I. Core Research Resource Facilities at ASU:

The facilities listed below are jointly available to Engineering, Life Sciences and Chemistry and Biochemistry at ASU to support the advancement of knowledge. These facilities can also be accessed by industry.

DNA Laboratory Resource: (LSE Building)

Fast automated DNA sequencing and oligonucleotide synthesis services offered to both university and private customers. The services are provided by molecular scientists with many years of experience in industry and academia. http://lsvl.la.asu.edu/dnalab/

Protein Chemistry Resource: (Goldwater Building)

A common-use protein synthesis and analysis laboratory ison the sixth floor of the Goldwater building that has a variety of equipment available for the sequencing, separation, size determination and spectral characterization of proteins. The lab also has a peptide synthesizer to make peptides as needed by researchers.
http://www.asu.edu/clas/chemistry/ProChemLab.htm

W.M. Keck Bioimaging Resource: (LSC Building)

This facility, made possible by the W.M. Keck Foundation, contains state-of-the-art: 1) Scanning laser confocal microscopy; 2) Multi-photon confocal microscopy; 3) Scanning probe microscopy; 4) Ratio Imaging Microscopy; and 5) Video/time lapse Microscopy. In addition, this research core contains microinjection apparati capable of injecting single cells, a PhosphorImager™, protein and DNA computer modeling software, and several off-line analysis systems. This resource is available to users in academia and industry.
http://lsvl.la.asu.edu/Klab/text/equipment.html

Mammalian Cell Culture Resource: (Goldwater Building)

The core cell culture facility has been set up to contain all of the necessary equipment for mammalian cell culture. It contains basic equipment for microbial growth in the event that vectors are required for transfection. The facility occupies GWC 627, 627a, 627b, 627c and part of 631. The main room is reserved for standard cell culture. It contains four, 4 foot biosafety cabinets, 2 dual chamber CO2 incubators, 2 microgravity bioreactors, 2 Nikon light microscopes with digital imaging including Cohu cameras and one Nikon light microscope without imaging. The analytical and microbial areas contain instruments such as a dual beam UV/Vis spectrophotometer, micro-ultra centrifuge , a speed-vac unit, sonicators, thermocycler, microbial incubators, and one 20-liter lyophilizer. The third area is the transfection room,. http://www.eas.asu.edu/~bme/ (Click on facilities).

Light Microscopy Resource: (Goldwater Building)

The BME core imaging facility in 730 ft^2 of contiguous space houses an inverted

microscope (Leica DM IRBE) with fluorescence, phase contrast, and modulation contrast capabilities and micropippetor/micromanipulator system. This scope has a color digital video camera (Optronics 750D) for fluorescence and bright field image acquisition and analysis. This facility has an upright research microscope (Leica Axioplan) with fluorescence, brightfield, and phase contrast capabilities with digital (Optronics Magnafire) and photo imaging capabilities (Leica photo system), and computers for digital image processing. This facility has a stereomicroscope (Leica MZFLIII) with brightfied and fluorescence capabilities with a video port for digital imaging. All computers are connected to the university network server. This facility has a high-resolution color laser printer (Tektronix Phaser 850) for publication quality hard copies of digital images. The Core Bioengineering Facilities also house a goniometer with computer imaging capabilities (Rame-Hart, Inc., Mountain Lakes, NJ) for surface analysis by contact angle measurements. http://www.eas.asu.edu/~bme/ (Click on facilities).

Analytical Laboratory Resource: (Goldwater Building)

The core analytical facility has been designed to provide equipment for basic protein, DNA, and polymer characterization. It is located within the protein chemistry laboratory run by the College of Liberal Arts and Sciences. The facility includes HPLC and FPLC capabilities, a dual beam UV/Vis spectophotometer, and a Raman spectroscope. It also includes 2 capillary electrophoresis systems, a microplate reader and washer with both UV and fluorescence capabilities, and a thermocycler. There is also a fully functional goneometer with video imaging capabilities. In addition to the core analytical facility equipment, the protein chemistry laboratory is capable of circular dichroism, peptide synthesis, peptide sequencing, MALDI-TOF mass spectroscopy and amino acid analysis. http://www.eas.asu.edu/~bme/ (Click on facilities).

Surgical Research Facilities

The Department of Bioengineering operates two AAALAC accredited operating facilities for chronic and acute surgical research. Both facilities are equipped with state-of-the-art anesthesia and monitoring equipment, and specialized surgical microscopes. http://www.eas.asu.edu/~bme/ (Click on facilities).

Core Neural Engineering Laboratories

The Bioengineering Department operates a core neural engineering instructional laboratory that is equipped for neurophysiology experiments. The Core laboratory is equipped to deliver special instruction that is part of the department's IGERT that is focused on musculoskeletal and neural adaptations as they relate to form and function. http://www.eas.asu.edu/~bme/ (Click on facilities)

Biological and Cryo Electron Microscopy: (LSC Building)

This biological electron microscopy resource contains multiple electron microscopes and uniquely serves the SouthWest in cryoelectron microscopy. The resource contains one of

the few high pressure freezers in the SouthWest used for ultra-rapid freezing, as well as other ultra-rapid freezing technologies including cold metal block freezers. A freeze fracture device (capable of deep-etching biological material) and ultracryotomes are also available to users in the University as well as in industry. http://lsvl.la.asu.edu/lsem/

