2017 ANNUAL REPORT

CULTIVATING INNOVATION

Foundation for Food and Agriculture Research

FFAR

FOUNDATION FOR FOOD AND AGRICULTURE RESEARCH

Contents

FFAR

Agriculture is the most healthful, most useful and most noble employment of man.

George Washington

Letter from the Board Chair

Dear Friends of the Foundation for Food and Agriculture Research,

As an inaugural FFAR board member and newly elected Chair, I am proud to say that 2017 was a momentous year for the Foundation. I have watched the organization grow from a brilliant idea on the pages of the 2014 Farm Bill to a fully functioning and dynamic institution that is fulfilling its charge from Congress.

FFAR has proven to be a nimble organization, able to seize scientific opportunities and build partnerships to move the needle on food and agriculture research. Catalyzed by a $9.4 million grant from FFAR, the Soil Health Institute, Soil Health Partnership and The Nature Conservancy are leading a collaborative project to improve soil health and, ultimately, support positive economic and environmental outcomes for American farmers. Without FFAR funding, a project of this scale to standardize soil health measurement and broaden decision support for farmers could not be realized.

The innovative research projects that you will read about in the pages of this report show great potential to improve the lives of farmers and consumers. For example, FFAR:

- Established the Crops of the Future Collaborative with eight organizations pooling resources for crop improvement.
- Provided emergency funding to address emerging pests and pathogens including: wheat leaf streak mosaic, spotted wing drosophila in tart cherries, South American palm weevil, Brucellosis in cattle and leaf streak in maize across the corn belt.
- Joined the World Wildlife Fund and the Walmart Foundation to help farmers maximize resources and ensure that more crops complete the journey from farm to table.

While I write this letter, the FFAR Board is preparing to discuss research priorities for 2019 and beyond – and we look forward to incorporating your input to help steer the Foundation toward innovation and impact.

As we prepare to welcome 9.7 billion people to the global dinner table, our work has never been more important and scientific opportunity has never been more promising.

We welcome your partnership during this vital and burgeoning time for food and agriculture research.

Sincerely,

Mark Keenum

Mark Keenum, Ph.D.
President and Inaugural Member, FFAR Board of Directors
President, Mississippi State University

Letter from the Executive Director

Dear Friends of the Foundation for Food and Agriculture Research,

Thank you for supporting food and agriculture research as we work together toward a more productive, sustainable food and agriculture system.

It is my pleasure to introduce the Foundation for Food and Agriculture Research Annual Report: Cultivating Innovation, which chronicles a banner year for FFAR.

We nurtured many relationships and ideas to unleash the power of the FFAR model in 2017. FFAR awarded $45.8 million in grants for innovative research and committed $16.6 million of FFAR funding to programs launched in 2017 that will award grants in 2018. Scientific needs identified by the food and agriculture community were met with large-scale, collaborative research partnerships that would not have occurred without the convening capacity offered by FFAR. It has been uniquely rewarding to spur collaboration between producers, scientists of different disciplines and other food and agriculture stakeholders who benefit from the innovative thinking that arises when a diverse team works toward a shared goal.

For example, a $2.2 million grant from FFAR is being leveraged with $4.4 million from the Noble Foundation for a cover crop germplasm effort that brings together representatives from the seed industry, the U.S. Department of Agriculture-Agricultural Research Service (ARS) and Natural Resources Conservation Service (NRCS), several land grant universities and a producer network. The multi-partner project will identify cover crop species with the greatest potential to improve soil health.

In short, the FFAR model has taken root. In 2017, the Foundation:

- Awarded 39 grants
- Leveraged taxpayer investment with an additional $64.8 million from co-funders – a 1:1.4 matching ratio
- Listened to input from more than 400 stakeholders at 10 convening events

The 39 grants awarded by FFAR in 2017 allowed hundreds of researchers to collaborate on innovative science with potential to make major strides toward more productive, sustainable agriculture and better health through food. One game-changing example: a University of Illinois team is harnessing the power of photosynthesis to improve staple crop yields by more than 20 percent, rates not seen since the Green Revolution. FFAR was proud to contribute $15 million to a $45 million investment in the project. Putting these research results in the hands of farmers in the coming years has potential to change lives and dramatically accelerate global crop production.

In addition to supporting science that yields practical outcomes for farmers and consumers, the Foundation fosters the next generation of food and agriculture researchers- an important step toward attracting top talent that is needed in the food and agriculture workforce. As we publish the 2017 Annual Report, FFAR is poised to award the third annual class of New Innovator awards to early-career researchers, has established the FFAR Fellows program for graduate students to receive training from industry mentors, and is celebrating Rodolphe Barrangou, the second annual recipient of the National Academy of Sciences Prize in Food and Agriculture Research, a mid-career honor established by FFAR and the Bill & Melinda Gates Foundation.

We look forward to continuing our work with you, our partners, colleagues and grantees, to champion the innovation, inspiration and collaboration we need to meet the global challenges facing food and agriculture.

Sincerely,

Sally Rockey, Ph.D.
Executive Director

It's a great time to be in food and agriculture sciences.

Sally Rockey
FFAR Executive Director

Who We Are

With 9.7 billion people projected to populate the world by 2050, our food system must evolve.

Sustainably nourishing the growing global community demands transformative discoveries from the best and brightest scientists. The Foundation for Food and Agriculture Research (FFAR) brings together leading experts to identify and investigate the researchable questions whose answers have the potential to enhance the economic and environmental resilience of our food supply.

The historic creation of FFAR in the 2014 Farm Bill is a visionary, lasting contribution to our nation's efforts to retake our place as a global leader in food and agriculture research. FFAR was established as part of the Agricultural Act of 2014, known as the Farm Bill. The premise of FFAR's formation was that increased investment in innovative partnerships and cutting-edge research and development would be critical to nourishing a growing global population.

We know that innovative science cannot happen without collaborative thinking from a strong, diverse and creative workforce. That means asking the right questions, convening the best and brightest minds to answer those questions, and seeing research through to successful implementation.

FFAR has created a brilliant model that realizes Congressional intent to leverage federal investment in agricultural research through unique public-private partnerships. The Foundation matches every $1 in Federal funding with at least $1 in funding from a non-Federal source, which doubles the investment by taxpayers.

OUR VISION

We envision a world in which ever-innovating and collaborative science provides every person access to affordable, nutritious food grown on thriving farms.

OUR MISSION

We build unique partnerships to support innovative science addressing today's food and agriculture challenges.

The FFAR model is:

Efficient
FFAR matches every $1 in Federal funding with at least $1 in funding from a non-Federal source, which doubles the investment by taxpayers.

Collaborative
Each research project creates novel research partnerships.

Nimble
FFAR can make award decisions as quickly as within one week.

Flexible
Resources can quickly shift to tackle emerging issues and seize opportunities to fill research gaps.

How We Work

At FFAR, we believe in harnessing science and technology for the betterment of the food and agriculture system and consequently improving quality of life for citizens of the U.S. and around the world.

We seek innovative research ideas with potential to fill critical knowledge gaps and reveal unexplored research areas that advance science and provide results that are applicable directly to the food and agriculture system. We listen and learn from the community to identify pressing issues where FFAR funding can make a difference, propel science into application and have the greatest impact.

FFAR staff constantly monitors supported programs for relevance and effectiveness in providing solutions to challenges faced by the agriculture and food system, and adjusts when necessary to achieve our mission.

How We Fund Projects

FFAR's work to fund the science needed to address today's food and agriculture challenges provides a critical opportunity to invest in our future through research. FFAR awards grants or prizes in one of the following three ways:

1 Request for Applications (RFA)

When it is determined that a program requires multiple organizations to conduct the research and would benefit from a broad solicitation of expertise, FFAR will issue an RFA to solicit grant proposals. Proposals received through an RFA are peer reviewed by experts in the research field related to the RFA and merit reviewed by FFAR Advisory Councils or a specialized review panel. Those deemed highest quality and aligned most closely with the objective of the program and FFAR mission are awarded. Public RFAs are posted online at www.foundationfar.org and announced through our email distribution list.

RFA funding examples: Accelerating Advances in Animal Welfare (pgs. 20-21) and New Innovator in Food and Agriculture Research Award (pgs. 38-39).

2 Challenge Prize

In the case of a particular information or technological need, FFAR may design or support a challenge prize competition in which one or several applicants are awarded funding based on a developed concept or technology. Challenge prizes are posted on our website and promoted publicly.

Challenge Prize example: National Academy of Sciences Prize in Food and Agriculture Sciences (pg. 37).

3 Direct Solicitation

Researchers may submit a concept to FFAR that does not align with a current RFA or challenge prize opportunity. If the Board of Directors believe the concept is aligned with the FFAR mission and exceptionally meritorious, it may advance to additional review and concept development. All concepts are also subject to a scientific review by experts in the concept's area of research. Concepts may be submitted at any time online at http://bit.ly/ffarconcepts.

Direct funding examples: Realizing Increased Photosynthetic Efficiency (RIPE) project (pg. 33), Science Breakthroughs 2030 study (pg. 30).

The FFAR Framework

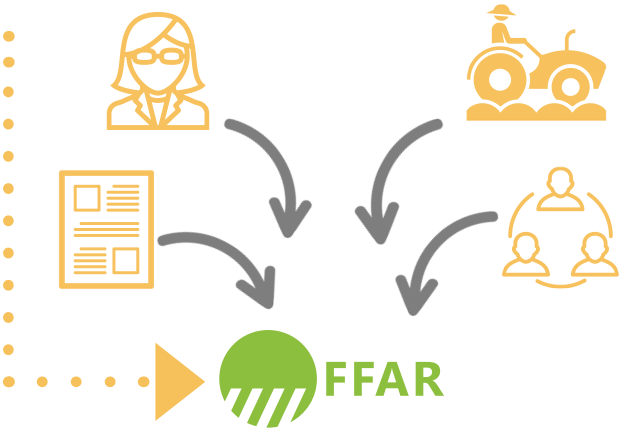
Scientific rigor is the heart of the work conducted by FFAR-supported researchers, but our efforts start long before funding is awarded.

FFAR research priorities and funding opportunities are determined under the strategic direction of the Board of Directors. Each potential program and funding opportunity undergoes a rigorous review process to ensure that FFAR is investing in research with potential to yield actionable results that solve critical issues in food and agriculture. The framework outlined below details the process of creating and executing an open funding opportunity at FFAR.

1 Generate Ideas

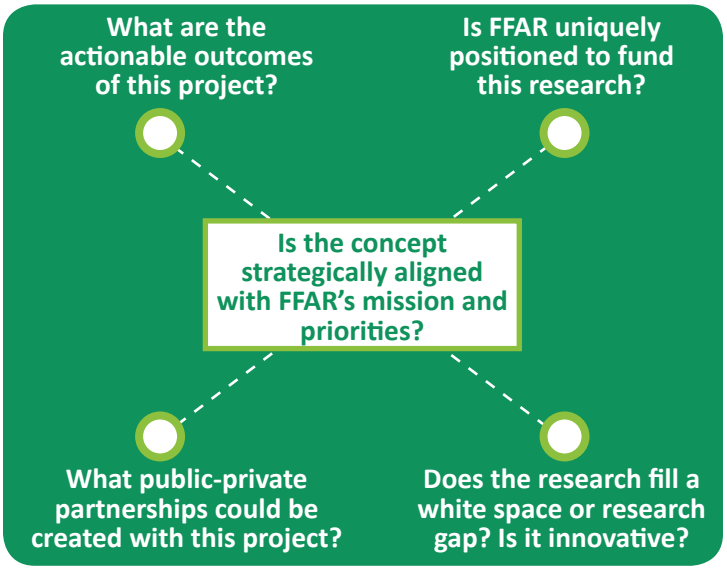
FFAR seeks research gaps and white spaces with the most potential to impact food and agriculture. Ideas for research programs and funding opportunities come from a variety of places:

- USDA Input
- Research Publications and Conferences
- Commodity and Farm Groups
- Partners and Friends of FFAR
- Convening Events (see pg. 42)
- FFAR Staff, Board and Advisory Councils

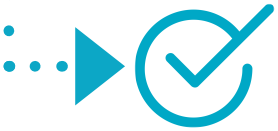


2 Initial Concept Review

Once an idea is generated, Scientific Program Directors review the concept for research merit and alignment with the FFAR mission. We ask several questions about the concept to determine if it is a potential FFAR project:



3 Executive Director Approval



At this stage, meritorious concepts are presented to the Executive Director for a preliminary approval. This gives the Scientific Program Directors authority to move the project forward through the secondary levels of review and approval.

