Mission
To advance and communicate scientific discovery in plant biology to improve agriculture, protect the environment, and enhance human health.

Values
Integrity, Mutual Respect, Excellence, Collaboration, Innovation

Vision
The Boyce Thompson Institute will be known internationally for research excellence in plant biology and discoveries that benefit society.

About the cover: In collaboration with scientists from Cornell University and Shandong University in China, the Fei group traced the apple’s evolutionary journey along the historic Silk Road trading route. The discoveries could help breeders develop apples that feature improved disease resistance, taste, and larger fruits.
2017 marked the one-hundred-year anniversary of William Boyce Thompson’s Red Cross expedition to war-torn Russia. Upon touring the country, Thompson witnessed, first-hand, the repercussions of an unstable food supply. He returned to the United States inspired to create an institute devoted to discoveries in plant science, which he hoped would sustain and improve the American way of life.

A century later, BTI continues to pioneer in new frontiers. The Board of Directors is proud of the Institute’s founding mission, and we take pride in helping to sustain that vision and ensuring that the crucial research being done in Ithaca receives the support it deserves. I want to express my appreciation and congratulations to my colleagues for a third straight year of 100% board participation in BTI’s annual fundraising campaign. Our collective contributions once again demonstrate the Board’s commitment to BTI’s research; and reinforce our belief that BTI is crucial in global efforts to support agriculture, the environment, and human health.

The Board also is pleased to announce the addition of three new members in 2017. Christine Smart is the newly appointed director of Cornell’s School of Integrative Plant Science (SIPS) and also serves on BTI’s Scientific Advisory Board. Susan McCouch is an adjunct faculty member at BTI and Professor, Plant Breeding and Genetics Section in SIPS. Finally, Oliver Schulze, the great-great grandson of W.B. Thompson and a partner in the Boyce Thompson Center on Plaque commemorating the opening of the Boyce Thompson Center in May, 2017.

In the process, we have looked back a century, and also ahead. While we have much to celebrate – a new Computational Biology Center, a human health spinoff, exciting findings on the history of the apple, insights into the current incarnation of BTI, and share the magic of plant science discovery.

I, along with a curious and sometimes wistful contingent of staff, emeriti, donors, and friends, was thrilled to attend the May 4th dedication of the Boyce Thompson Center in Ithaca. The mixed-use center revives and enhances the historic architecture, and places a great emphasis on the history and current importance and trajectory of plant science. To visit the Center and view the numerous exhibits and works of art dedicated to BTI science is to recall its origins, learn about the current incarnation of BTI, and share in its storied past.

The 315-mile arc of this storied river is a metaphor for discovery. Upon touring the country, Thompson was united in celebration at the grand opening of the Boyce Thompson Center in May, 2017.

Past and present members of the BTI community united in celebration at the grand opening of the Boyce Thompson Center in May, 2017.
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Scholars at Cornell have unveiled technologies, including keyword cloud visuals, that help to curate BTI’s publications and research collaborations.

**LETTER FROM THE VICE PRESIDENT OF RESEARCH**

The halls of BTI are bustling with 150+ people doing science, in a community working in many different capacities—at the bench, in the greenhouse and other core facilities, and through the web of interactions that are required to execute less visible but essential tasks, like ordering materials, fixing equipment, and paying the bills. BTI scientists are grateful for the dedication of the staff and their exceptionally high level of service and support, which enables the scientists’ work.

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The Uncharted Course to Discovery

At one time, societies believed the Earth to be flat. People gazed out over the ocean, imagining a Cliff at the end of the world. The Age of Exploration eventually squashed this theory, introducing Europe to land masses and raw materials they did not know existed. The ripple effect of these revelations cannot be understated.

Ponce de Leon, Vasco da Gama, Magellan, and others explored for the sake of discovery and the hope for riches, unsure of what they would encounter. The vessel was their lab, the stars and navigation tools were their instruments, and if they were lucky, state-sponsored funding paid for it all.

500 years later, scientists represent our great explorers, hunting not for new land, but for understanding. For some, it’s a journey into the deep abyss of molecular biology. For others, a quest to reveal the chemistry of life. Research charts a path to enlightenment, unlocking knowledge that can be used by colleagues around the world to improve and protect our way of life. This is the power of discovery.