Cell Biotechnology Laboratory: (LSA Building)

This resource is available principally to students and faculty at Arizona State University. Industrial users can approach the "Mammal Cell Culture Resource" described above. This laboratory was made possible by grants from the Howard Hughes Foundation (in support of undergraduate research) and the Whitaker Foundation (Program Development Award). The laboratory's principal function is to create an environment to jointly train advanced undergraduate students and beginning graduate students from both the Life Science and Bioengineering Departments in a formal course setting where the students can learn the paradigms, vocabulary, and limitations of each discipline, as well as promoting team work. Students gain experience in mammalian cell culture, the growth of mouse embryonic stem cells, the use of microgravity bioreactors and microcapillary bioreactors, and a variety of other techniques in cell biology. This laboratory is in use year round by students. http://lsvl.la.asu.edu/bio494/dcapco/ and http://www.eas.asu.edu/~bme/ (click on facilities)

Vascular Plant Herbarium: (LSC Building)

The vascular plant herbarium is the second largest such Herbarium in the Arid SouthWest having over 210,000 mounted specimens. Its collection of Cataceae is one of the best in the World, being particularly rich in cytological voucher specimens. http://lsvl.la.asu.edu/herbarium/

ASU Lichen Herbarium: (LSC Building)

The Lichen Herbarium has over 85,000 fully accessioned specimens and about 30,000 additional specimens being evaluated in the context of the Sonoran Desert Lichen Flora Project. http://mgd.nacse.org/Arizona/

Insect Collection: (LSA Building)

This collection contains over 2.5 million specimens from the southwest United States and from Mexico.

Vertebrate Collection: (LSA Building)

This collection focuses on the Arizona and the southwest United States with an emphasis on species that are threatened or endangered.

Environmental Laboratory Resource: (Goldwater Building)

This resource is equipped for elemental analysis of various samples by atomic absorption spectroscopy and mass spectrometry. http://lsvl.la.asu.edu/gwbc/elab/

Ultrafast Laser Facility: (PSD Building)

The ultrafast femtosecond laser spectroscopy facility is located in the Department of Chemistry and Biochemistry. It provides a powerful tool to study photo-induced energy and electron transfer processes in chemical and biological systems. Two femtosecond transient spectrometers have been built since the establishment of the Center for the Study of Early Events in Photosynthesis at ASU in 1987. The first one was built in 1988 with instrumentation funds (from the NSF and DOE) in the ASU Chemistry/Physics laser facility. The system was replaced with a second ultrafast facility which was constructed in 1997 with a grant from the NSF. It provides users with a broader range of excitation and probe wavelengths, high resolution kinetics and high signal to noise ratios. http://www.public.asu.edu/~sulin/index.html

Nuclear Magnetic Resonance Facility: (PSD Building)

The ASU NMR Facility is comprised of two shared-use instrumentation laboratories operated by the Department of Chemistry and Biochemistry. The research-oriented NMR laboratory is located in room C-2 of the Bateman Physical Science building and houses three Varian superconducting fourier-transform NMR spectrometers, an Inova 500, an Inova 400 and a Gemini-300. Seven high-performance UNIX-based graphics workstations (SUN and Silicon Graphics) are available for instrument control and data analysis. The workstations are equipped with a wide variety of NMR analysis, molecular modeling and distance geometry software. A variety of plotters, tape drives and disk devices are available for spectral output and storage. A Mattson FT-IR spectrometer is also available for routine IR analysis. http://asnmr4.la.asu.edu/nmr/

Electron Paramagnetic Resonance Facility: (LSC Building)

A state-of-the-art EPR facility capable of providing structural inforamtion on an atomic scale in free radicals and paramagnetic metal centers. The laboratory is equipped with a Bruker 300E continuous wave spectrometer that operates over multiple microwave frequency ranges, as well as an electron-nuclear double resonance (ENDOR) attachment. An electron spin echo (ESE) spectrometer is also available. Each of these instruments is capable of operation from room temperature to 4.2K. analysis.
http://photoscience.la.asu.edu/Photosyn/facilities/facilities.html/ (click on EPR)

Time-of-flight Mass Spectrometry Facility: (PSD Building)

This facility utilizes the technique of Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry (MALDI-TOF) to study a broad range of biological and synthetic molecules. http://www.public.asu.edu/~ionize/

X-Ray Diffraction Facility: (PSD Building)

This facility provides for single crystal structure analysis, identification of materials, specialized powder diffraction, crystal orientation, and data base search/browse. http://www.public.asu.edu/~tlgroy/

Center for Solid State Science: (ERC Building)

http://www.asu.edu/clas/csss/main.html

High Resolution Electron Microscopy Center: (PSC Building)

The Center for High Resolution Electron Microscopy (CHREM) is a facility that operates a number of ultrahigh resolution and ultrahigh vacuum electron microscopes for external and internal user groups. It also maintains a vigorous program of microscopy methods and instrumentation development including holography, position and time-resolved nanospectroscopy, both dynamic and static controlled-atmosphere TEM and energy-filtered imaging and diffraction. Latest developments, including applications to interdisciplinary materials research and instrumentation, are communicated to the technical community during annual high-resolution electron microscopy schools, at topical interdisciplinary research workshops, and at users meetings held at national technical meetings of societies, such as the Microscopy Society of America and the Materials Research Society. http://www.asu.edu/clas/chemistry/HREM.htm