MAJOR EQUIPMENT
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Major Equipment for Emory Stem Cell and Organoids Core (ESCOC) Users

EMORY STEM CELL AND ORGANOIDS CORE (ESCOC)

The **Emory Stem Cell and Organoids Core (ESCOC)**, one of the **Emory Integrated Core Facilities (EICF)**, is located in a laboratory located on the 4th floor of the Whitehead Biomedical Research Building, with approximately 500 square feet of dedicated cell culture and wet-lab space and 300 square feet of office space. The ESCOC major equipment includes:

Three ThermoFisher 1300 Series Class II biosafety hoods: The 4 feet safety cabinets provide superior protection for daily culturing of cells with SmartFlow design with digital airflow verification and adjust airflow as filter resistance changes. The installed UV light works as an effective germicide and viricide for daily use.

Five HERACELL VIOS 160I CO2 incubators: These CO_2 incubators support a range of culturing needs for optimal cell growth. In-chamber fan gently distributes clean, humidified air throughout the chamber ensuring homogeneous conditions and fast recovery of all parameters in 10 minutes or less for stable culturing conditions. The In-chamber HEPA continuously filters the entire chamber air volume every 60 seconds and the steri-run sterilization feature ensures elimination of all biological contaminants.

Three EVOS XL Core microscopes: The EVOS®XL Core Imaging System is a digital, transmitted light, inverted imaging system for cell and tissue culture applications and routine cell maintenance. These compact systems are kept inside the biosafety cabinets and allow for routine imaging of cells without the worry of contamination from exposure to the environment outside the cabinet. The large LCD screens allow for multiple user viewing and are excellent for training and teaching.

One EVOS M5000 microscope: The fully integrated EVOS M5000 Imaging System combines precision optics, an articulated 18.5-inch high-resolution LCD monitor, and a highly sensitive camera. It delivers high-quality four-color fluorescence, transmitted light, phase-contrast, and color images with excellent flexibility across a broad range of applications and imaging requirements.EVOS M5000 microscope offers autofocus, Z-stack capability, time-lapse imaging, and multichannel capture.

Two Worthington LS6000 liquid nitrogen dewar with CS100 Automatic Controller: A liquid nitrogen refrigeration system that holds nearly 5000 2 ml cryovials for cryogenic storage of cells. The CS100 controller is a sophisticated automatic level controller that provides standard alarms and stores more than 500,000 events.

ThermoFisher Sovall ST16 centrifuge: A benchtop machine to perform cell culture and blood processing applications with a variety of rotors for 15 ml tubes, 50 ml tubes and microcentrifuge tubes.

Z446-K Universal centrifuge: refrigerated, with swing rotor for 1.5-2 ml tubes

Fisher ISOtemo waterbath: A water bath that allows for consistent temperatures and reliability for routine culturing purposes.

Applied Biosystems Countess II FL: A benchtop cell counter equipped with state-of-the-art optics, full autofocus, and image analysis software for rapid assessment of cells in suspension. It comes with three-channel flexibility (brightfield and two optional fluorescence channels) to count cells, monitor fluorescent protein expression, evaluate apoptosis, and measure cell viability.

Invitrogen Qubit Fluorometer: A fluorometer designed to accurately measure DNA, RNA, and protein quantity in less than 3 seconds per sample with high levels of accuracy using only 1-20 ul of sample.

Applied Biosystems SimpliAmp Thermal Cycler: A compact 96 well thermal cycler for essential PCR flow and a veriflex temperature control for 3 zones with accurate optimization.

Invitrogen E-gel iBase and Safe Imager Electrophoresis System: A electrophoresis system allows for the separation of DNA in 7 minutes and the transilluminator that allows real-time visualization of the migration of the DNA in the e-gels. This system replaces the need for staining with ethidium bromide and visualization using UV making it a much safer and more effective way to visualize DNA.

Invitrogen Neon NxT Transfection System: A transfection machine that enables fast and efficient delivery of nucleic acids into all mammalian cell types including primary and stem cells. Unlike standard cuvette-based electroporation chambers, the neon uses biologically compatible pipette tip chamber that generates a more uniform electric field in 10 or 100 ul reactions.

Two Infors HT Celltron orbital shaker for CO2 incubators: The Celltron is a small shaker specially developed for use in CO2 incubators — one that uses minimal energy and has an antimicrobial coating, making it perfect for starting out with shaking brain organoids cultures.

Additional Equipment Access to:

Nikon Eclipse TI Fluorescence Microscope: An inverted motorized microscope for fluorescence imaging of live or fixed cells on slides.

Nikon Biostation IM Microscope: A live cell imaging system that incorporates a microscope, an incubator and CCD camera to provide a stable environment for live cells imaging and simple long term time lapse data acquisition.

Keyence Fluorescence Microscope. A benchtop microscope that captures high-resolution publication quality images without the necessity of a dark room. It accommodates brightfield, fluorescence, and phase contrast observation with a single unit. It supports slides, cell-plates, dishes, and flasks for imaging different samples.

Applied Biosystems QuantiStudio 6 Flex Real Time PCR system: A real time PCR machine with a 96 well block for assays for gene expression, genetic variation, gene regulation, or protein expression experiments.

Biorad ChemiDoc MP Imaging System: A full feature instrument for imaging and analyzing gels and western blots. It is designed for multiplex fluorescent western blotting, chemiluminescence detection, general gel documentation and stain-free imaging.

Synergy H1 Hybrid Multi-Mode Reader: Synergy™ H1 is a configurable multi-mode microplate reader, with monochromator-based optics for flexibility, filter-based optics for sensitivity, or both. BioTek's patented Hybrid Technology™ offers applications versatility and excellent performance in a modular platform to expand as your laboratory's needs change. Synergy H1 now offers continuously variable bandwidth monochromators for fluorescence excitation and emission wavelength selection; the fluorescence bandwidth can be set between 9 nm and 50 nm, in 1 nm increments, allowing users to fully optimize reader settings to drive the best assay performance compared to fixed bandwidth systems.