



Agricultural Genome to
Phenome Initiative

NEWSLETTER

~ Summer 2022 ~

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ROUND 3 SEED GRANTS AWARDED

AG2PI has awarded seed grants to nine projects in this third round of tiered awards. The awarded projects involve researchers representing 27 institutions including international collaborators. Although not a research-producing project itself, AG2PI and its seed grant program helps to meet the project's goal of advancing research in the genome-to-phenome arena.

The grants span three levels of funding: Emerging grants, Enabling grants, and Establishing grants. Award amounts range from \$50,000–\$100,000, depending on the grant type and associated funding level. Narratives for these awarded projects can be found on the AG2PI website under the RESOURCES tab.

Round 3 Seed Grant awardees, listed by lead Project Investigator:
(* denotes early career)

Emerging Grants

- Michael Kantar*, University of Hawaii at Manoa: *Understanding emergent agricultural phenomena through big data analytics: Creating frameworks for understanding using physics-guided machine learning and agent-based models*
- Hao Cheng, University of California-Davis: *Homomorphic encryption to enable sharing of confidential data*
- Samantha A. Brooks, University of Florida: *An AI Toolkit for Video Phenotyping in Livestock*

Enabling Grants

- Susanta Kumar Behura, University of Missouri: *Leveraging single-cell genomics in QTL mapping*
- Jameson Brennan*, South Dakota State University: *Standardizing data management and terminology for increased adoption of virtual fence systems*

- Christopher K. Tuggle, Iowa State University: *Creating a FAIR data ecosystem for incorporating single cell genomics data into agricultural G2P research*
- Theodore S. Kalbfleisch, University of Kentucky: *A genetic data portal to enable discovery of deleterious genetic variants in farmed animals*

Establishing Grants

- Anju Biswas*, University of Florida: *Using unmanned aerial vehicles to detect nitrogen stress in alfalfa (*Medicago sativa* L.)*
- Jingqiu Chen*, Florida A&M University: *Developing Education, Research, and Extension Training on Precision Agriculture Phenotyping Tools at HBCU*

Across all grant opportunities and in
just over one year,
AG2PI has awarded more than
\$1.1 million
in seed funds to **30** projects.

OTHER SEED GRANTS AVAILABLE

Working Group: This funding opportunity supports the formation of working groups that can make quick progress on mapping out the challenges and opportunities within the ag G2P research arena. Proposals for Working Groups should include scientists from a variety of disciplines who will work together on a shared problem.

Rolling: This grant supports single events or limited term activities (like a summer learning program). Examples from successful applications include providing travel support to broaden participation at an ag G2P event or creating a cross-disciplinary training workshop. Project narratives are available on the AG2PI website under the RESOURCES tab.

Applications for both grants are on a rolling basis and the deadline for either grant is April 23, 2023, or until all funds have been committed. For more information and details on submission, visit the AG2PI seed grant webpage: <https://www.ag2pi.org/seed-grants/>

RESOURCES TO DISCOVER

Community Resources/Data Sharing

Check out the [Community Resources/Data Sharing page](#) on the AG2PI website, which serves as a center for data sharing within and among the G2P community. The page contains a list of genomic, phenomic, and data resources that are available. Complete the request form on the

page that requests access to a list of contacts who are willing to share their resources. Numerous data topics are available such as epigenomic/functional genome data, field remote sensing platforms like UAVs, data integration and visualization tools, and much more.

Publications

[Links to two publications](#) written by the AG2PI Executive Committee are also on the AG2PI website and are freely available to download and digest.

“The Agricultural Genome to Phenome Initiative (AG2PI): Creating a Shared Vision Across Crop and Livestock Research Communities” was published in *Genome Biology* in January 2022. The paper provides an overview of the project’s goals and activities as well as recommendations for future action.

The paper “Ten Simple Rules to Ruin a Collaborative Environment” was recently published in *PLOS Computational Biology*. It provides a lighthearted, satirist view of the joy of collaborative work. If you’ve ever been part of a collaboration, there may be familiar experiences illustrated here.

COMMUNITY SURVEY

The third community survey has been sent out. We encourage you to please complete the survey as soon as you receive it. The surveys help the AG2PI community to identify topics of interest and future collaborative work, as well as gaps in research. The survey results are shared with AG2PI’s funding organization USDA NIFA to help direct the future of agricultural genome-to-phenome research.

UPCOMING ACTIVITIES

Field Days: held online the third Wednesday of each month.

- **June 15, 10:30 am-12:00 pm (CDT): Quantitative Multi-omics to Unravel Genomes-to-Phenomes in Crops and Livestock**
 - presenters Justin Walley, Iowa State University; and Lingzhao Fang, University of Edinburgh
 - Register at: <https://www.ag2pi.org/workshops-and-activities/field-day-2022-06-15/>

We have an **open call** for **two upcoming field days** that focus on private industry and their collaborations with researchers outside of their organizations. The first call is to businesses looking to exhibit how their technologies provide a solution to an agricultural genomes-to-phenomes adjacent or data pipeline problem by demonstrating the science behind it. This field day is scheduled for August 17. The second is a call for industry partnerships, particularly with academic researchers, and how these have led to advances in genomes-to-phenomes research or other related work. This field day is scheduled for September 21. **To apply to present on behalf of your company or industry collaboration**, fill out this form in Smartsheets:

<https://app.smartsheet.com/b/form/6eb06e83cba74146a9707ffd453ee867>

Workshops:

Workshops are virtual and range from a single event to multi-sessions, depending on the topic.

- **June 23, 10 am-12pm (CDT): Crop Modeling Using DSSAT**
 - presenter Gerrit Hoogenboom, University of Florida
 - Register at: <https://www.ag2pi.org/workshops-and-activities/workshop-2022-06/>
- **July 12, 1-3 pm (CDT): Bison-Fly: A UAV Pipeline Applied to Plant Breeding Programs**
 - presenter Filipe Matias
- **July 26, 12-2 pm (CDT): -Omics-enabled Genetic Prediction**
 - presenters Jinliang Yang and Hao Cheng

PAST EVENTS

Recordings of previous field days, workshops, and conferences are accessible on the AG2PI website and YouTube channel. You can continue the conservation of any field day by joining the AG2PI Field Day [Slack Workspace](#) where each event has its own channel. In Slack, you can review questions and answers discussed during the live session and ask your own questions through the appropriate channel.

The Agriculture Genome to Phenome Initiative (AG2PI) is a three-year project funded by the U.S. Department of Agriculture's (USDA) National Institute of Food and Agriculture (NIFA) awards 2020-70412-32615 and 2021-70412-35233 to build communities that address the challenges of genome to phenome (G2P) research across crops and livestock. AG2PI partners include Iowa State University, University of Nebraska, University of Arizona, University of Idaho, and the Iowa Corn Promotion Board.

Contact AG2PI: <https://www.ag2pi.org/contact-us/>
Social Media: Twitter [@AG2PI](#) [YouTube](#) [LinkedIn](#)