

the Leaflet

VOLUME 27 • ISSUE 2 • FALL 2025

A NEW ERA OF LEADERSHIP BEGINS

The Leaflet is a publication for partners, friends, and supporters of the Donald Danforth Plant Science Center.



DONALD DANFORTH
PLANT SCIENCE CENTER



Leaflet Vol. 27 Issue 2 Fall 2025

Table of Contents

News.....	3
Feed people.	10
Sustain the Earth.	12
Speed innovation.	14
Nurture talent.	16
Grow our community.	18

OUR MISSION



Printed on paper from sustainably managed forests with 10% post-consumer content.

Contact
975 North Warson Road
Saint Louis, MO 63132
development@danforthcenter.org
314.587.1234 | danforthcenter.org

Credits
© 2025 Donald Danforth Plant Science Center All rights reserved. *The Leaflet* is a biannual publication for partners, friends, and supporters of the Danforth Center. Thank you.

Editor: Elizabeth McNulty
Designer: Lee Kern

Contributors: Patrick Bowey, Kristina DeYong, Elizabeth McNulty, Karla Roeber

Photography: Adobe (cover, 2 mid, 21); Courtesy Advanced Bioimaging Lab (9 top); Patrick Bowey (3 top, 6, 13 mid, 14 mid, 17 top, 18 bottom third from L, 19 bottom L, 20, 22); Courtesy Cambridge University (3 bottom L); Kristina DeYong (12 bottom, 15 bottom, 16 top); Courtesy Edward Jones (8 mid); Courtesy Cary Fowler (10 mid); Matt Freebersyler (15 top); Devon Hill (4

mid top, bottom L; 8 top; 9 mid; 11, 13 bottom; 14 top; 17 bottom; back cover); Courtesy Larta Institute (2 top); Elizabeth McNulty (12 top, 18 L); Stewart Morley (13 top); Karla Roeber (3 bottom R); Bill Stutz (4 mid bottom, 5 bottom R, 16 mid); Courtesy TED (3 bottom mid); Michael Thomas (7, 10 top); Dilip Vishwanat (18 top, bottom second and third from L, 19 bottom mid and R)

Leadership

FOUNDING CHAIR
William H. Danforth, MD[†]

PRESIDENT & CEO
Giles Oldroyd, PhD

BOARD DIRECTORS
Penny Pennington, *Chair*
Lisa Ainsworth, PhD
Benjamin Ola Akande, PhD
Senator Roy Blunt
Sara Yang Bosco
Patrick O. Brown, MD, PhD
Johannes Burlin
Marilyn Bush
Mun Y. Choi, PhD
Desiree Coleman-Fry
Christopher B. Danforth
James L. Johnson, III
Robert J. Jones, PhD
Wesley Jones
Jackie Joyner-Kersee
Ruth E. Kim, JD
Sanjeev Krishnan
Lúcia G. Lohmann, PhD
Ann C. Marr
Andrew D. Martin, PhD
Anna E. McKelvey, LLM
Thomas C. Melzer
William L. Polk, Jr.
Robert Reiter, PhD
Michael W. Riney
Todd R. Schnuck, *Immediate Past Chair*
John F. McDonnell, *Emeritus Director*

SCIENTIFIC ADVISORS
Eric Ward, PhD, *Chair*
David Braun, PhD
Natalia de Leon, PhD
Jen Heemstra, PhD
Jan Leach, PhD
Jennifer Nemhauser, PhD

[†] Deceased



The Danforth Center holds the highest rating from both Charity Navigator (four stars) and GuideStar (the Platinum Seal of Transparency).

The Donald Danforth Plant Science Center is a nonprofit organization, tax exempt under Section 501(c)(3) of the Internal Revenue Code, Federal ID No. 31-1584621. Contributions are tax deductible as allowed by law.

From the President

Dear friends,

Our world faces extraordinary challenges—and the Danforth Center is uniquely positioned to meet them. I'm grateful to Dr. James Carrington for years of leadership that built this momentum. Plant science holds many answers, and answers are urgently needed.

My path to plant science began early—during formative years in Zambia—and set me on a career turning biological insight into practical benefit. At Cambridge, my team focused on how crops partner with microbes to access nutrients. Through the [ENSA project](#), we worked to reduce fertilizer dependence and raise yields for farmers, especially smallholders in Africa.

The headwinds are real: weather volatility, soil degradation, fragile supply chains, uneven access to innovation. But challenge creates opportunity—especially here. The Danforth Center is built to move discovery to impact, from St. Louis to partners around the world. I'm eager to help accelerate that trajectory.

My priorities:

- **Deliver with urgency.** Aim science at measurable outcomes—feeding people, sustaining the Earth, speeding innovation.
- **Scale through partnership.** Link discovery, field validation, and adoption with growers, industry, academia, and philanthropy.
- **Invest in people and platforms.** Equip diverse talent and shared technologies to shorten the path from idea to implementation.

I'm excited to work with this community to translate world-class science into solutions for humanity—here in our region and across the globe.

With urgency and optimism,

Giles Oldroyd, PhD
President, Danforth Center



Former role as Professor and Director of the Crop Science Centre at Cambridge University.

2025 TED talk "The Food that Fertilizes Itself."

"The Danforth Center is built to move discovery to impact, from St. Louis to partners around the world. I'm eager to help accelerate that trajectory."

*- Giles Oldroyd, PhD,
President, Danforth Center*

Dr. Oldroyd is one of only 300 scientists worldwide who are members in both the [US National Academy of Sciences](#) and the [UK Royal Society](#), the two foremost scientific organizations in the English-speaking world. He is in the top 1% of highly cited scientists worldwide.

News & Events

ASPB NAMES TESSA BURCH-SMITH PRESIDENT-ELECT, GRANTS AWARDS

The [American Society of Plant Biologists](#) (ASPB) was founded in 1924 to advance plant science research and education. It publishes the highly cited and respected journals *Plant Physiology* and *The Plant Cell*. In July, the ASPB named Danforth Center Principal investigator **Tessa Burch-Smith, PhD**, president-elect. She will serve a three-year term.



The ASPB also awarded Principal Investigator **Kevin Cox, PhD**, the 2025 [Eric E. Conn Young Investigator Award](#) recipient. The award recognizes an outstanding plant scientist who has also demonstrated excellence in outreach, public service, mentoring, or teaching early in their faculty career.



Ivan Baxter, PhD, Danforth Center principal investigator was recognized as an [ASPB Fellow](#) for direct service to the Society and distinguished, long-term contributions to plant biology.

