

CORE FACILITIES

With highly-specialized capabilities and research initiatives, the Danforth Plant Science Center's core facilities are well-prepared and positioned to serve as regional, national and international resources.



Proteomics and Mass Spectrometry

Contact: Brad Evans, Ph.D. 314.587.1464

Developing new tools and providing high quality analysis of proteins, lipids and metabolites using mass spectrometry and related analytical techniques.

Current instrumentation

- LTQ Orbitrap Velos Pro
- Q-Exactive
- 6500 QTRAP with Selexion
- 5975C GC-MS
- ITQ-900 GC-MS with FID
- Thermo trace GC-FID
- Isoelectric Focusing
- 1D/2D Electrophoresis
- Typhoon 9410 Imager
- GelPix Spot Cutting Robot
- MultiProbe II Protein Digester
- Agilent, Beckman, Shimadzu HPLCs
- TissueLyserII
- Waters UPLC system
- Dionex Ion Chromatography System
- MASCOT
- Scaffold, Scaffold PTM
- Progenesis LCMS
- Progenesis SameSpots



Tissue Culture & Transformation

Contact: Veena Veena, Ph.D., MBA 314.587.1634

The facility operates both as a full-service facility delivering transgenics and cell cultures to researchers and self service providing high quality space for researchers to use for their own specific project needs.

Services

- Full-service transformations and cell/ tissue culture in many different plant species
- Project consultation
- Self-service hood usage and high quality growth space
- Training workshops

Facility staff have developed a portfolio of systems including; *Setaria viridis*, *Brassica juncea*, *Brassica juncea*, Maize, Soybean, Tomato, Rice, Arabidopsis.

Full-service transformations can be requested utilizing systems that are currently available within the portfolio. The facility staff can also provide assistance, consultation and training workshops.





Advanced Bioimaging

Contact: *Kirk Czymmek, Ph.D. 314.587.1261*

A collaborative full-service and training center featuring a repertoire of instrumentation for live-cell light, confocal and electron microscopy to provide state-of-the-art imaging for plant scientists.

Current instrumentation

Imaging with Photons

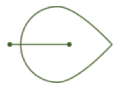
- Leica SP-8 confocal microscope
- ZEISS AxioZoom Motorized Microscope
- Nikon Fluorescence Dissecting Microscope
- Nikon Eclipse 800 Widefield Epifluorescence Microscope
- Zeiss PALM laser microdissection microscope
- Cryostat, wax microtome, vibratome

Imaging with Electrons

- Bal-Tec HPM 010 High Pressure Freezing Machine
- LEO 912 AB Energy Filter transmission electron microscope
- Reichert Ultracut UCT ultramicrotome
- Hitachi TM-1000 tabletop scanning electron microscope
- Hitachi S-2600H conventional scanning electron microscope
- Grid plunge freezer

Analysis:

- Bitplane Imaris 3D image reconstruction, ZEN Blue Intellesis machine learning based segmentation, ZEN Connect correlative microscopy workspace



Integrated Plant Growth

Contact: *Kevin Reilly, 314.587.1482*

A state-of-the-art facility provides research grade plant growth space and horticultural services to Center scientists, commercial clients and academic institutions. The facility consists of 3 greenhouse ranges, 36 walk-in growth rooms, 48 reach-in growth chambers, 3 potting rooms, 2 wet labs, 2 seed processing rooms, 1 seed storage cooler and multiple general-use work areas.

Services

- Watering 365 days a year, and setup of autoirrigation systems if appropriate
- Maintaining proper soil nutrient levels
- Pest scouting and control measures
- Programming and monitoring of computer-controlled environments
- Adjusting and maintaining supplemental lighting and photoperiod control
- Greenhouse maintenance and routine sanitation
- Autoclaving of all plant material
- Regular consultation with expert crop specialists
- Assistance with all phases of plant care available upon request (may incur added service charge)

Greenhouse Range A:

12,400 sq. ft.
14 individual houses

Greenhouse Range B:

15,300 sq. ft.
15 individual houses

Greenhouse Range C:

26,430 sq. ft.
14 individual houses





Bellwether Phenotyping

314.587.1617

Contact: *Mindy Darnell,*

Provides self-service and full-service phenotyping tools for the plant sciences in both academics and industry.

Current instrumentation

- **LemnaTec Scanalyzer 3D / Conviron growth house** - climate controlled high-throughput imaging
- **PhenoVaton CropReporter** - stand-alone PSII photosynthesis imaging
- **LI-COR LI-6400XT** - portable photosynthesis system
- **Ocean Optics Flame Spectrometer** - UV-Vis spectroscopy
- **PlantCV** - open-source image analysis tools