our machine learning guided cell therapy products for the treatment of T cell mediated disease and accelerated our path towards helping patients."*
>
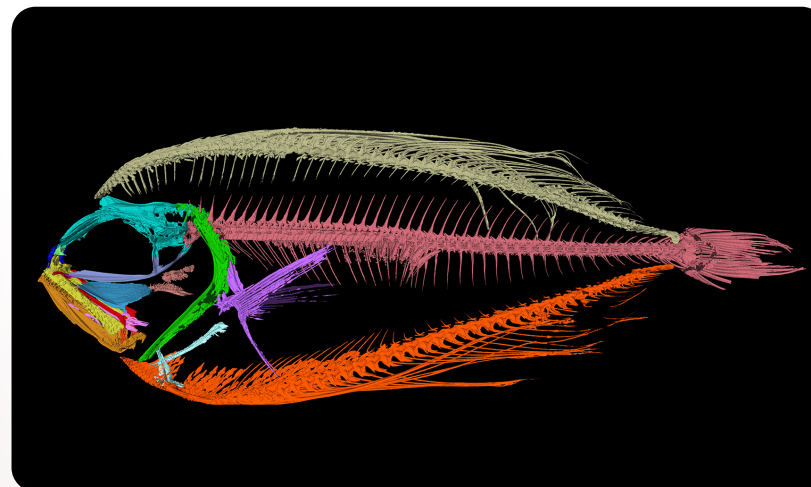> Cameron Gardner, R&D, JURA Bio of Somerville

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

Cell Culture (Amherst)
Michael Daley | mpdaley@umass.edu
Two cell culture facilities for both biological and bio-engineering approaches. Biosafety cabinets, incubators and general wet lab supplies.

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.

Clinical Research Center
(Worcester–Chan Medical School)
Danielle Howard | Danielle.howard@umassmed.edu
CRC is dedicated to efficient, reliable and high-quality study support for UMass Chan 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.

Crystallography & Drug Design
(Worcester–Chan Medical School)
Ala Shaqra | ala.shaqra@umassmed.edu
Provides instrumentation for determination of crystal structures using X-Ray diffraction techniques. 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.

Deep Sequencing (Worcester–Chan Medical School)
Ellen Kittler | nemo@umassmed.edu
Employ Next-Generation sequence (NGS) technology platforms and other state-of-the-art resources to provide analytical services to UMass investigators and external academic and commercial researchers. The DSCL operates Illumina NovaSeq6000 and MiSeq instruments, which are continuously upgraded to expand technical capabilities.

Drosophila Resource Facility
(Worcester–Chan Medical School)
Andreas Bergmann| andreas.bergmann@umassmed.edu
Provides labs with the media necessary for Drosophila research. The three types of media we make include Low Yeast Brown Food, High Yeast Brown Food, and Yellow Food. The media is available in narrow vials, wide vials, and bottles.

Ecology of Stress Lab (Dartmouth)
Michael Sheriff | msheriff@umassd.edu
Using radioimmunoassays to measure various hormones in blood, feces, hair, or saliva samples. We specialize in the design, collection, analysis, and interpretation. These techniques can and have been used across taxa, from wild game-birds to caribou to lab rodents.

Flow Cytometric Analysis and Cell Sorting (Boston)
Genomicscore@umb.edu
Analyze tissue samples, identify and quantify different populations of cells based on the presence of cell-specific fluorescent signatures, and collect cellular populations of interest for further analysis. Live cell sorting and cell counting featuring the FACSAria Fusion.