• Tessa Burch-Smith



• Climate Week 2025

NADIA SHAKOOR AT CLIMATE WEEK 2025

Danforth Center Principal Investigator **Dr. Nadia Shakoor** (*second from right below*) was part of a panel at [Climate Week New York](#) this September. “Building Regional Innovation Ecosystems: Focus on Agri-Food & Geospatial in St. Louis” was hosted by [Global Flagship Initiative for Food Security and Crop Trust](#). Other speakers were from [The Yield Lab](#), [BioSTL](#), and [Taylor Geospatial Institute](#). Said Shakoor: “Innovation that strengthens food security starts locally but scales globally. In St. Louis, our agtech and geospatial communities are proving that coordinated regional ecosystems can drive global impact.”

POSTDOC NAMED A RISING STAR

Danforth Center Postdoctoral Researcher **Somnath Koley, PhD**, has been recognized as a Rising Star by the [Salk Institute](#), standing out as the only plant scientist among 12 honorees. A member of the [Allen Lab](#), Dr. Koley is known for his work in metabolic flux analysis, which delivers dynamic and quantitative insights into plant metabolism that other methods alone cannot provide. He presented his groundbreaking research at the Salk Institute’s Rising Stars Symposium.

STEM LEADERS EXCHANGE

The Danforth Center [Education Research and Outreach Lab \(EROL\)](#) team has pioneered a new program, STEM Leaders Exchange. A collaboration with [St. Louis Community College](#), the [Science Center](#), [Botanical Garden](#), and [Zoo](#), the program brings together educators to better understand the barriers they face in accessing STEM resources. Forty-five educators from across the region participated in the inaugural meeting this August. The EROL team is now reviewing recommendations and planning how to help democratize access to real-world STEM opportunities—making it easier for teachers to connect their students to local resources, diverse professionals, and authentic hands-on experiences.

WELCOME NEW FACULTY

In July, the Danforth Center announced two new faculty members:

Justin Conover, PhD, joined as assistant member. The Conover lab uses a mix of comparative genomics, population genetics, and phylogenetics to study polyploidy, or genome duplication. Conover was previously an NSF postdoctoral research fellow at the



• Somnath Koley



• New Faculty

[University of Arizona](#). He received his PhD in Genetics and Genomics from [Iowa State University](#) and BS in Biology from [Missouri State University](#).

Erin Sparks, PhD, joined as associate member at the Danforth Center and associate professor and Bond Life Sciences Center principal investigator at the [University of Missouri – Columbia](#), a joint hire between the Danforth Center and Mizzou. The Sparks laboratory works on developmental biomechanics, integrating basic molecular development and applied engineering. Sparks was previously an associate professor at the [University of Delaware](#). She completed postdoctoral research at [Duke University](#), received her PhD from [Vanderbilt University](#) and BS in biomedical engineering from [Northwestern University](#).



At the event, Dr. Jim Carrington's leadership was celebrated with the sharing of favorite memories, the announcement of a fellowship in his honor, and a standing ovation.

Celebrating a Legacy

JIM CARRINGTON'S TRANSFORMATIVE LEADERSHIP

After 14+ years at the helm, President & CEO **Jim Carrington, PhD**, ceded Danforth Center leadership to Dr. Giles Oldroyd on October 1, leaving a Danforth Center that is larger, stronger, and more connected to the world. Under Jim's leadership, the Center doubled its faculty and staff, welcoming talent from 34 countries and building a truly global community of science.

He catalyzed remarkable growth—more than \$361 million in research funding and over \$400 million in philanthropy—fueling discoveries with real-world impact. Jim also expanded our scientific footprint: the William H. Danforth Wing, Greenhouse expansions, new Plant Phenotyping and Data Science core facilities, and a 140-acre Field Research Site. Even the landscape surrounding the Center flourished under his watch thanks to the cultivation of a six-acre prairie that is now home to 72 native plant species and nearly 50 species of native insects.

Innovation flourished. During Jim's tenure, scientists filed 94 patents, launched eight startups, and created the Startup Initiative and Danforth Technology Company, cementing the Center as a driver of regional entrepreneurship.

The Center hosted a mini-symposium in his honor featuring current and former Carrington Lab members from across the US. There was also an evening celebration with more than 300 influential plant scientists, colleagues, family, friends, and leaders from across the St. Louis region, who shared favorite memories of Jim. The evening closed on a high note with the announcement of a graduate fellowship in his honor and a standing ovation that filled the room—an outpouring of gratitude and admiration for Jim's remarkable legacy.

SUPPORT THE NEXT GENERATION: THE CARRINGTON FELLOWSHIP

Add your tribute or make a gift in Jim's honor and help launch the Carrington Plant Science Fellowship, an award for an outstanding graduate student whose work demonstrates great promise in plant science. To contribute, visit danforthcenter.org/donate or contact the Development team: 314.587.1234 or development@danforthcenter.org.



Team Sun Solutions, with their pitch to help crops thrive in low light, were announced as the winners of Conversations: Big Ideas. From left: Vanessa Jawahir, Salma Adam, and Marcus Griffiths



"We want to use the power of plants to remove contaminants from unusable soil and decrease the consequences of land contamination," said Keely Brown, PhD, of Team BioQumulate (left).

Conversations: BIG IDEAS

BUILT ON JIM'S BIG VISION

On Thursday, May 15, the Danforth Center hosted its fourth—and largest—Conversations: Big Ideas showcase, drawing 425 attendees in person and 320 online to cheer on three teams of early-career scientists as they pitched plant-powered solutions to real-world challenges.

After a live audience vote, Team Sun Solutions (Nusinow/Topp Labs) won a \$10,000 grant for their plan to help crops thrive in low light—opening doors to grow more food on less land (and maybe one day, in space). Also on stage: Team BioQumulate (Gehan/Fahlgren Labs), proposing quinoa varieties to clean contaminated soils, and Team Pore Decisions (Czymbek/Burch-Smith Labs), designing a molecule to block plant viruses from spreading.

Since launching in 2017, Big Ideas has built a strong track record—past pitches helped spark local startups Metablify and Spearhead Bio—but what looks effortless onstage is the result of weeks of work and a distinctive approach championed by former President & CEO Jim Carrington, PhD.

Inspired by the spirit of TED, Jim envisioned Big Ideas as a stage where scientists learn to tell compelling stories, not just present data. He personally coached the teams—pushing them to think from the audience's perspective, trim jargon, choose memorable visuals, and rehearse until the message lands with confidence and clarity. One participant borrowed Jim's favorite term for the goal: "sprezzatura"—being so well prepared that delivery feels natural and alive.

The result is more than a competition. It's professional development that changes how emerging scientists communicate—on our stage and beyond: in classrooms, community talks, media interviews, donor meetings, and entrepreneurial pitches. And it's a powerful window for the community into why this work matters. Bold ideas don't just inspire audiences; they accelerate real-world impact.



