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EDUCATION

Ph.D. Botany
University of Georgia
1997-2003

M.S. Biology
Texas Tech University
1996-1997

B.A. Biology
Hendrix College
1992-1996

INTERESTS

Dog training
Rafting
Marksmanship
Sewing
Beekeeping
Travel

SUMMARY

Experienced data scientist, plant biologist, and research director with a demonstrated history of working in both higher education and federal sectors. Skilled in genomics, life sciences, research coordination, and mentoring. Focused on catalyzing team science, fostering innovation, and supporting novel research that spans disciplines, organizational units, and institutions.

Current objective: Expand my scope of impact in research coordination through service in support of faculty research and the research enterprise.

EXPERIENCE - BRIEF

Iowa State University	Agronomy Genetics, Development & Cell Biology
Professor	*2019 - date*
Associate Professor	*2014 - 2019*
USDA-ARS	Corn Insects & Crop Genetics Research
Research Geneticist	
GS-14	*2012 - 2013*
GS-13	*2008 - 2012*
GS-12	*2005 - 2008*
ISU Faculty Collaborator	*2005 - 2013*
Iowa State University	Volker Brendel, Advisor
Postdoctoral Associate	*2003 - 2005*
University of Georgia	R.K. Dawe & R.L. Malmberg, Advisors
NSF Fellow	*1997 - 2003*
Texas Tech University	A.S. Holaday, Advisor
Research Assistant	*1996 - 1997*
NSF/HHMI REU Fellow	*1994, 1995 (summers)*

PROFESSIONAL DEVELOPMENT - BRIEF

Iowa State University

Research Collaboration Catalyst	*ISU – VPR*
Iowa State I-Corps Program	*ISU – Econ Devo & VPR*
Food Systems Leadership Institute	*APLU*

USDA-ARS

Congressional Briefing	*Georgetown University*
Assistant Area Director (detail)	*ARS Midwest Area*
Science Leadership Development Program	*ARS Midwest Area*
Resiliency Advantage	*US OPM*
Engaging & Encouraging Employees	*US OPM*

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EDUCATION

Ph.D. Botany	2003	University of Georgia	Athens, Georgia
M.S. Biology	1997	Texas Tech University	Lubbock, Texas
B.A. Biology	1996	Hendrix College	Conway, Arkansas

PROFESSIONAL EXPERIENCE (OVERVIEW; DETAILS FOLLOW)

IOWA STATE UNIVERSITY

2017 - 2019	Chair and Director of Graduate Education	Graduate Interdepartmental Bioinformatics & Computational Biology

- Reformulated administration and oversight by re-instituting turnover in the program's supervisory committee.
- Directed the reconstituted supervisory committee to review and update program's governance document (which was 20 years old and had otherwise remained unchanged).
- Managed transition to the first new Program Coordinator in >15 years and provided on-the-ground oversight of position expansion to cover three interdepartmental graduate programs.

2015 - present	Faculty Scholar	Plant Sciences Institute

- Co-founded the Predictive Plant Phenomics graduate specialization across six graduate programs (supported by a $3M NSF NRT).
- Led the Executive Board of the North American Plant Phenotyping Network (NAPPN) in founding a 501(c)3 not-for-profit to serve as a basis for legal organizational structure.

2019 - present 2014 - 2019	Professor Associate Professor	Department of Agronomy and Department of Genetics, Development & Cell Biology

- Recruited as an Associate Professor (with tenure) via a Presidential Initiative targeted hiring strategy that aimed to bring in expertise in data science and analytics.
- Created a community of researchers working in data sciences at ISU by organizing a host of seminar series, conferences, and symposia.
- Highlighted as an agent of change for re-envisioning how to document and reward data science achievements for promotion and tenure by the College of Agriculture and Life Sciences, the Office of the Vice President for Research, and the Office of the Provost.
- Selected and contributed to the hiring process for key administrative personnel.
- Published 2-9 peer-reviewed publications annually ($\overline{x} = 4.83$).
- Brought in $10,848,261 over 7 years as PI or co-PI.
- Received the YWCA Women of Achievement award for eliminating racism and empowering women based on conduct in research, personnel management, and building community.

USDA-ARS

2008 - 2012	GS-14 Research Geneticist	Corn Insects & Crop Genetics Research Unit USDA-ARS
2005 - 2008	GS-13 Research Geneticist	
2003 - 2005	GS-12 Research Geneticist	
	Collaborator	
2005 - 2013	Assistant Professor Collaborator Iowa State Univ.	

- Hired as the Agency's first ever Category-I (research) scientist for bioinformatics and computational biology.
- Managed ~$500K per year federal budget for the project. Personnel included PhD-level biologists and computer scientists.
- Coordinated ARS scientists to evaluate research computing for the agency, resulting in a whitepaper for the future, creation of a new Chief Scientific Information Officer for the Agency, and updated guidance to loosen restrictions on data use, transfer, storage, and access.
- Instituted a hiring strategy for placing PhD-level curational expertise in regions where scientist stakeholders were well-represented.
- Published 1-4 peer-reviewed publications annually ($\bar{x} = 2.40$).
- Brought in $8,312,599 over 9 years as PI, co-PI, or contractor.
- Received the Midwest Area Equal Opportunity Award for plant germplasm and genomics outreach to American Indians.

IOWA STATE UNIVERSITY

2003 - 2005	Postdoctoral Research Associate	Volker Brendel, Advisor

- Provided on-the-ground leadership and cross-institutional communication resulting in the transition of a long-term USDA-ARS project into a new congressional district with alternate administration, oversight, and personnel.
- Managed transition of the Maize Genetics Database to a sequence-based paradigm, ultimately resulting in the creation of a new Maize Genetics and Genomics Database (MaizeGDB) resource.

