Equipment:

List the major equipment in your lab and surrounding areas/department that will be used in your research.

Equipment in Core Facilities – only list what is relevant to your research.

**DNA sequencing/Genomics Core Facility**

Illumina MiSeq Next-Generation Sequencer.

**Applications:**

* small genome resequencing
* *de novo* sequencing and assembly of clinical isolates and other unknowns
* small RNA profiling
* whole transcriptome analysis
* microbial community studies using multiplexed 16s amplicon pools
* TruSeq amplicon Cancer panels (48 gene validated panel)
* ChIP-Seq

96-capillary 3730xl DNA Analyzer used for DNA fragment analysis applications such as microsatellites, AFLP, SNP analysis, mutation detection and traditional DNA sequencing.

Agilent 2100 Bioanalyzer is a microfluids-based platform replacing standard gel electrophoresis for RNA sample QC, DNA fragment analysis, and SDS-page electrophoresis for proteins.

**Applications:**

* Check RNA integrity for downstream applications
* Genomic and ribosomal contamination of mRNA samples
* Small RNA (6-150 nt) analysis of miRNA, siRNA, and oligonucleotides
* Sizing of T7-RNA transcripts
* PCR product purity and size
* Restriction digests
* Protein induction in cell lysates
* Protein purification
* Glycoprotein sizing

NanoDrop Nucleic Acid and Protein Quantitation

Nan: oString Counter SPRINT profiler uses a molecular barcode technology that allows researchers to digitally examine multiple pathways in a single tube in an extraction-free workflow.  NanoString assays eliminate cDNA synthesis, amplification , and library prep which reduces technical variation.  Analysis software is free for all users and can be installed on any computer.

High Throughput PCR machines

**Flow Cytometry and Imaging Core Facility**

Equipment includes

Flow Cytomtry: Stratedigm 3-Laser, Stratedigm 4-Laser, FACSCalibur, FACSAria Fusion

FACSJazz

Microscopes: Leica SP2 Confocal, Leica SP8 Confocal, Nikon TE2000-E, Bio-Plex 200 and Leica LMD7 Laser Microdissection Microscope

**Mass Spectrometry/Proteomics Core Facility**

The instrumentation available for mass spectrometry services includes an ABSciex QSTAR Elite hybrid quadrupole/TOF mass spectrometer, a Bruker-Daltonics HCT Ultra ion trap mass spectrometer, a Bruker Daltonics – Ultraflex-2 MALDI-TOF, and a Waters Synapt G2-S High Definition mass spectrometers. Several of our mass spectrometers are coupled to HPLC instruments which allows us to provide additional applications to our researchers.  The QStar and the Bruker HCT ion trap are paired to 1D LC systems (Dionex Ultimate 3000 and Michrom Paradigm, respectively) while the Waters Synapt is paired to a 2D UPLC (nanoAcquity) in order to allow processing of more complex proteomic type samples.

**Laboratory of Biomolecular Structure and Function**

The laboratory is equipped with a range of crystallographic equipment and computers: A 2015 Rigaku 007 generator, R\_axis IV and Mar345 image plate detectors, Osmic mirrors on both ports, Rigaku and Oxford Systems crystal cooling systems. The R-AXIS IV has an optional helium path for working with large unit cells. [D-Trek](http://www.rigaku.com/en/products/protein/dtrek), [XDS](http://xds.mpimf-heidelberg.mpg.de/html_doc/XDS.html), [Mosflm](http://www.csb.yale.edu/userguides/datamanip/mosflm/mosflm.html%22%20%5Co%20%22Mosflm%20%22%20%5Ct%20%22_blank)and [HKL2000](http://www.hkl-xray.com/) image processing software are available for data processing, Any of the [Phenix](http://www.oumedicine.com/department-of-biochemistry-and-molecular-biology/department-facilities/www.phenix-online.org), [CCP4](http://www.ccp4.ac.uk/), [CNS](http://www.oumedicine.com/department-of-biochemistry-and-molecular-biology/department-facilities/cns-online.org/v1.3) program suites can be used for structure determination and refinement, while [COOT](http://www2.mrc-lmb.cam.ac.uk/Personal/pemsley/coot/), [Chimera](http://www.cgl.ucsf.edu/chimera/) and [Molmol](http://www.csb.yale.edu/userguides/graphics/molmol/molmol_descrip.html%22%20%5Co%20%22Molmol%22%20%5Ct%20%22_blank) are offered for graphical representation of the results. A 2014 Wyatt plate reading dynamic light scattering instrument that enables high-throughput data collection with no user intervention for evaluation of the oligomerization states of  proteins. A 2018 Art Robbins Gryphon LCP crystallization robot can set up crystallization plates for soluble proteins and for membrane proteins using the lipidic cubic phase.