Flow Cytometry (Amherst)
Amy Burnside | aburnside@umass.edu
Enables researchers to image structures ranging from single molecules to whole model organisms and performs microscope-based high-throughput screens.
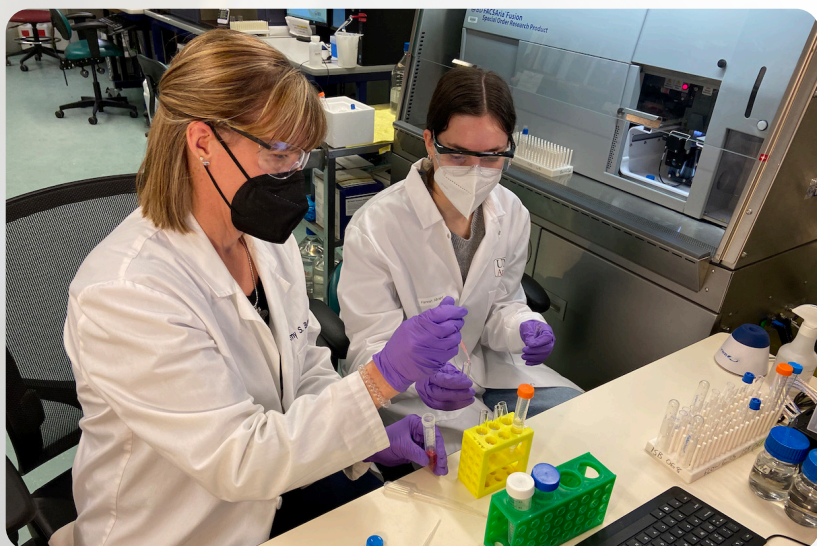
Flow Cytometry & Cell Sorting (Lowell)
Jack Lepine | Jack_Lepine@uml.edu
Offers Imaging Flow Cytometry services and analyzing capabilities. Instruments include Amnis FlowSight Imaging flow cytometer and Sony AM900 cell sorter.

The Human Motion facility at UMass Amherst.

Flow Cytometry at UMass Amherst.

Flow Cytometry (Worcester–Chan Medical School)
Carol Schrader | carol.schrader@umassmed.edu
Cell sorting including BSL-2+ and BSL-3, acquiring and analyzing data as well as training for self-use of select sorters, analyzers and software.

Genomics (Boston)
Jill Macoska | Jill.Macoska@umb.edu; Genomicscore@umb.edu
We provide expertise in whole transcriptome, whole genome, exon capture, single-cell, miRNa, and ATAC sequencing, as well as ChIP-seq, RIP-seq, and other sequencing-based services. Nanostring nCounter and qRT-PCR platofrms for transcript assessment and quantitation services, as well as DNA/RNA integrity and quantitation services are available. In-house and external Bioinformatic services are available for data analysis.

Genomics (Lowell)
Jack Lepine | Jack.Lepine@uml.edu
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.

Genomics Resource Laboratory (Amherst)
Ravi Ranjan | ranjan@umass.edu
Provides solutions for Next-Generation Sequencing (NGS) and advances instrumentation for DNA, RNA analysis. Facility is equipped with instruments including Illumina NextSeq 500 and MiSeq.

Histology–Tissue Resources (Amherst)
Sallie Schneider | sallie.schneider@baystatehealth.org
Provides tissue immunohistochemical analysis and HistoSpring tissue registry.

Human Magnetic Resonance Center (Amherst)
hmrc@umass.edu
Brain and whole body structural and functional imaging and spectroscopy for academic and industry-based research. The only research-dedicated 3T MRI/MRS system in western Massachusetts.

Humanized Mouse (Worcester–Chan Medical School)
Michael Brehm | michael.brehm@umassmed.edu
Immunodeficient mice that can be engrafted with human cells/tissues for analysis of function.

IALS Clinical Testing Center (Amherst)
Ashley Eaton | amoineau@umass.edu
CLIA-certified laboratory providing clinical and research support for high-throughput molecular projects.

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.

> *"The MA Innovation Voucher Program enabled our company to perform key preclinical research that is accelerating the development of our therapeutic candidates. Almost certainly, without this program, this research would either not be performed or would have been performed at a large contract research organization out of state. We used this program to perform key studies to make our therapeutic program more selective, understanding the intended and unintended biology engaged by our candidates. We hope this understanding leads to safer medicines for patients."*
>
> Riparian Pharmaceuticals of Watertown

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 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 in a Class 100 cleanroom.

Massachusetts Center for Cryo-Electron Microscopy (Worcester–Chan 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. Cryo-Electron Microscopy facility at UMass Medical School-Worcester.

> " *The extensive access to professional expertise and high-quality instrumentation from the UMass network has enabled us to specifically and quickly tailor our pipeline to best fit difficult to treat disease indications and patient populations. Without UMass Boston's core facilities and Mass Innovation Voucher Program support, we would not be advancing oncology therapeutics as fast as we are.*"
>
> Yivan Jiang, Window Therapeutics, Inc. of Boston

Mass Spectrometry (Worcester–Chan Medical School)
Scott Shaffer | scott.shaffer@umassmed.edu
State of the art quantitative proteomics, intact mass measurement, small molecule quantitation, and metabolomics analysis (targeted, untargeted assays). Analysis platforms include 4 Orbitrap, 2 Q-TOF, and 2 triple quadrupole instruments.