"From feeding the world to guarding your backyard tomato patch, our technology adapts to the scale," said Ally Angermeier, PhD, of Team Pore Decisions (right).



"The plant scientists here are moving innovation to impact at top speed. There's nothing like this organization anywhere in the world."

*- Penny Pennington,
managing partner of
Edward Jones and Danforth
Center board chair*

OUR CUTTING-EDGE CORE FACILITIES

[Advanced Bioimaging Laboratory](#)

[Bioanalytical Chemistry Facility](#)

[Data Science](#)

[Phenotyping](#)

[Plant Growth Facility](#)

[Plant Transformation Facility](#)

The World Center for Plant Science

INSIDE THE DANFORTH CENTER'S STRATEGY TO CONTINUE TO LEAD

Hunger and malnutrition affect hundreds of millions of people worldwide—and the population is growing. Solving these problems demands faster discovery, stronger tools, and the best minds focused on crop improvement and resilience.

WHY ST. LOUIS LEADS

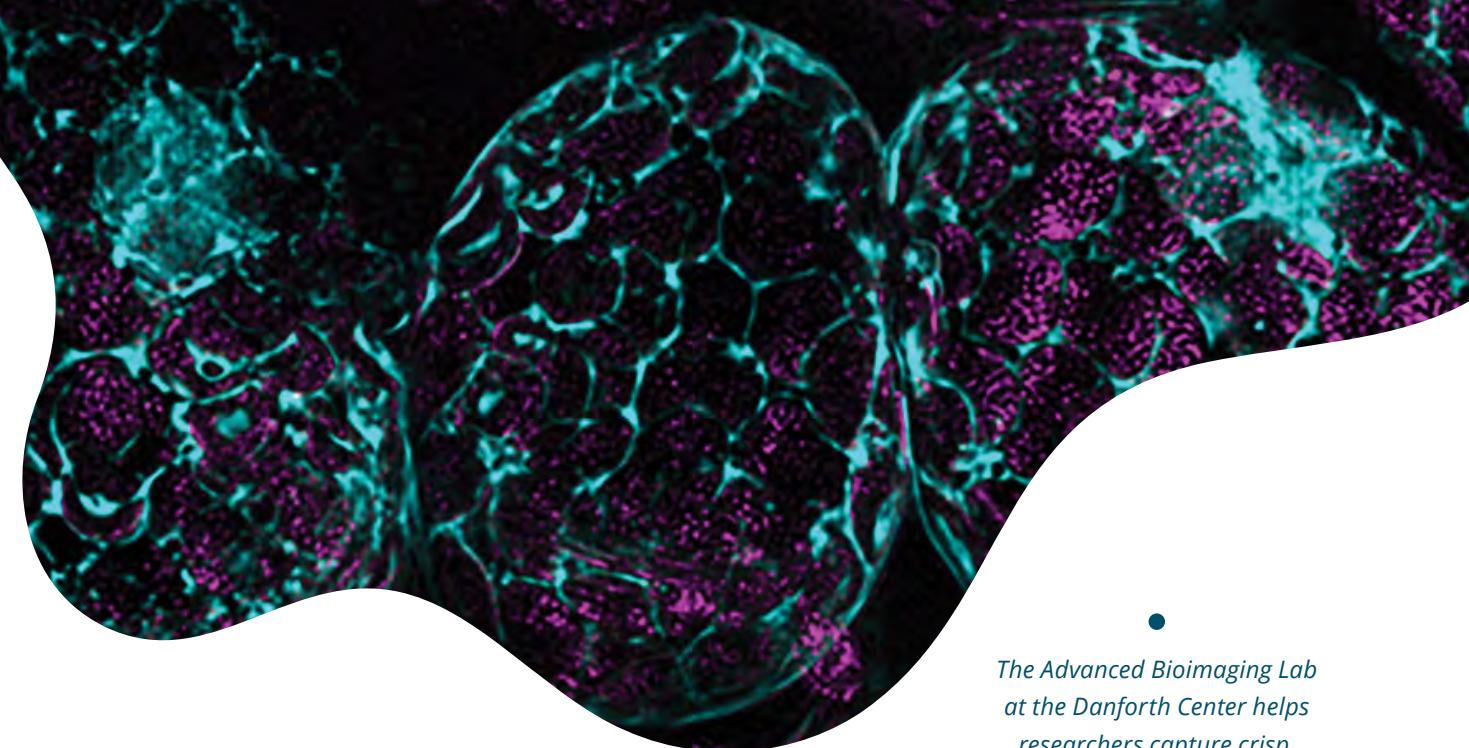
Our region sits within 500 miles of more than half of US agriculture, putting scientists and startups next to America's heartland. We host the world's highest concentration of plant-science PhDs—more than 1,000—and a vibrant innovation economy with 700+ agtech and biotech companies advancing ideas from lab to field.

HOW THE DANFORTH CENTER HELPS

The Danforth Center is an engine of agtech innovation. **The annual economic impact to the region by the Danforth Center and its campus is \$412 million.** We attract the best and brightest scientists from around the world, place them in a system that incentivizes collaboration, and supply them with the most cutting-edge facilities anywhere. Researchers can see more, measure faster, and design better crops more quickly than anywhere else—and are supported to spin out companies to speed new technology to market.

Through the *Future Forward* campaign, we seek donors' help to:

- Continue to invest in leading-edge **core facilities**
- Provide a **funding bridge** to retain highly skilled postdoctoral researchers between grants to keep key projects and players in the pipeline
- Grow **endowment**. Enduring leadership requires stable fuel. Growing long-term resources ensures top talent, cutting-edge instruments, and rapid response to emerging challenges—today and decades from now.



The Advanced Bioimaging Lab at the Danforth Center helps researchers capture crisp, reliable images inside living plant cells.

Raising the Bar in Plant Imaging

GLOBAL GUIDE LED BY DANFORTH CENTER SETS NEW STANDARD FOR FLUORESCENCE MICROSCOPY

Plant scientists rely on microscopes to "see" how cells work. But plants are tricky subjects: their waxy skins, tough cell walls, and natural glow can blur images and hide important details. To help researchers get clearer, more reliable pictures, a global team led by **Kirk Czzymmek, PhD**, director of the [Advanced Bioimaging Laboratory](#) at the Danforth Center, and Heather E. McFarlane of the [University of Toronto](#) has published a new roadmap in *The Plant Cell*.

Fluorescence microscopy makes specific parts of a cell light up like a shining beacon. This new guide to fluorescence microscopy shows users, step by step, how to plan a study, prepare plant samples, capture the best possible images, and share enough information so others can repeat the work. It also offers practical tips for common plant challenges, from reducing image "fade" to keeping pictures crisp and accurate. The result: stronger, more trustworthy data for the entire field.