UNIVERSITY OF GEORGIA

1997 - 2003	Research Fellow NSF Training Grant	R. Kelly Dawe and Russell L. Malmberg, Advisors

Dissertation:
"A combined bioinformatic/molecular-based approach to understanding molecular motors in plants"

- Published the first paper showing that flowering plant cytoskeletal elements are unique among multicellular organisms – dynein, the major minus-end directed motor, is missing.
- Reorganized how researchers understood relationships among kinesin motor protein superfamily members, demonstrating that plants have an expansion of minus-end directed kinesins.
- Led the creation of a standardized kinesin nomenclature by organizing researchers worldwide to function as a community. (Reviewed for The Taproot podcast.)

TEXAS TECH UNIVERSITY

1996 - 1997	Graduate Research Assistant	A. Scott Holaday, Advisor

Thesis: “Effects of mild night chilling on respiration of expanding cotton leaves”

- Published one peer-reviewed paper with the same title as the dissertation. This work continues to accumulate citations even today with findings serving as the basis for ongoing research.

1994 & 1995 summers	Fellow, NSF REU/HHMI	A. Scott Holaday, Advisor

- Selected to serve as an 8-week summer intern for two years.
- Developed an independent research project that served as the basis for the M.S.

PROFESSIONAL DEVELOPMENT

ISU RESEARCH COLLABORATION CATALYST TRAINING

2020 - 2021	Facilitating interdisciplinary team science

- Nominated by the Plant Sciences Institute Director, Dr. Patrick Schnable.
- Organized by the Office of the Vice President for Research.
- Monthly meetings to focus on the support of team science through self-evaluation reading, homework assignments, and seminars by renowned leaders on collaborative research.

ISU I-CORPS PROGRAM

2019	Exploring the commercial potential for research outcomes

- Selected through an application process.
- Organized by the ISU Office of Economic Development and Industry Relations and the Vice President for Research.
- Weekly meetings over a two-month period.
- Developed a business model for a data sciences-oriented startup company by progressively considering alternate perspectives, input, and strategies.

FOOD SYSTEMS LEADERSHIP INSTITUTE, COHORT 13 FELLOW

2017 - 2019	Developing core leadership competencies for the Association of Public and Land-Grant Universities

- Nominated by the ISU CALS Senior Associate Dean for Research, Dr. Joe Colletti.
- Program organized by the Association of Public and Land-Grant Universities.
- Components:
  - Three intensive training sessions on-site at diverse member universities (i.e., the North Carolina State University, The Ohio State University, and the University of California – San Luis Obispo).
  - Change project: ISU Bioinformatics and Computational Biology Program Revamp.
  - Professional coaching and formal mentorship (mentors: Iowa Senator Chuck Grassley and ISU Department of Food Science Chair Dr. Ruth MacDonald).

CONGRESSIONAL BRIEFING CONFERENCE

2013	Understanding congressional process and procedure as well as the "culture" that is the United States Congress

- Nominated by USDA-ARS Midwest Area Director Dr. Larry Chandler.
- Week-long training sessions by Georgetown University Government Affairs Institute on-site at the US Capital.
- Focus on how authorization and appropriation work, how congressional committees function, and what congressional oversight is. Interactions with members of the Congressional Research Service and other agencies were facilitated.
- Seminars from constitutional historians, senators, staffers, and lobbyists on how to work with congress.
- Visited key state and federal offices.

DETAIL: ACTING ASSISTANT AREA DIRECTOR, MWA USDA-ARS

2013	Experiential leadership training as a short-term member of the Midwest Area Office

- Component of the MWA Science Leadership Development Program.
- Three-week, on-site experience at the Midwest Area Office in Peoria, Illinois.
- Reviewed and provided feedback for Project Plan development.
- Provided feedback for scientist applications for the Research Position Evaluation System (i.e., promotion portfolios).
- Observed meetings with scientists across the Midwest seeking input for making difficult decisions.

RESILIENCY ADVANTAGE, US OPM

2012	Behavioral training to increase resilience in the face of leadership challenges

- Nominated by Research Leader Dr. Craig Abel.
- One-week course conducted in Shepherdstown, West Virginia. Focused on how best to remain calm, cool, and collected in the face of organizational change, personnel management issues, and project administration.

ENGAGING & ENCOURAGING EMPLOYEES, US OPM

2012	Engaging employees to maximize individual performance, team productivity, and organizational results

- Nominated by Research Leader Dr. Craig Abel.
- One-week course in Aurora, Colorado. Focused on supporting employees and colleagues to become high-performing contributors to all projects and how to help them maintain a high level of performance for their organizations and for themselves. Involved not only supervisory leadership challenge guidance but also peer mentoring and training to influence individuals beyond the scope of direct supervision.

DETAIL OF MAJOR ACCOMPLISHMENTS AT ISU

CONTEXT

Iowa State University is Research I, public Land Grant institution founded in 1858 that currently enrolls about 36,000 students (roughly 83% undergraduate, 43% female). ISU is the largest university in the state of Iowa. In 2020, Iowa State reached $253M in external research funding, with $186M derived from federal sources.

At ISU, I have focused on enabling and catalyzing research in data sciences and agriculture, fostering educational advancement through the development of data-focused programs and courses for the biosciences in general and for plant phenomics in particular, and creating a diverse, equitable, and inclusive environment for team science in analytics research.

ENABLING AND CATALYZING RESEARCH

Creating community in Big Data for Iowa State: I joined ISU in 2014 as a 'Big Data' targeted hire. I began building a community of practice in the area for by coordinating the existing community of ISU researchers working in the data sciences. First, I created a list serve: bigdata@iastate.edu, which now has ~230 people subscribed. Next, I put together a crosscutting seminar series for 'Big Data.' That series ran successfully for four full years, with monthly meetings attended by roughly thirty people each month. From there, I organized a workshop for the Office of the Vice President for Research (VPR) in Spring of 2015 entitled "Data-Driven Science Initiative Workshop" where speakers from Ames as well as other institutions described the state of the art in data sciences to ~80 attendees. Shortly thereafter, colleagues in Computer Science had begun organizing a new major, minor, and certificate in Data Sciences. I served on the Data Sciences Curriculum Committee for five years. Following that, I became involved in the Data Sciences Task Force, a group working at the request of the VPR to design and implement policy and mechanisms for data sharing. My role on the committee was as the faculty lead. Our faculty subcommittee focused on reviewing and developing guidelines to ensure that data management plans for proposals could be coordinated and managed, and began work toward ensuring that data sciences contributions would be valued in the promotion and tenure process.

