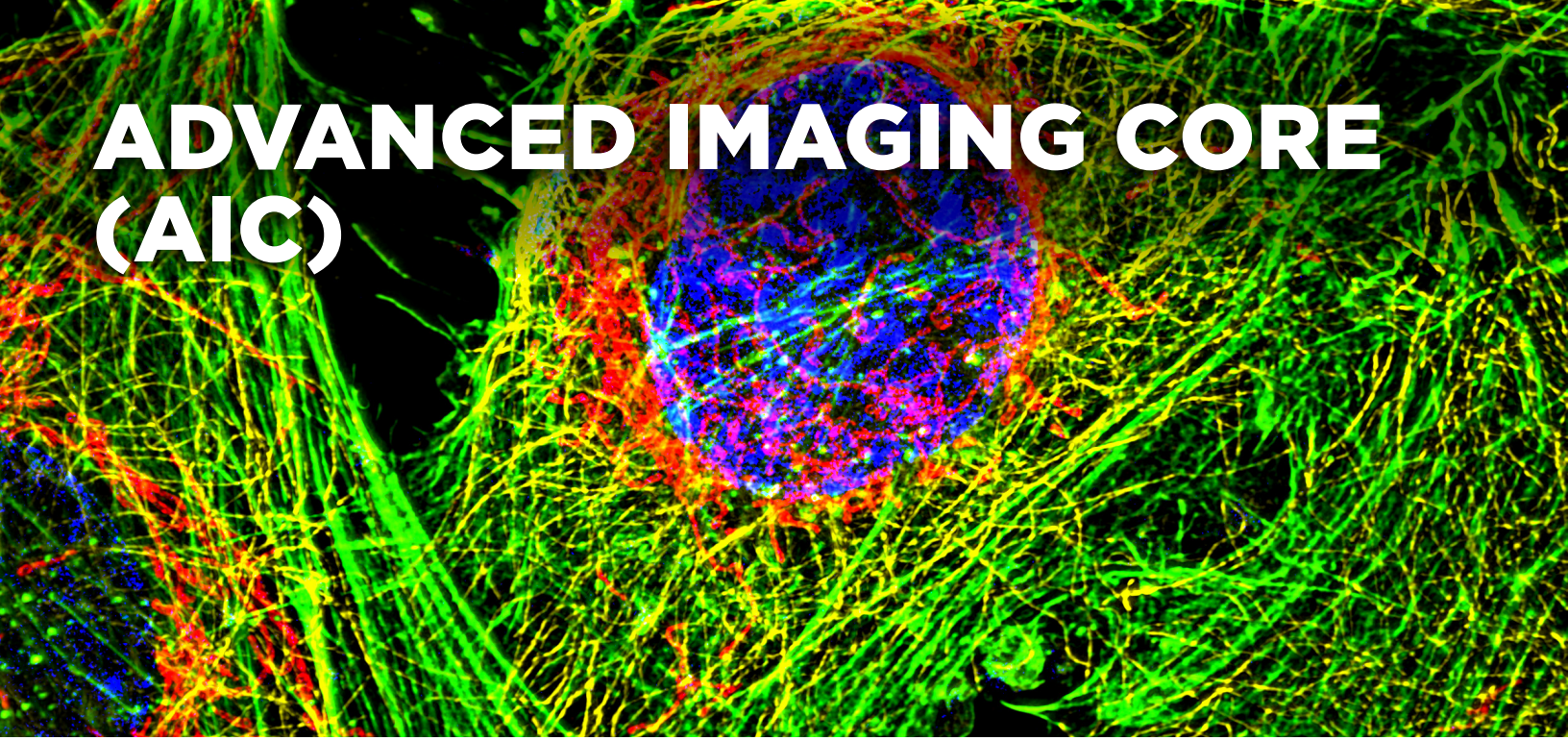

ADVANCED IMAGING CORE (AIC)

The Advanced Imaging Core (AIC) provides super-resolution microscopy imaging services through its state-of-the-art equipment and expertise. The AIC houses super-resolution microscopy imaging equipment, enabling researchers to capture sub-cellular structures and to identify protein localization patterns with high accuracy in both 2D and 3D. These cutting-edge technologies minimize sample photo damage during imaging. Live imaging on the Zeiss Elyra 7 system allows users to track fast cellular processes such as vesicle movement, and to observe a myriad of signaling events.

In addition to maintaining the Elyra 7, the AIC offers expert technical assistance to investigators, including experimental design/consultation, microscope training, assistance with imaging, and post-acquisition data analysis.

EQUIPMENT AND CAPABILITIES

SUPER RESOLUTION MICROSCOPY (SRM) UNIT

Zeiss Elyra 7 equipped with 4 Laser lines (405, 488, 561, 642) and 4 Objective lenses:

- EC-Plan Neofluar 10x/0.30 M27
- Plan-Aprochromat 40x/1.4 Oil DIC M27
- Plan-Aprochromat 63x/1.4 Oil DIC M27
- alpha Plan-Aprochromat 63x/1.46 Oil Corr M27

The Zeiss Elyra is capable of 2D and 3D wide-field microscopy, Lattice Structured Illumination Microscopy (SIM), Total Internal Reflectance Fluorescence Microscopy (TIRFM), and Single-Molecule Localization Microscopy (SMLM).

Lattice SIM allows very light-efficient imaging, resulting in less photodamage to cells. Key features include:

- 2D imaging speeds up to 255 fps
- image up to 4 channels at a time;
- resolution down to 120 nm laterally, 300 nm axially.

SMLM utilizes photo-switchable fluorescent dyes and proteins to induce spontaneous “blinking” of single fluorophores. This allows investigation of subcellular structures and single molecules in both fixed and live cells. Key features include: dual camera capability to image two different fluorophores at once; resolution down to 20 nm laterally and 50 nm axially.

STAFF

Rachel Escue, PhD
Microscopy Manager
901.448.6180
rescue@uthsc.edu

Dr. Escue graduated from Christian Brothers University in 2010 with a BS in Biomedical Sciences. From 2009-2011, she performed lab work in the Pharmaceutical Sciences department at St. Jude Children's Research Hospital, genotyping patient samples for pharmacogenetics studies. In 2018, she received her doctorate from UTHSC, completing her dissertation research in the Department of Physiology in Dr. Kaushik Parthasarathi's lab. Her work focused on inflammatory signaling mechanisms within the rodent pulmonary microvasculature. She is well-versed in performing high-resolution fluorescence imaging, having spent seven years performing intricate confocal imaging experiments on isolated, autologous blood-perfused rat and mouse lungs. Dr. Escue completed her training on the Elyra 7 Super-resolution microscope in late 2020.

For more information:

ADVANCED IMAGING CORE (AIC)
Johnson Building | 847 Monroe Avenue, Room 311, Memphis, TN 38163
uthsc.edu/research/institutional-cores/advanced-imaging-core/