4 Scientific Program Committee Approval

Members of the Scientific Program Committee, a subset of the FFAR Board of Directors, review the concept for alignment with FFAR's Strategic Plan, scientific merit and impact potential. This committee includes ex-officio representation from the USDA. Concepts may be rejected, invited to revise and resubmit or approved.

5 Accepting Applications

Subscribe to our newsletter to stay up to date on current funding opportunities:

http://bit.ly/ffarnewsletter

OR

Request for Applications

Once the program is fully approved, the request for applications will be made public. Open opportunities are listed on the FFAR website at foundationfar.org/open-opportunities.

Direct Solicitation

Once the concept is approved, a full proposal must be submitted for a formal application review.

6 Application Review Process

Submitted research proposals undergo a rigorous, two-stage review process: External Peer Review and FFAR Advisory Council Review.

Peer Review

Applications are evaluated by an independent, external peer review panel of scientific experts in the award area. Evaluation criteria generally includes:

- Scientific or technical merit
- Impact and relevance
- Project strategy and feasibility
- Innovation
- Outcomes evaluation
- Key personnel qualifications

Advisory Council Review

FFAR Advisory Councils have industry or scientific expertise in the FFAR Challenge Areas and evaluate applications based on the following criteria:

- Alignment with FFAR strategic priorities
- Impact and relevance
- Merit across topic areas

7 Executive Director Approval

The Executive Director reviews the recommendations from the review process and makes a final approval of the grants awarded.

Grants Awarded 8

Agreements are initiated for funding. A public announcement is made once the grant agreement is finalized. Ongoing reporting requirements and grant management begin.

What We Do

Our mission is to build unique partnerships to support innovative science addressing today's food and agriculture challenges.

In 2017, the Foundation awarded 39 grants and $45.8 million in funding to support the innovative agricultural solutions we need to feed a growing world population. With $64.8 million in non-Federal matching funds, FFAR has facilitated a total of $110.6 million invested in food and agriculture research in 2017, and far exceeded our $1 for $1 matching requirement.

The following pages describe our work in 2017 and how we invested in transformative research that will bring innovative solutions to producers across the U.S. and around the world.

About the Annual Report

This report details the grants awarded, programs launched and general activities of the Foundation for Food and Agriculture Research from January 1, 2017 – December 31, 2017. In some cases, FFAR committed resources to funding opportunities in 2017 that were not fully awarded until 2018. These programs are summarized in this report, but details of awardees may still be pending at the time of publication.

You can learn about all of our ongoing programs and initiatives on our website at www.foundationfar.org.

A nation that destroys its soil destroys itself.

Franklin D. Roosevelt

Challenge Areas

2050

FFAR supports research with the potential to yield pivotal pieces of knowledge that propel the food and agriculture field forward. With help from stakeholders in the public and private sector, FFAR established seven Challenge Areas that are ripe with scientific opportunity to create a more sustainable, productive agricultural system.

Learn more online at foundationfar.org/challenge-areas

In 2017

$24 MILLION awarded to

18 research teams

in FFAR's

7 Challenge Areas

Healthy Soils, Thriving Farms Challenge Area

The Healthy Soils, Thriving Farms Challenge Area focuses on applied research projects that contribute to improving soil health, while addressing the social and economic realities that challenge farmers, ranchers, businesses and other stakeholders. This FFAR Challenge Area is designed to foster adoption of science-based management strategies, technologies, training and outreach that not only encourage sustainable practices, but also support thriving farms as the centerpiece of a comprehensive soil health program.

Why Soil Health?

- Soil is the **foundation of American agriculture** and the science of soil health is ever-evolving.
- There is a vital need for **improved soil health metrics** and a deep understanding of comprehensive soil health practices.
- Soil health regulates water, filters potential pollutants, cycles nutrients, reduces erosion, increases biodiversity and more.

Can cattle grazing improve soil health?

Researchers will collect data on Adaptive Multi-Paddock (AMP) grazing to analyze how this grazing technique increases farm resiliency, contributes to carbon sequestration, improves soil biodiversity, and impacts animal wellbeing and productivity. This project will quantify how AMP grazing impacts farm and ranch productivity, as well as measure environmental impacts of production.

Awarded to: ASU Foundation for a New American University
Principal Investigator: Peter Byck
Matching Funder: McDonald's USA
FFAR Amount Awarded: $1,250,000
Total Investment: $2,500,000

Principal Investigator Peter Byck, Arizona State University

"Understanding the science connecting grazing practices, soil health and farmer economic well-being will help us direct investments in our supply chain to support continuous improvement in beef sustainability."

Townsend Bailey
Director of Supply Chain Sustainability
McDonald's USA

$1.25 MILLION in FFAR funding + **$1.25 MILLION** in matching funds

Assessing and Expanding Soil Health for Production, Economic and Environmental Benefits

The goal of this project is to support collaborative research and education that accelerates adoption and benefits of soil health management systems nationally. Currently, there is no standard measurement for soil health in the United States. This project will help the industry adopt standardized measurements to evaluate and improve soil health while expanding education and tools for local farmers, agronomists and landowners. The researchers believe significant engagement with farmers and landowners will catalyze greater adoption of soil health promoting practices that benefit productivity, farmer livelihoods and the environment.

Awarded to: Soil Health Institute, Soil Health Partnership and The Nature Conservancy
Principal Investigator: Steven Shafer, Ph.D.
Matching Funders: General Mills, the Jeremy and Hannelore Grantham Environmental Trust, Midwest Row Crop Collaborative, Monsanto, Nestlé Purina PetCare Company, The Samuel Roberts Noble Foundation, Walmart Foundation, the Walton Family Foundation and individual donors.
FFAR Amount Awarded: $9,442,268
Total Investment: $19,855,869

$9.4 MILLION in FFAR funding + **$10.4 MILLION** in matching funds

to support this soil health research initiative

Cover Crop Germplasm and Breeding in Support of New Cultivar Development

The focus of the initiative is to identify cover crop species with the greatest potential to improve soil health and evaluate such species over a broad geography within three groups: small grains (wheat, rye, oat and triticale), annual legumes (hairy vetch, winter peas and clovers) and brassicas (turnips, radishes, kale and mustards). Scientists at the Noble Research Institute will utilize advanced breeding techniques – which have traditionally been limited in application to high-value, row crops – to bring new and value-added characteristics to cover crops.

Awarded to: Noble Research Institute
Principal Investigator: Twain Butler, Ph.D.
Matching Funder: Noble Research Institute
FFAR Amount Awarded: $2,200,000
Total Investment: $6,600,000

"Our goal is simple: to get new cover crop solutions into the hands of those who use them."

Twain Butler, Ph.D.
Research Agronomist
Noble Research Institute

"The Noble Foundation has been a leader in developing forages and new cover crop varieties since the 1950s. It's only fitting to help further research advancement in this area at the national level, which is made possible through the FFAR grant and our team of collaborators."

Bill Buckner
President and CEO
Noble Research Institute

Learn more online at http://bit.ly/ffarcovercrops

$2.2 MILLION in FFAR funding + $4.4 MILLION in matching funds

to support cover crop research across the U.S.

Seeding Solutions: Coordinated Site Network for Studying the Impacts of 4R Nutrient Management

Research is needed to document the implications of certain nutrient management practices for managing water quality while also maintaining or growing crop yields, maintaining soil health and profitability. Researchers on this project will study 4R Nutrient Stewardship practices, a management approach that focuses on precision: using the right fertilizer source, at the right rate, at the right time and in the right place.

Awarded to: Foundation for Agronomic Research
Principal Investigator: Matthew Helmers, Ph.D.
Matching Funder: Foundation for Agronomic Research
FFAR Amount Awarded: $1,000,000
Total Investment: $2,000,000

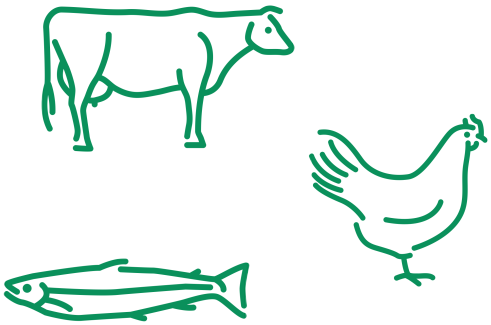
$1 MILLION in FFAR funding + **$1 MILLION** in matching funds

"This is really a one of a kind opportunity to leverage existing investment in agronomic and drainage research sites across the Corn Belt to answer additional questions about 4R practice effectiveness related to crop yield, soil health, nutrient use efficiencies, nutrient losses with leaching and gaseous nitrogen losses."

Matt Helmers, Ph.D.
Professor
Iowa State University

Protein Challenge Area

The Protein Challenge Area seeks to enhance and improve the environmental, economic and social sustainability of diverse proteins for a growing global population. For livestock and poultry production, the priority research targets include feed and nutrition efficiency, environmental sustainability, animal wellbeing and antibiotic stewardship.



Why Protein?

- The global demand for meat, dairy and fish products is projected to **increase by 50-70%** by 2050. (Source: FAO)
- Animal agriculture accounts for **60 to 70% of the total U.S. agricultural economy.**

(Source: National Academies Committee on Considerations for the Future of Animal Science Research)

2017 Protein Project Highlights

Consumer Understanding of Animal Production Practices

Farmers, ranchers and agricultural businesses are seeking to respond to consumer demand for cage-free egg production and slow-growth broiler chickens, and food retailers need to better understand consumer knowledge, beliefs and willingness-to-pay for these attributes. This research employs choice modeling to estimate diversity in consumer preferences and willingness-to-pay for cage-free eggs and slow-growth broilers now and in the future. Results released in 2018 will provide producers and companies with better data on consumer beliefs about production practices and how much of a premium they are willing to pay for poultry and eggs produced with those standards.

Awarded to: Food Marketing Institute Foundation
Principal Investigator: Susan Borra, R.D.
Matching Funders: Food Marketing Institute Foundation and Animal Agriculture Alliance
FFAR Amount Awarded: $50,000
Total Investment: $100,000

"Consumers are key stakeholders in the food system. It is critical to develop a firmer understanding of shoppers' values and priorities when making choices about the food they purchase and feed their families."

Kay Johnson Smith
President and CEO
Animal Agriculture Alliance

Learn more online at http://bit.ly/ffareggstudy

Seeding Solutions: Automated Individual Poultry Vaccination

Researchers are developing a vaccine delivery system that uses imaging technology to recognize each bird's position and deliver an individualized vaccine dose to each chick. By significantly increasing the rate of successfully vaccinated chicks, this method has potential to provide greater protection against disease and infection.

Awarded to: Applied LifeSciences & Systems
Principal Investigator: Elizabeth Turpin, Ph.D.
Matching Funder: Merck Animal Health
FFAR Amount Awarded: $800,000
Total Investment: $1,600,292

"Using facial recognition and robotics technology to deliver vaccinations with greater precision is a prime example of harnessing innovations developed outside the agriculture sector for the health and productivity of our food system."

Sally Rockey, Ph.D.
Executive Director
FFAR

Seeding Solutions: Enhancing Animal Protein through Crops and Cattle

Researchers aim to improve land use efficiency by integrating livestock and crop production systems. Dr. MacDonald and collaborators will investigate various outputs including yields, soil health and greenhouse gas emissions, as well as the economic feasibility of adopting these new practices.

Awarded to: University of Nebraska
Principal Investigator: James MacDonald, Ph.D.
Matching Funders: Board of Regents of the University of Nebraska on behalf of the University of Nebraska-Lincoln
FFAR Amount Awarded: $1,000,000
Total Investment: $2,402,000

$1 MILLION in FFAR funding

+

$1.4 MILLION in matching funds

Principal Investigator James MacDonald, Ph.D.