Bringing together the Digital Agriculture community: In 2015, I led a group to submit a proposal to the VPR Presidential Interdisciplinary Research Initiative's request for proposals. We were funded, but in an unexpected way. Our proposal to work on computational predictive phenomics was joined with one from Asheesh (Danny) Singh in Agronomy and another with Baskar Ganapathysubramanian from Mechanical Engineering. I served as overall principal investigator. Together we formed a project entitled "D3AI: Data-Driven Discovery for Agricultural Innovation" and created ways for our various teams to interact and grow new connections. Over the course of 3 years, our project brought in over $44M and authored 46 research papers. From that project, there was a natural connection to the Midwest Big Data Hub's Digital Agriculture community, led by ISU. As such, I attended various meetings of the MBDH and led a number of activities, including:

- Coordinating the 2017 Midwest Big Data Summer School Digital Agriculture Track.
- Organizing the 2017 Plant Phenomics Phridays Summer Seminar Series with help from Plant Sciences Institute Director, Pat Schnable.
- Taking on the leadership role for the Midwest Big Data Hub Digital Ag Spoke co-principal investigator Joe Colletti served as the Interim Dean of the College of Agriculture (2017-2019).
- Organizing the 2018 Metagenomics Mondays Summer Seminar Series with help from Gwyn Beattie (Plant Pathology) and Iddo Friedberg (Veterinary Pathology and Preventive Microbiology).
- Coordinating a EU/US Big Data Miniseries focused on Satellites for Agriculture and Data Science for Plant Genomics and Phenomics
- Organizing an International Controlled Environment Phenotyping "Women in Science" event held at Iowa State.
- Coordinating the Midwest Big Data Hub's Digital Agriculture community as a co-PI in collaboration with PI J. Reecy and co-PI Joe Colletti for the current funding period, with a focus on facilitating the creation and administration of small grants.

All of these activities have been very successful. As an example, the Plant Phenomics Phridays seminar series was attended in person and via webcast worldwide by 440 researchers with 46 industry attendees and 72 joining from other countries.

Since then, I have joined a group of 7 investigators (led by PI Patrick Schnable) to create a project that expands the traction in phenomics to include animal genome to phenome perspectives. The Agricultural Genome to Phenome Initiative, AG2PI, is a NIFA-funded organization that seeks to engage broad and diverse researchers by sponsoring and coordinating field days, conferences, training workshops, and seed grants. Outcomes of the project are intended to guide the spending of $40M authorized for genome to phenome research by Congress.

Founding the North American Plant Phenotyping Network: In 2016, I was awarded a conference grant from the NSF's Plant Genome Research Program to begin work toward outlining how best to coordinate the plant phenotyping community across the US and in collaboration with our European colleagues. I organized two conferences, one at the Plant and Animal Genome Conference and one in Ames. Participants developed guidance for funding agencies including a suggestion to create a community coordinating organization like the various Plant Phenotyping Networks in Europe. A subset of 7 of us who were highly engaged in these discussions formed the *ad hoc* NAPPN board. We organized a convening at Purdue in Fall of 2016 and another at the PHENOME conference in February of 2017. We developed provisional bylaws, grew a membership of over 400 scientists from many organization types, and conducted elections in early 2018. I became one of 7 scientists elected by the community to further develop the NAPPN, including planning for how to sustain the organization. In my second year of service as an elected member, I chaired the committee and suggested that rather than working under the umbrella of a single university, we should found a not-for-profit (501(c)3) organization. The membership agreed. Together, we officially created the legal entity. Since the conclusion of my service on the organization's Board of Directors, membership has increased to more than 800 members, a conference was organized by the Board of Directors with help from members of the organization, and funds were brought in to the organization as a result. I currently have a proposal under review with the NSF that, if funded, will provide about $500K support for NAPPN's expansion over the course of the next five years.

FOSTERING INNOVATION THROUGH NOVEL EDUCATIONAL OPPORTUNITIES

Bioinformatics: My research is primarily concerned with plant bioinformatics and computational biology, making leadership in the undergraduate BCBio and Graduate BCB majors a natural fit. I have served on the supervisory committees of both, and served as the Chair and Director of Graduate Education (DOGE) for BCB. Whereas BCBio is a very small program (with around fifteen undergrads participating most years), the graduate BCB program has approximately fifty PhD students any given year, with participating faculty from 4 academic colleges and 18 departments.

In 2015, I developed and taught two new classes, BCBio 322 – Introduction to Bioinformatics and BCBio 110 – Bioinformatics Orientation. Both are required courses for the BCBio undergraduate major that had never been taught before. As the Chair and DOGE of the BCB graduate program (2017-2019), I organized the BCB 690 Student Seminar and the BCB 691 Faculty Seminar.

Leading change as chair and DOGE of BCB: During my tenure as chair for BCB, I had planned to focus on sustainability of the program through developing a MS non-thesis option for the program with funding streams directed back to program support. Given that BCB is an interdepartmental program and these programs are not directly supported by the ISU budget model, that work was (surprisingly) challenging. Coupled with that came this challenge: the program coordinator of nearly fifteen years retired unexpectedly during my first year as chair of the program. I began working with Ruth MacDonald, who was Assistant Dean of Graduate Programs in CALS, and Bill Graves, Dean of the Graduate College, to figure out how best to proceed. In the end, we hired a program coordinator to support both the BCB and Interdepartmental Genetics and Genomics graduate programs, a position that subsequently was expanded to also cover the Molecular, Cellular, and Developmental Biology graduate program. This change was significant: the new hire became responsible for the work previously carried out by three people. As such, managing this change required that the faculty in all three programs pick up a good deal of program coordination. As such, for BCB I reformulated administration and oversight. This involved careful review of supervisory committee membership including re-instituting turnover and elections, which had gone unattended to for a number of years. I also directed the reconstituted supervisory committee to review and update program's governance

document (which had gone unchanged for 20 years). With these significant changes, the program continues to be successful, though the 2020 pandemic has reduced the number of recruits for two years, a trend that must be stemmed in the coming recruitment season.