Media Prep (Worcester–Chan Medical School)
Rachel Lamson | rachel.lamson@umassmed.edu
Liquid and plate form custom media and laboratory buffers using standard or customer-modified recipes.

Molecular Biology (Worcester–Chan Medical School)
Ellen Kittler | nemo@umassmed.edu
DNA fragment analysis, Genotyping & SPR services. Host to the Oligonucleotide program providing discounted oligos.

Morphology (Worcester–Chan Medical School)
Yu Liu | yu.liu@umassmed.edu
Histology services including routine histologic preparations, special stains, immunohistochemistry & frozen sections.

Mouse Behavioral (Worcester–Chan 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–Chan Medical School)
Michael Brodsky | michael.brodsky@umassmed.edu
Targeting genome alterations in human cells & model organisms.

National Mouse Metabolic Phenotyping Center (Worcester–Chan Medical School)

Jason Kim | jason.kim@umassmed.edu
NIH-funded center is 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 four phenotyping cores: Metabolism, Analytical, Islet and the Microbiome Cores.

New England Center for Stroke Research (Worcester–Chan 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, a variety of biometric sensors, and NIRx functional near-IR spectroscopy.

> " *The MA Voucher Program has been incredibly valuable to our early-stage pharmaceutical screening platform company as we continue to grow and evolve. We've been able to continue high level research and development work for prototyping and design iteration. With access to high quality facilities at low cost of usage, we've been able to expand our research focus areas much quicker than we would otherwise. We're very grateful for the opportunity to participate in this program, and thankful that it helps us contribute to biotech innovation in the Boston area."*

Pulsar Bio of Watertown

Mass Spectrometry at UMass Amherst.

Next Generation Sequencing & Genomics (Lowell)

Jack Lepine | Jack_Lepine@uml.edu
Provides Next-Generation DNA & RNA sequencing (NGS) as well as cell sorting and flow cytometry services. Additionally, this facility provides technical expertise including NGS library prep, DNA and RNA quality assessment, Fluorometric quantification of DNA/RNA/Protein, DNA & RNA isolation, PCR/qPCR for applications such as gene expression, drug development, and technology 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
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 CO_2, 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.

> *"Rectify Pharmaceuticals has been consistently impressed with the quality and expertise provided by the UMass Chan Medical CryoEM Facility. Their state-of-the-art equipment and knowledgeable staff have been instrumental in advancing our drug discovery efforts. We highly recommend this facility to any company needing advanced cryo-electron microscopy services."*
>
> Anna Welland, Program Management,
> Rectify Pharmaceuticals of Cambridge

Optical Animal Imaging (Worcester–Chan Medical School)
Mary Rusckowski | mary.rusckowski@umassmed.edu
Perkin Elmer IVIS 100 imager & IVIS Spectrum CT Imager for in vitro and in vivo detection and quantification of bioluminescent and fluorescent probes.

PacBio Core Enterprise (Worcester–Chan Medical School)
Maria Zapp | maria.zapp@umassmed.edu
Provides single molecule, real-time (SMRT®) sequence analysis using PacBio® SEQUEL II instrumentation and custom software packages. One of five national HHMI sequencing centers. Builds libraries and performs the sequencing runs and primary analyses. Chemical treatment of libraries to enhance detection/delineation of certain DNA modifications and secondary data analysis services are available.

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.

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.

RLASTIC-Radio Labeling Small Animal Translational Imaging (Worcester–Chan 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 in life imaging of biomarkers in small animals.

RNAi (Worcester–Chan 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.

SCOPE–Sanderson Center for Optical Experimentation (Worcester–Chan Medical School)
Christina Baer | christina.baer@umassmed.edu
Advanced quantitative light microscopy including MERFISH and GeoMx DSP spatial transcriptomics, STED super-resolution, FLiM, multi-photon, TIRF, confocal, and live-cell imaging.

Skin Disease (Worcester–Chan 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.