Created in partnership with the NSF-funded *Plant Cell Atlas*, the resource gives labs everywhere a clear, shared playbook for plant imaging.

This is **Future Forward: Continue to Lead** in action. By convening experts and setting standards, the Danforth Center isn't just using cutting-edge imaging—we're shaping how the world does it, accelerating discoveries that feed people and sustain the planet.

► **FUTURE FORWARD** Explore how Priority 4—**Continue to Lead**—powers faster discovery and stronger impact. See the plan, the cores, and the people behind them at the *Future Forward* campaign site: [campaign.danforthcenter.org](#).



"Clear, plant-focused standards mean better images—and faster breakthroughs."

*- Kirk Czzymmek, PhD,
director of the Advanced
Bioimaging Laboratory*

LEARN MORE

Support the
**FUTURE
FORWARD**
campaign.





Dr. Fowler speaks with Sarah Fenske, executive editor of St. Louis Magazine at Seeds of Change this August.

"The Danforth Center's work is making a huge difference in the world. They're conducting agricultural research where there's the most bang for the buck."

- Dr. Cary Fowler,
founder of the Svalbard Global Seed Vault

WHY IT MATTERS

Seeds of Change is more than an inspiring evening; it's a call to sustain the pipeline of solutions—from conserved diversity to resilient crops—that keep dinner on the table. When we invest in plant science, we invest in the most basic promise a community can make to itself and its neighbors: that no one goes hungry.



Germination and Determination

DR. CARY FOWLER AT SEEDS OF CHANGE

At this year's [Seeds of Change](#), the Danforth Center welcomed Dr. Cary Fowler, the renowned conservationist behind the [Svalbard Global Seed Vault](#), for our largest audience in the event's history. His message was clear: global food security is facing a once-in-a-lifetime stress test, and plant science is one of the smartest, highest-return investments we can make.

Dr. Fowler reminded us that roughly 750 million people are food insecure today, with rising temperatures, conflict, and declining research investment converging to threaten harvests worldwide. Yet he also offered reasons for optimism: modern tools now let scientists tackle problems that seemed impossible 20–30 years ago.

OPTIMISM ROOTED IN PRAGMATISM

Fowler's "moonshot" work—like safeguarding more than a million seed samples at Svalbard—preserves the crop diversity that underpins resilient food systems. He underscored that US agricultural R&D does extraordinary good abroad and yields an estimated 10-to-1 return for American farmers—evidence that investing in science delivers both moral and economic dividends.

Crucially, he pointed to the Danforth Center as a place where moonshots meet the fundamentals. Danforth Center teams are advancing crops such as cassava, teff, and cowpea—staples for hundreds of millions—that can withstand heat, drought, and disease. As Fowler put it, the quality of the work here is singular, and it's aimed squarely at real-world impact for food security.

How Plants Handle Heat—and What It Means for Our Food

Summer heatwaves are common in St. Louis and across many parts of the US. The impact of extreme temperatures can dampen outdoor activities, wreak havoc on lawns and gardens, and most importantly, challenge food producers.

Heat stress is complex: lessons from model plants don't always translate to fields, and species—and even varieties—use different tactics. That's why our scientists study diverse plants, looking for discoveries that might help safeguard crop productivity in a warming world.

In the Gehan Lab, [Malia Gehan, PhD](#) and her team study diverse crop species to compare the mechanisms and strategies plants have evolved to respond to heat. There can even be large differences in heat response within a single species because they have become adapted to their local environments. Teams compare quinoa, maize, and brachypodium (a model grass related to wheat and rice) to map heat-response strategies. Understanding natural variation can help pinpoint traits that stabilize yields as temperatures rise.

Heat stress also affects photosynthesis, decreasing efficiency and reducing yields. Because photosynthesis powers food production—and is among the most heat-sensitive processes—[Ru Zhang, PhD](#), and her team investigate how high temperatures damage plants' inner photosynthetic machinery. Using short-lifespan model organisms, such as algae and grasses, the lab aims to accelerate gene function analysis related to photosynthesis and identify strategies to improve photosynthesis and plant growth under high temperatures.

"Heatwaves turn sunlight into stress," said Zhang. "Our job is to retune the photosynthetic machinery so that plants keep making food when temperatures spike—protecting food security for all."



In the lab of Malia Gehan (right) this summer, REU interns tested how heat impacts pollen viability in a high-yielding quinoa line versus a standard research variety.



Team members in the lab of Ru Zhang (center) investigate the effects of high temperatures on photosynthesis, with a goal of protecting crop yield in the face of increased heat.



Perennial Solutions

FFAR BACKS ALLISON MILLER'S CROP DOMESTICATION RESEARCH

The [Foundation for Food & Agriculture Research](#) has awarded a Seeding Solutions grant matched by partners to speed the domestication of herbaceous perennial crops. Led by [Allison Miller, PhD](#), Danforth Center principal investigator and professor at [Saint Louis University](#), the effort aims to hone the breeding pipeline that delivers perennial grain crops that protect soil and water while maintaining strong yields and lowering production costs.

Compared to annual crops, perennial crops root deeply, recycle nutrients and water, and require reduced inputs relative to annual grains—but very few have been domesticated for large-scale production. Working with collaborators at [Kansas State University](#), [The Land Institute](#), and Saint Louis University, Miller's team will accelerate that process by testing rapid, early-life screening methods that predict adult performance. Studies will include species at different points along the domestication continuum, from wild pre-breeding candidates to more advanced lines.

"Our goal is simple and ambitious: deliver crops that work for farmers and the planet," said Allison Miller, PhD, Danforth Center principal investigator and professor at Saint Louis University. "We seek to shorten timelines and widen possibilities, so that farmers have more options that offer more benefits."

WHY IT MATTERS

Optimizing the process of improving perennial grains would give producers new options that sustain soils and water resources while stabilizing costs, aligning productivity with stewardship. By validating fast, scalable screening tools, the project seeks to shorten timelines and broaden the diversity of species entering domestication—moving promising plants from research field plots to farms more quickly.



Silphium is another perennial candidate for domestication. Scientists are breeding for plants that produce many seeds.



Outstanding in His Field

DIRECTOR NAMED FOR DANFORTH FIELD RESEARCH SITE

The Donald Danforth Plant Science Center has appointed [George "Cody" Bagnall, PhD](#), as Director of its Field Research Site in St. Charles, Missouri. Acquired in August 2022, the 140-acre bottomland farm is a crucial bridge between discovery science and real-world application—where teams can test hypotheses under authentic field conditions with the infrastructure and support rarely available at larger sites.