Predictive plant phenomics: In 2015, ISU professors Julie Dickerson, Ted Heindel, Pat Schnable, and I brought in a $3M grant from the NSF's Research Traineeship (NRT) program to create a graduate Predictive Plant Phenomics (P3) Specialization at ISU. Perhaps notably, the NRT program claims a funding rate of less than 5% on average. The P3 Specialization combines training in plant science, data science, and engineering with 'soft skills' like project management and communication. Students in the program come from diverse backgrounds. As such, all students have an area of expertise as well as a number of areas with deficiencies. In 2016, Ted Heindel and I developed and taught ME/GDCB 585 – Fundamentals of Predictive Plant Phenomics, the core course for the P3 Specialization, for the first time. ME/GDCB 585 is taught annually, including both lecture- and project-based training and requiring a laboratory component. Enrollment is good and a particularly exciting thing has happened: past students involved in the course have volunteered to teach sessions for the class over time. In this way, the camaraderie of the cohort of P3 students grows stronger, their communication skills improve, and our program becomes more integrated.

CREATING A DIVERSE, EQUITABLE, AND INCLUSIVE ENVIRONMENT

To be successful at the university involves bringing together purpose, rigor, and empathy. My efforts are at the intersection of plant genomics and data science, both of which are "team sports" where methods and tools change at break-neck speed. I train and mentor with a focus on diversity, teamwork, and continual change. Much to my delight and surprise, these signature features of *how* the teams I organize work and function have been recognized at ISU. How I manage and document teamwork have been highlighted as examplars for documenting achievements in team science for promotion and tenure by the College of Agriculture and Life Sciences, the Office of the Vice President for Research, and the Office of the Provost. I also have been honored to receive the YWCA Women of Achievement award for eliminating racism and empowering women based on conduct in research, personnel management, and community building. More recently, I have been charged to lead a small team to develop governing principles that will support the Department of Agronomy to nominate and elect members to the Diversity, Equity, and Inclusion (DEI) committee, to put in place guidelines that ensure committee turnover and broad participation, and to clearly define the mission, vision, and values that should guide DEI efforts for the department. Last but not least, I am now assembling a Faculty Allies page at ISU. The goal is to enable people to identify someone who can listen when it isn't clear who to turn to or how to manage a difficult situation. Faculty inclusion in the directory is based on student nominations, with the first few trickling in just this past week.

DETAIL OF MAJOR ACCOMPLISHMENTS AT USDA-ARS

CONTEXT

One of four agencies in USDA's Research, Education and Economics mission area, the Agricultural Research Service (ARS) is the in-house research arm of the USDA. With over 7,000 employees, scientists working at USDA-ARS seek to extend scientific knowledge and solve the nation's agricultural problems through its four national program areas: nutrition, food safety, and quality; animal production and protection; natural resources and sustainable agricultural systems; and crop production and protection. The ARS Headquarters is located in Washington, D.C. and headquarters personnel are located at the George Washington Carver Center (GWCC) in Beltsville, Maryland. The ARS budget is approximately $1.2 billion. Ames, Iowa is the largest location in terms of personnel for USDA-ARS outside of Beltsville.

At ARS my work as the Director of MaizeGDB, the maize model organism database, involved reinventing the project in the age of genome sequences, extending lessons learned to advance the agency's perspective on data science, and involving and supporting people to carry out that work through service focused on advancing inclusion, diversity, and civil rights activities.

REINVENTING AND INTEGRATING MAIZE GENETICS AND GENOMICS

Becoming the lead scientist for the Maize Genetics and Genomics Database brought a host of complex problems. During my postdoctoral work under the guidance of Volker Brendel, my job was to take two independent biological databases and to combine them into a single, seamless resource that brought maize genetics into the era of genomics. ZmDB was a sequence-based resource initially created to house information about mutants and their seed stocks where the mutations were indexed by sequence of the mutator insertion site, and MaizeDB, which was a genetics-oriented resource. Together with a programmer and a database administrator, we succeeded in solving the technical problems associated with creating the resource. As a result, our small team of three was hired by USDA-ARS in Ames to continue the project. I was hired as a Category-I (research) Geneticist. At that time, it was not considered reasonable to expect that someone working in what we now call data science could lead and publish to become a successful, independent researcher. I am lucky that Les Lewis, the unit's Research Leader, chose to develop the position as a full-fledged and independent Cat-I research appointment. From there, I set to work figuring out how to navigate federal rules and regulations while also bringing the project into a paradigm of constant renewal and advancement under the umbrella of an institution where rules and regulations sometimes favor sustainability over adopting cutting-edge methods. In an effort to enlist the community of maize genetics as stakeholders whose voices could keep the call for change fresh, I created and instituted a stakeholder guidance committee whose members included maize geneticists from the National Academy of Sciences, data scientists from NIH and other prominent federal research institutions, and leaders of other model species databases. These stakeholder scientists reviewed the project annually and offered guidance on how best to advance the project over time and keep MaizeGDB moving forward in an organization where the pace of change sometimes can feel glacial.

PROMOTING ORGANIZATIONAL CHANGE FOR DATA DRIVEN DISCOVERIES

Starting in 2005, I provided evidence and a rationale for moving Congressionally mandated funding from one Congressional District to another (Missouri to Iowa) to support the transitioning of the maize genetics database to new leadership and a new future in Ames, Iowa. Once this was accomplished, I devised and instituted a hiring strategy that placed PhD-level curational expertise in regions where scientist stakeholders were well-represented as a means to ensure that the project's stakeholders would be better served by the newly invigorated federal model organism database for maize. During this transition, ARS researchers nationwide began contacting me. Their question was how they, too, could institute change to enable facile access and use of "big data" resources for their own research areas. In 2012, I joined with three others. Together, we organized ARS scientists to evaluate research computing for the agency, which resulted in guidance for the future of computing in ARS, creation of a new Chief Scientific Information Officer (CSIO) for the agency, and updated guidance to loosen restrictions on data use, transfer, storage, and access. In late 2013, I declined an offer to become the agency's first full-time Chief Scientific Information Officer by Caird Rexroad, II (then Associate Administrator for the agency) in order to join Iowa State University as a tenured faculty member.

