

REQUEST FOR APPLICATIONS

2019 Ideas Lab Challenge: Transformative Approaches to Optimizing the Food – Health – Ecosystem Trilemma

Key Dates & Information:

RFP Release Date: June 2019

Ideas Lab Informational Webinar (1 hour): Held July 30, 2019, view the webinar at:

https://sdsu.zoom.us/recording/share/yMxNSepRhitekxFzLoPayRmRBFVM7kp4w6oJWYh_u dt8%E2%80%8B. The webinar starts at 16 minutes in the video, and features Chris Meyer (Dean of Sciences, Fresno State; 19 – 42 minutes on The Trilemma Challenge), Ray Rodriguez (UC Davis; 42 – 48 minutes on the inspiration for the Trilemma Challenge), and Andy Burnett (KnowInnovation; 48 – 60 minutes on “What is an Ideas Lab?” and “If you’re interested in the Trilemma Challenge, we’re interested in you!”)

Ideas Lab Application Rolling Deadline: Thursday, August 15 before 5:00 p.m. pacific time

Participant Selection Notification: Third week of August, 2019

Ideas Lab: September 12-14, 2019, at Fresno State

Ideas Lab Seed Team Grant Application Due Date: Monday, September 30, 2019

Maximum Seed Team Grant Amount: \$1000 per team member

Seed Team Grant Notifications: mid-October, 2019

Project Duration / Draft Proposals Due: 4 months / February, 2020

Program Description:

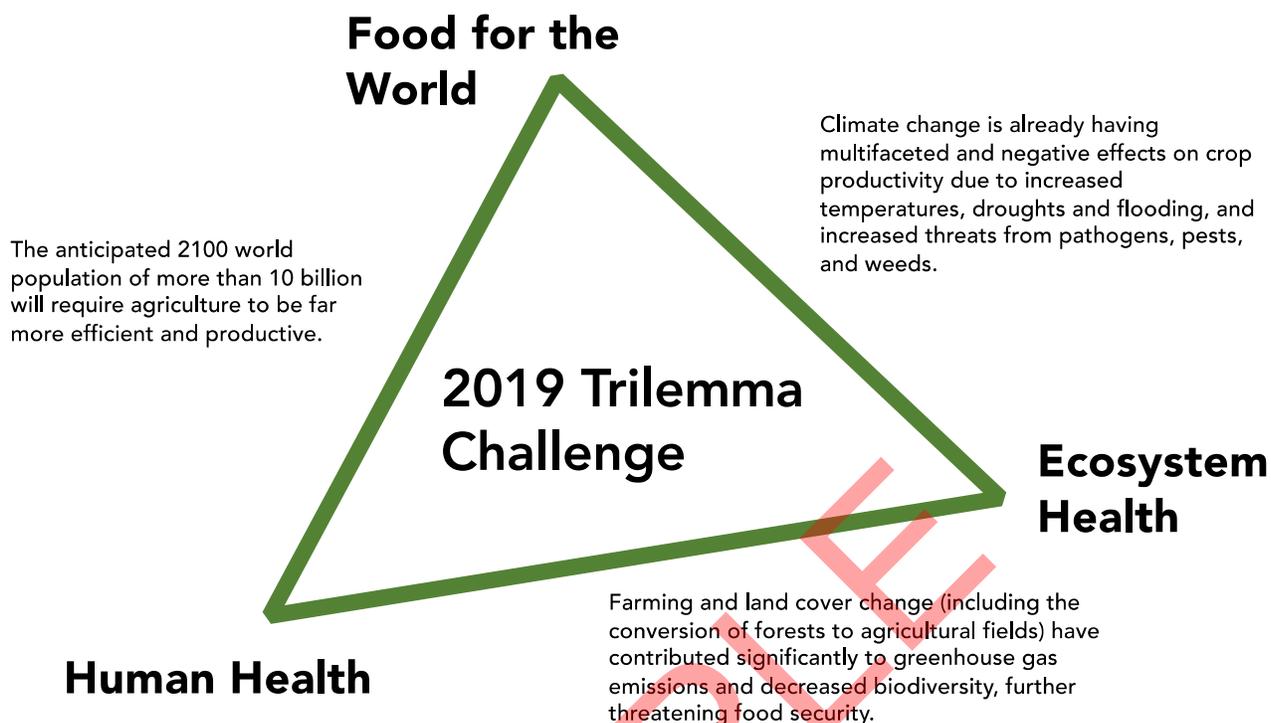
The CSUPERB 2018-2021 Strategic Plan aims to "advance integrative, inter-disciplinary education, and team research." CSU faculty asked CSUPERB for support to develop collaborative, interdisciplinary research projects, help in build nationally competitive teams, and convenings to explore problems worth solving for regional communities and in the national interest. CSUPERB responded by planning an annual series of intensive workshops and team-building activities described at the Ideas Lab Website:

<https://www2.calstate.edu/impact-of-the-csu/research/csUPERB/Pages/CSUPERB-Ideas-Lab.aspx>. The 2019 Ideas Lab is supported by CSUPERB, the National Science Foundation, and Fresno State. We anticipate inviting up to 35 participants this year.

Idea Labs Selection Criteria:

- The 2019 CSUPERB Ideas Lab is open to tenured/tenure-track CSU faculty members
- Applicants must commit to attend all three days of the Ideas Lab (Sept. 12-14, 2019) in person at Fresno State
- Applicants must be willing to join teams in proposing ideas or exciting solutions to problems within the 2019 Challenge Area
- Applicants must be willing to step outside their areas of expertise or interest and develop novel approaches with individuals they may not know
- Applicants must be open, available and motivated to develop a nationally-competitive team grant proposal by end of February 2020

2019 Challenge Area: A Problem Worth Solving



The ultimate goal of the 2019 Ideas Lab is to catalyze the inception and implementation of innovative, exciting research projects addressing food, energy, water and land issues that are part of California's food-health-ecosystem trilemma. A trilemma is characterized by tough choices among three alternatives. For instance, to optimize food production, a community might face the degradation of its ecosystem.

Facing the effects of climate change, the need to sustainably feed a growing human population, and dealing with pollution and degraded soil quality, California's agricultural and environmental sectors are in need of new, transdisciplinary ideas. In order for these ideas to be successfully implemented, innovative concepts must be built on input from multiple, local stakeholders (including community, industry and government members).

Each region of California faces different trilemmas when considering its health, food systems, and environmental ecosystems – there is not one solution for the state or the world. How can we find the right balance and help communities make difficult choices? The ability to resolve the apparent conflict between “agriculture and nature” requires the recognition that agriculture is not separate but part of a larger network of ecosystems that influence each other. How do we determine the “local optima” for production and long-term health and sustainability?

The American Society of Agronomy¹ has defined a “Grand Challenge” around the need to double global food, feed, fiber, and fuel on existing farmland within the 21st Century. How might we accomplish this with limited resources while enabling food security and producing more nutritious foods and, simultaneously enhancing soil quality and the availability of fresh water, safe air, and healthy biodiversity? The Food and Agriculture Organization² (FAO) of the United Nations also identified challenges to ensuring a sustainable natural resources

base, making food systems more efficient, inclusive, and resilient, and preventing transboundary and emerging agriculture and food system threats. It is clear that a “business as usual” approach to the “bioeconomy” of agriculture is not sustainable. Comprehensive solutions require transdisciplinary thinking that goes beyond science and technology to include the farming community, social and behavioral sciences, policy, industry, and government.

Progress toward these goals will require convergent research by diverse interdisciplinary and transdisciplinary teams that can create new frameworks and methods. The methods and approaches developed must span agriculture, biology, computer science, and engineering. Emerging tools include artificial intelligence (AI)/IT convergence (digital agriculture), biology automation, drones/sensors, synthetic biology, green chemistry, genetic engineering/gene editing technologies, intercropping, and metabolic engineering. There is also a need to convert “Big Data” from satellite imagery and geospatial data into usable information for scientists, farmers, and other stakeholders. The ability to work across and communicate between local and global scales of analysis will be essential to linking changes to nutritional outcomes and agriculture policy.