Bagnall brings a systems-engineering mindset to an inherently systems-based challenge: field research shaped by weather, soils, and management decisions. Trained in aerospace engineering, soil science, and root biology, Bagnall has 13+ years of field experience leading teams. He has designed experiments on regenerative agriculture, including cover cropping, nitrogen use, and mechanical farming systems. He co-developed root imaging technology that captures roots growing in place, yielding real-time insights into how plants interact with soil, water, and nutrients.



"In this role, I'm excited to support projects across our community and help them tackle critical questions in the unpredictable field environment," Bagnall said. "We'll continue expanding the site while diversifying both our user base and the plant species we study."

Bagnall earned a BS in aerospace engineering and a PhD in agricultural engineering from [Texas A&M University](#). His leadership will help ensure Danforth Center discoveries deliver on their promise to benefit people and the planet.

The Danforth Center Field Research Site in St. Charles, Missouri.



Cody Bagnall collects a soil sample at the Field Research Site. His tenure as director of the site began in September.

FIELD RESEARCH SITE 2025 NUMBERS

- 140 acres
- 49 plant species
- 14 experiments
- 6 labs
- 3 research institutes
- 3 outreach/education fields



The lab of Nigel Taylor (above right) secured proof-of-concept funding to pursue resistance to geminiviruses, a serious threat to crops.



The lab of Tessa Burch-Smith (above left) has an idea for an entirely new mode of action to block plant disease spread.

The Proof-of-Concept fund is part of the *Future Forward* campaign and is supported by donors like you. Visit [campaign.danforthcenter.org](https://danforthcenter.org/campaign) to learn more.

Plant Science, Powered Early

FOUR PROOF-OF-CONCEPT AWARDS SPEED IDEAS TO IMPACT

The Danforth Center's Startup Initiative has awarded four \$50,000 proof-of-concept (PoC) grants to accelerate promising technologies from lab bench to marketplace—tackling food security and environmental sustainability challenges head-on.

These donor-powered awards help teams generate the data needed to secure intellectual property, attract partners, and de-risk ventures on the path to startup formation.

"Over the past four years, several technologies have been derisked through PoC awards, resulting in three new startup companies," notes Tom Laurita, PhD, Danforth Center director of entrepreneurship.

What's funded now:

- Virus-resistant crops.** The [Taylor Lab](#) has identified mutations in the POLD1 gene that confer resistance to geminiviruses—pathogens that devastate cassava, tomato, maize, soybean, and cotton—offering a scalable route to protect yields.
- Smarter weed control.** The [Umen Lab](#) is building a rapid, customizable platform to pinpoint genetic drivers of herbicide sensitivity across crops—enabling targeted strategies that reduce overall herbicide use.
- New ways to block disease spread.** The [Burch-Smith](#) and [Czymmek](#) teams are developing tools to control plasmodesmata—tiny channels between plant cells—opening entirely new modes of action for crop protection.
- Cover crops without the yield penalty.** The [Baxter](#) and [Topp](#) labs are advancing maize germplasm tailored for no-till, cover-cropped systems—so farmers can build soil health without sacrificing productivity.

This is what early, catalytic capital makes possible: faster validation, stronger IP, and clearer paths to market for innovations that feed people and sustain the earth. Thank you to our supporters for fueling first steps that lead to real-world impact.



Danforth Launches Spearhead Bio

NEW COMPANY TO SUPERCHARGE GENOME EDITING

St. Louis has gained a new agtech company, Spearhead Bio—launched through the Danforth Center's Start-Up Initiative—will commercialize a breakthrough "genome glue" that makes inserting DNA into plant genomes faster and more precise. The company's TAHITI platform (Transposase-Assisted Homology-Independent Targeted Insertion) complements CRISPR's "scissors," enabling efficient, targeted gene integration in both transgenic and non-transgenic crops.

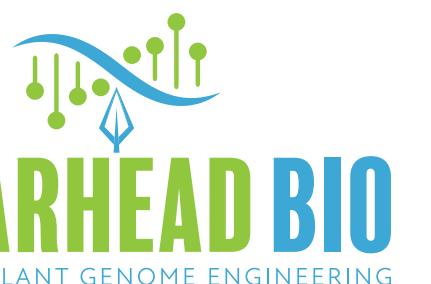
The seed for Spearhead Bio was planted in March 2019 at a Big Ideas event, where teams of scientists compete for best big idea as voted by the audience. The Slotkin lab's presentation on harnessing transposable elements—nature's "jumping genes"—for crop improvement won the small grant. That research matured into a 2024 *Nature* paper describing transposase-assisted target-site integration (TATSI), an order-of-magnitude leap in precision DNA insertion. TAHITI builds on this science to deliver predictable, efficient gene integration for real-world breeding.

Spearhead reflects the Danforth innovation arc—idea to impact. De-risked by our Start-Up Initiative and launched by the [Danforth Technology Company](#) with regional investors including [BioGenerator](#) and the Helix Fund, the company underscores St. Louis's strength: turning foundational science into companies and on-farm solutions for growers.

BETTER CORN IN A HURRY

The promise of TAHITI is already drawing support. In July 2025, Spearhead Bio earned a [National Science Foundation](#) STTR Phase I award to fast-track TAHITI in corn, the nation's most valuable row crop. Improvements to corn typically take around 16 years and cost \$115 million. NSF is betting that TAHITI can improve both price tag and timeline.

•
Corn, one of the most important crops in the US, is a focus for Spearhead Bio, the new precision genome engineering company spun out of the Danforth Center this year.



"Our goal is to unlock the full potential of plant genetics using the tools nature already provides. By engineering the plant's own genome-editing machinery, we're creating a faster, cleaner, and more predictable path to crop improvement."



- Keith Slotkin, PhD, Spearhead Bio Founder and Chief Scientific Officer; Danforth Center Principal Investigator



The 25th Research Experience for Undergraduates program this summer welcomed 17 interns.

"I now have a much better sense of what agricultural biotechnology entails—and how many possibilities there are."

- **Serene Cheng, intern from Sierra College**



Growing Scientists. Growing Solutions.

25 YEARS OF REU AT THE DANFORTH CENTER

For a quarter century, the Danforth Center's Research Experience for Undergraduates (REU) has opened the lab door to promising students nationwide. This six-week, hands-on internship equips emerging scientists with cutting-edge skills, dedicated mentorship, and a real-world view of how plant science drives solutions in food security and sustainability.

This milestone summer came with a twist: National Science Foundation (NSF) funds were delayed during planning. Thanks to the Saigh Foundation's Fred M. Saigh Internship Fund, bridge support kept the program on track. On day one, NSF funds arrived—an emphatic green light for discovery.

LEARNING BY DOING—AND BELONGING

From first pipette to final poster, students experience the full arc of research—designing experiments, analyzing data, and presenting results alongside world-class mentors.