CREATING A DIVERSE, EQUITABLE, AND INCLUSIVE ENVIRONMENT

In 2006 I was appointed to the Ames Area Civil Rights Advisory Committee. The group was responsible for developing activities that supported people in all units in the Ames Location to participate in observances of civil rights advances, federal holidays, and diversity efforts. We organized diverse events monthly and worked to increase the awareness and support of diversity in brings benefit to projects, organizations, and people. I served also as the chair for that committee beginning in 2008, and was appointed to the ARS Midwest Area Outreach, Diversity, and Equal Opportunity Advisory Committee, which I also chaired. At the same time that I was working on these committees, I saw a unique opportunity to involve a specific group in my own research - American Indians. The 'corn connection' from genetics to native culture was apparent: we shared a love for the plant as a source of both food and inspiration. With guidance from Dr. Lemanuel Bitsoi, a Diné Navajo colleague working at FlyBase, the model organism database for *Drosophila*, I set to work crafting a request for supplemental funding from the NSF to bring Navajo students from the Four Corners region in the Southwest United States to Ames. Once the funding was in place, our effort to recruit undergraduates was enabled by a connection with New Mexico State University's Bridges to the Baccalaureate Program for Native American Students at

Community Colleges. They sent us the applications for their own program that were beyond their capacity and funding for placement. Six interns joined us in our first summer and carried out research projects in data science, molecular research, and germplasm operations (at the North Central Regional Plant Introduction Station under the direction of Research Leader Candice Gardner's scientists and staff members). This project was supported and active for five years, with individual American Indian students continuing to join in my research projects on an *ad hoc* basis ever since. For this work, the team guiding the effort of these students received the Midwest Area Equal Opportunity Award for plant germplasm and genomics outreach to American Indians in 2009.

In 2007, my son Elliot was born. Over the course of the first year of his life, I became keenly aware of how difficult it could be for a mother to find a place to pump milk during her regular workday. As a result, I reviewed all ARS units in Ames for availability of lactation rooms and coordinated the allocation of appropriate space and signage for lactation to support mothers working in units on sites in the Ames location. I also served on the Board of Directors for the local federal daycare center, which was my first official role in a not-for-profit organization, paving the way for a better understanding of how to create and manage not-for-profit organizations to support scientific communities.

PUBLICATIONS

Asterisks (*) as corresponding author

Daggers (†) invited publications

Italics indicate those led, supervised, or mentored at the time of publication

PEER-REVIEWED JOURNAL ARTICLES

IN PREPARATION

Fattel, L., Psaroudakis, D., Yanarella, C.F., Chiteri, K., Dostalik, H., Joshi, P.*, Starr, D.C. *Vu, H., Wimalanathan, K.,* **Lawrence-Dill, C.J. Standardized genome-wide function prediction enables comparative functional genomics: a new application area for Gene Ontologies in plants. To be submitted to GigaScience. Current version available via BioRxiv preprint doi: 10.1101/2021.04.25.441366.

Braun, I.R*. Bassham, D.C., and **Lawrence-Dill, C.J. The Case for Retaining Natural Language Descriptions of Phenotypes in Plant Databases and a Web Application as Proof of Concept. To be submitted to Database. Current version available via BioRxiv preprint doi: 10.1101/2021.02.04.429796.

SUBMITTED

-

IN PRESS

-

PUBLISHED

63. **Wimalanathan, K*. and **Lawrence-Dill, C.J.** Gene Ontology Meta Annotator for Plants (GOMAP). Plant Methods. 2021. doi: 10.1186/s13007-021-00754-1.

62. Utility of Climatic Information via Combining Ability Models to Improve Genomic Prediction for Yield within the Genomes to Fields Maize Project. Jarquín D., De Leon, N., Romay, M.C., Bohn, M.O., Buckler, E.S., Ciampitti, I.A., Edwards, J.W., Ertl, D., Flint-Garcia, S., Gore, M.A., Graham, C., Hirsch, C.N., Holland, J.B., Hooker, D.C., Kaeppler, S.M., Knoll, J. Lee, E.C., **Lawrence-Dill, C.J.**, Lynch, J.P., Moose, S.P., Murray, S.C., Nelson, R., Rocheford, T.R., Schnable, J.C.,

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ADDITIONAL PUBLICATIONS (NOT NECESSARILY PEER REVIEWED)

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4. *†*Harper, L.C*., Sen, T.Z., and **Lawrence, C.J.** Plant cytogenetics in genome databases. In: Plant Cytogenetics: Genome Structure and Chromosome Function. J.A. Birchler and H.W. Bass (Editors) for the series Plant Genetics and Genomics: Crops and Models. pp. 311-322. Springer, New York, NY USA. 2012.
3. *†**Lawrence, C.J.** and Ware, D. Databases and data mining. In: Handbook of maize, S. Hake and J. Bennetzen (Editors), Springer. pp. 659-672. Springer, New York, NY USA. 2009.
2. *†**Lawrence, C.J.** MaizeGDB, the maize genetics and genomics database. In Plant Bioinformatics, D. Edwards (Editor) for the series Methods in Molecular Biology. pp. 331-345. Humana Press, New York, NY USA. 2007.
1. Stein, L.D., Beavis, W.D., Gessler, D.D., Huala, E., **Lawrence, C.J.**, Main, D., Mueller, L.A., Rhee, S.Y., and Rokhsar, D.S. Save our data! The Scientist 2006 20(4):24-25.