For 93 years, the scientists at BTI have ventured into new corners of plant, fungal, insect and chemical biology. Their research has offered valuable insights into fungal, insect and chemical biology. Their research has offered valuable insights into fungal, insect and chemical biology. Their research has offered valuable insights into fungal, insect and chemical biology. Their research has offered valuable insights into fungal, insect and chemical biology. Their research has offered valuable insights into fungal, insect and chemical biology.

Fei Group’s seasonal science makes headlines

Dr. Zhangjun Fei and his group members have developed an impressive reputation for analyzing genomic datasets. In 2017, they also produced several publications in perfect harmony with the seasons. In September, the Fei group and collaborators from Cornell University and Shandong University in China revealed the apple’s evolutionary journey along the historic Silk Road trade route. This research offered several breakthroughs, including a better understanding of the common apple’s true origin, as well as the revelation that the apple traveled both west and east along the Silk Road. Previous studies only identified the western travels to Europe. Fei’s research stands to benefit apple breeders looking to improve taste and disease resistance. These apple revelations captured the imagination of the media as Fei lab’s work was featured globally through outlets including The Guardian, The Times of London, Food and Wine, BBC, Smithsonian, and more.

Just in time for Halloween, and in collaboration with the National Engineering Research Center for Vegetables in Beijing, Fei published an analysis of the Curcubitana maxima and Cucurbita moschata genomes; two pumpkin species in high demand for their decorative appeal and nutrition. This revelation promises to have an impact on nations struggling with food insecurity. “Pumpkins are used as a staple food in many developing countries and are cultivated all over the world for their culinary and ornamental uses,” said Fei, who was the senior author of the paper. “The high-quality pumpkin genome sequences will lead to more efficient dissection of the genetics underlying important agronomic traits, thus accelerating the breeding process for pumpkin improvement.”

The power of algae fuels the Stern Lab

For several years, there has been a lingering hope that a breakthrough would occur involving algae as a legitimate successor to fossil fuels. As tests and trials have fallen short, research continues as scientists try to harness the power of this unique organism, which replicates at a feverish pace using only carbon and sunlight.

Enter BTI’s Stern Lab, who, in collaboration with Texas A&M University, released a paper focused on a revolutionary new concept: algal droplet bioreactors on a chip. The conversion to fuel rests upon two functions of algae, their ability to grow to high density, while maintaining a high content of useful oils. To date, scientists have been forced to study replication and hydrocarbon production separately, but this discovery changes the game. “This is the first microsystem that allows both lipid content analysis and growth rate measurement at high throughput, where previous work could only do one or the other,” remarked senior author and engineer, Arum Han of Texas A&M University.

These bioreactors won’t springboard the world to cars powered by algae just yet, but they do create a more efficient research environment in the hunt for algal strains with ideal characteristics. “The important thing is to develop a tool that can screen millions of cells in a short time frame and small space. In a chip which houses millions of droplets of cells, each droplet is like a flask or a bioreactor, and that’s how we can get results faster from just a tiny chip,” explained author and BTI post-doc, Shih-Chi Hsu. There is still much work to be done, and the Stern Lab’s research is a step forward in identifying strains that could bring the potential of large-scale algal oil production to fruition.

New support for innovation in the Jander Lab

When it comes to exploring insect-plant interactions, few do it better than BTI’s Jander Lab. In 2017, they successfully competed for awards from multiple government agencies.

First, the National Science Foundation’s (NSF’s) Biological Sciences Directorate awarded a grant through the Enabling Discovery through Genomic Tools (EDGE) program. On top of that, the Jander Lab received an award from the Defense Advanced Research Projects Agency (DARPA) Insect Allies program. The EDGE grant will allow Georg Jander and his collaborators, including BTI’s Mueller Lab, to create genetic and genomic resources for common milkweed (Asclepias syriaca) and tropical milkweed (Asclepias curassavica). While milkweed is an important host for insects such as monarch butterflies and bumble bees, its biology offers important insights for plant biologists. Of particular interest are the chemicals produced by milkweeds to communicate with insect partners and defend against attack from unwanted insects. “Using milkweed as a model will help researchers to transition from analyzing these plants at a macro scale to looking at their molecular makeup,” said Jander.