Interdisciplinary team proposals drafted during the Ideas Lab and refined in follow up work will be eligible for CSUPERB Ideas Lab Team Seed Grants (\$1000 per person). The Ideas Lab Seed Grants will fund travel needed by teams to jointly write and refine a nationally competitive proposal, with the ultimate goal of securing federal grant funds. Alternatively, teams can negotiate with CSUPERB to use Team Seed Grant funds to conduct joint research as a subcontract. There are relevant sources of follow-on funding from NSF and USDA, including the INFEWs (Innovations at the Nexus of Food, Energy, and Water) program, the prior NSF BREAD (Basic Research to Enable Agricultural Development (BREAD) program (in partnership with the Bill & Melinda Gates Foundation), NSF Research Coordination Networks (RCN), and a recent Dear Colleague Letter³ aligned with NSF’s Harnessing the Data Revolution Big Ideas and aiming to build capacity across disciplinary boundaries. CSUPERB will fund travel to Washington, D.C. to meet with program officers, based on draft proposals submitted by teams in February 2020.

References

1. Grand Challenge: Agronomy Feeds the World. 2010. American Society of Agronomy. <https://www.agronomy.org/files/science-policy/asa-grand-challenge-2010.pdf>
2. FAO Food Chain Crisis Early Warning Bulletin. 2019. Food and Agriculture Organization of the United Nations. <http://www.fao.org/documents/card/en/c/CA4251EN>
3. Dear Colleague Letter: Supporting Research at the Intersection of Agricultural Science, Big Data, Informatics and Smart Communities. National Science Foundation (NSF) and US Department of Agriculture’s National Institute of Food and Agriculture (USDA/NIFA). <https://www.nsf.gov/pubs/2019/nsf19051/nsf19051.jsp>

2019 Ideas Lab Progression:



Read more about Ideas Labs at the website: <https://www2.calstate.edu/impact-of-the-csu/research/csuperb/Pages/CSUPERB-Ideas-Lab.aspx>

Ideas Labs Participant Eligibility and Information:

CSUPERB Ideas Labs are open to tenured/tenure-track faculty researchers from life, computer, physical, behavioral, social, and environmental sciences; engineering and mathematics; policy and law; business; or any other discipline that can provide new insights and perspectives on a given Challenge Area.

Ideas Labs have been shown to be effective approaches for rapidly creating novel, interdisciplinary solutions to complex problems. The methodology has been widely adopted within many national funding agencies including, NSF, NIH, and NASA to transform research paradigms and find solutions to intractable, wicked problems. For the 2019 Ideas Lab, CSUPERB is partnering with experts at Knowinnovation (<https://knowinnovation.com/>) to provide project management, facilitate the workshop, and share expertise based on their successful series of federally-sponsored Ideas Labs.

The in-person 2019 Ideas Lab will be convened at Fresno State, hosted by the College of Science and Mathematics and the Lyles Center for Innovation and Entrepreneurship. Fresno State is an inspiring location for the 2019 Challenge Area, given its location in the Central

Valley, which is among the most productive agricultural land in the world and also faces complex challenges with respect to food, water, energy, health, and the environment.

CSUPERB will provide lodging and reimburse participant expenses related to travel to and from the in-person Ideas Lab at Fresno State from September 12-14, 2019. Meals will be provided during the three-day workshop, but CSUPERB will reimburse participants for meals not provided.

Funding for this program is provided by a National Science Foundation grant to CSUPERB at San Diego State University. Idea Labs funds are classified as participant costs and, therefore, Facilities and Administrative (indirect) costs are prohibited. CSUPERB grants are issued as a result of an internal competition within the CSU.

Application Submission Instructions:

A complete application must be submitted electronically using the CSUPERB CSYou system before the deadline on Thursday, August 15, 2019, before 5:00 p.m. pacific time (use “Apply” link at www.calstate.edu/csUPERB). Faculty applicants login to the CSYou system using their campus ID/username and password. Applications must answer all questions and adhere to style/length guidelines included in the proposal template. Failure to follow those guidelines may result in application rejection during administrative review. The 2019 Ideas Lab Application Form and the submission link can be found on the CSUPERB website. Applications that are complete and meet eligibility requirements will be evaluated by a CSUPERB selection committee. The selection meeting will be held in August 2019. The CSUPERB program office makes final funding decisions. Funding decisions are based on recommendations made by the selection committee, available funds, and CSUPERB strategic priorities.

Post-Award Reporting Requirements:

Ideas Lab Workshop participants are required to submit a final report to CSUPERB by September 20, 2019. Final reports document the need for and help justify continuation of the program. CSUPERB may also contact participants for longer-term impact reporting.

Program Contacts:

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