MAJOR DATASET RELEASES

23. GOMAP *Musa acuminata* DH-Pahang. CyVerse Data Commons. doi: 10.25739/yt7w-gs55. 2021. (*Leila Fattel* is the student primarily responsible for this effort.)
22. GOMAP *Theobroma cacao* B97-61/B2. CyVerse Data Commons. doi: 10.25739/9qc0-n310. 2021. (*Leila Fattel* is the student primarily responsible for this effort.)
21. GOMAP *Vitis vinifera* Pinot Noir PN40024. CyVerse Data Commons. doi: 10.25739/jtfk-q888. 2021. (*Haley Dostalik* is the student primarily responsible for this effort.)
20. GOMAP *Gossypium raimondii* JGI v2.1. CyVerse Data Commons. doi: 10.25739/a13t-zh47. 2020. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
19. GOMAP *Cannabis sativa* NCBI-cs10 January 2020 CyVerse Data Commons. doi: 10.25739/ab9z-2z86. 2020. (*Kevin Chiteri* is the student primarily responsible for this effort.)
18. GOMAP TreeGenesDB sugar pine assembly v1.5. CyVerse Data Commons. doi: 10.25739/jvs4-xr88. 2020. (*Colleen Yanarella* is the student primarily responsible for this effort.)
17. Phenolog Identification Datasets and Supplemental Files. doi: 10.5281/zenodo.3258671 (*Ian Braun* is the student primarily responsible for this effort.)
16. GOMAP Soybean JGI-Wm82.a4.v1. CyVerse Data Commons. doi: 10.25739/59ec-1719. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
15. GOMAP Rice Reference Sequences 2.0 CyVerse Data Commons. doi: 10.25739/53g0-j859. 2019. (*Ha Vu* is the student primarily responsible for this effort.)
14. GOMAP Wheat Reference Sequences 1.1. CyVerse Data Commons. doi: 10.25739/65kf-jz20. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)

13. GOMAP Maize Zm-Mo17-REFERENCE-CAU-1.0 Zm00014a.1. CyVerse Data Commons. doi: 10.25739/m634-cn58. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
12. GOMAP Maize Zm-PH207-REFERENCE_NS-UIUC_UMN-1.0 Zm00008a.1. CyVerse Data Commons. doi: 10.25739/dm9s-aa15. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
11. GOMAP Maize Zm-W22-REFERENCE-NRGENE-2.0 Zm00004b.1. CyVerse Data Commons. doi: 10.25739/e4va-9f09. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
10. GOMAP Barley Reference Sequences IBSC_PGSB_r1. CyVerse Data Commons. doi: 10.25739/zvgv-8e37. 2019. (Colleen Yanarella is the student primarily responsible for this effort.)
9. GOMAP Peanut IPGI 1.0. CyVerse Data Commons. doi: 10.25739/chab-0e35. 2019. (*Dennis* Psaroudakis is the student primarily responsible for this effort.)
8. GOMAP Barrel Clover R108_HM340 v1.0. CyVerse Data Commons. doi: 10.25739/2sqc-j140. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
7. GOMAP Cowpea IT97K-499-35 JGI annotation v1.1. CyVerse Data Commons. doi: 10.25739/cdx9-wr97. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
6. GOMAP Soybean JGI-Wm82.a4.v1. CyVerse Data Commons. doi: 10.25739/1ywe-ew96. 2019. (Dennis Psaroudakis is the student primarily responsible for this effort.)
5. GOMAP Common Bean DOE-JGI and USDA-NIFA v2.0. CyVerse Data Commons. doi: 10.25739/59ec-1719. 2019. (*Dennis Psaroudakis* is the student primarily responsible for this effort.)
4. *__Lawrence-Dill, C.J.__ Genomes to Fields 2015. CyVerse Data Commons doi: 10.7946/P24S31. 2017. (See also P41 and P47.)
3. *__Lawrence-Dill, C.J.__ maize-GAMER. CyVerse Data Commons. doi: 10.7946/P2S62P. 2017. (Note that CyVerse requires a single name on the data file; Kokulapalan Wimalanathan is the student primarily responsible for this effort. See also P44)
2. **Manchanda, N.*, Andorf, C.M., Wang, K., and __Lawrence-Dill, C.J.__ Maize B104 (beta) Genome Assembly and Annotation. doi: 10.6084/m9.figshare.4042422. 2017.
1. *__Lawrence-Dill, C.J__. Genomes to Fields 2014. CyVerse Data Commons doi: 10.7946/P2V888. 2016. (Note that CyVerse requires a single name on the data file; see also P41 and P47.)

GRANTS AND CONTRACTS

EXTRAMURAL

Role	Period of Performance	Funding Source	Title	Award Amount
PI				
	2020-2021	USDA-ARS	Coordination of AgBioData Consortium for Agricultural Genetics, Genomics and Breeding Databases	$40,000
	2020-2021	Iowa Corn	Supporting the North American Plant Phenotyping Network	$19,329
	2017-2018	Iowa Corn	Encouraging Broad Use of Genomes to Fields Data: Populating a FAIR Data Demonstrator	$32,623