Media Prep Core at UMass Chan Medical School-Worcester.
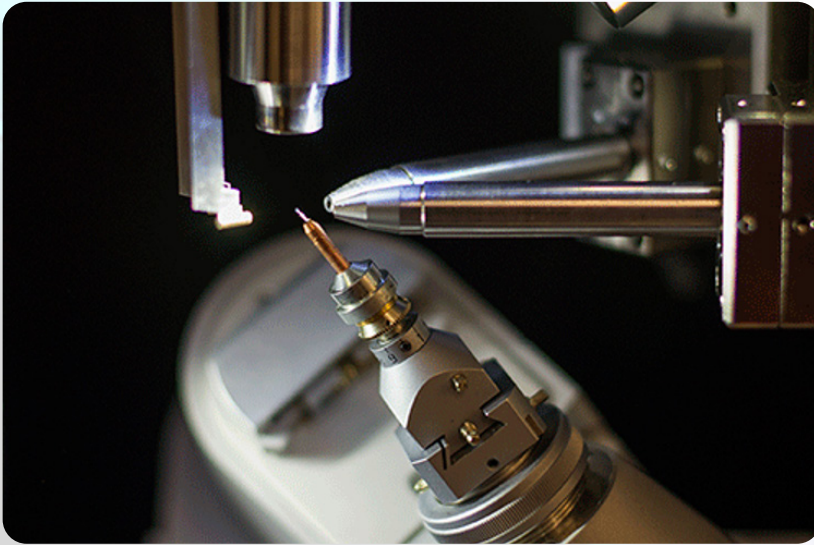
X-Ray Diffraction at UMass Dartmouth.

Transgenic Animal Modeling (Worcester–Chan Medical School)
Heather Gray-Edwards | heather.grayedwards@umassmed.edu
Produce genetically modified mice, rats, and stem cells in a timely and cost-efficient manner.

Umbilical Cord Blood & Birth Tissues (Worcester–Chan Medical School)
Kristen Matteson | kristen.matteson@umassmemorial.org
Provides cord blood units collected real-time from deliveries occurring at the UMMHC Labor & Delivery Maternity Unit.

Vector (Worcester–Chan 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.

Sleep Monitoring Lab (Amherst)
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.

Small Molecule Screening (Worcester–Chan Medical School)
Shruti Choudhary | Shruti.Choudhary1@umassmed.edu
Develop high-throughput screens to discover novel drugs & chemical probes utilizing in house 1M compound collection & detection technologies.

Tissue Bank and Biorepository (Worcester–Chan 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–Chan Medical School)
David Lambright | david.lambright@umassmed.edu
Supplies, restriction/modifying enzymes, Kits for DNA preparation & cleanup and related reagents.

> " *At the UMass Chan Core Facilities, it is possible to find any instrument to perform your experiments as well as resourceful scientists to troubleshoot issues and prepare appropriate samples for gathering the best possible results. We were able to utilize the MA Voucher Program, as our funding sources were tight, and we would not be able to do the systematic study we needed to do solid science and achieve our company's milestones without it. These vouchers are essential for small companies to obtain the data they need to demonstrate feasibility and secure further fundings.* "
>
> Lina Gonzales, Co-Founder, SpadXTech, LLC of Worcester

Devices, Materials, Manufacturing

3D Printing (Worcester–Chan 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.

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.

Atomic Force Microscopy (Amherst)
Alex Ribbe | aeribbe@polysci.umass.edu
Provides analytical and high resolution scanning probed based microscopy. This includes Atomic Force Microscopy (AFM) related techniques such as tapping mode, contact mode or conductive AFM as well as force measurements.

Nanofabrication Class 100 Clean Room at UMass Lowell.

> *For an early-stage company like IWS the voucher program has been instrumental in supporting the development of our innovations at the UMass Core Facilities. Working with Dave, Jeremy, Mike and their teams in ADDFab and CH²P combines talent and knowledge with great facilities to take on the challenges of developing new products and tools."*
>
> Ted Finn, Founder,
> Innovative Wellness Systems of Dover

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)
Neel Mehta | nmehta@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.

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.

### 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 (Worcester–Chan 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.

Fabric Discovery Center (Lowell)
Mark Keene | Mark_Keene@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, multicomponent fiber extrusion lines, textile assembly (knitting, weaving), and textile finishing including coating, printing, sewing and bonding. A wide range of mechanical, thermal, flammability, and durability testing equipment and services are available.