The DARPA award supports the Viruses and Insects as Plant Enhancement Resources (VIPER) project, which will help Jander and his collaborators to develop insect-vectored viruses that will help improve the adaptability and resistance of maize crops. Maize, or corn, is the most valuable crop in the United States, and 30% of it is lost to insect damage each year. “The biggest impact of the VIPER project will be the development of a toolkit to rapidly counter sporadic and emerging threats to this valuable crop,” said Jander. “While the benefits to maize are potentially extraordinary, the benefits created by the VIPER team are also expected to be transferable to a variety of other important crops.”
Heck Lab leading the charge against Citrus Greening Disease

Citrus fruits are such a consistent part of many people’s daily lives that many rarely consider that they might one day become scarce. One might be startled to hear that citrus greening disease has killed nearly 150,000 acres of Florida orange groves to date and the threat remains uncontained. The disease costs growers hundreds of millions in revenue each year, along with the elimination of over 8,000 jobs annually.

At BTI, Michelle Heck’s lab works to unlock discoveries that will help bring an end to this epidemic. Heck has emerged as a global leader in the fight to defeat citrus greening, and last year her accomplishments were recognized at the highest level. One of the final actions by the outgoing Obama administration was to honor Michelle with the Presidential Award for Early Career Scientists. “I congratulate these outstanding scientists and engineers on their impactful work,” said President Obama in a statement. “These innovators are working to help keep the President Obama in a statement. “These innovators are working to help keep the

While citrus greening is a focus for many researchers, most attention is diverted to the bacterium that causes the disease, and not the insect that spreads it. To gain a better understanding of the Asian citrus psyllid, or ACP (Diaphorina citri), BTI’s Heck and Mueller labs teamed up with 21 partner institutions to publish a draft assembly and annotation of the ACP genome, comprising 5.3 million manually curated gene models and 200,000 automatically predicted genes. “It is essential to have detailed genetic and genomic knowledge to tackle the psyllid, but a lack of this information had been very problematic,” according to Surya Saha, BTI senior bioinformatics analyst and project leader. “Now, an annotated ACP genome exists, containing a wealth of information needed to develop molecular-based solutions to combating this pest.”

Harrison Lab goes to the root of the problem

As political leaders, farmers, and scientists maintain collaborations to address the monumental challenge of feeding 9 billion people by 2050 on roughly the same amount of farmland, one cannot underestimate the need to develop more sustainable and efficient growing methods. Currently, farmers utilize massive amounts of phosphorous-rich fertilizer to provide nutrients to crops, which is often inefficient and the cause of many environmental problems such as water contamination. While the global population increases, access to phosphate, an important natural fertilizer, is decreasing. This begs a perilous question: how do we farm in a world where phosphate is a scarce, expensive resource?

Maria Harrison believes the answer to the question could lie within a 400-million-year-old symbiotic relationship in the soil, between plant roots and a group of fungi called Glomeromycota. In exchange for the food it receives from the plant, the fungi transfer phosphate to the roots. Harrison has studied this relationship for several years, and new breakthroughs offer further insight into how these relationships can be managed to offer more plants a naturally-occurring conduit for nutrients.

The Harrison Lab recently revealed an exciting new understanding of the “food” the plants feed to the fungi. Existing theories suggested sugars as the lone menu item for fungi, but, in collaboration with Dr. Peter Driever at the University of Bonn, the lab found the existence of lipids, or fatty acids, as well. “Until recently, it has been assumed that the fungus obtains sugar from the plant and can manage to make other essential nutrients itself,” Harrison explains. “However, this is not the full story.” This crucial discovery shows the fungi are almost completely dependent on the plant for survival, versus simply obtaining a portion of their diet from the roots. “Without the basic lipids that are obtained from this plant, the fungi cannot produce the complex lipids that it requires to live,” says the first author of the study, BTI postdoc Armando Bravo.

The Harrison Lab also made strides in understanding the lifespan of the plant-fungus relationship, specifically the plant’s decision to terminate the relationship if the fungi do not deliver phosphate (via a specialized form of the fungus, called an arbuscule). The plant’s ability to break away from the fungus may be a key reason this symbiosis has existed for so long. “To understand the process, the Harrison Lab studied the regulators that control it. “Regulation of arbuscule lifespan may provide an avenue for obtaining more effective symbiosis,” proposed Harrison. “If you can extend arbuscule lifespan slightly, possibly by modifying when the degeneration program is triggered, then there is time for additional [phosphate] delivery.”