	2016-2018	National Corn Growers Association	Strengthening Information Systems That Support Maize Research	$95,000
	2015-2017	NSF	Meeting: High-throughput Plant Phenotyping and Data Analysis, A Series of Workshops	$48,033
	2015-2017	Iowa Corn	Information Management Solutions, Genomes to Fields	$93,570
	2014-2015	Iowa Corn	Informatics Support for the Genotype x Environment Subgroup of the Maize G2F Initiative	$13,400
	2014-2015	National Corn Growers Association	Database for Maize Phenotypic Data with Emphasis on Breeding Data	$96,914
	2008-2011	NSF	POPcorn – A Project Portal for corn	$485,696
Co-PI				
	2021-2022	USDA NIFA	AG2PI Collaborative: Seeding the Future of Agricultural Genome to Phenome Research for Crops and Livestock	$960,000
	2020-2023	NSF MRI	MRI: Acquisition of a Shared High-Performance Computing System for Cyber-Enabled System Design	$600,000
	2020-2022	USDA NIFA	AG2PI Collaborative: Creating a Shared Vision Across Crop and Livestock Communities	$960,000
	2020-2022	USDA NIFA	Enabling Researchers to Compute on Phenotype: Machine Learning and Natural Language Processing for Novel Candidate Gene Prediction (Advisee Ian Braun is PI)	$120,000
	2019-2023	USDA NIFA	High Intensity Phenotyping Sites: A Multi-Scale, Multi-Modal Sensing and Sense-Making Cyber-Ecosystem for Genomes to Fields	$2,930,432
	2017-2020	NSF BDH	BD Hubs: Collaborative Proposal: Midwest: Midwest Big Data Hub: Building Communities to Harness the Data Revolution	$1,420,869
	2017-2019	NSF MRI	MRI: Acquisition of a HPC System: Computing for Sustainability	$678,000
	2016-2020	USDA-NIFA BRAG	A Data-driven CRISPR Design Tool for Reduced Off-target Activity in Plant Genome Editing	$465,000
	2015-2021	NSF	NRT-DESE: P3 -- Predictive Phenomics of Plants	$2,866,938
	2015-2016	USDA-ARS	Development of Maize Sequence Annotation Methods and Pipelines for MaizeGDB	$35,120

	2014-2017	NSF	MRI: ENVIRATRON – an accelerator for climate change research	$1,463,220
	2013-2014	National Corn Growers Association	Functional Genomics Software Tools for MaizeGDB	$90,682
	2011-2013	National Corn Growers Association	Functional Genomics Software Tools for MaizeGDB	$196,276
	2011-2013	NSF	GEPR: Functional Structural Diversity Among Maize Haplotypes	$3,000,000
	2006-2011	NSF	Cyberinfrastructure for (Comparative) Plant Genome Research Through PlantGDB	$4,120,931
Subcontractor				
	2012-2017	NSF	Genetic Networks Regulating Structure and Function of the Shoot Apical Meristem	$153,597
	2011-2012	NSF	Genomic Analyses of Shoot Meristem Function in Maize	$35,343
	2011-2012	Monsanto	American Indian Outreach	$7,000
	2011-2012	ISU (Entomology)	American Indian Outreach	$1,500
	2011-2012	ISU (GDCB)	American Indian Outreach	$3,500
	2010-2011	NSF	BREAD: Improving Water Acquisition in Maize with Root Traits that Reduce the Metabolic Cost of Soil Exploration	$49,765
	2010-2011	USAID	Transfer QTL and other maize marker data into MaizeGDB	$41,782
	2009-2011	NSF	Construction of Comprehensive Sequence Indexed Transposon Resources for Maize	$73,885
	2009-2010	NSF	The Grass Regulome Initiative: Integrating Control of Gene Expression and Agronomic Traits Across the Grasses	$26,206
	2009	DOE	SNP Genotyping for the Mo17 Genome	$23,472
	2004-2007	NSF	PlantGDB – Plant Genome Database and Analysis Tools	$93,646

INTRAMURAL

Role	Period of Performance	Funding Source	Title	Award Amount
PI				
	2015-2021	ISU Plant Sciences Institute Faculty Fellow	Developing and Deploying Standard Data Acquisition and Analysis Formats	~$100,000 per year

			and Tools to Enable Predictive Phenomics	
	2015-2018	ISU PIRI	D3AI: Data-Driven Discovery for Agricultural Innovation	$750,000
	2007	ISU Office of Biotechnology	Workshop on Translational Biology	$4,620
coPI				
	2018-2020	ISU PIRS	Leveraging in silico Phenolog Identification to Advance Agricultural and Biomedical Research	$41,698
	2017-2018	ISU Crop Bioengineering Center	Engaging Policy-makers and the Public in Discussions around the Impacts of Genome Editing Technologies	$12,500
Lead Scientist				
	2005-2013	USDA-ARS	MaizeGDB	~$5,000,000

PROFESSIONAL ASSOCIATIONS, AWARDS, AND RECOGNITION

ASSOCIATE EDITOR

The Plant Phenome Journal 2017 – present

Frontiers in Bioinformatics and Computational Biology 2017 – present

MEMBER

AAAS	American Association for the Advancement of Science
ASPB	American Society of Plant Biologists
GSA	Genetics Society of America
ISB	International Society for Biocuration
NAPPN	North American Plant Phenotyping Network
MGC	Maize Genetics Cooperation

Past memberships include the International Society for Computational Biology, Society for Advancement of Chicanos/Hispanics and Native Americans in Science, the American Indian Science and Engineering Society, and others.

FOUNDER

NAPPN: North American Plant Phenotyping Network

- Brought in $48,033 in NSF Conference Funding to support initiation 2015
- One of 7 founding *ad hoc* Board members
- Elected Executive Board member 2018-2020; Chair 2019-2020
- Founded not-for-profit 501(c)3 for the organization in 2020

HONORS, AWARDS, AND ELECTED SERVICE

2020	Recognized by receiving the YWCA Women of Achievement award for eliminating racism and empowering women.
2018	Elected to the International Plant Phenotyping Network Board (3-year term)
2018	Elected to the North American Plant Phenotyping Network Executive Board (3-year term; 2019-2020 chair)
2016	Elected to the International DivSeek Steering Committee (5-year term)
2013	Inducted into Gamma Sigma Delta, the Honor Society of Agriculture
2010	Elected to the Maize Genetics Executive Committee (5-year term; 2015 chair)
2009	Recognized by USDA-ARS by being selected to receive the Midwest Area Equal Opportunity Award for plant germplasm and genomics outreach to American Indians
2001	Elected Botany Graduate Student Association Secretary/Treasurer, University of Georgia

INVITED SEMINARS

2021

- Invited speaker, Fall 2021 seminar series for Crop Sciences and Plant Biology at the University of Illinois, Urbana, IL.
- Student invited Speaker, WiDS: Women in Data Science, Iowa State University, Ames, IA.

