



# FLOW CYTOMETRY & CELL SORTING (FCCS) CORE

The Flow Cytometry and Cell Sorting (FCCS) Core provides state-of-the-art instruments, expertise, instruction, and assistance with experimental design and data analysis for multicolor flow cytometry and cell sorting experiments, including indexed single-cell sorting. We offer one-on-one consultation with internal investigators at no charge for experimental design, training in the use of the instrumentation (hourly rate), and software resources. The core director, a highly experienced immunologist and flow cytometry and cell sorting expert, is also available to analyze investigators' data (hourly rate).

## EQUIPMENT

The **BD Biosciences FACSaria II** cell sorter is equipped with 4 lasers and 12 fluorescence detectors, in addition to forward (FSC) and side (SSC) scatter detectors. The 100 mW, 488 nm blue diode laser has 5 fluorescence, SSC, and FSC detectors. The 30 mW, 638 nm red diode laser has 3 fluorescence detectors. The 50 mW, 405 nm violet diode laser has 2 fluorescence detectors, and the 20 mW, 355 nm solid-state UV laser has 2 fluorescence detectors. The sorter has two- and four-way sort capability into tubes or microtubes. The sorter is also equipped for indexed, single-cell sorting or multiple cell sorting into microwell plates or onto microscope slides. The sorter has temperature-controlled sample injection and collection chambers within a biosafety level-2 (BSL2) laboratory and includes an Aerosol Maintenance System to prevent exposure to potentially infective agents during cell sorting.

The **Cytek Aurora CS** - coming fall of 2023 - is a spectral cell sorter equipped with 5 lasers (UV, Violet, Blue,

Yellow-Green, Red), 3 scatter detectors (FSC, SSC, 405 SSC) and is capable of analyzing 40+ parameter panels. The sorter has 6-way sorting capability and is equipped for indexed and single-cell sorting into 96-well plates. This sorter is expected to replace the FACSaria II.

The **Bio-Rad ZE5** cell analyzer is a 4 laser, 21-fluorescence parameter, highly automated cytometer, with a 4-7-7-3 configuration for blue, yellow-green, violet, and red lasers, respectively, which includes detection of popular "fruit" dyes and standard FSC and SSC light detection. The instrument also has the capability for small particle detection (exosomes, subcellular particles, and bacteria). The Everest software is user friendly, offering operator-independent programmable sample loading and data collection for up to 48 tubes, as well as from 96-well plates.

Also available for use at no additional charge are FlowJo® and ModFit® software on workstations with either PC Windows or Apple OSX operating systems for advanced data analysis and cell cycle modeling, respectively.

## CORE CAPABILITIES

The FCCS core supports:

- Detection and quantification of up to 21 cell surface and/or intracellular molecules
- Detection and quantification of GFP, mCherry, or other fluorescent protein expression including “fruit” dyes
- Measurement of Ca<sup>2+</sup> flux during cell signaling among different cell subpopulations
- DNA quantification, cell cycle analysis, and apoptosis detection and quantification
- Detection and quantification of exosomes
- High-speed sorting of viable or fixed eukaryotic or prokaryotic cells into four or fewer defined subpopulations
- Single or multi-cell sorting into microwell plates or onto microscope slides
- Indexed single cell sorting into microwell plates or onto microscope slides
- Immunology and flow cytometry expertise for fluorochrome panel design, immuno-phenotyping, and data analysis
- Spectral flow cytometry will be supported post-acquisition of the Cytex Aurora CS sorter

## STAFF



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**Core Director**  
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Dr. Deidre Daria has over 20 years of flow cytometry experience in both academic and CRO institutions designing multi-color fluorescence phenotyping schemes

for cellular phenotyping and shorting of various cell types. At the UTHSC FCCS, Dr. Daria assists users with experimental design, panel development, data analysis and many other facets of flow cytometry. She also trains new users and is responsible for instrument operation and maintenance. Dr. Daria received her PhD at the University of Ulm, Germany with subsequent postdoc experience at Batelle. Her research experience has encompassed numerous projects associated with hematopoiesis and stem cell biology. She was also involved in studies designed to evaluate immune responses and test therapies against toxins, bacteria, and viruses.

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**For more information:**

### **FLOW CYTOMETRY & CELL SORTING (FCCS) CORE**

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[uthsc.edu/research/institutional-cores/fccs/](http://uthsc.edu/research/institutional-cores/fccs/)