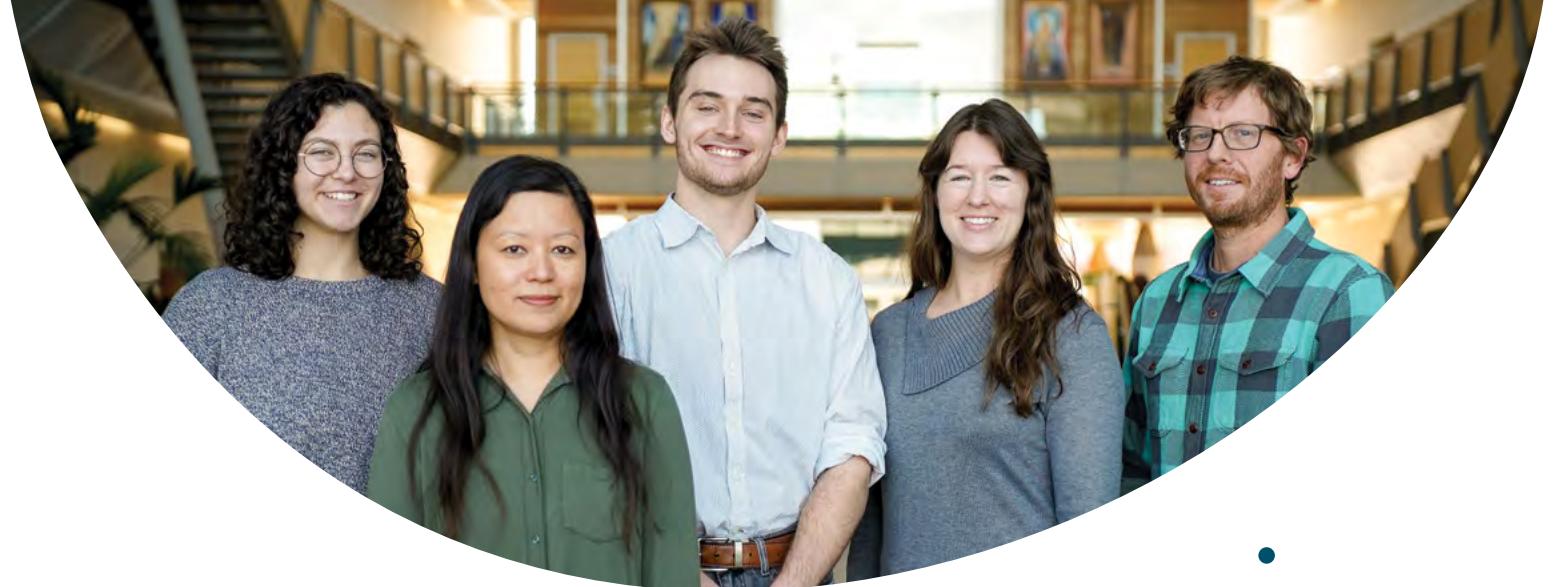
"Since there were no labs at my home institution, I was thrilled to finally conduct experiments and learn new skills," says Serene Cheng, a student at Sierra College. "My favorite part has been meeting people in this field and seeing the many pathways—from leading a team to science communication to running a core facility. I now have a much better sense of what agricultural biotechnology entails and how many possibilities there are."

FROM INTERNSHIP TO IMPACT

REU alumni carry forward rigor, creativity, and purpose into graduate school, industry, and public-sector labs. This year's cohort includes future scientists pursuing gene editing for food security, data science for phenotyping and geospatial analysis, and breeding for crop improvement. Whether their journey leads next to the lab, the office, or the field, students leave inspired and empowered—ready to become the next generation of scientific innovators and problem solvers.

ACKNOWLEDGMENTS

The Danforth Center thanks the National Science Foundation for supporting the REU program and the Saigh Foundation for ensuring an uninterrupted experience for the 2025 cohort.



The first cohort of Pivot to Plants will graduate later this year. One candidate has already landed a position with a local agtech employer.

Pivot to Plants

BUILDING THE BIOSCIENCE WORKFORCE OUR REGION NEEDS

The St. Louis bioscience economy is growing faster than its talent supply. BioSTL's labor market analysis projects about 1,400 bioscience job openings per year in our region over the next decade—many requiring specialized lab and data skills that are in short supply.

Pivot to Plants meets this gap head-on. Launched in 2025 with National Science Foundation support, and with funding for two more years, the year-long fellowship at the Danforth Center gives motivated adults with associate or bachelor's degrees the hands-on research experience, mentorship, and professional development needed to move into plant and data science roles. Fellows train while embedded in the St. Louis agtech ecosystem—gaining the competencies employers need today.

REGIONAL IMPACTS

- **Ready-to-hire talent.** Fellows graduate with verifiable lab experience, data fluency, and safety/compliance skills.
- **Broader access.** Roughly half of future bioscience openings won't require a four-year degree, widening pathways for a variety of candidates.
- **Retention by design.** Training occurs in-region, knitting fellows into employer networks, core facilities, and peer cohorts—keys to long-term retention.



"Local employers tell us the skills gap is real," said **Parag Bhatt, PhD**, Danforth Center data science trainer. "Pivot to Plants closes that gap by providing intensive, mentored training in lab practice and data science. It's a fast, practical on-ramp that delivers confident, capable hires to St. Louis's growing agtech ecosystem."

BY THE NUMBERS: ST. LOUIS BIOSCIENCE WORKFORCE

- **19,000+** payroll jobs in regional bioscience industries
- **800** bioscience firms across the region
- **1,400** projected annual job openings over the next decade
- **47%** of current openings are "middle-skill" roles often attainable without a four-year degree

Source: BioSTL, "Labor Market Analysis Reveals Significant Opportunities for Accessible, Quality Jobs in Commercial Bioscience," March 28, 2022.

WHY IT MATTERS

With targeted training and strong employer connectivity, Pivot to Plants turns regional workforce gaps into opportunity—delivering the skilled scientists and technicians our innovation economy needs to thrive.

GROW OUR COMMUNITY.



Thanks to the Young Friends Steering Committee for helping make Party with the Plants 2025 a resounding success!

"I hope first-time visitors get a feel for how important the work here is... Scientists at the Danforth Center really are changing the world."

