

KSU Integrated Genomics Facility, IGF:

<http://www.k-state.edu/igenomics/>

The IGF is about 2000 ft² facility located at the Department of Plant Pathology (labs #4732, 4511, 4411, and 4716), Throckmorton Plant Sciences Center, Kansas State University. The IGF is equipped with:

- 1) **NextSeq 500 sequencing system (Illumina)**. Supports 2x150bp sequencing. One high output run results in ~400 mln clusters.
- 2) **MiSeq Personal sequencing system (Illumina)**. It is capable of generating more than 15Gb per one sequencing run and supports the 300 bases reads generation.
- 3) **Biomek FXP Laboratory Automation Workstation plus TRobot** allows every aspect of liquid handling, including pipetting, dilution, dispensing and integration. The platform is capable of walk-away automation of TruSeq RNA sample prep workflow with current throughput of 200 RNA-seq libraries a week.
- 4) **Synergy H1 Hybrid Multi-Mode Microplate Reader (BioTek)** supports top and bottom fluorescence intensity, UV-visible absorbance and high performance luminescence detection.
- 5) **QIAgility Liquid Handling System (QIAGEN)** enables rapid, high-precision automated transfer of liquids, for as low as 1ul, into almost any tube or plate format, including 384 well plates.
- 6) **Covaris S220 Focused-ultrasonicator** for accurate and precise nucleic acid fragmentation.
- 7) **Affymetrix GeneChip System:** GeneChip Hybridization Oven 640; GeneChip Fluidics Station 450; GeneChip Scanner 3000-7G. The Affymetrix GeneChip Microarray technology allows the analysis of expression profiles of thousands of genes in a single experiment. We provide complete services for Affymetrix GeneChip processing including first and second strand cDNA synthesis and purification, cRNA synthesis/labeling and purification, GeneChip hybridization, washing, staining, scanning, raw data generation, and data analysis.
- 8) **NanoDrop Spectrophotometer** for quantification of nucleic acid, proteins and culture cells in the small volumes (1-2 ul).
- 9) **Agilent 2100 Bioanalyzer** combining a miniature of gel electrophoresis and scanning spectrophotometry to allow analysis of quality of RNA, DNA and protein samples using very small amounts of material.
- 10) **Agilent 2200 Tape Station system** automates RNA, DNA and protein sample QC, including sample loading, separation, and imaging.
- 11) **Qiagen TissueLyser II** is well-suited for high-throughput disruption of human, animal, and plant tissues, bacteria, and yeast.
- 12) **SpeedVac** for concentrating aqueous solution.
- 13) **Hydroshearing Device (GeneMachines)** for highly controlled fragmentation of genomic DNA and preparation of shotgun or paired end libraries for sequencing.
- 14) Two **ABI9700 GeneAmp PCR** machines with 96-well plate heads.
- 15) **Beckman Z2 Coulter Counter** provides an accurate cell / bead count, measuring average cell / bead size, accurate and precise population size distribution data, and high throughput.

16) CFX 96 Real-Time PCR system (BioRad) allows up to 5-target multiplexing and has a broad range of applications from gene expression analysis, diagnostic, allelic discrimination to Precision (High Resolution) Melt analysis.

17) Qubit 2.0 Fluorometer for precise nucleic acid quantification.

18) Pippin Prep (Sage Science) is a preparative electrophoresis platform that separates and extracts DNA fragments.

Other equipment includes autoclaves, -80C freezer, -20C freezers, refrigerators, two MJ Research PCR machines, a TECHNE PCR machine, microcentrifuges, incubators, vacuum pump, drying oven, VirSonic 50 sonicator, sterile laminar flow-hoods for working with bacterial cultures, microwave oven, mini plate spinner, Barnstead's AquaWave ultrasonic cleaner, UV Stratalinker 1800 (Stratagene), Labquake Rotisserie shakers, walk-in cold room, sets of manual multi- and single-channel pipettes (RAININ), and standard magnetic stirrers, balances, vortexes, shakers, water baths, quick spin minifuges, dry bath incubators, heating plates, orbital shakers.

Software:

- 1) CLC Bio Genomics workbench (Qiagen);
- 2) Beacon Designer (Premier Biosoft).