Located on the 3rd floor in the Morrill Science Center the Genomics Resource Laboratory (GRL) provides services and advanced instrumentation support for nucleic acid (DNA and RNA) analysis.

The GRL provides a suite of services to address your high-throughput next-generation sequencing, including solutions for sample processing such as nucleic-acid isolation, nucleic-acid quantitative and qualitative analysis, NGS library preparation, quantitative-PCR analysis, etc.

We provide a sample processing and library preparation such as whole genome sequencing, shotgun metagenomics, metatranscriptomics, targeted amplicon sequencing, RNA-Seq, ChiP-Seq, Exome Sequencing, Methyl-seq, Single Cell Genomics, etc., to address your NGS projects.

The facility accepts samples and will perform requested analysis. We offer training to users to conduct experimentation for use on a fee for service basis to both internal and external researchers, academic or industry based.

Following an initial consultation, covering experimental parameters training and access is arranged through the director.

**ACCESS**
To request access, training, or additional information please contact Ravi Ranjan at ranjan@umass.edu.

Our rates are competitive and tiered based on needs and usage. Visit our website at umass.edu/ials/genomics for current listing.

**TRAINING**
Training for new users consists of:
- lab safety training as mandated by UMass EH&S,
- operation of the instrument and associated software,
- use of data analysis software.

Once the training is complete, researchers may schedule their experiments through the director of the GRL (Ravi Ranjan) or online through FOM (Facilities Online Manager) at fom.umass.edu/fom

Genomics Resource Inquiries
Ravi Ranjan, PhD
Genomic Resource Director
N330 Morrill Science Center I
637 North Pleasant Street
ranjan@umass.edu
(413) 577-4501

umass.edu/ial/core-facilities

UMass Core Facilities Inquiries
Andrew Vinard
Core Facilities Director
S307 Life Science Laboratories
avinard@umass.edu
(413) 577-4582

umass.edu/ial/core-facilities

*X*lab safety training as mandated by UMass EH&S, *y*operation of the instrument and associated software, *z*use of data analysis software.
**EQUIPMENT**

**Illumina NextSeq 500 Sequencing System**
High-throughput sequencer with quick turnaround time, capable of generating up to 120 Gb data, with 800 million paired-end sequencing reads and 150 bp read length. Used for large whole genome sequencing projects, Methyl-Seq, RNA-Seq, exome sequencing projects, etc.

**Fluidigm C1 Single-Cell Auto Prep System**
The innovative C1 system carefully isolates single cells into individual reaction chambers in the exclusive Fluidigm integrated fluidic circuit (IFC). The optically clear IFC lets you automatically stain captured cells and examine them by microscopy for viability, surface markers or reporter genes. After staining, cells are automatically lysed and template is quickly prepared for qPCR or sequencing analysis—all in as little as four hours.

**BluePippin, Sage Science**
DNA size selection system, capable of selecting to 100 bp – 50 kb for NGS applications. Has integrated pulsed-field electrophoresis for resolving and collecting high molecular weight DNA for PacBio library prep as well.

**Agilent Mx3005P qPCR System**
High-performance real-time qPCR system. Ideal for a wide variety of applications and chemistries. It has four optical channels, allowing multiplexing with most fluorescent dyes.

**Qubit 3.0 Fluorometer**
Used for the quantitation of DNA, RNA, microRNA, and protein, using the highly sensitive and accurate fluorescence-based assays. Used widely for NGS applications.

**Illumina MiSeq Sequencing System**
Mid-throughput sequencer, capable of generating up to 15 Gb data with 50 million paired-end sequencing reads with 300 bp read length. Applied for applications such as 16S rRNA amplicon sequencing, targeted gene sequencing, small genome sequencing and targeted gene expression.

**Bioruptor Pico Sonicator System**
Sonication device for shearing DNA and RNA for NGS applications. Optimized for volumes of 20 - 100 μl.

**Thermo Scientific Savant DNA120 SpeedVac**
High-performance concentrator for efficient concentration, and drying of small-volume DNA or RNA samples.

**FastPrep-24 5G Sample Homogenizer (MP Biomedicals)**
An advanced, high-speed benchtop homogenizer used for lysis of any type of cells, tissues, bacteria, fungi, plants, soil samples, etc.

**Eppendorf epMotion 5070 Liquid Handling Workstation**
Used for routine applications which involves automated pipetting systems such as serial dilutions, reagent distribution, sample transfer from tubes to plates, and sample normalization.

**Agilent 2100 Bioanalyzer**
Used for sizing, quantitation and quality control of DNA, RNA, and proteins.

**What Makes Us Unique**
- Library preparation
  - Whole genome sequencing
  - Shotgun metagenomics
  - Metatranscriptomics
  - 16S/18S rRNA amplicon library prep
  - RNA-Seq
  - ChIP-Seq
  - Other library preps
- DNA and RNA isolation

**Other Services**
GRL and Integrated DNA Technologies (IDT) have created a portal for Discounted Primer orders. Visit [www.idtdna.com/umamherst](http://www.idtdna.com/umamherst) for more information.

A significant portion of core equipment has been purchased through MLSC grant funding support.