**[Current Instruments](https://biosci-batzerlab.biology.lsu.edu/Genomics/genomics_about.php)**

1. **ABI 3130xl** (Sanger-Sequencing):
   1. Reactions by client, with electrophoresis & basecalling by facility.
   2. ThermoFisher no longer supports ABI 3130xl platform; limited parts availability.
2. **Ion Torrent S5** (NGS):
   1. 540 chip generates up to 200-bp modal reads (~60-80 million);
   2. 530 chip generates up to 400-bp modal reads (~20-30 million).
3. **ViiA-7 & QuantStudio-6 Flex:**
   1. qPCR and Protein Thermal Shift (PTS) assays;
   2. standard 96-well blocks;
   3. Facility has PTS analysis software.
4. **Veriti thermal cycler (s**tandard PCR):
   1. 96-well block;
   2. explicit temperature gradients available through 6 thermally-distinct regions.
5. **SmartCheck** (Pipette verification tool):
   1. Test pipettes prior to 'volume-critical' experiments;
   2. determine if pipette needs re-calibration; and,
   3. train personnel.
6. **Savant SPD1010 SpeedVac**:
   1. Concentrate DNA extractions;
   2. Remove low concentrations of non-aggressive organic solvents;
   3. Tubes or 96-well plates.
7. **Diagenode Bioruptor**:
   1. Gently sonicate up to 12 DNA samples in parallel;
   2. temperature is automatically maintained by a chilled water bath (4C).
8. **Eppendorf 5810R centrifuge**:
   1. 4-place rotor with swinging buckets (maximum speed = 2800 rcf);
   2. 96-well plates, 50-ml tubes, or 15-ml tubes.
9. **Typhoon 8600**:
   1. Phosphor-screen imaging;
   2. process scans in ImageQuant or saved \*.tif files.
   3. Instrument still functions, but parts and service are no longer available.

[**Current Services**](https://biosci-batzerlab.biology.lsu.edu/Genomics/genomics_services.php)

1. **ABI 3130xl** (Full Service DNA Sequencing) :
   1. Client supplies DNA templates and primers.
   2. Facility handles all remaining aspects of the workflow needed to generate sequence data.
2. **Agilent Bioanalyzer**:
   1. Provide quantitation and assessments of integrity.
   2. Facility stocks the DNA High Sensitivity kit and the RNA Pico 6000 kit.
3. **Qubit 4.0**:
   1. Facility can process samples for clients; or,
   2. clients can use their own reagents and read samples on the facility's Qubit 4.0.
4. **DNA Size-Selection Platforms**:
   1. Bluepippin (narrow or broad size-ranges);
   2. E-gels (~50-bp ranges); and,
   3. Zymo Select-a-Size columns (remove fragments below 50,100, 150, 200 or 300-bp).
5. **Supplies & Reagents**:
   1. Facility maintains stocks of commonly used products and can special order items at discounted rates.
   2. Free ThermoFisher shipping.

**Potential Upgrades**

1. [ABI 3500xl](https://www.thermofisher.com/order/catalog/product/4406016#/4406016) (Replacement):
   1. Our three ABI 3130xl platforms (16-capillary arrays) are no longer supported by ThermoFisher and parts are in limited supply.
   2. 3500xl has improved thermal control & signal consistency across injections & capillaries (24-capillary arrays).
2. [ABI QuantStudio-6 Pro](https://www.thermofisher.com/order/catalog/product/A43180#/A43180) (Replacement):
   1. Our two existing ABI qPCR platforms are old and becoming expensive to maintain.
   2. QS-6 Pro has improved well-to-well & instrument-to-instrument accuracy;
   3. 5 coupled excitation/emission filter channels, with sensitivity to 1.5-fold (single-plex).
   4. Options for User-changeable blocks: 96-well (std. or fast); 384-well.
3. [ABI QuantStudio Absolute-Q](https://www.thermofisher.com/order/catalog/product/A52864?SID=srch-srp-A52864) (New Capability):
   1. All dPCR steps (compartmentalization, cycling and data acquisition) integrated into one instrument with 4 optical channels.
   2. Hands-on time is <5 min; export results for analysis or compile into easy-to-read report.
4. [Azure Cielo-6](https://www.azurebiosystems.com/cielo-6/) (Alternative Capability):
   1. Fiber-optics deliver/capture light directly from individual wells; thus, no ROX reference dye required, allowing up to 6 targets per well.
   2. The Cielo-6 simultaneously images 16 individual wells (requires 6 scans per 96-well plate).
5. [KingFisher Flex](https://www.thermofisher.com/us/en/home/life-science/dna-rna-purification-analysis/automated-purification-extraction/kingfisher-systems/models.html) (New Capability):
   1. Versatile benchtop automated extraction instrument for consistent medium- to high-throughput extraction & purification of DNA, RNA, proteins & cells.
   2. Wide volume range (20 ul to 5 ml); 24 or 96 samples/run with customizable protocols.
6. [Azure Sapphire Imager](https://www.azurebiosystems.com/sapphire-biomolecular-imager/) (New Capability):
   1. Choose among 4 models covering fluorescence (NIR/RGB), chemiluminescence, & radio-isotopes (e.g., phosphor).
   2. Ultra-wide dynamic range & resolution down to 10 microns for high-quality image analysis.  [[Model Comparison Chart](https://biosci-batzerlab.biology.lsu.edu/genomics/documentation/vendor/Sapphire_Models.pdf)].
7. [BioTek Synergy H1](https://www.biotek.com/products/detection-hybrid-technology-multi-mode-microplate-readers/synergy-h1-hybrid-multi-mode-reader/) (New Capability):
   1. Functions with luminescence, fluorescence & absorbance;
   2. tunable monochromator for assay flexibility.
   3. Temperature control for kinetics; optional CO2/O2 control & dual injector system.
   4. Take3 plate to quantify DNA/RNA/protein (16-48 samples, 2-ul). [[pdf](https://biosci-batzerlab.biology.lsu.edu/genomics/documentation/vendor/BioTek_Synergy_H1.pdf)]
8. [PacBio Sequel IIe](https://www.pacb.com/products-and-services/sequel-system/latest-system-release/) (New Capability):
   1. Ultra-long NGS reads (to 25-kb) from single-molecules;
   2. dramatically reduces NGS bioinformatic requirements.
   3. Sequel IIe reads through low-complexity regions & high GC or AT regions, with extremely low error (e.g., 8 errors in 19,000 bp).