**BioSafety Level 3 Facility**

The BSL-3 suite offers two laboratories with a total of 6 class II B2 Biosafety cabinets for in-vitro work with risk group 3 agents or large volume culture (> 10L) work with risk group 1, 2, and 3 agents.

Equipment available for use in the lab includes: Double set CO2 incubators (2 sets), Beckman Allegra 64R and Beckman Allegra X-12R refrigerated table top centrifuges, Olympus CKX31 Inverted microscope, Olympus IX71 Inverted microscope and attached camera (DP70) with fluorescent capability, and two table top microfuges.

Support lab space with tissue culture (BSL-2) equipment including class II A2 biosafety cabinet and double stack CO2 incubators as well as a chemical fume hood and space for solution preparation is also available.

Stephenson Cancer Center **Molecular Imaging Core**

**Equipment**

* Vevo 2100 Ultrasound Imaging Machine
* IVIS Spectrum Imaging System
* Carestream In-Vivo Xtreme Imaging System
* Leica Fluorescence Stereo Microscope
* INVIVO 400 and 500 Hypoxia Workstations

**Research Imaging Facility, College of Pharmacy**

The OU Research Imaging Facility is equipped with a world-first Biomarker Generator, Positron Emission Tomography (PET), Computed Tomography, and Single Photon Emission Computed Tomography (SPECT) machines.

The PET/CT system has a capability of acquiring both CT and PET imaging by using the same scanner bed. The ultimate result is tracing a marker within an anatomical model, which allows the researcher to record the effect of certain drugs.

The Single Photon Emission Tomography (SPECT) machine comes with dual detectors and a maximum resolution of less than 1 mm. Because of its high energy resolution, the NanoSPECT machine is capable of imaging multiple isotopes together, including I-125 radionuclide.

Our Biomarker Generator supports PET imaging activities at the OU Research Imaging Facility. It has the capability to produce a single dose of a radioactive biomarker at the push of a button and is finished in about 30 minutes. It also takes up one-fifth the space of a commercial cyclotron.

**Dean McGee Eye Institute Cellular Imaging Module**

The facility has an Olympus MVX10, a macroview-fluorescence microscope system, and the Olympus FV1200 confocal system.  The FV1200 is equipped with all solid state laser diodes which are stable, long lasting, and energy efficient.  The stage is designed to accommodate an environmental chamber for live cell/tissue imaging.  It is also outfitted with the ultra-sensitive GaAsP detectors for low signal imaging.  The MVX10 system is equipped with a fully motorized stage and the CellSens software for creating stack images and large montages using the multiple image alignment function of the software.  Users can create bright-field and fluorescence images of up to 20X objective equivalent resolution images of flat mount tissues such as retinas and corneas. Also housed in this module is a Leica cryostat for sectioning, Nikon E400 and E800 microscopes, and review stations for Fluoview and Metamorph applications.

Each location contains a complement of the following instruments used in analyzing vision in small animal models: Diagnosys Electroretinography Systems, Bioptigen SD Optical Coherence Tomography, Optomotry, Microns III and IV with slit lamp and laser attachments, Zeiss operating microscopes with MindStream imaging, various support and portable vision analysis equipment, and environmental housing, including dark adaptation, dark rearing, light damage housing, and oxygen and humidity chamber housing.