Near the end of 2017, the Harrison Lab and collaborators heard that they will receive a $5 million National Science Foundation grant to study genes that help legumes access soil nutrients. Using gene editing to make precise changes in the plant genome, the Harrison Lab will develop Medicago truncatula mutants to identify the functions of genes they believe to be important for the relationship with arbuscular mycorrhizal fungi. With these new insights, researchers hope to reduce dependency on chemical fertilizers while finding alternative methods for delivering crucial nutrients to important crops.

The ripple effect of discovery

As scientists continue to sail into the uncharted areas of plant and insect biology, they may not always know what they are looking for. What they appreciate is that discovery is the revelation of something not yet known. Once knowledge surfaces, it must be shared. BTI accomplishes this through different means including scientific publications, public seminars, and technology transfer, allowing the entire scientific community, and beyond, to leverage new insights for education, further research, and technological innovations. That is the true power of discovery.
Technology Transfer
TRANSLATING RESEARCH INTO BENEFICIAL VENTURES

The famous French microbiologist, Louis Pasteur, once said: “there is no such thing as applied science—there is only science and its applications”.

An important part of BTI’s mission is to ensure that discoveries made at BTI have a positive impact on society and that technology is applied in ways that are most useful. The Technology Transfer office works with BTI researchers to identify potential new technologies developed in the labs, to protect those technologies, and to find the best ways to deploy them, often in conjunction with outside partners.

Of seven new 2017 invention disclosures, two examples are a new resistance gene for protecting tomatoes against disease, discovered in the Martin lab, and new methods developed in the Harrison lab for the growth of beneficial fungi that promote plant growth. Technology Transfer
TRANSLATING RESEARCH INTO BENEFICIAL VENTURES

Utilizing a diversity of digital content, the BTI social media communities all enjoyed significant growth in size and engagement. 2017 also saw the birth of a start-up company, Ascribe Bioscience, whose platform uses BTI small molecule technology to boost the immunity of plants against a whole host of agricultural diseases. Ascribe is an Ithaca-based company and was co-founded by three BTI scientists and a local entrepreneur. BTI is working closely with the company to help it secure funding and grow into a competitive force in the agricultural biotechnology community.

In 2017, BTI also filed two new patent applications, and received two new issued patents. Two new license agreements were finalized this past year, and many commercial and academic entities launched into new evaluations of BTI technology.

Communicating Science
ENGAGING THE PUBLIC IN BTI RESEARCH

The communication of science is a pillar of BTI’s mission and BTI continues to push the boundaries for what it means to engage the public and disseminate scientific knowledge.


Utilizing a diversity of digital content, the BTI social media communities all enjoyed significant growth in size and engagement. A new podcast, the BTI Science Bomb, debuted in March and currently has a dozen episodes featuring faculty, post-doctoral scientists, donors, and interns.

For the first time in its 16-year history, BTI offered a livestreamed broadcast of the Plant Genome Research Program (PGRP) Summer Intern Symposium. Hundreds of family members, friends, and science enthusiasts from around the country were able to watch the impressive young scientists present their summer research. Livestreaming was utilized again in November’s Giving Tuesday programming for a day-long broadcast that featured discussions with scientists from six different BTI labs, as well as local supporter Ron Cooper, and past BTI President, Charlie Arntzen.

BTI Communications teamed up with the Cornell Alliance for Science and Cinemapolis, an Ithaca-based theater, to present a screening of the documentary “Food Evolution.” An audience of 100 people from the greater Ithaca community watched the movie, then engaged in a panel discussion with scientists, farmers, and science communicators, some of whom were featured in the film.

The BTI website was transformed to offer a more engaging and educational experience for visitors. The integration of real-time content feeds and publication metrics allow visitors to quickly understand the purpose and impact of BTI science.

BTI’s 2017 communications efforts have positioned the Institute to be a leader in the increasingly important world of science communication, while successfully conveying the power of BTI’s discovery research to the public and science community at large.
From August to November of 2017, BTI’s faculty, staff, and Board participated in a series of facilitated activities to develop the Institute’s strategic vision for 2018 – 2023. A tool called scenario planning was used to imagine four alternative futures, 20 years ahead, and create strategies that would maximize BTI’s scientific and societal impact regardless of which of these very different scenarios predominate. The process was built through surveys and interviews, a faculty-staff retreat, Scientific Advisory Board input, a Board and leadership team retreat, additional faculty-led discussions, and other forms of engagement. Through this process, five key objectives emerged:

1. **People**  
   Reimagine workforce, organization, succession, and hiring, while maintaining a focus on scientific discovery in plant biology.