- **Klaire Whiteside, chair, Danforth Center Young Friends**

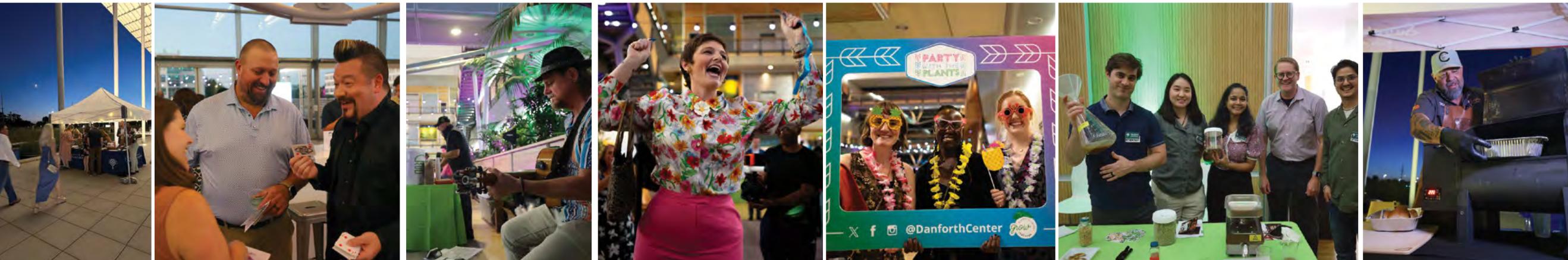
A Good time for a Good Cause

FOOD, FUN, AND FLORA AT PARTY WITH THE PLANTS

On September 26, summertime persisted for one last night for Party with the Plants 2025: Plants in Paradise. The atmosphere at the Center was one of a summery celebration with guests arriving in tropical attire, ready to explore some science and give back. This year was the most successful yet: with record attendance and a record \$170,000+ raised to help fund early-stage research, training for young scientists, and local STEM education.

TURNING UP THE HEAT

The night got off to a sizzling start with a live cooking demonstration from celebrity chef Mike Johnson of Sugarfire Smoke House. Their new giveback dish—The Botanical Belly—inspired by the Danforth Center's research, includes two food security crops, sorghum and cassava, and is available at Sugarfire's Olivette location on Fridays through the end of the year. (A portion of proceeds benefit the Danforth Center.)



SEE THE 2025 PARTY WITH THE PLANTS HIGHLIGHTS REEL:



THE FUN IN FUNDRAISING

Party with the Plants featured much to enjoy throughout the building: live Latin-inspired music by Akoustic Element, close-up card tricks by illusionist Keith Jozsef, food and drink from more than a dozen partners, and a raffle where guests could win everything from a barrel of booze to a weekend at the Lake. And then there was the main event: the eight unique science stations, where guests could glimpse some of the research being done at the Center—and play a veggie piano!

KEEP GROWING!



Since its inception in 2017, Party with the Plants has been the signature event of the Danforth Center's Young Friends—a community of professionals, age 40 and younger, who champion the Center's mission. Since 2022, the event has also served as the grand finale of our annual online peer-to-peer fundraiser, the Grow Challenge® Week of Giving.

THANK YOU

PARTY CO-CHAIRS: Klaire Whiteside, chair; Richard Clements, vice chair
 EMCEE: Blake Whiteside
 SCIENTIST ORGANIZERS: Kerri Gilbert and Katie Murphy
 SCIENTISTS: Balaji Balamurugan, Rachel Combs-Giroir, Pratibha Demiwal, Keith Duncan, Jackson Gehan, Sabita Gyawali, Takashi Hamaji, Hui Jiang, Raviraj Kalunke, Ray Kannenberg, Eileen Kosola, Ellen Krall, Clara Lebow, Maneesh Lingwan, Dianyi Liu, Collin Luebert, Jennifer McDonnell, Karina Medina, Boominathan Mohanasundaram, Aimee Moore, Stew Morley, Srijana Mukhia, Narayanan Narayanan, Sona Pandey, Seth Polydore, Vidhya Raman, Tess Rogers, Ashley Snouffer, Danielle Stretch, James Umen, Vincent Vanyo, Jiahong Zhou

Thank You to Our Sponsors

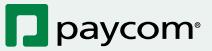
Platinum



Gold



CHRISTNER ARCHITECTS



Silver

ArchBridge Family Office
 BioBalance Health
 Clements Foods Company
 First Bank
 KWS
 Lewis & Clark Agrifood
 Maritz
 Modifi
 Polsinelli
 Tarlton

Food & Beverage Partners

4 Hands Brewing Co.
 Alpha Brewing
 Anheuser-Busch
 Blissfully Popped
 Blue Jay Brewing
 Eleven Eleven Mississippi
 Fired Up Jellies & Jams
 Levels Nigerian Cuisine
 Nothing Bundt Cakes
 Pretzel Boy's
 Shake Shack
 Still 630
 Sugarfire Smoke House
 Switchgrass Spirits

Bronze

ACTA Wealth Management Group
 Circadia
 CK Power
 CMA Global
 Colliers
 Compass
 Electrical Solutions
 CoverCress
 G.S. & S. Construction
 Limitless Horizons Consulting
 PNC
 Saluna
 Western Gate Partners

Special Community Partners



GROW OUR COMMUNITY.



Bellwether Chairman and President Robert B. Smith III and Ginger Smith talk with Dr. Katie Murphy outside the Bellwether Foundation Phenotyping Facility.



The Bellwether Foundation has made a transformational \$5 million commitment to expand phenotyping capability at the Danforth Center Field Research Site.

If you'd like to learn more about how the *Future Forward* campaign is transforming plant science and our region, visit: campaign.danforthcenter.org.

GROW OUR COMMUNITY.



Norma Deen Juracsik enjoys a moment in the Danforth Center prairie, where her passion for nature and science come full circle.

"Even when I was giving just \$100 a year, people at the Danforth Center knew my name. That made me feel like I belonged."

- Norma Deen Juracsik, member of the WHD Legacy Society

During the *Future Forward* campaign, planned gifts can create a legacy of connection and caring for generations to come. Learn more at campaign.danforthcenter.org/ways-to-give.

The Bellwether Foundation

LEADING THE WAY IN PLANT SCIENCE INNOVATION

With a mission to enhance quality of life in St. Louis through bold, future-focused philanthropy, The [Bellwether Foundation](#) has become a catalytic force in plant science innovation at the Danforth Center.

ONE OF THE FIRST IN THE NATION

In 2012, Bellwether helped launch the **Bellwether Foundation Phenotyping Facility**, one of the first high-throughput, automated plant phenotyping platforms in the nation. This indoor phenotyping system remains a core strength of the Danforth Center, attracting top scientists, start-ups, and national partners working to build improved crops for a changing world. With recent upgrades—including advanced cameras and automated nutrient systems—Bellwether's investment continues to yield vital insights into plant growth and resilience.

A RENEWED INVESTMENT

Now, with a transformational \$5 million commitment to the [Future Forward](#) campaign, the Foundation is expanding phenotyping capability to the field. The new Bellwether field phenotyping facility, under construction at the Center's 140-acre [Field Research Site](#), will bring advanced imaging outdoors—creating a one-of-a-kind environment to test crops under real-world climate variability.