Accelerating Advances in Animal Welfare and Productivity Program

Farm animal welfare research plays an important role in the development and continuing improvement of sustainable livestock production, with potential to improve production efficiency, animal lives, food quality and farm-laborer work environments. In 2017, FFAR launched the Accelerating Advances in Animal Welfare and Productivity Program to support farm animal welfare and productivity research. FFAR partnered with the Open Philanthropy Project, which identifies high-impact giving opportunities and makes grants, to launch a funding opportunity to improve the welfare and productivity of egg-laying hens and commercially raised pigs.

Accelerating Advances in Animal Welfare and Productivity Program Project Highlights

Stolen Kiss – An Advanced Breeding Solution

Dr. Sonstegard and a team of researchers will use precision breeding techniques to produce swine without the need for surgical castration, a global livestock production practice used to improve meat quality and make management easier and safer. This project has the potential to improve the health of millions of piglets globally, and the safety of their handlers. Additionally, this methodology has the potential to reduce production costs and impact overall sustainability.

Awarded to: Recombinetics, Inc
Principal Investigator: Tad Sonstegard, Ph.D.
Amount Awarded: $499,443

Addressing Keel Bone Fractures in Laying Hens Housed in Cage-free Aviary Systems Using Nutrition and Management Interventions

Dr. Karcher and collaborators will conduct research to determine the impact of nutritional interventions on the gut microbiome. Research will also focus on management interventions that help producers reduce keel bone fractures in laying hens housed in cage-free systems.

Awarded to: Purdue University
Principal Investigator: Darrin Karcher, Ph.D.
Amount Awarded: $490,093

Hens have more room to roam in cage-free housing, but the extra space comes with added risk for collision and broken bones.
Photo: Joy Mench/UC Davis

Impacts of the Rearing Environment on Keel Bone Integrity, Spatial Awareness Abilities of Laying Hens

Dr. Makagon will lead a team of collaborators from UC Davis, University of Bristol, University of Bern and Iowa State University. The team will explore the impacts of poultry housing design, particularly vertical space, on the prevalence of keel bone injuries in egg-laying hens.

Awarded to: University of California, Davis
Principal Investigator: Maja Makagon, Ph.D
Amount Awarded: $431,999

A Practical Phenotypic Solution to Reduce Keel and Skeletal Bone Damage in Laying Hens

Dr. Dunn and collaborators at the major poultry genetics companies Hy-Line and Lohmann Tierzucht will lay the groundwork for breeding hens with stronger bones by developing a novel x-ray based measurement system adapted for on-farm use and correlating bone density with genetic information.

Awarded to: University of Edinburgh
Principal Investigator: Ian Dunn, Ph.D.
Amount Awarded: $486,594

PROGRAM IMPACT

If you eat, you're involved in agriculture.

Wendell Berry
Author

Food Waste and Loss Challenge Area

The Food Waste and Loss Challenge Area aims to address the social, economic and environmental impacts from food waste and loss. There are tremendous opportunities to influence economic impacts and environmental consequences through reclamation of agricultural products that are lost along the entire food chain. This Challenge Area includes research that leads to the development of novel uses for agricultural waste, improves storage and distribution that leads to food loss reduction and changes behavior to reduce food waste.

Why Food Waste and Loss?

- **Up to 40%** of the food produced in the United States is **never eaten**. (Source: NRDC)
- An estimated **$161 billion worth of food is lost** annually in the United States, and much of that waste is edible. (Source: USDA)

2017 Food Waste and Loss Project Highlights

Maximizing Farm Resources and Edible Food Rescue

The goal of the project is to identify practical opportunities for producers to increase the proportion of crops that are harvested and delivered to the highest value destinations. Initial research will focus on leafy greens, peaches, tomatoes, potatoes and romaine lettuce. The research team will collect data to estimate on-farm and postharvest losses, in addition to quantifying the environmental impacts from seed to harvest for each of these crops.

Awarded to: World Wildlife Fund
Principal Investigator: Pete Pearson
Matching Funder: The Walmart Foundation
FFAR Amount Awarded: $650,000
Total Investment: $1,300,000

"Each bite that doesn't reach consumers represents a loss of the natural resources—and money—used to produce it. We're grateful to FFAR and Walmart Foundation for supporting research that can help promote more efficient use of land, water, energy and natural resources, and deliver more crops to the highest value destinations."

Jason Clay
Senior Vice President of Markets and Food
World Wildlife Fund

Seeding Solutions: Energy-Efficient Drying to Reduce Postharvest Loss of Agricultural Commodities and Foods

This project will test a new technology to improve the drying methods used in food production. This new method will use innovative moisture-absorbing technology instead of exclusively relying on heated air to dehydrate produce, such as grains, nuts, rice and seeds, for optimum storage and distribution. Researchers will investigate if this technology can improve product quality and safety, measure the energy savings, evaluate reduction of food lost, and identify economic incentives for adoption in the industry.

Awarded to: University of California, Davis
Principal Investigator: Irwin R. Donis-Gonzalez, Ph.D.
Matching Funders: UC Davis Innovation Institute for Food and Health and the College of Agricultural and Environmental Sciences
FFAR Amount Awarded: $790,407
Total Investment: $1,580,814

"Drying agricultural produce is an energy intensive process and it is imperative to find alternative means of drying for the enhancement of food quality, safety and economical operations, while reducing food losses and waste."

Irwin R. Donis-Gonzalez, Ph.D.
Assistant Postharvest Systems Engineering Specialist
University of California, Davis

Irwin R. Donis-Gonzalez (left), Ph.D., and Kurt Kornbluth, Ph.D., are part of the team of UC Davis researchers on this project.

Forging the Innovation Pathway to Sustainability Challenge Area

The Forging the Innovation Pathway to Sustainability Challenge Area aims to understand the barriers and decision-making processes that influence the adoption of technology and research results into sustainable practices. This Challenge Area focuses on research that investigates the adoption dynamics and distribution patterns of technologies and practices that incorporate the latest research results, identifies factors that affect their adoption and recommends solutions for addressing barriers to adoption.

Why Support Innovation?

- Over the last 50 years, farmers have **tripled global food production** thanks to agricultural innovations.
  (Source: CropLife International)
- Feeding the world's growing population will require innovation adoption across the food system.

2017 Innovation Pathway Project Highlights

Seeding Solutions: An Open Source Framework and Community for Sharing Data and Algorithms
Agriculture is missing out on the innovative power of data systems by taking time to develop a workforce ready to adopt open source culture and new computational thinking, data and coding skills. This research proposes creating an open source community building and educational resource generation program enhanced with solid demonstrations of data exchange situations that have broad applicability to industry and research. The goal of this project is to build community and momentum for scalable, distributed agricultural data processing and collaboration that is readily translated to practice.

Awarded to: Purdue University
Principal Investigator: James Krogmeier, Ph.D.
Matching Funders: Centricity, LLC, Winfield/ Land O'Lakes, Inc., Ag Gateway, Archer Daniels Midland and Purdue University
FFAR Amount Awarded: $1,066,348
Total Investment: $2,134,079

$1.06 MILLION in FFAR funding + **$1.06 MILLION** in matching funds

Overcoming Water Scarcity Challenge Area

The Overcoming Water Scarcity Challenge Area aims to increase the efficiency of water use in agriculture, reduce agricultural water pollution and develop water reuse technologies. This Challenge Area targets innovative research in developing water conservation and reuse technology throughout the production chain, improving water use efficiency in plants, creating improved agronomic practices, increasing the social and economic tractability of water-conserving practices and enhancing irrigation technologies.

Why Water Scarcity?

- **Agriculture uses 70%** of the world's accessible freshwater. (Source: FAO)
- As much as **84 percent of the economic impact** of drought falls on agriculture. (Source: FAO)

2017 Water Scarcity Project Highlights

Seeding Solutions: Open Source Technology for Gene Discovery in Plants

The objective of this project is to develop more drought-tolerant rice varieties to protect rice farmers' yields and livelihoods against drought. While studying genes responsible for drought tolerance, researchers will build an open source database to make their discoveries more accessible.

Awarded to: University of California, Davis
Principal Investigator: Pamela Ronald, Ph.D.
Matching Funders: Innovation Institute for Food and Health, AgBiome, Structural Genomics Consotrium, Universite de Montreal Promega
FFAR Amount Awarded: $1,000,000
Total Investment: $2,320,000

Pamela Ronald, Ph.D., in the Department of Plant Pathology and the Genome Center at UC Davis. Photo: Deanne Fitzmaurice

"I am delighted to work with this talented and diverse team of researchers to advance rice genetics research. We are grateful for FFAR support that has allowed us to launch this project."

Pamela Ronald, Ph.D.
Distinguished Professor
University of California, Davis

Urban Food Systems and Making My Plate, Your Plate Challenge Areas

The Making My Plate, Your Plate and Urban Food System Challenge Areas aim to support transformative research that increases our understanding of overall food systems and supply chains dynamics to address food and nutritional security. Research topics were developed with the intent of leveraging current research investments or filling gaps in research and range from agricultural production to local food security. While each of the topics target specific aspects of the food system, they were developed with the understanding that systemic changes will only be sustainable if they are economically viable, and that food and agriculture can serve as an important driver of economic growth.

These two Challenge Areas often overlap to address similar research needs to understand food systems, as well as consumer access and behaviors related to healthy foods.

Why Urban Food Systems and Nutrition?

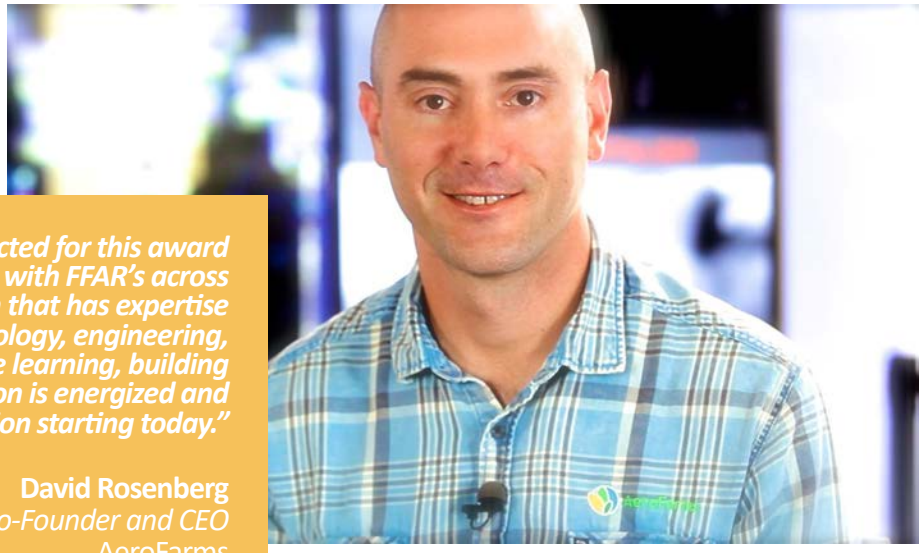
- **60% of the world population** will live in urban areas by 2050. (Source: GSDR)
- An **estimated 87 percent** of U.S. consumers do not eat the recommended 4 ½ cups of fruits and vegetables per day. (Source: CDC)

2017 Urban Food Systems and Nutrition Project Highlights

Seeding Solutions: Defining Stressors to Manage Plasticity and Quality in Leafy Greens

This project aims to improve crop production by defining the relationships between stressed plants, the phytochemicals they produce and the taste and texture of the specialty crops grown. The work will result in commercial production of improved leafy green varieties and yield science-based best practices for vertical farming.

Awarded to: AeroFarms
Principal Investigator: Roger Buelow, Ph.D.
Matching Funder: Just Greens LLC
FFAR Amount Awarded: $994,035
Total Investment: $1,989,030



"We are honored to have been selected for this award and are glad that our goals line up with FFAR's across the board. Our world-class team that has expertise in all aspects of horticulture, biology, engineering, automation, machine vision, machine learning, building systems, food safety, and nutrition is energized and ready to contribute to FFAR's vision starting today."