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.

Materials Characterization and Trace Analysis (Lowell)
Earl T. Ada | Earl_Ada@uml.edu
Offers wide range of instruments and technical expertise for the characterization of materials including optical profilometry, dynamic light scattering, and trace analysis using atomic mass spectrometry. Applications include nano-engineered materials, microelectronics, photonics, biomaterials, and others with applications in life sciences, drug discovery, environmental and energy research.

Nanofabrication/Class 100 Cleanroom (Lowell)
Justin Moreau | Justin_Moreau@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.

"*Diemat is doing some fundamental research on the application of nano materials in the areas of semi-conductor and energy industry. We have benefited a lot from the cutting-edge instruments at UMass Amherst and Dr. Alex Ribbe's extraordinary talent in polymer science and nano technologies, the support from the Voucher Program has dramatically accelerated Diemat's footsteps of exploration in the new materials.*"

Zhixiang Lu, Diemat, Inc. of Byfield
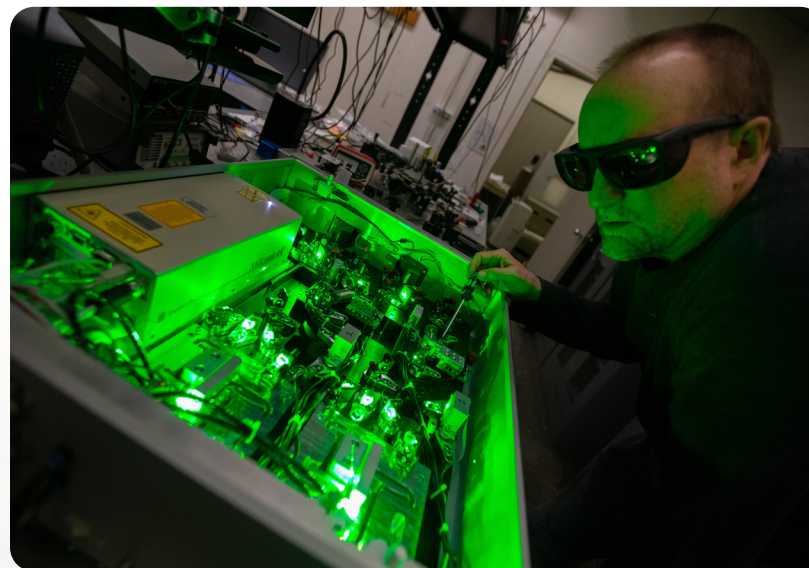
Broad Spectrum Molecular Imaging at UMass Boston.

Nanofabrication–Cleanroom (Amherst)
Neel Mehta | nmehta@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 professional staff provide planning, design, and integration for fabricating devices. Features Class 100 Cleanroom.

Quantum (Boston)
Matthew Bell | Matthew.Bell@umb.edu
Offers access to quantum device characterization and fabrication facilities to the quantum information science and engineering industry for quantum device development and commercialization.

Raman, IR, and XRF Spectroscopy (Amherst)
Lili He | lilihe@umass.edu
Provides resourceful advanced spectroscopic analysis of versatile organic and inorganic samples, including agricultural, environmental, food, and biomedical materials, as well as polymers and heavy metals.

> *Working with ADDFab allowed TinyPilot to grow, experiment, and adapt rapidly during the critical early years of our company. TinyPilot runs without investor funding, so ADDFab's design and 3D printing services would be out of reach without the MA Innovation Voucher. We're on track to generate over $1M of revenue in our third year of operation, but we wouldn't have even passed the prototype phase without ADDFab and the MA Innovation Voucher."*

Michael Lynch, TinyPilot, LLC of South Hadley

Roll-to-Roll Fabrication and Processing (Amherst)
Jeff Morse | jdmorse@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 (Boston)
Niya Sa | niya.sa@umb.edu
ZEISS Sigma500VP FESEM is an advanced field emission SEM that produces exceptional images at high and low accelerating voltages. Together with its analytical capabilities, this instrument is suitable for a wide range of applications.

Scanning Electron Microscope (Dartmouth)
Milana Vasadev | 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.

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.