"At Bellwether, we believe that investing in plant science today is an investment in the health of our region and our world," said Robert B. Smith III, chairman and president of The Bellwether Foundation. "The Danforth Center is one of St. Louis's great innovation engines, and we're proud to support its work."

"The Bellwether Foundation has been a vital partner," said **Dr. Katie Murphy**, Danforth Center director of phenotyping. "They are facilitating cutting edge discoveries that will benefit agricultural sustainability and the region for decades."

A Nurse, A Hiker, A Legacy

NORMA DEEN JURACSIK'S JOURNEY TO PLANT SCIENCE PHILANTHROPY

Norma Deen Juracsik first toured the Danforth Center in 2002, shortly after the main building and greenhouses opened. "I was impressed and thought, 'I'll send them a donation!'" That first gift grew over the years—and so did her connection.

ROOTED IN NATURE AND ADVOCACY

A retired nurse and passionate environmentalist, Norma spent years leading walking tours in Forest Park, hiking at the Shaw Nature Reserve and around the country, and engaging with organizations like the Sierra Club. Her deep concern for clean air, water, and healthy food naturally drew her to the Danforth Center's mission.

A LEGACY OF BELONGING

For Norma Deen, giving is about connection. "Even when I was giving just \$100 a year, people at the Danforth Center knew my name. That made me feel like I belonged."

Norma joined the [Friends of Plant Science](#) in 2012 and the [Danforth Society](#) in 2024. She's also made a planned gift through the [WHD Legacy Society](#). "If you make a planned gift, you're more a part of things," she says. "Since I became a more involved donor, I've attended intimate events, like lunch with the CEO." She also promotes the Danforth Center in other ways, sharing her [Leaflet](#) newsletters with friends who aren't familiar with the Center.

"I'm not the biggest donor, but I've been giving for years. I'm part of the original foundation and I really feel connected to the place."

Tributes

The Danforth Center is grateful to donors who choose to honor or memorialize their friends, loved ones, and colleagues with a gift to the Center. Gifts listed here were received by Sept. 30, 2025. To make a tribute, visit danforthcenter.org/donate.

In Honor of...

Jane Bond
Ms. Martha W. Bond

Beau Brauer
Rev. Roy Pfautch

Jim Carrington
Drs. Gerty Cori Ward &
Eric R. Ward

Melissa Clements
Laura & Richard Clements

Richard Clements
Ms. Leeann Bo

Anna Dible
Philip & Marjorie Alderson

Steven A. Epner
Mr. & Mrs. Paul L. Epner

Kathy Hollo
Laura & Richard Clements

Ruth Kim
Lenny & Debbie Vines

Robert & Susan Levin
Mr. & Mrs. Leonard J. Adams

Dr. Allison Miller
Philip & Marjorie Alderson
Kenneth R. Mares
Mr. & Mrs. Timothy G. Morrison

Katie Mocivnik
Julie Brown

Allison Rae
Liz & Tim Rea

Peter H. Raven
Mr. & Mrs. Guy McClellan

Mike Scully
Mr. & Mrs. Brett Moorehouse

Doug & Lynn Yaeger
Dr. & Mrs. Joseph G. Sandza

Bing Yang
Kenneth R. Mares

In Memory of...
Frances M. Austin, Jr.

Tom & Cindy Bander

Roger Krueger
Mr. & Mrs. Cary Dollard

Mr. & Mrs. Dan Doyle

Erlinger Family Fund

Ms. Judy E. Glatz

Mr. & Mrs. King Poor

Kay Pugh

Debra Jo Becker
Renee & Harold Denlow

Ruth Brock
Mrs. Arthur J. Reimers

Gene Citeman
Lenny & Debbie Vines

William H. Danforth
Mr. & Mrs. Blackford F.

Brauer

Shanti Khinduka &
Manorama Khinduka

Joseph R. Dolan
George C. Convy

Derick Driemeyer
Mr. Wayne Althen

Bob Harness
Luke Kissam & Kathryn

Schanen Kissam

Bob & Joan Jasper
Butch & Cindy Jasper

Roger Krueger
Luke Kissam & Kathryn

Schanen Kissam

Grace Marks
Lenny & Debbie Vines

Henry Winkelman
Tom & Cindy Bander

Mr. & Mrs. David A. Chassin

Malia & Jackson Gehan

Charles W. Oertli
Anonymous

Tom & Cindy Bander

Mr. & Mrs. James J.
Murphy, Jr.

Patty Nooney

Jo Oertli

Mr. & Mrs. Austin Tao

Alice H. Vosburgh†

Ambassador† & Mrs.
George Walker, III

Mr. Blanton J. Whitmire†

James M. & Rev. Dr.
Barbara G. Willock

Mr. & Mrs. John J. Wolfe, Jr.

Aleene Schneider Zawada†

WHD Legacy Society

The Danforth Center is grateful to donors who have planned for future needs of the Center by designating an estate gift. To learn more about estate giving, visit legacy.danforthcenter.org.

Anonymous

Mel† & Sue† Bahle

Mr.† & Mrs.† William J. Barnard

Senator† & Mrs.

Christopher S. Bond

William R. Boyle†

Cicardi & Susan Bruce

Ann Case†

Dr.† & Mrs.† William H. Danforth

Dr. Robert† & Lorene† Drews

Elizabeth Early

Steven & Louise Epner

Mr.† & Mrs.† David C. Farrell

Glenn Fischer

George L. Fonyo

Harris J. Frank†

Allen W. Gaebe†

Mr.† & Mrs. David P. Gast

Mrs. Charles Guggenheim†

Irene & Bob Gulovsen

Dr.† & Mrs.† Ernest G. Jaworski

Norma Deen Juracsik

Karen Kalish

Janet M. & Newell† S. Knight, Jr.

Nancy Knowles†

Dr.† & Mrs.† Wilfred R.

Konneker

Mary† & Oliver† Langenberg

William A. and Christine A.

Linnenbringer

The Mares Family
Endowment

Marilyn Miles

Mr.† & Mrs.† Jefferson Miller

Philip† & Sima

Needleman

Jo Oertli

Mr. & Mrs. John W. Rowe

Carol† & D.C.† Rucker

Walter† & Marie† Schmitz

Rich Schumacher

Francine & Jerome† Seslen

Steven C. Shepley

Dr.† & Mrs. William S. Sly

Sanford† & Gloria Spitzer

† Deceased



DONALD DANFORTH
PLANT SCIENCE CENTER

975 North Warson Road
Saint Louis, MO 63132 USA

Address service requested

Connect with us.  danforthcenter.org