David Rosenberg
Co-Founder and CEO
AeroFarms

Seeding Solutions: Fostering Innovative, Sustainable Urban Farming Methods to Meet Food Needs

This project aims to improve the ecological resilience and economic viability of urban and peri-urban farming systems and improve urban food distribution systems to reduce waste and meet fresh produce needs of low-income consumers. The project team will work to improve the sustainability and resilience of urban farms by building soil health, conserving water and promoting beneficial insects. Researchers will also evaluate the effectiveness of existing urban and peri-urban food access and food distribution methods for meeting food needs of urban low-income, food insecure communities.

Awarded to: University of California, Berkeley
Principal Investigator: Jennifer Sowerwine, Ph.D.
Matching Funder: The Regents of the University of California
FFAR Amount Awarded: $294,988
Total Investment: $590,189

"This FFAR grant will support both research and a participatory process with the public to co-create solutions that can support ecological sustainability, economically viable livelihoods and equitable access to fresh, healthy and affordable foods in culturally acceptable ways."

Jennifer Sowerwine, Ph.D.
Assistant Cooperative Extension Specialist
University of California, Berkeley

Seeding Solutions: Closing the Gap in Delivery of Fruit and Vegetable Benefits

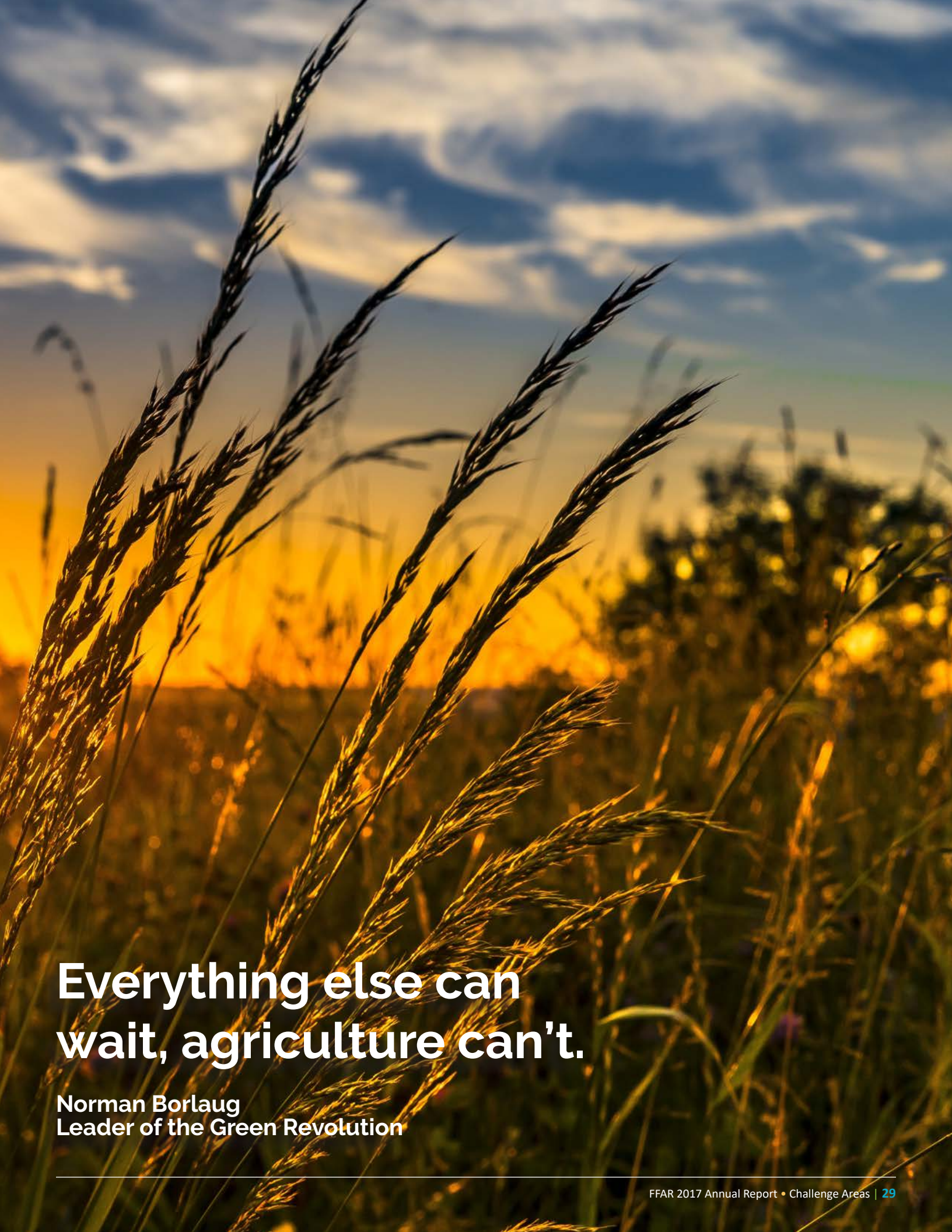
Researchers will study the micronutrients and bioactive phytochemicals provided by fruits and vegetables used in food products. The goal of this research is to improve the nutritional density of common fruits and vegetables in a range of consumer products. Researchers will use cutting-edge genetics and phenotyping technologies to identify varieties of blueberries, bananas and spinach with higher nutritional content, in addition to determining the bioavailability of specific nutrients from these varieties, and applying food processing technologies to increase the nutrient content of products containing these foods.

Awarded to: North Carolina State University
Principal Investigator: Mary Ann Lila, Ph.D.
Matching Funders: Dole Foods Company, Standard Process, Inc., General Mills, Inc., North Carolina State University
FFAR Amount Awarded: $999,716
Total Investment: $2,005,846

The research team includes (left to right): Massimo Iorizzo, Ph.D., Mario Ferruzzi, Ph.D., Mary Ann Lila, Ph.D., and Colin Kay, Ph.D.

"This project represents a direct interface between plant genetics, food science and nutrition science that we believe will help close the gap between dietary guidance and actual fruit and vegetable consumption."

Mary Ann Lila, Ph.D.
David H. Murdock Distinguished Professor
North Carolina State University



Everything else can wait, agriculture can't.

Norman Borlaug
Leader of the Green Revolution

Strategic Initiatives

FFAR takes advantage of being an independent, nimble organization by seizing scientific opportunities even when they arise outside of our seven Challenges Areas. FFAR Strategic Initiatives often overlap with one or more Challenge Areas and always further the Foundation's core mission to address today's most pressing food and agriculture challenges. These programs undergo the same rigorous scientific review as projects funded through our Challenge Areas.

In 2017

$19.1 MILLION awarded to **9** research teams

$31.4 MILLION in matching funds

Breakthroughs 2030: A New Strategy for Food and Agricultural Research

The goal of the study is to develop a compelling strategy for food and agricultural research for the next decade and beyond that will stimulate transformational change in the food and agricultural system.

Science Breakthroughs 2030: A Strategy for Food and Agricultural Research is a new study being conducted by the National Academy of Sciences to identify ambitious scientific directions in food and agriculture. Working through the National Academies independent study process, Breakthroughs 2030 collected input from hundreds of researchers and stakeholders to determine a vision that capitalizes on emerging trends, encourages greater interdisciplinary research and informs the decisions of policymakers and academic leaders. Food and agriculture research stakeholders participated in the process through the project's interactive website and a town hall meeting during summer 2017. Look for the Breakthroughs 2030 report in 2018.

Learn more about Breakthroughs 2030: http://bit.ly/breakthroughs2030

Awarded to: Supporters of Agricultural Research Foundation
Principal Investigator: Tom Grumbly
Matching Funder: Supporters of Agricultural Research Foundation, USDA NIFA and others
FFAR Amount Awarded: $348,000
Total Investment: $689,000

Rapid Outcomes from Agricultural Research (ROAR)

The Rapid Outcomes from Agricultural Research (ROAR) program nimbly deploys funds to support research and outreach in response to emerging or unanticipated threats to the nation's food supply and agricultural systems. ROAR enhances our capacity to mitigate, contain and prevent outbreaks. Research funded through ROAR is short term and focused on deploying diagnostics, instituting monitoring protocols and developing prevention and mitigation strategies that will be applied quickly through extension or other outreach methods.

2017 ROAR Project Highlights

"We are excited that our experience developing new diagnostic tools to control bovine brucellosis in the greater Yellowstone area has allowed us to help address the emerging threat."

Brant Schumaker, Ph.D.
Associate Professor
University of Wyoming

Detecting *Brucella suis* in Swine and Cattle

This project aims to develop a faster, more accurate diagnostic test for detection of swine brucellosis, a costly disease affecting swine and cattle. *Brucella suis*, a strain of Brucellosis, is prevalent in feral swine, but can infect domestic swine and cattle where populations overlap. No gold standard test exists for accurately identifying *B. suis* in living animals.

Awarded to: University of Wyoming
Principal Investigator: Brant Schumaker, Ph.D.
Matching Funder: University of Wyoming
FFAR Amount Awarded: $149,136
Total Investment: $299,095

Ecology and Evolution of Bacterial Leaf Streak of Maize in Colorado and the Western Corn Belt

Researchers are investigating bacterial leaf streak, a disease with limited treatment or prevention methods, that is causing yield losses for corn growers in the western corn belt, including western Kansas and Nebraska and eastern Colorado. This project aims to understand how the pathogen spreads and develop damage mitigation strategies.

Awarded to: Colorado State University
Principal Investigator: Kirk Broders, Ph.D.
Matching Funder: Colorado State University
FFAR Amount Awarded: $148,479
Total Investment: $296,978

"We plan to address knowledge gaps about the disease and be able to relay the information to growers as quickly as possible in order to limit future yield losses."

Kirk Broders, Ph.D.
Assistant Professor
Colorado State University

Protecting the Michigan Tart Cherry Crop from Spotted Wing Drosophila

Researchers will combat spotted wing drosophila (SWD), an invasive pest that decimated 21 percent of Michigan's 2016 cherry crop according to industry surveys. Researchers are investigating integrated pest management strategies with the potential to mitigate the damage caused by SWD not only in tart cherries, but also in other specialty crops including blueberries and raspberries. Researchers will investigate suitability and optimal application techniques for current pesticides, develop real-time SWD population maps and provide direct outreach to farmers who will most benefit from improved SWD management.

Awarded to: Michigan State University
Principal Investigator: Julianna Wilson, Ph.D.
Matching Funders: Michigan State University Project GREEEN, Michigan Cherry Committee and Michigan State Horticulture Society
FFAR Amount Awarded: $150,000
Total Investment: $300,000

Learn more online at http://foundationfar.org/ROAR

Combating Wheat Streak Mosaic Virus in Kansas and U.S. High Plains

This project aims to mitigate damage from wheat streak mosaic, a viral disease threatening wheat yields across Kansas and the High Plains. This grant is supporting updated best management practices for wheat farmers threatened by the disease and identification of the best available resistant wheat varieties. Researchers will work closely with farmers through focus groups and surveys to better understand factors that elevate disease risk and how to overcome obstacles to implementing known mitigation strategies.

Awarded to: Kansas Wheat Commission Research Foundation
Principal Investigator: Aaron Harries
Matching Funder: Kansas Wheat Commission
FFAR Amount Awarded: $50,000
Total Investment: $120,623

Identifying Short-term Solutions for Managing Allium Leafminer in Onions

This research aims to identify and deploy effective control tactics for growers whose farms are threatened by Allium leafminer (ALM). The emerging pest has the capacity to devastate entire fields of Allium crops, which include onion, garlic, leek, scallions, shallots and chives. Researchers will use the grant to identify effective insecticides for both organic and conventional Allium production, develop best practices for predicting and scouting for ALM and arm growers with the latest information on the pest and effective tactics for controlling crop damage.