Thermal Analysis & Mechanical Properties (Lowell)
Violet Sullivan | Violet_Sullivan@uml.edu
A complete thermal analysis suite including Mettler Toledo TGA & DSC, TA Instruments TGA, DSC & DMA and Instron 4466 UTM. Service level work and technical expertise are also provided.

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.

Artificial Intellenge at UMass Boston.

Biodegradability Testing Lab at UMass Dartmouth.

Data Science, Bioinformatics

Artificial Intelligence (Boston)
Daniel Haehn | daniel.haehn@umb.edu
Provides infrastructure and algorithms for machine learning on massive data collections. Services include specialized data management and targeted software development to minimize the cost of manual data processing.

Bioinformatics (Lowell)
Jack Lepine | Jack_Lepine@uml.edu
The Next Generation Sequencing & Genomics Lab can provide data analysis services for total RNA, mRNA and 16S sequencing. Services include alignment of raw data to reference genomes, differential gene expression differences, analysis of expression differences for specific genes of interest. Additional analyses can be conducted at a custom rate based on the project.

Bioinformatics (Worcester–Chan 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.

Computational Modeling (Amherst)
umasscores@umass.edu
Provides consultative and collaborative service in computational and molecular modeling.

Conquering Diseases (Worcester–Chan 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.

Data Corps (Amherst)
CDS-info@cs.umass.edu
Services offered include analysis, application development, deployment, and prototyping in areas such as data science, security, forensics, software development, informatics, machine learning, computer vision, natural language processing, and cloud computing.

Image Processing & Analysis (Worcester–Chan Medical School)
M. Salman Shazeeb | mohammed.shazeeb@umassmed.edu
iPAC provides image analysis tools and expertise for pre-clinical and clinical imaging studies of different types of diseases from different instruments.

mHealthLab (Amherst)
Michael Busa | mbusa@umass.edu
Develops algorithms and processes for large scale wearable sensor networks to support the development of novel hardware.

Quantitative Methods (Worcester–Chan Medical School)
Bruce Barton | bruce.barton@umassmed.edu
Clinical and basic research support in biostatistics, experimental design, data analysis, and data management.

Research Informatics (Worcester–Chan Medical School)
Adrian Zai | adrian.zai@umassmed.edu
Provides research informatics services such as clinical data access for research, artificial intelligence, data management, and analytics.

Bluetech, Greentech, Cleantech

Biodegradability Testing Lab (Dartmouth)
Michael Marino l mmarino@umassd.edu
State-of-the-art research, learning and product development laboratory designed to measure biodegradation of products in environmental systems including landfills, oceans, wastewater, soil and compost.

" *Our partnership with UMass Amherst, facilitated through the Voucher program, has significantly helped us to understand our chemistries role in both the wastewater and potable water treatment industry. The research we have undertaken has allowed us to focus our resources into applications that will drive sales for our company and allow us to grow and provide green chemistries to these industries.*"

BioSafe Systems of Hampden

SMAST Optic-Acoustic Test Tank at UMass Dartmouth.

Environmental Analytical Facility (Boston)
Alan Abend | Alan.Abend@umb.edu
Karen Johannesson karen.johannesson@umb.edu
Environmental instrumentation for chemical and material property analysis of environmental samples including natural waters, soils, sediments, and biological tissues. Includes two inductively coupled plasma mass spectrometers, class 100 (ESO 5) clean room, Scanning (SEM) and Field Emission (FESEM) Scanning Electron Microscopes, and technical expertise for the characterization of nano-engineered materials, microelectronics, and others.

SMAST 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.

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.

Water & Energy Technology (WET) Center (Amherst)
Patrick Wittbold | pwittbold@umass.edu
Offering research and development and pilot scale demonstration of new technologies in water treatment using real water sources (river, rain, sewage, and more) for post-concept and lab-scale evaluation.

" *With the expertise of UMass we are developing and commercializing state-of-the-art cryogenic components, and are already helping the US in the race for successful Quantum Computers. We are working with many small MA companies to make our products and providing training to UMass students. We believe the technology in MA is among the best in the world and bringing Quantum Technology to our state will create many new careers and opportunities.*"

Andrew Cobin, President, Quantum Microwave of Cohasset

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Alphabetical by Campus

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Alphabetical by Core Facility

A-D

E-H

I-L

M-O

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massachusetts.edu/research/core-facilities