

Date: November 28, 2018

TO WHOM IT MAY CONCERN

The *Genomics Resource Laboratory (GRL)* provide services to the UMass-Amherst research community, external academic, non-academic and corporate researchers. The core provides as suite of services, including, but not limited to - Next-Generation Sequencing services (whole genome, shotgun metagenome, metatranscriptome, amplicon, exome sequencing, etc), quantitative-PCR analysis, nucleic-acid isolation, quantitative and qualitative analysis. GRL also provides training to users of the instruments and maintains active freezer program from various vendors stocking bioreagents to facilitate the users.

The GRL is equipped with the essential instruments required to enable genome sequencing projects. Following are the list of instruments including, but not limited:

1. *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. Applicable for exome, transcriptome, shotgun metagenomics, large scale genome sequencing projects, etc.
2. *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.
3. *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 hour.
4. *Bioruptor Pico Sonicator System (Diagenode)*: Sonication device for shearing DNA and RNA for NGS applications. Optimized for volumes of 20 - 100 μ l.
5. *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.
6. *Agilent 2100 Bioanalyzer system*: Used for sizing, quantitation and quality control of DNA, RNA, and proteins.

7. *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.
8. *Qubit 3.0 Fluorometer (Life Technologies)*: Used for the quantitation of DNA, RNA, microRNA, and protein using the highly sensitive and accurate fluorescence-based assays.
9. *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.
10. *Agilent Mx3000P qPCR System*: Is 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.
11. *Thermo Scientific Savant DNA 120 SpeedVac*: High-performance concentrator for efficient concentration and drying of small-volume DNA or RNA samples.
12. One Eppendorf Mastercycler *epGradient* and Two BioRad T100 thermal cycler (PCR).