Awarded to: Cornell University
Principal Investigator: Brian Nault, Ph.D.
Matching Funders: New York Farm Viability Institute and Cornell University CALS Alumni Affairs
FFAR Amount Awarded: $65,000
Total Investment: $130,000

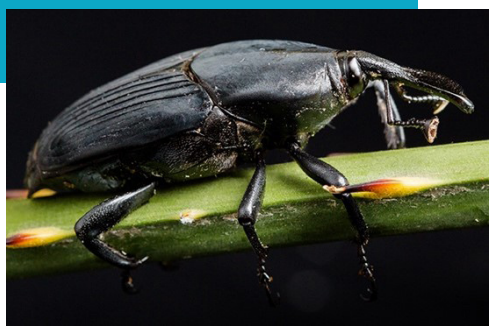
Shielding U.S. Palm Industries from the South American Palm Weevil Invasion in California

Researchers are developing environmentally-friendly pest controls to protect the date palm industry and California's iconic palm trees from the invasive South American palm weevil. Researchers will create and field test formulations with naturally occurring compounds, called semiochemicals, to deter adult weevils from infecting palm trees.

Awarded to: ISCA Technologies Inc.
Principal Investigator: Agenor Mafra-Neto, Ph.D.
Matching Funders: California Date Commission, Bard Valley Date Growers Association and W.D. Young & Sons Palm Nurseries
FFAR Amount Awarded: $150,000
Total Investment: $300,000

"We believe that the chemically modulated behavior of this weevil is its Achilles heel. We will create formulations to monitor and control populations of this invasive species in an effective, economical and environmentally-friendly manner."

Agenor Mafra-Neto, Ph.D.
Founder and CEO
ISCA Technologies



South American palm weevil, Rhynchophorus palmarum. Photo: Center for Invasive Species Research, UC Riverside.

"This funding has arrived at a critical time. We need to get ahead of the weevil invasion in San Diego and this support provides the boost we need."

Mark Hoddle, Ph.D.
Director and Research Collaborator
UCR's Center for Invasive Species Research

Mark Hoddle, Ph.D., checks palm weevil traps in San Diego County. Photo: Sean Nealon, UC Riverside

Realizing Increased Photosynthetic Efficiency (RIPE) Reinvestment

Realizing Increased Photosynthetic Efficiency (RIPE) is engineering staple food crops to more efficiently turn the sun's energy into food to sustainably increase worldwide food productivity.

In September 2017, FFAR contributed $15 million to the RIPE project at the University of Illinois. RIPE researchers have already harnessed photosynthesis to boost crop yields by 20 percent and are now working to apply yield gains to staple U.S. crops, including soybeans, and crops that are critical to food security in the developing world, including cowpea and cassava. The $45 million reinvestment in RIPE supports this critical, ongoing research meant to break through stagnant yield ceilings, providing farmers around the world with another tool to enhance global food security and their own livelihoods.

Learn more about RIPE: http://ripe.illinois.edu

$15 MILLION from FFAR + **$30 MILLION** from matching funders:
- Bill & Melinda Gates Foundation
- U.K. Department for International Development (DFID)

→ **$45 MILLION for research to improve yields**

Researchers led by Stephen Long (left), University of Illinois, and Don Ort (right), USDA-ARS, will continue transformative work to increase yields of food crops for farmers worldwide through Realizing Increased Photosynthetic Efficiency with the support of a five–year, $45-million reinvestment from the Bill & Melinda Gates Foundation , the Foundation for Food and Agriculture Research and the U.K. Department for International Development. Photo: Brian Stauffer/University of Illinois.

Crops *in silico*

Crops *in silico* is a suite of virtual plant models that will allow researchers to computationally mimic the growth, development and response of crops to the environment and conduct more experiments than can realistically be achieved in the field, meaning more knowledge will be generated in a shorter time period.

Environments around the world are changing faster than traditional crop breeding can develop new plant varieties adapted for environmental challenges including drought, flooding and increased ambient carbon dioxide. Fully realized, Crops *in silico* will give crop researchers a tool to examine the effects of environmental challenges including drought and flooding on a molecular, cellular and organ level within a plant to more quickly and accurately determine the best targets for genetic engineering.

Learn more about Crops *in silico*: http://cropsinsilico.org

Researchers Matthew Turk (left), Ph.D., and Amy Marshall-Colón (right), Ph.D., will collaborate with teams from crop sciences and plant biology, computer and information sciences and supercomputing applications departments on the Crops in silico *project. Photo: University of Illinois.*

Awarded to: University of Illinois, Urbana-Champaign
Principal Investigator: Amy Marshall-Colón, Ph.D.
Matching Funder: The Board of Trustees of the University of Illinois
FFAR Amount Awarded: $273,138
Total Investment: $601,136

"We believe Crops* in silico *will unite largely isolated efforts into a connected and collaborative community that can take full advantage of advances in computation science and mechanistic understanding of plant processes and their responses to the environment."

Amy Marshall-Colón, Ph.D.
Assistant Professor
University of Illinois, Urbana-Champaign

FFAR Crops of the Future Collaborative

The Crops of the Future Collaborative is a public-private, multi-partner consortium convened by FFAR to accelerate global efforts to develop crops needed to meet food system challenges 20-50 years from now.

Bringing together leading companies and research organizations, the consortium will leverage the knowledge, capabilities and financial resources of participants to expand the scientific understanding of traits that give rise to complex characteristics crops will need to adapt to changing environments.

This Collaborative is a deliverables-driven consortium aiming to generate knowledge that can accelerate breeding efforts. Consortium members will initially fund wheat, leafy greens and maize research targeting a specified number of traits per crop each year and aim to identify the molecular, biochemical and physiological mechanisms and pathways that give rise to them. The consortium will also fund cross-crop projects to develop tools and technologies required to accelerate discovery of those pathways and mechanisms as they relate to traits of potential agricultural importance.

In 2017, Founding Participants Bayer, Biogemma, CIMMYT, KWS SAAT SE, FAPESP, FFAR, Precision PlantSciences and Rijk Zwaan met to establish bylaws and priorities for the Collaborative. Each participant has a representative on the Crops of the Future Collaborative executive committee, which will set the strategic direction for the consortium.

Look for an announcement about the first project funded by the Crops of the Future Collaborative in 2018.

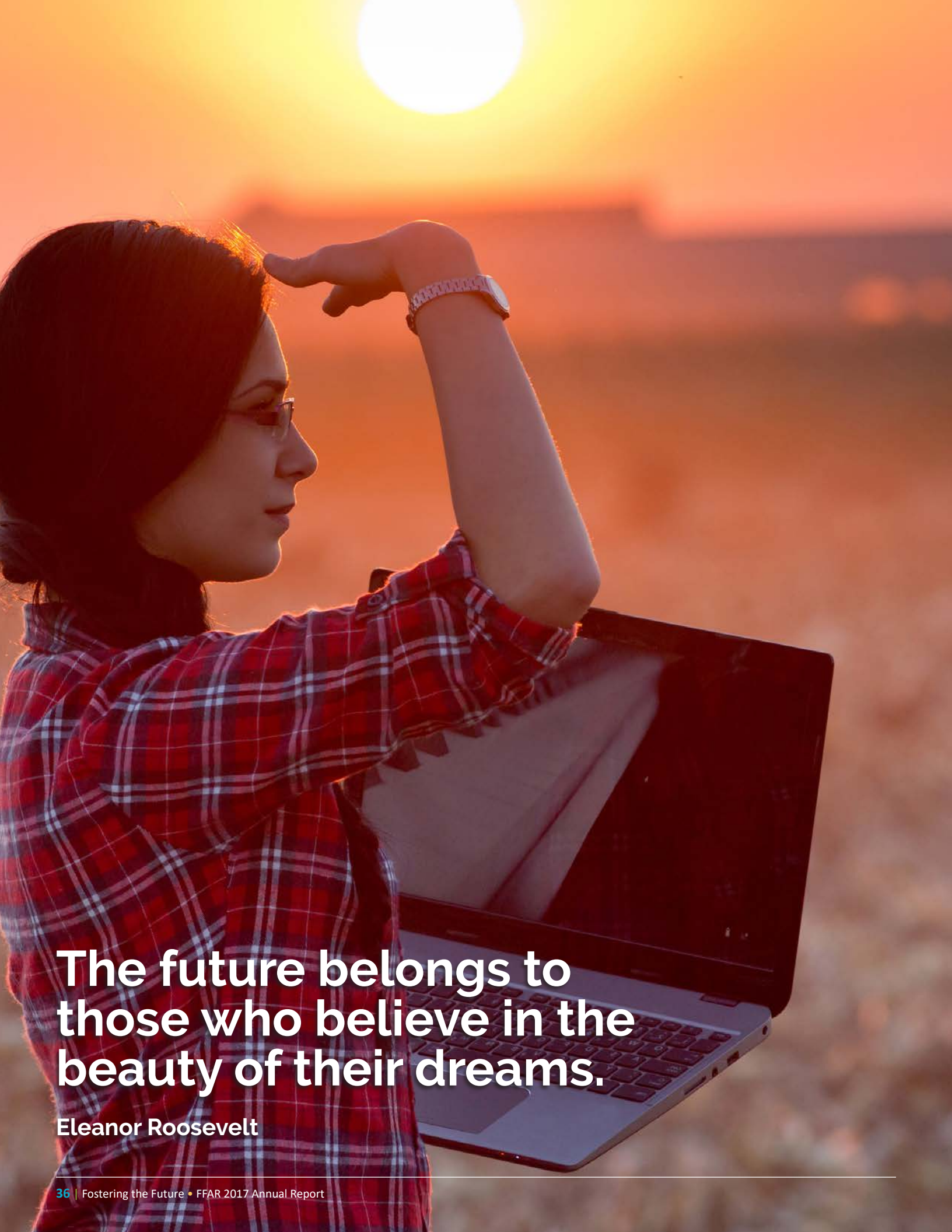
$10 MILLION committed by FFAR

To be matched by Crops of the Future Participants for at least

$20 MILLION in crop research

"Solving the challenges farmers face worldwide in growing healthy, abundant crops in a sustainable manner will require commitment and collaboration from experts around the world. With the Crops of the Future Collaborative, FFAR provides a unique framework to develop public-private collaborations for accelerating innovation that can propel the next green revolution for major crops, and Bayer is proud to support it."

Catherine Feuillet, Ph.D.
Senior Vice President (former)
Crop Science, a division of Bayer



The future belongs to those who believe in the beauty of their dreams.

Eleanor Roosevelt

Fostering the Future

Innovative science cannot happen without collaborative thinking from a diverse and creative workforce. By supporting early-career scientists and spotlighting leaders breaking new ground in research, we strive to inspire the next generation of scientists to pursue careers that help put food on every table.

In 2017

$2.29 MILLION awarded to **9** grantees working to Foster the Future of Food and Ag Research

NAS Prize in Food and Agriculture Sciences

A FFAR grant in 2016 helped establish the first-ever National Academy of Sciences Prize dedicated to food and agriculture sciences. The $100,000 prize recognizes one annual mid-career recipient for an extraordinary contribution to agriculture or to the understanding of the biology of a species fundamentally important to agriculture or food production. Joint support from the Foundation for Food and Agriculture Research and the Bill & Melinda Gates Foundation endows the prize in perpetuity.

Edward Buckler, Ph.D., accepted the inaugural National Academy of Sciences (NAS) Prize in Food and Agriculture Sciences on April 30, 2017. Buckler, a U.S. Department of Agriculture-Agricultural Research Service researcher and adjunct professor of plant breeding and genetics at Cornell University, studies the connection between a plant's genetic makeup and the physical traits exhibited by different strains. Dr. Buckler and his colleagues used their findings to breed a new kind of maize with 15 times more Vitamin A than conventional varieties. This biofortified maize is now widely available in Zambia, where more than half of children under the age of five are Vitamin A deficient.

The Foundation for Food and Agriculture Research celebrated Dr. Buckler with congratulatory remarks from FFAR Board Members, and representation from the Bill & Melinda Gates Foundation and the National Academy of Sciences, on April 27, 2017 before Dr. Buckler officially accepted the inaugural Prize at the National Academy of Sciences Annual Meeting.

FFAR Executive Director Sally Rockey, Ph.D., Inaugural NAS Prize Recipient Edward Buckler, Ph.D., and FFAR Board Member Kathryn Boor, Ph.D., Dean of the College of Agriculture and Life Sciences at Cornell University, celebrate the first year of the Prize.

Maize with **15x** More Vitamin **A**

2017 New Innovators in Food and Agriculture Research

Meeting and sustaining the growing global demand for food will require a scientific workforce committed to innovating the way food is grown, processed and distributed.

