



DONALD DANFORTH  
PLANT SCIENCE CENTER  
DISCOVERY | COMMUNITY | IMPACT

Since 1998, The Donald Danforth Plant Science Center has brought nearly 300 scientists from more than 20 different countries together to answer humanity's most profound challenges. Today the Danforth Center is the largest organization of its kind, an independent 501(c)3 nonprofit founded to improve the human condition through plant science. We seek to increase agricultural productivity to sustainably feed people today and nearly 10 billion people by the middle of the century, and to do so with a lower environmental footprint and with fewer natural resources. The Center was founded by the late Dr. William H. Danforth and named after Dr. Danforth's father, Donald Danforth, former chief executive of Ralston Purina. The main building opened in 2001, and the William H. Danforth Wing was dedicated in 2016.

### **Facts at a Glance**

- 362 employees, from more than 20 countries
- 26 scientific teams
- Collaborative research projects across the globe
- 1,347 Peer reviewed publications
- \$248M in competitive research funding from government agencies, industry and foundations
- \$50M investment in core technologies
- \$33M annual operating budget
- \$352.2M in annual economic impact to the St. Louis Region
- 7 startup companies launched by faculty
- Total gross square footage: 303,860 sq. ft
- Laboratory space: 26+ suites; over 77,458 sq. ft. total including lab support
- Greenhouse complex: 42 bays providing 54,130 total sq. ft. of active growth space
- Faculty and graduate student affiliations: Washington University in St. Louis, University of Missouri Columbia, University of Missouri St. Louis, Saint Louis University and Harris Stowe State University.

### **Major Research Focus Areas**

Our scientists are plant biologists, computer scientists, engineers, statisticians and educators who believe we can harness the power of plants to create a future where everyone has access to a nutritious diet and a clean environment. They are leading ground-breaking research in six major areas:

- Metabolic systems and synthetic biology
- Biotic and abiotic interactions
- Crop Improvement
- Sustainable bioenergy
- Genomics, phenomics and data science
- Education research

Translation and application of discoveries is facilitated by two Danforth Center institutes:

### **The Enterprise Rent-A-Car Institute for Renewable Fuel**

Our Enterprise Institute leverages bioenergy crops to create green solutions for global challenges. Established in 2007 with a generous gift from the Jack C. Taylor family, institute scientists are exploring fundamental science about genes, enzymes, and systems that underlie production of food, fiber, and fuel in photosynthetic organisms. Through cutting-edge research, we are developing new technology and taking advantage of biodiversity to provide novel solutions. By translating discoveries into useful products or commercial applications, we can solve real problems and preserve natural resources.

## **The Institute for International Crop Improvement**

Our Institute for International Crop Improvement (IICI) translates plant science discoveries and technology into food security solutions for the people that need them most. The IICI is dedicated to improving the disease and pest resistance, nutritional content, and harvest of staple crops like cassava, sorghum, and cowpea that are critical to the health and livelihood of smallholder farmers in developing countries, and the millions of people that depend on them for food and nutrition. In addition to stabilizing communities by empowering farmers, these efforts also have the potential to reduce the need for harmful chemicals and contribute to environmental health. The IICI team also specializes in guiding research development projects through the product development process with international partners. Areas of expertise include product development planning and coordination, confined field testing, regulatory strategy development, biosafety, stakeholder communications, analytical activity, and nutritional evaluation.

## **Core Technologies**

Innovative plant science requires cutting-edge technologies. The Danforth Center has invested \$50M in state-of-the-art instrumentation, technology and expertise in facilities that equip our scientists to do ground-breaking research. Facilities include Advanced Bioimaging, Data Science, Plant Phenotyping, Plant Growth, Proteomics and Mass Spectrometry, Tissue Culture and Transformation, and X-ray CT Imaging. High-quality services are offered to both internal and external clients.

They act as hubs of collaboration and problem-solving that accelerate discovery and innovation in all of our labs as well as bioscience companies who make use of some or all of these core facilities to cost-effectively commercialize their technologies and bring products to the market. Training opportunities within each facility enable our researchers to become cross-disciplinary plant scientists.

## **Funding for Research**

The Center's work is funded through competitive grants from many sources, including the NIH, NSF, DOE, USDA, Bill & Melinda Gates Foundation and individual donors.

## **Economic Development**

The St. Louis region, as home to a rapidly growing plant and agricultural innovation community, with more than 1000 plant science PhDs, has become a leading hub for the commercialization of agriculture and related technologies. The Danforth Center is located in 39 North, a 600-acre innovation district surrounding the Center, BRDG Park, Helix Incubator, Yield Lab and Bayer Crop Science. Center leadership is actively involved in the implementation of the 39 North strategic master plan that was launched in 2016. By connecting regional assets, improving mobility, creating development and networking opportunities and additional greenspace, 39 North will enhance the region's ability to grow, attract and retain companies and top talent.

## **BioResearch & Development Growth (BRDG) Park**

The Center is committed to enhancing the St. Louis region as a world center for plant science and to creating new jobs in this sector. The most visible result of this commitment is the Bio Research & Development Growth (BRDG) Park located on our campus. BRDG and EDGE@BRDG serve as a vital resource to startups and mid-stage companies, the North American headquarters of international companies, and an on-site workforce training and equipment loan program. Tenants have access to more than \$50M in core technologies at the Danforth Center and interactions with some of the world's top scientists.

## **AgTech NEXT**

Launched in 2020, the inaugural event was a live, online series of virtual conference sessions around the theme of *Risks & Rewards* featuring farmers, industry leaders, investors and entrepreneurs who gathered to debate, collaborate, unite to tackle questions of national and global importance including food production, soil health, technology transfer, food waste, and food security. For more info, visit [www.agtechnext.org](http://www.agtechnext.org)

## **Education and Outreach**

Our education research and outreach lab is committed to inspiring the next generation of plant scientists. By creating meaningful research opportunities for students at every stage of their education, we can keep students engaged in science and help them build the foundational skills that are critical to a career in plant

science. Our programs provide educational opportunities for teachers and students, and use research assessment within the programs to understand how a diverse range of students learn about STEM concepts. Through our education research, we can improve the impact and destination of our education programs.

Our grades K-12 programs create opportunities for students to explore science, technology, engineering and mathematics concepts (STEM). By equipping teachers and students with the tools and opportunities to engage with science, we can foster the future generation of plant scientists and create a more diverse and inclusive science community.

Training infuses all of the Center's research programs and students come from around the world. Since inception, we have trained more than 500 people from more than 50 countries. Generous funding from the National Science Foundation supports the Center's highly sought-after Research Experience for Undergraduates Summer Internship Program. Ninety percent of former interns have gone on to pursue advanced degrees in science or work full-time in the field of science.

The Center hosts weekly scientific seminars, an annual fall symposium and other events that are open to the public.

For more information please visit [www.danforthcenter.org](http://www.danforthcenter.org)

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