2. **Space and Technology**  
   Reimagine the discovery research environment and infrastructure, addressing BTI’s physical space and technological platforms for communication and local or distance collaboration.

3. **Resources and Outreach**  
   Execute robust plans for relational and financial resource growth, growing private and public funding and collaborations through enhanced messaging and relationship building, increasing recognition of the Institute among the science community and potential funders, engage the next generation of scientists, and participating in promoting and explaining science to a sometimes-skeptical public.

4. **Cornell University**  
   Strategically strengthen the symbiotic relationship with Cornell by initiating and strengthening scientific, administrative, and facility partnerships.

5. **Harnessing Discoveries**  
   Translate discoveries to real world applications and value by strengthening the technology transfer pipeline, developing new funding sources, and potentially monetizing discoveries.
A Plan for Any Scenario

Four possible future scenarios were developed by the Plant Science Research Network and described in their document, Imagining Science in 2035: Strategies for Maximizing the Value and Impact of Plant Science, and Beyond.

Targeted Science
Climate change and food insecurity contribute to geopolitical instability
Increased investments in deep understanding of climate and organisms
Investments enable scientists to respond to the challenges of the moment
Public support allows researchers to adequately prepare for the future

Critical Science
Environmental stresses create geopolitical instability around the globe
Researchers abandon deep level understanding to focus on the crisis of the moment
Quality control suffers under the pressure to reach conclusions quickly
Corporations control information and data underlying an unhealthy majority of scientific results

Selective Science
Computers and intelligent machinery handle most of the lab work
Individual labs survive through large group collaboration
Only the most established research areas garner attention
Focus is mostly on high-impact areas that offer the best apparent return on investment

Renaissance Science
Dedicated time to pursuit of knowledge and understanding
Ample opportunity for big-picture thinking
An era of unprecedented discovery and innovation
Advances in Artificial Intelligence thrusts research into new frontiers

Selective Science
Computers and intelligent machinery handle most of the lab work
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Focus is mostly on high-impact areas that offer the best apparent return on investment
Education and Outreach

NURTURING THE SCIENTISTS OF THE FUTURE

Curriculum Development
In 2017 BTI supported 55 classrooms across the country, reaching more than 2,250 students with kits designed to bring BTI science into the classroom. 40% of the two kits, titled “Beet Army Worm Invasion” and “Algae to Energy: Optimizing Systems,” went to “high-needs” school districts and were distributed equally between urban, suburban and rural school districts. Driven by research in the Jander Lab (Beet Army Worm) and the Stern Lab (Algae to Energy), both classroom kits are intended to provide students with hands-on plant biology experiments designed to introduce the scientific method while discovering real-world applications.

With a newly renovated Boyce Thompson Center, the BTI Education and Outreach team wanted to connect the Institute with the Yonkers community. In October, David Stern, Vanessa Greenlee and Delanie Sickler guided 20 Yonkers City School District teachers in implementing the Algae to Energy lesson plan for their classrooms. With support from an NSF award to BTI and Texas A&M University, these classrooms will receive materials to build their own photo-bioreactors and learn the possibilities for algae-produced fuels and other bioproducts to increase sustainable energy and materials production in the U.S. and around the world.

BTI also participated in the NY State Agricultural Literacy week, partnering with the Van Eck lab to teach second graders from the Ithaca-area Newfield and Groton school districts. Through a children’s book entitled “The Grapes Grow Sweet,” and accompanying activities and discussion, students learned the agricultural value of grapes in their region and how the Van Eck lab is discovering solutions to protect this vital state crop from viruses that attach their root systems.

Plant Genome Research Program (PGRP)
BTI hosted 32 students for the 17th PGRP summer internship program. This program continues to draw exceptional young people interested in plant biology and bioinformatics, who often are stimulated by their multifaceted summer experience to pursue STEM-related careers. During the summer, interns live on campus, work in labs on their own projects, and present their work in an August symposium. They also benefit from one-on-one mentorship from experienced researchers, as well as a variety of seminars and other opportunities. This program is possible with funding from the National Science Foundation and is a collaboration between BTI, Cornell and the USDA.