Funding early career faculty is one important way to cultivate a creative workforce who will train, encourage and inspire future agricultural and food scientists. The New Innovator in Food and Agriculture Research Award is designed to provide the early investment needed to launch new faculty members into successful scientific careers bringing ground-breaking research and thinking to bear on problems facing food and agriculture.

A public request for nominations for the New Innovator in Food and Agriculture Research Award was limited to no more than two applicants per institution, and only to researchers within the first three years of their faculty careers. In addition to a compelling research proposal, successful applicants also demonstrated their commitment to mentoring students.

Nutrition and Healthful Food Choices

Hannah Holscher, Ph.D.
University of Illinois

Dr. Holscher's research will include laboratory and computer experiments to further understanding of how certain foods impact the gut microbiota and health outcomes. The findings will help consumers make healthful food choices and inform dietary guidance given by registered dietitians, health care providers and extension specialists.

Hannah Holscher (back), Ph.D., works with a graduate student in the lab.

Maya Vadiveloo, Ph.D.
University of Rhode Island

Dr. Vadiveloo aims to understand whether targeted incentives can increase the adoption of healthier eating patterns and whether such approaches can be adopted on a population-scale to improve health. Similar to existing targeting strategies, they will use insights from behavioral theory and from shoppers' purchasing data to allocate incentives for healthier products.

Maya Vadiveloo (far right), Ph.D., works with a graduate student in the classroom.

Optimizing Agricultural Water Use

Sotirios Archontoulis, Ph.D.
Iowa State University

Research by Dr. Archontoulis will enhance understanding of groundwater impacts on soil-crop-atmospheric processes, improving simulation models to better predict impacts and design mitigation strategies that will lead to better water quality, soil health and corn yields. Outcomes of this work will reach farmers via an easy-to-use web tool that provides real-time forecasts.

Sotirios Archontoulis (far left), Ph.D., gives a root sampling demonstration to farmers interested in water use efficiency.

Transforming Soil Health

Steven Culman (left), Ph.D., collects soil samples for analysis.

Steven Culman, Ph.D.
The Ohio State University

This research project will investigate promising tests of the rapidly cycled and biologically-active pool of organic matter found in soil to see how these tests reflect nutrient cycling and nutrient supply to crops. Dr. Culman will build on a statewide, on-farm effort to revise fertilizer recommendations by pairing these results with active organic matter tests. The goal is to reveal the ability of these tests to inform nutrient management decisions.

Spurring Food System Innovation

Jonas King, Ph.D.
Mississippi State University

Dr. King's research combines existing technologies with novel data analysis pipelines and refines their use in detecting diverse plant pathogens and insects of importance in row crop, orchard and forestry settings. This research will impact consumers and producers by identifying novel means of pest and pathogen detection.

Jonas King (right), Ph.D. and a student gather plant pathogen samples.

Improving Plant Efficiency

Diwakar Shukla, Ph.D., writes computations in class.

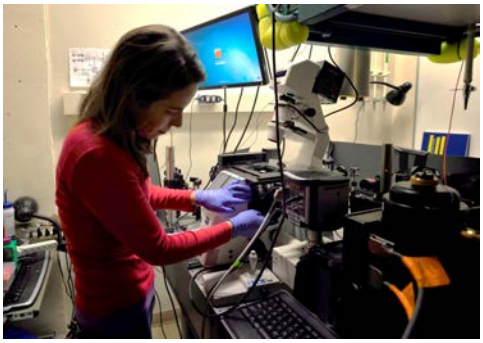
Diwakar Shukla, Ph.D.
University of Illinois

This project will utilize an ensemble of techniques including computer modeling to address low nitrogen use efficiency in plants and provide a unique platform to demonstrate the need, feasibility and impact of using computational biophysics to understand fundamental plant biology questions.

Kranthi Mandadi, Ph.D., examines orange trees for signs of disease.

Kranthi Mandadi, Ph.D.
Texas A&M University

Dr. Mandadi is testing a method of screening for antimicrobial genes and chemicals effective against pathogens causing citrus greening and potato zebra chip diseases. The research findings can be translated into disease management strategies in the field that will help growers and the industry to prevent future damage from these costly diseases.



Markita Landry, Ph.D., examines nanomaterials in her lab.

Markita Landry, Ph.D.
University of California, Berkeley

Dr. Landry aims to develop tools that enable broad-scale production of transgenic plants, which can mitigate the increasingly urgent need for sustainable and high-yielding crops. The study of nanomaterial biodistribution in plant systems, and leveraging their use will enable a synthetic method to create robust crops to meet our growing food and energy needs.

Learn more online at foundationfar.org/new-innovator/

FFAR Fellowship: Innovations in Work Force Development

The FFAR Fellowship will fund 48 graduate students over three years using an interdisciplinary approach to career readiness. Students will pursue research projects in an area of food or agriculture research related to FFAR's priorities. In addition to academic advisors, students will be matched with industry mentors who will offer guidance on soft skills and career development.

The flagship component of the FFAR Fellowship is the annual professional development workshop. Fellows will convene with industry peers to participate in training for professional and interpersonal skills, such as team building, project management and science communication. These trainings will be complemented by a personalized development plan to help students obtain the professional skills they need to excel in the workforce.

A team at North Carolina State University led by John Dole, Ph.D., will manage the program. The $2.7 million FFAR grant will be matched by a consortium of industry leaders dedicated to preparing the agricultural workforce to optimize impact on the future of the industry.

Look for an announcement of awardees in 2018.

Visit www.ffarfellows.org for more information.

Learn more online at foundationfar.org/ffar-fellowship

Less than **60%** of science and engineering jobs in food and agriculture are being filled by graduates of food, agriculture, renewable natural resources and environment programs. (Source: 2017 study by Purdue University)

Why focus on STUDENTS in food and ag?

To spur the innovation we need to feed the world, we must bring together the best and brightest scientists to address challenges in food and agriculture.

Students must be prepared to not only make the scientific breakthroughs that will sustain us, but also have the professional skills to succeed in their careers across the agricultural sector.

Our closest relationship to Earth is through agriculture.

Sally Rockey
FFAR Executive Director

Cultivating Progress Together: Engaging With the Community

The Foundation for Food and Agriculture Research is dedicated to supporting science that will advance a more productive, sustainable and health-promoting food system. Feedback from farmers, ranchers, scientists and other leaders is integral to FFAR efforts to design and fund impactful research that is rapidly applied in the field.

FFAR Board and Advisory Council members and staff seek this critical feedback both at FFAR-hosted events, such as the convening events, and through external opportunities to engage.

The following pages highlight moments of engagement with the food and agriculture community in 2017.

In 2017

400 stakeholders attended

10 convening events

leading to at least

5 new initiatives

FFAR Convening Events

To drive socially feasible and economically viable solutions, FFAR seeks stakeholder input starting at the program design phase. FFAR Convening Events bring together thought leaders and experts from academia, government, industry, commodity and farm groups to identify gaps in research areas. Convening Events are a critical component of the FFAR model; participants help guide the Foundation's design of collaborative programs informed by experience and knowledge. By engaging key stakeholders and experts at Convening Events, FFAR aims to address research questions that aren't being asked elsewhere and uncover results with potential to enhance the economic and environmental resilience of our food supply.

2017 FFAR Convening Events

FFAR Workshop at the NIAA Antibiotic Symposium: Identifying Priorities and Opportunities for Multi-Stakeholder Research

The workshop featured speakers with expertise in antibiotic use in farm animal production and concluded with a group discussion to identify key challenges in this area. Attendees used a breakout session to identify ongoing challenges and research gaps related to antibiotic stewardship and explore the potential for collaborative research to address challenges in antibiotic use.

Event Supporter: National Institute for Animal Agriculture

Participants at the Open Source Adaptive Management Tools Convening Event discussed issues of data ownership and compatibility in small groups.

Open Source Adaptive Management Tools: From Farm Observations to Location Specific Soil Health Decision Support

Representatives from 26 universities, companies, nonprofits and government organizations convened to explore research gaps in the decision support tool and open source software platform space. Technological advances in this field can increase U.S. farmers', ranchers' and other land managers' access to knowledge and information relevant to their soil, topography and climate.

Event Supporters: American Society of Agronomy, Crop Science Society of America, Soil Science Society of America and Stonyfield Organic

Assessing and Managing Soil Health on Rangelands and Pasture Lands

FFAR, the Noble Research Institute and the Sustainable Rangelands Roundtable hosted this event to explore the state of science, information needs and research gaps in rangeland and pasture land soil health. In attendance were representatives from 21 different universities, nonprofits and government organizations, as well as producers. The goal was to provide farmers, ranchers and other land managers tools they can use to access information about soil health and to empower them to make more informed soil health decisions.

Event Co-Hosts: Noble Research Institute and the Sustainable Rangelands Roundtable
Event Supporter: Soil Health Institute

Participants took a tour of Noble Research Institute's farms to see firsthand how soil health research is conducted on rangelands and pasture lands.

Identifying Research Gaps for Novel and Ancient Crops: Investing in New Opportunities in Plant Efficiency

The objective of this convening event was to discuss potential research gaps for making novel and ancient crops, which can be drought-tolerant and adaptive to harsh environments, more available and competitive in domestic and international markets, as well as to develop better farm practices. Researchers and industry experts discussed potential areas to invest in future water-efficient crop research.

Event Supporters: American Society of Agronomy, Crop Science Society of America and Soil Science Society of America

Irrigation Innovation Consortium

More than 15 companies and more than 20 universities, nonprofits and government organizations gathered to discuss a potential opportunity for collaborative research to advance irrigation. The discussion was designed to inform a future collaborative effort to address water scarcity through research.

Event Sponsor/Supporter: Robert B. Daugherty Water for Food Global Institute

Read full reports of FFAR Convening Events online at: foundationfar.org/convening-events

Sustainable Livestock Production

More than 35 universities, industry leaders, nonprofits and government organizations were represented at this convening event, which explored challenges, innovations and future directions in sustainable livestock production. FFAR hosted the event to provide a unique forum to identify knowledge gaps, high-impact targets for program development and opportunities for cross-sector collaboration. This event has informed ongoing research program development at FFAR.

Event Sponsors: National Corn Growers Association (Silver) and Ohio Soybean Council (Silver)

Participants spent a full day discussing prominent issues in livestock production.

Breaking Down the Barriers: Identifying Research Needs to Overcome Obstacles to Innovation Adoption Across the Food System

FFAR hosted a convening event to analyze barriers to adoption of a wide range of innovations and technological advances aimed at improving agricultural sustainability. More than 40 universities, government organizations, nonprofits and companies were represented at the event. The event focused on the areas where FFAR can research pathways to increase adoption of innovations across the U.S. food and agricultural production chain.

Event Sponsor: Cargill, Incorporated (Platinum)
Event Supporter: Association of Public and Land-grant Universities

Participants at the Breaking Down the Barriers Convening Event.

Crops for Controlled Environments

To advance crop development in controlled systems that will support economic viability, FFAR hosted a convening event to help determine the state of science and the areas where FFAR could catalyze research efforts. Representatives from 50 different universities, companies, nonprofits and government organizations attended the event. Attendees discussed advances in the molecular understanding of traits required for controlled environments, breeding crops for controlled environments and environmental stressors to enhance nutritional content.

Event Sponsors: IBM Research THINKLab, Bayer Vegetable Seeds, KeyGene and Holiday Inn Mt. Kisco

Participants at the Crops for Controlled Environments Convening Event.

Resilient Agriculture for the 21st Century: Crop Diversity, Nutrition and Cropping Systems

FFAR and AgLaunch hosted a convening event to explore the science behind resilient agricultural systems, and build partnerships around creating more resilient agriculture systems through diversity, nutritional focus and new cropping systems. More than 45 universities, companies, nonprofits and government groups were represented at the event. Participants discussed areas of pre-competitive research that could potentially be addressed through partnerships.