The high school internship program is funded through generous donations.

Patrick Mendoza
Originally from Santa Ana, California, Patrick is majoring in horticulture at Iowa State University. He worked as a financial analyst for over a decade, until his passion for horticulture inspired him to return to school. His interests include plant molecular biology and mutualism between insects, fungi, and plants. He presented on his BTI experience at the 2017 Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) conference. “My experience as a summer REU intern has been phenomenal. I’ve made friends and contacts that will help me through my academic career and beyond.”

Patrick will be pursuing a Ph.D. at Cornell University beginning Fall 2018.
Postgraduate Society

FOSTERING COMMUNITY AND PROFESSIONAL DEVELOPMENT
FOR GROWING SCIENTISTS

BTI supports graduate and postgraduate students in sharpening their research, communication and networking skills, to prepare them fully for a variety of career options that would draw on their scientific experience. The Postgraduate Society (PGS) seeks to promote professional development, foster a sense of community and facilitate communication throughout BTI.

Science Symposium

This annual one-day event fosters inter-lab communication and stimulates collaborations between various BTI research areas. Themed “Plant Development and Evolution,” the event featured speakers from BTI, the USDA, Cornell SIPS, and the Department of Chemistry and Chemical Biology (CCB). A poster session allowed BTI researchers to showcase their work.

Career Symposium

Highlighting non-academic scientific careers, this event featured BTI staff, alumni, and guests in both a panel discussion as well as workshops. Presentations ranged from technology transfer and biotechnology startups, to consulting and publishing. Presenters included Paul Debbie (BTI), Michael Kamarck (Willow Creek Biotech), Parag Mahanti (IMS Consulting Group), Richard Pattisson (Nature Communications), Lori Adams-Phillips (University of Iowa), and Michael Roach (Cornell University).

Guest Speakers

BTI’s Distinguished Lecture Series gives members the opportunity to interact and network with renowned scientists. 2017 lecturers included Elizabeth Kellogg (Donald Danforth Science Center) and Martin Chalfie (Columbia University). The PGS also organized a seminar series entitled “PGS Feasts.” Seminar speakers included Polly Holmberg (Cornell Alliance for Science), Hening Lin (CCB), and Michael Raising (Stanford University).

Mentoring Program

PGS organized a pilot mentoring program linking members with professionals in career areas that are of interest to them. Mentors help to guide and inspire PGS mentees to make practical steps in preparation for their careers, and are able to provide insight into career options outside of academia. Twelve PGS members were paired with mentors from a variety of sectors, and thanks to the positive feedback received by both mentors and mentees, this program will continue into 2018.

Alumni Spotlights

Dr. Sarah (Refi) Hind

In May of 2017, BTI gathered to congratulate and bid farewell to Sarah Hind who had worked as a postdoc and research associate in the Martin Lab at BTI for six years. Sarah moved to Illinois with her family to join the University of Illinois at Urbana-Champaign as Assistant Professor in the Department of Crop Sciences.

Dr. Hind’s new position began on June 16th and her research explores how the plant immune system detects pathogenic bacteria that cause disease on tomato and other crops. Her research helps scientists better understand how plants and microbes interact, contributing to the development of agricultural crops that are more resistant to infection.

Things are progressing well in her new role; in fact, she has already added several new members to her lab and is starting a new research project working on pumpkin. When BTI reached out to Sarah this past October, she reported that her family has “been settling in well, enjoying life in the Midwest” and added that she really enjoys “being the boss” of her own research group.

Education:
Ph.D. Molecular, Cell, and Developmental Biology, University of South Carolina-Columbia, 2010
B.S. Biological Sciences, University of South Carolina-Columbia, 2005

Dr. Jiayang Li

Our most sincere congratulations to BTI alumna, Jiayang Li, who recently received first prize at the National Awards for Natural Sciences from the Chinese government. This is the highest award for Natural Sciences in China and was awarded to him by President Xi Jingping from the Chinese government. This is the highest award for Natural Sciences in China and was awarded to him by President Xi Jingping from the Chinese government.

Dr. Li has made seminal contributions to establishing genetics approaches to improve rice and understand rice growth habit. He has identified and characterized key transcription factors and hormonal signals that determine rice architecture, and he has demonstrated that this fundamental knowledge can contribute to the development of improved rice varieties through marker assisted breeding.