Event Co-Host: AgLaunch

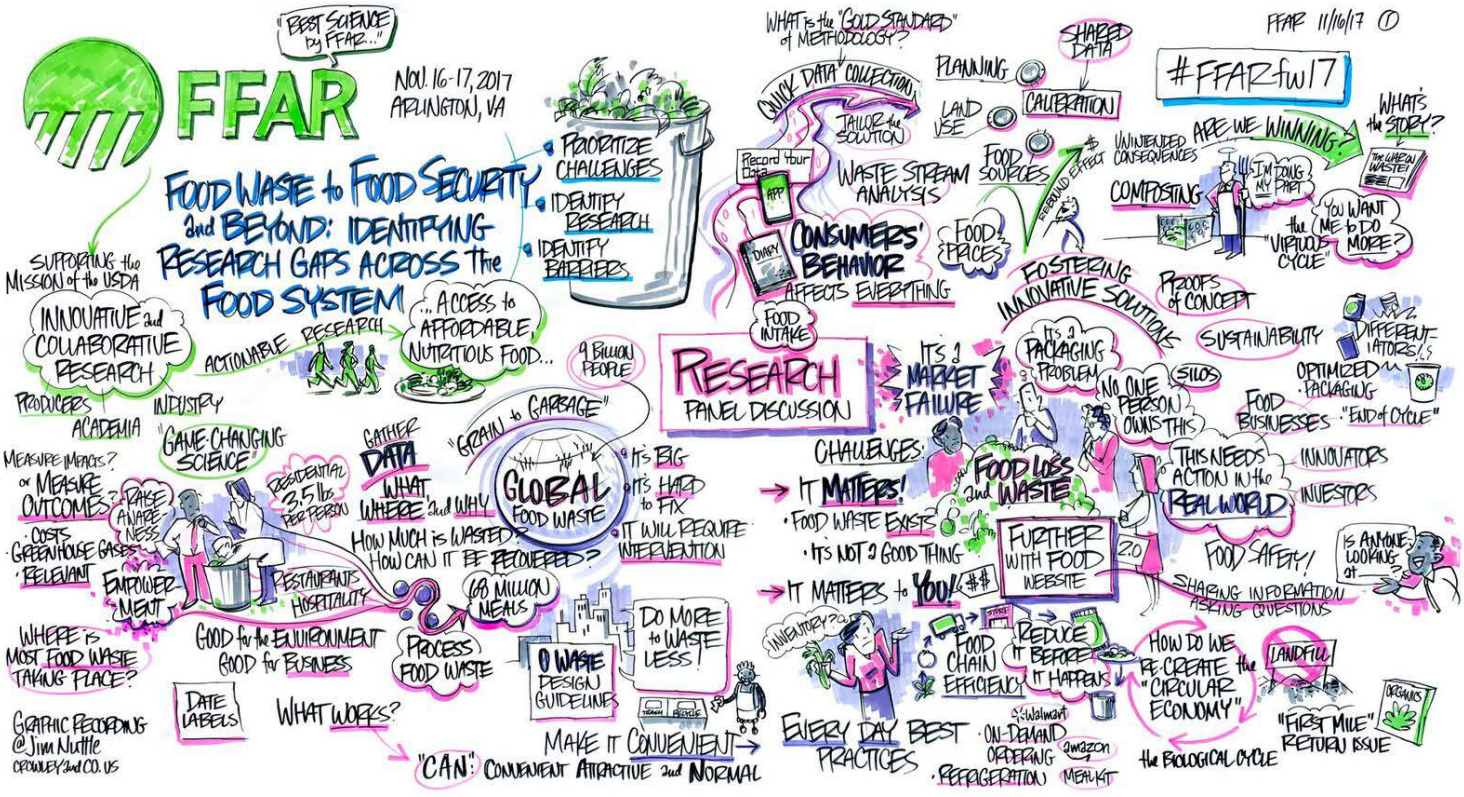
Special thanks to PepsiCo for making possible a special breakout session on advancing efforts to reinvent potato as a diploid inbred line.

Participants at the Resilient Agriculture for the 21st Century Convening Event spent two days discussing the future of crop diversity.

Food Waste to Food Security and Beyond: Identifying Research Gaps Across the Food System

The event brought together thought leaders from more than 40 universities, government organizations, nonprofits and companies to identify key knowledge gaps related to food waste. The convening event explored future directions toward reducing food waste from farm to table and provided a unique forum for participants across diverse sectors to identify high-impact targets for FFAR program development and opportunities for cross-sector collaboration.

Event Sponsors: Walmart (Platinum), Food Marketing Institute and FMI Foundation (Silver), InSinkErator (Silver)



A graphic artist captured the event by detailing the discussion of food waste through unique illustrations.

Celebrating FFAR Awardees

At FFAR, we're proud of the work our grantees are doing to transform food and agriculture. Whenever we have the chance, we like to update our stakeholders on the latest projects by hosting events to celebrate the amazing work of FFAR awardees.

Sharing New Innovator Research Projects on Capitol Hill

As part of their New Innovator in Food and Agriculture Research Award grants, nine early-career faculty members representing institutions from University of Rhode Island to University of California, Berkeley visited Washington, DC to participate in a scientific communications workshop followed by visits to Capitol Hill.

After hearing from science and policy communications experts, participants practiced sharing their complex research projects with a non-scientific audience and then put their refined skills into action on Capitol Hill.

The nine participants met with their respective states' Congressional offices and other influential staff to share how their respective research is impacting critical issues including food production, human nutrition, agricultural security and soil health.

Learn more about FFAR New Innovators: foundationfar.org/new-innovator

2017 FFAR New Innovators Hannah Holscher (left), Ph.D., and Diwakar Shukla, Ph.D., visit Capitol Hill. Photo: Diwakar Shukla.

FFAR New Innovators visited the U.S. Capitol to discuss their research with members of Congress.

Congressional Testimony: Expanding the Tent for Food and Agriculture Research

FFAR Executive Director Dr. Sally Rockey participated in a U.S. Senate Committee on Agriculture, Nutrition, & Forestry hearing titled, "Agricultural Research: Perspectives on Past and Future Successes for the 2018 Farm Bill" on June 15.

Dr. Rockey emphasized the need for federal funding for agricultural research and highlighted the success of the FFAR model as a mechanism for doubling taxpayer investment in research.

Dr. Rockey served as a witness alongside FFAR ex-officio board members Dr. Ann Bartuska, Acting Under Secretary of USDA's Research, Education, & Economics, Dr. Sonny Ramaswamy, Director of USDA's National Institute of Food and Agriculture and Dr. Chavonda Jacobs-Young, Administrator of USDA's Agricultural Research Service.

Read Dr. Rockey's full testimony: http://bit.ly/ffartestimony

"FFAR can quickly bring research to scale and more than double the taxpayer's investment while, at the same time, expanding the tent for U.S. agriculture…We are grateful for the opportunity to continue work with Congress to ensure FFAR is fully funded in the next Farm Bill, consistent with our bipartisan legacy as an institution contributing to the long-term competitiveness of our nation's food and agriculture sector."

Sally Rockey, Ph.D. (far right)
Executive Director, FFAR
Quote from written testimony

Bolstered by the Food and Agriculture Community

In advance of Dr. Rockey's testimony, a letter with signatures from more than 60 organizations in support of continued congressional funding of FFAR in the next Farm Bill was submitted for the record. A similar letter was later submitted to the House Agriculture Committee, with more than 100 organizations voicing support.

Thank you to the National Coalition for Food and Agriculture Research for spearheading this effort.

100+
SIGNATURES
in support of FFAR

FFAR Public Board Meeting

The third annual public board meeting session was held in October 2017, and open to stakeholders across the country via live broadcast. Attendees heard from Executive Director Sally Rockey and Board Chair Mark Keenum on the Foundation's milestones in 2017.

The FFAR Board of Directors sincerely thanks the following guest speakers for responding to the open call for formal feedback and input on how the FFAR Challenge Areas might evolve in the coming years.

The following guest speakers delivered remarks at the 2017 Public Board Meeting session:

- Robert Campbell, Director of Nutrition Assistance and Budget Policy, Feeding America
- Marcia DeLonge, Senior Scientist, Union of Concerned Scientists
- Kanika Gandhi, Policy Specialist, National Sustainable Agriculture Coalition
- Elliot Roth, Founder, Spira Inc.
- Michael Stein, Policy Associate, Organic Farming Research Foundation
- David Welch, Director of Science and Technology, The Good Food Institute

Thank you to the American Association for the Advancement of Science for generously providing space for this event.

Thank you to the

100

ATTENDEES

of this event!

Marcia DeLonge (far left) speaks during the open comment session at the Annual Public Board Meeting in October 2017 as FFAR Executive Director Sally Rockey, Ph.D., FFAR Board Chair Mark Keenum, Ph.D., and FFAR Vice Chair Pam Johnson listened and answered questions.

Stakeholder Briefings

FFAR Board Member Chris Mallett, Ph.D., chats with ex officio FFAR Board Member Ann Bartuska, Ph.D., at the FFAR Open House in April 2017. Guests heard brief remarks from FFAR leadership and enjoyed a reception in the FFAR offices.

FFAR is dedicated to being transparent and to keeping our stakeholders informed about our activities. FFAR holds regular virtual briefings hosted by our Executive Director Sally Rockey to summarize our activities and answer questions from the public. One webinar and three public events were held in 2017 to connect with friends of FFAR.

Join our newsletter to stay informed on opportunities to attend briefings: http://bit.ly/ffarnewsletter

Watch the latest FFAR briefing: http://bit.ly/FFARupdate


The science of today is the technology of tomorrow.
Edward Teller
Author

2017 Contributors

FFAR continuously seeks funders to contribute to our projects, programs and events. Thank you to all of the organizations who generously contributed to our mission to advance food and agriculture science.

The Foundation for Food and Agriculture Research is pleased to recognize the following 2017 contributors:

Visionary Level - $1M+

Open Philanthropy Project

Bill & Melinda Gates Foundation

Champion Level – Up to $249,999

Bayer CropScience AG

Enthusiast Level – Up to $99,999

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Friend Level – Up to $49,999

AgLaunch

Alliance of Crop, Soil and Environmental Science Societies

American Association for the Advancement of Science (AAAS)

Association of Public and Land-grant Universities

Bayer Vegetable Seeds

Benson Hill Biosystems, Inc.

Biogemma

Cargill, Incorporated

FAPESP

Food Marketing Institute (FMI)/FMI Foundation

Holiday Inn Mt. Kisco

IBM Corporation

InSinkErator

KeyGene

Monsanto Company

National Corn Growers Association

National Institute for Animal Agriculture

Noble Research Institute, LLC

Ohio Soybean Council

PepsiCo, Inc.

Precision Plant Sciences

Robert B. Daugherty Water for Food Global Institute

Soil Health Institute

Stonyfield Farm

Walmart

Special thanks to our individual donors:

Robert Beccard
Kathryn Boor
Doug Buhler
Renee Bullion
Doug Cameron
Gail Christopher
Nancy Creamer
Debby Delmer
Hayden Galante
The Hon. Dan Glickman
Rob Horsch
Pam Johnson
Mark Keenum
Mehmood Khan
Michael Ladisch
Chris Mallett
Pam Marrone
Terry McElwain
Madeleine O'Connor
Stanley Prusiner
Julie Reynes
Sally Rockey
Yehia "Mo" Saif
Stephen Scaringe
Bob Stallman
David Stern
Alton Thompson

Q&A with Britt Lundgren

Director of Organic and Sustainable Agriculture
Stonyfield Farm

FFAR Healthy Soils, Thriving Farms
Advisory Council Member

Tell us about Stonyfield Farm's interest in soil health.
Soil health is a common thread that connects our commitments to healthy foods, healthy people, healthy business and a healthy planet. We're invested in the long-term success of the farms who supply our ingredients, and we understand that healthy soils are essential to their success. That's why I really value the opportunity to be involved with FFAR as a Healthy Soils, Thriving Farms Advisory Council member.

Why collaborate with FFAR?
A defining feature of the Foundation is its ability and interest in bringing diverse groups together for the broad benefit of agriculture and the environment. The Open Source Decision Support Tools convening event was an opportunity not just to identify research needed to put data in the hands of farmers, in order to support on-farm decision making. It was also an incredible opportunity to build bridges between these decision support tools and the scientists who manage them, so that we can work more efficiently towards common goals of building soil health and delivering other ecosystem services.

The farmers who supply Stonyfield milk are entrepreneurial and eager to have the best information available in order to make the right land management decisions for their land. At Stonyfield, we're proud to support initiatives like this one that support our suppliers.

What do you see for the future of open source decision support tools and soil health?
The FFAR convening event was an important jumping off point to coordinate existing development of decision support tools, encourage new tool development and better align technology with the needs of farmers and ranchers. Stonyfield's organic ingredient purchases support hundreds of organic family farms and more than 200,000 organic acres. We work directly with our farmers to ensure they have the resources and customized technical assistance they need to grow and operate their businesses sustainably. We are always looking for better ways that we can partner with these farms to help them build soil health, reduce their GHG [greenhouse gas] emissions and deliver other ecosystem services.

User-friendly decision support tools will continue to be valuable resources for farmers and ranchers, and Stonyfield looks forward to continued collaboration to improve those tools in the future, taking advantage of the wealth of data available today. We envision that someday we and other sustainability minded companies will be able to use tools like this to purchase carbon credits and other ecosystem services from the farms in our supply chain – giving them an additional source of income and us a better way to meet our sustainability goals and advance our mission.

Q&A with Eileen Hyde

Director of Hunger and Healthy Eating, Walmart Giving

Tell us about Walmart and the Walmart Foundation's interest in food waste and loss, one of the FFAR Challenge Areas.

As a business, Walmart believes the value-maximizing strategy is the one that creates shared value – value for customers, business and society – by strengthening systems we all rely on. Addressing the issue of food waste both in our operations and from farm to fork is an example of creating shared value. While Walmart has been working to address issues of food waste for nearly a decade through our food donation and food waste recycling programs, we recently committed to halve the food waste within our US, Canada and Japanese operations (vs. 2016 baseline).

To complement these efforts, the Walmart Foundation is investing in research and innovative initiatives to reduce food waste all along the food chain. From building cold chain capacity in the charitable food network for over the past 10 years to joining FFAR this past year to supporting an on-farm food rescue research initiative led by the World Wildlife Foundation, we hope this philanthropic capital builds capacity to scale proven programs, as well as catalyzes new resourceful approaches.

Why collaborate with FFAR?

FFAR is known for bringing together experts and stakeholders at convening events for productive discussion around solutions to critical food and agriculture challenges. Walmart was pleased to sponsor one such event, "Food Waste to Food Security and Beyond."

What were your takeaways from the Convening Event?

A common theme that I heard from attendees from various sectors was how much they appreciated the opportunity to come together for discussion around common challenges to reducing food waste and loss. With a number of organizations working on this issue, it is extremely valuable to identify cross-organizational synergies and opportunities for collaboration, as well understand where organizations are specializing in their approaches to address food waste and loss.

2017 FFAR Board of Directors

The FFAR Board of Directors includes 20 voting members and five ex-officio members designated by Congress. FFAR's non-voting ex officio members are the stewards of the Foundation's close partnerships with the National Science Foundation and the U.S. Department of Agriculture. Specifically, these members provide insight into the federal research enterprise and ensure that FFAR's work complements USDA and NSF research. The voting members on FFAR's inaugural board were selected from lists of nominees provided by industry and the National Academy of Sciences.

The list of board members on this page reflects all directors who served in 2017 and uses job titles and companies accurate for 2017. Please note that at time of publication this information may have changed. Visit our website for the most current list: www.foundationfar.org.

Appointed Members

Kathryn Boor, Ph.D.
Ronald P. Lynch Dean of the College of Agriculture and Life Sciences
Cornell University

Doug Buhler, Ph.D.
Director, AgBioResearch and Assistant Vice President for Research and Graduate Studies
Michigan State University

Doug Cameron, Ph.D.
Managing Director
First Green Partners and Alberti Advisors

Carl Casale
President and Chief Executive Officer
CHS, Inc

Gail Christopher, Ph.D., N.D
Former Senior Advisor and Vice President for Truth, Racial Healing & Transformation
W. K. Kellogg Foundation

Nancy Creamer, Ph.D.
Distinguished Professor of Horticulture and Sustainable and Community-Based Food Systems
North Carolina State University

Debby Delmer, Ph.D.
Professor Emeritus
University of California – Davis

Hon. Dan Glickman
Executive Director, Congressional Program
Aspen Institute

Rob Horsch, Ph.D.
Deputy Director, Agricultural Research and Development
Bill & Melinda Gates Foundation

Pam Johnson
Past President
National Corn Growers Association

Mark Keenum, Ph.D.
2017 Board Chair
President
Mississippi State University

Mehmood Khan, M.D.
Vice Chairman and Chief Scientific Officer, Global R&D
PepsiCo

Michael Ladisch, Ph.D.
Director of the Laboratory of Renewable Resources Engineering
Purdue University

Chris Mallett, Ph.D.
Corporate Vice President, Research and Development
Cargill, Inc.

Pam Marrone, Ph.D.
Founder and CEO
Marrone Bio Innovations, Inc.

Terry McElwain, Ph.D., DVM
Regents Professor in the Paul G. Allen School for Global Animal Health
Washington State University

Stanley Prusiner, M.D.
Professor of Neurology and Director of the Institute for Neurodegenerative Diseases
University of California - San Francisco

Yehia "Mo" Saif, Ph.D., DVM
Professor Emeritus, Food Animal Health Research Program, Ohio Agricultural R&D Center
The Ohio State University

Bob Stallman
Past President
American Farm Bureau Federation

Alton Thompson, Ph.D.
Executive Director
Association of Research Directors of 1890 Land Grant Universities

Ex-Officio Members

Hon. Sonny Perdue
Secretary of Agriculture
U.S. Department of Agriculture

Ann Bartuska, Ph.D.
Acting Chief Scientist and Under Secretary for Research, Education, and Economics
U.S. Department of Agriculture

Sonny Ramaswamy, Ph.D.
Director, National Institute of Food and Agriculture
U.S. Department of Agriculture

Jim Olds, Ph.D.
Assistant Director for Biological Sciences
National Science Foundation
Designee of Dr. France Córdova, Director

Chavonda Jacobs-Young, Ph.D.
Administrator, Agricultural Research Service
U.S. Department of Agriculture

FFAR Board of Directors Meeting – April 2017

Front row from left to right: Dr. Rob Horsch (Bill & Melinda Gates Foundation), Dr. Debby Delmer (University of California-Davis), Dr. Pam Marrone (Marrone Bio Innovations, Inc.), Dr. Doug Cameron (First Green Partners and Alberti Advisors), Ms. Pam Johnson (National Corn Growers Association), Hon. Dan Glickman (Aspen Institute), Dr. Mark Keenum (Mississippi State University), Dr. Sally Rockey (FFAR), Dr. Kathryn Boor (Cornell University), and Dr. Nancy Creamer (North Carolina State University). Back row from left to right: Dr. Stanley Prusiner (University of California, SF), Dr. Alton Thompson (Association of Research Directors of 1890 Land Grant Universities), Dr. Sonny Ramaswamy (USDA-NIFA), Dr. Chavonda Jacobs-Young (USDA-ARS), Dr. Michael Ladisch (Purdue University), Dr. Terry McElwain (Washington State University), Mr. Bob Stallman (formerly American Farm Bureau Federation), Dr. Doug Buhler (Michigan State University), Dr. Ann Bartuska (USDA-OSEC), and Dr. Mehmood Kahn (PepsiCo).

2017 FFAR Advisory Councils

Foundation for Food and Agriculture Research Advisory Council members advise foundation staff regarding program development and implementation, potential partnerships and other matters of significance to the organization's mission. Individuals representing diverse industries, geographic areas and professional backgrounds were selected to serve on the Foundation's six Advisory Councils from a competitive pool of applicants nominated through an open solicitation.

Each Advisory Council is led by a Chair, appointed to facilitate discussion, build consensus and may serve as a liaison to the Foundation's board if needed. Please note that at time of publication this information may have changed. Visit our website for the most current list: www.foundationfar.org

Healthy Soils, Thriving Farms Advisory Council

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Ohio State University

Chad Ellis
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Nick Goeser
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Stonyfield Farm Inc.

Allison Thomson
Field to Market: The Alliance for Sustainable Agriculture

Don Villwock
Corn, soy, seed soybeans and seed wheat farmer

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University of Illinois

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Global Harvest Initiative

Joint Council – Making My Plate, Your Plate and Urban Food Systems

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E&J Gallo Winery

Kate Fitzgerald
Kate Fitzgerald Consulting

Nicole Ilic
Edesia Nutrition

Dean Kopsell, Ph.D.
University of Florida

Jonathan Lynch, Ph.D.
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University of California Division of Agriculture and Natural Resources

Jeff Rosichan, Ph.D.
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Ronda Rutledge
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Gary Stutte
SyNRGE, LLC

Maha Tahiri, Ph.D.
General Mills

Laurian Unnevehr, Ph.D.
University of Illinois (ret.)

2017 Financial Information

Balance Sheet

December 31, 2017

ASSETS	
Cash and Cash Equivalents	$9,460,979
Certificate of Deposit	200,000
Award Match Receivable	53,150,587
Investments	183,533,819
Other Assests	133,835
	$246,479,220
LIABILITIES AND NET ASSET	
Liabilities	
Accounts payable and accrued expenses	$221,170
Grants payable, net of discount	89,439,473
Conditional Grant (Deferred Appropriation)	148,976,145
Conditional Grant (General Operating Support Fund)	2,347,171
Deferred rent	122,477
	$241,106,436
NET ASSETS - UNRESTRICTED, BOARD DESIGNATED	**5,372,784**
	$246,479,220

Statement of Activities

Year ended December 31, 2017

REVENUE	
Recognition of deferred appropriation	$43,301,753
Matching award revenue, net	69,532,463
Investment income, net of fees	5,372,784
Crops of the Future Contributions	207,000
Contributions and Other Revenue	238,867
Total Revenue	**$118,652,867**
EXPENSES	
Grants and awards program	$110,918,970
General and administrative	2,106,213
Development	254,900
Total Expenses	**$113,280,083**
CHANGE IN NET ASSETS	**$5,372,784**

The Balance Sheet and Statement of Activities were derived from the financial statements that were audited by RSM LLP, whose unmodified audit opinion was dated May 8, 2018. A copy of the full audit report is available upon request.


Let food be thy medicine
and medicine be thy food.
Hippocrates

On the Horizon

Thank you to the donors, partners, grantees, supporters and friends of the Foundation for Food and Agriculture Research. While 2017 was transformational for our organization, the exciting work of FFAR grantees is just getting started. We look forward to working together towards more sustainable, healthful and productive agriculture in 2018 and beyond.

As this 2017 Annual Report goes to press, FFAR is pleased to have announced the successful applicants to three competitive research programs that launched in 2017:

Pollinator Health Fund

Established in response to the issue of declining pollinator health in agricultural systems, this program focuses on applied research that addresses the social and economic realities faced by beekeepers, farmers, ranchers, private businesses and others engaged in working toward addressing this problem. The Pollinator Health Fund brings together major stakeholders to improve pollinator health by:

- Understanding multiple interacting stressors
- Developing best management practices
- Accelerating technology transfer
- Enhancing outreach and education

Tipping Points

This competitive program invited applications for research to analyze the complex relationship between food system interventions, communities and health outcomes. Projects funded by this program will focus on one urban community and aim to produce results that transform the local food system by providing data on how and why certain food and nutrition programs are effective within the context of their environments. Researchers will use computer modeling to gain new insight into how different assistance programs and other interventions within a community affect one another and relate to improved nutrition and health.

Sustainable American Aquaculture Program

FFAR launched this program in 2017 to stimulate innovative research in farmed production of fish and shellfish, providing economic opportunities to U.S. farmers and increasing the supply of domestically-produced, nutritious foods to meet growing consumer demand for protein. FFAR committed up to $5 million to a competitive call for research proposals addressing three key areas in aquaculture:

- Genomics and breeding of understudied shellfish species for improved performance
- Hatchery research, including best early stage life cycle production practices for commercial fish
- Market-based analyses for new species and/or production regions.

Awardees of these programs will be announced in 2018. Visit www.foundationfar.org for details.

Connect with Us

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