Dr. Li was a postdoc at BTI from 1991-1994. Dr. Li is currently the Vice Minister of Agriculture in China and President of the Chinese Academy of Agricultural Sciences. He is also Professor and Principal investigator at the Institute of Genetics and Development at the Chinese Academy of Sciences.

Education:
Ph.D. Biology, Brandeis University, 1991
M.S. Institute of Genetics, Chinese Academy of Sciences, 1984
B.S. Agronomy, Anhui Agricultural College (now Anhui Agricultural University), 1982

What is a BTI Alum?

Anyone who has previously worked at the Boyce Thompson Institute at any level (high school, undergraduate, graduate, postdoc, etc.) is considered a BTI alum. This includes former interns, researchers, professors, and students. To learn more, visit BTIscience.org/alumni.
BTI is grateful to the following individuals and organizations who have shown generosity during 2017, providing the capacity that helps to make the research and programs of BTI possible.

$10,000 & Over
American Endowment Foundation

$5,000 - $9,999
Greg Galvin Paul & Carol Hatfield Legacy Foundation of Tompkins County

$1,000 - $4,999
Altman Foundation Patti & Owen Baynham April Burke Drs. Lourdes Casanova & Soumith Dutta David Fernandez & Cayuga Landscape Co., Inc.

John & Kate Townsend Sylvia Weinstein*

$500 - $999
Anonymous

To make a gift to BTI, please contact BTI development at (607) 288-3554 or email bti-dev@cornell.edu. Visit BTIscience.org/give to make a secure online contribution. Every effort has been made to ensure the accuracy of these lists. If we have unknowingly made an error, please notify the development office.

*Deceased

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*Deceased
BOYCE THOMPSON INSTITUTE: 2017 in Review

2017 Designations

Education & Outreach
Ithaca Garden Club
Robert & Roberta Kohut
Legacy Foundation of Tompkins County
Carolyn W. Sampson
Triad Foundation, Inc.

STEM Scholarships for High School Students
Sophia & Nick Darling
Vanessa & John Wyatt Greenlee
Stephanie Meyer & Jesse Andres
Laura Philips & John Elliott
Melissa & Eric Richards
David & Karen Stern

Postgraduate Society Initiatives
Laboratory Product Sales (LPS)

Research
American Endowment Foundation
Triad Foundation, Inc.

2017 Sustainers

BTI is fortunate to receive support from a very special community of committed, long-term donors, and we recognize and are most grateful for their loyalty. The following individuals and organizations have given gifts over the course of ten or more years, showing dedicated support of BTI’s mission. Many have also given the gifts of time and guidance, and will forever leave their mark on the Institute.

$100,000 & Over
Christian C. & Nora R. Hohenlohe
Triad Foundation, Inc.

$50,000 - $99,999
Philip & Anette Goetel
Charles T. Schulze

$20,000 - $49,999
Evelyn Berezin
Mr. & Mrs. Roy H. Park, Jr.
Laura Philips & John Elliott
Carolyn W. Sampson
David & Karen Stern
Leonard & Sylvia Weinstein*

Up to $19,999
Anonymous
Charles & Kathy Arrtzen
Patti & Owen Baynham
Eleanor Stern Burchfield
James & Terry Byrnes
Mary E. Glitter
Luke & Greta Calvito
John & Marie Denters
Lori A. Van Oosten
David Fernandez & Cayuga
Landscape Co., Inc.
Bob & Johanna Gorosnoas
Stephen & Elizabeth Howell
André and Jean Jagendorf
Robert & Roberts Kohut
Lynn Bradley Leopold
Susan & Gregory Martin
Robert M. Pennoyer
Alen & Anne Remwick
Donald & Marcia Stocum
Richard & Mildred Staples
Kathryn W. Torgeson
Fred A. (Ben) Williams

Monthly Givers
Patti & Owen Baynham
Zhangjun Fei & Xuemei Tang
Vanessa & John Wyatt Greenlee
Ryan Gutierrez
Kelli Monroe
Aurora Ubing
*Deceased

In Memory of
Edward H. Buckley
Janet Buckley
A. Carl Leopold
Lynn Bradley Leopold
Leonard H. Weinstein
David and Libbie Silberman
Robert and Roberta Kohut
Sylvia Weinstein
Sylvia Weinstein
Lynn Bradley Leopold

2017 Memorials and Tributes

In Honor of
Clare L. Simpson
Donna Esposito

In Memory of
Edward H. Buckley
Janet Buckley
A. Cari Leopold
Lynn Bradley Leopold
Leonard H. Weinstein
David and Libbie Silberman
Robert and Roberta Kohut
Sylvia Weinstein
Sylvia Weinans
Lynn Bradley Leopold

SUSTAINERS REMEMBERED

Dr. Robert and Mrs. Virginia Miller
Robert’s father, Dr. Lawrence P. Miller, was an esteemed biochemist and among the first researchers at BTI in Ithaca, BTI was a source of many friends for the Miller family, who have many family photos from picnics on the grounds. Robert and Virginia continued to help BTI thrive long after its time in Ithaca.

Dr. André Jagendorf
Dr. Jagendorf was a passionate and distinguished scientist, President of the American Society of Plant Physiologists, a BTI collaborator, and more. Best known for his work in photosynthesis and chloroplast molecular biology, Andre is remembered fondly for his enthusiasm for discovery.

Dr. Leonard “Len” and Mrs. Sylvia Weinstein
The Weinsteins were iconic members of the BTI community for over 50 years. Among Len’s many roles were dedicated employee, board member, and sustaining donor. He led a colorful career, and remained active in his research long after retirement. Leonard’s most esteemed research focused on the impact of fluorides on plant development. After Len’s passing, Sylvia maintained her generosity to BTI until her recent passing, and she will be missed.

DONOR SPOTLIGHT

Ithaca Garden Club

BTI’s summer research internship program offers valuable opportunities for undergraduate and high school students to experience hands-on research in plant biology. While program internships for undergraduate students are primarily funded by the National Science Foundation (NSF), high school student inclusion is made possible by sponsors and individual donors.

Founded in 1922, the Ithaca Garden Club (IGC) has a long history of supporting local beautification projects and programs that focus on environmental conservation and education. Among their many community contributions, the Ithaca Garden Club has sponsored local high school students’ participation in BTI’s summer research internship program since 1911.

2017 LEGACIES REMEMBERED

The memories of the following deceased individuals, who, over the course of the Institute’s history, have included BTI in their estate plans, will endure through the work being done to honor W.B. Thompson’s vision for the future.

Charles & Margaret Abell
John & Madolpina Bank
Anthony (Andy) Grefig
John & Mayfred Hirshfield
George & Helen Kohut
George & Elizabeth McNew
William Boyce Thompson

2017 W.B. THOMPSON
LIVING LEGACY SOCIETY

BTI recognizes living individuals who have expressed intent to remember BTI in their estate plans or with other methods of planned giving. Through their generosity and foresight, W.B. Thompson Living Legacy donors help to secure the future of the Institute. BTI would like to thank them for announcing their commitment to BTI, and appreciate them in their continued generosity and passion for the Institute’s mission.

Evelyn Berezin
Brian & Claire Federici
David & Karen Stern

NOVEMBER 1, 2017
### 2017 New Grants

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<thead>
<tr>
<th>Source of Funds</th>
<th>Amount</th>
<th>Percentage</th>
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<tr>
<td>US Government</td>
<td>$7,987,000</td>
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<tr>
<td>Institute endowment</td>
<td>$3,910,000</td>
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<tr>
<td>New York State</td>
<td>$1,662,000</td>
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<tr>
<td>Foundations</td>
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<tr>
<td>Other private sources</td>
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<tr>
<td>Unrestricted revenues</td>
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<td><strong>TOTAL</strong></td>
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### Use of Funds

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<tr>
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<tr>
<td>Research</td>
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<tr>
<td>Administration</td>
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<td>Research support</td>
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<td>Equipment &amp; facility</td>
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<td>Non-research</td>
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<td>Development</td>
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<tr>
<td>Communications</td>
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<tr>
<td>Education &amp; Outreach</td>
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<td>1%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$16,314,000</td>
<td></td>
</tr>
</tbody>
</table>

* We are grateful for the dedicated service of Machi Dilkworth (2014 through 2017). She supported and enriched the Board of Directors, the Scientific Advisory Board, the institute and its staff by challenging our beliefs and always seeking a better way. We are better for having shared her expectations for professionalism, challenges for excellence, commitment to diversity and furtherance of the mission of the Institute.