2020

- Invited Keynote, Function COSI for ISMB, Intelligent Systems for Molecular Biology (virtual).
- Invited Speaker, P&T Best Practices - Faculty Experience. College of Agriculture and Life Sciences, Iowa State University, Ames, IA.
- Invited Speaker, Donald Danforth Plant Science Center, St. Louis, MO.
- Invited Speaker, Illinois Corn Breeders' School, University of Illinois, Urbana-Champaign, IL.
- Invited Speaker, Corteva Agrisciences, Johnston, IA (cancelled due to pandemic).
- Student invited Speaker, Interdepartmental Plant Biology Iowa State University, Ames, IA.

2019

- Student-Invited Speaker, Michigan State University Student-organized Plant Science Symposium.
- Invited by Dr. Craig Ogilvie to organize the panel to present research opportunity types for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2018

- Student-Invited Speaker, University of Wisconsin – Madison Plant Sciences Graduate Student Council.
- Invited Speaker, ICEppg (International Controlled Environment plant phenotyping group) Meeting to describe ENVIRATRON, Adelaide, Australia.
- Invited Panel Member for Data Analysis, International Plant Phenotyping Symposium, Adelaide, Australia.
- Conference organizer and invited speaker, Midwest Big Data Hub Digital Agriculture All Hands Meeting/UAS Workshop, University of Nebraska – Lincoln.
- Invited speaker (one of seven), International Conference on Biological Ontology. Eugene, OR.
- Invited by Uli Schurr to visit Julich, Germany to describe ISU and NAPPN opportunities for collaboration in phenomics (declined due to time constraints).
- Invited Panel Member for Digital Agriculture: Prospects and Challenges in the Great Lakes Region, Great Lakes Economic Forum, Montreal, Canada.
- Student-Invited Alumnus Speaker, Department of Biology, Hendrix College, Conway, AR.
- ENVIRATRON Seminar: Update for the Department of Agronomy, Iowa State University.

- Invited by Rishi Masalia to deliver a podcast for the American Society for Plant Biology's Plantae series describing why the field of phenomics is important. Available online at http://bit.ly/2vfvx6r.
- ENVIRATRON Seminar: Update for the Department of Plant Pathology, Iowa State University.
- Invited by Eric Lyons to present "Maize GO Annotation Method, Analysis, and Review" for the Interoperability and Federation Across Bioinformatic Platforms and Resources Workshop at the Plant and Animal Genome Conference.
- Invited by Michael Gonzales to present "A gaggle of geese, a murder or crows, a diversity of impacts" for the Developing and Executing Successful Broader Impact Programs for Current and Future Grants Workshop at the Plant and Animal Genome Conference.
- Invited by Dr. Craig Ogilvie to organize the panel to present research opportunity types for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2017

- Invited by Seth Murray to present "Maize GO Annotation Method, Analysis, and Review" for The Plant Phenome Journal's monthly seminar series.
- Invited by Mabel Rice to present a seminar entitled "Cross-disciplinary Activities in Big Data for Agricultural Innovation" for the Merrill Conference on the Research Mission of Public Universities Meeting. Topics change year to year, with the topic that year listed as "Research planning in the data era: Working with the levers and pulleys that tie together research information, from big data to local details".
- Invited by Dr. Mitch Tuinstra to present a seminar entitled, "Data-driven Approaches to Plant Science Research" to the Purdue University Botany Department.
- Invited by Drs. Ivan Baxter and Elizabeth Haswell to deliver a podcast for the American Society for Plant Biology's Plantae series "The Taproot." Available online at http://bit.ly/2vfvx6r >800 accesses.
- Student-Invited Speaker, R. F. Baker Plant Breeding Symposium, Iowa State University.
- Invited by Dr. Craig Ogilvie to organize the panel to present research opportunity types for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2016

- Invited by the Iowa Corn Promotion Board to deliver an update on data management for the maize Genomes to Fields Initiative.
- Invited by April Agee Carroll to present a seminar on "Data Standards" for the first NAPPN Convening.
- Invited by Dr. Craig Ogilvie to organize the panel to present research opportunity types for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2015

- Invited by Dr. Craig Ogilvie to organize the panel to present research opportunity types for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2014

- Invited by Edgar Spalding to present on "Data standards" for Plant Biology 2014.
- Student-Invited Alumnus Speaker, Department of Plant Biology, University of Georgia.
- Invited by Drs. Patrick Schnable and Craig Ogilvie to serve as a panel member representing federal research groups for the Iowa State University Graduate College Emerging Leadership Academy (GC-ELA) discussion on leading a research group.

2013

- Requested by Sophia Magill (Assistant Director of Federal Relations, Office of the President, ISU) and Thomas Binion (Congressman Steve King's Legislative Director) to report on what MaizeGDB is, who the stakeholders are, and how the project relates to USDA-ARS and Iowa State University's mission.

2012

- Invited by Dr. Stephen Kresovich to present a seminar entitled, “MaizeGDB: The Maize Genetics and Genomics Data Service” at the International Sorghum Genomics Workshop.
- Invited by Dr. Eva Huala to represent MaizeGDB at the October NSF Phenotype RCN meeting in Asilomar, CA to plan phenotype ontology representation and associations to enable cross-species phenotype associations.
- Invited by Dr. Jianshen Li to present a seminar entitled, “MaizeGDB: Enabling access to basic, translational, and applied research information” at the International Conference on Research and Utilization of Crop Heterosis, Xi’an, China.
- Invited by Dr. Jinsheng Lai to participate in a mini-workshop between Iowa State University and China Agricultural University. Delivered a seminar entitled, “MaizeGDB: Enabling access to basic, translational, and applied research information”. Beijing, China.

2011

- Invited by Drs. Candice Gardner and Tom Payne to moderate a session entitled “Mysteries of Maize: A Recognition of Pillars in Maize Science” for the ASA/CSSA/SSSA (2011).
- Invited by Drs. Owen Hoekenga and Jean-Luc Jannink to present a seminar entitled “MaizeGDB: The Maize Model Organism Database” for the Cornell Plant Breeding and Genetics seminar series, Ithaca, NY.
- Invited by Dr. Domagoj Simic to present a seminar entitled “Informatics for maize research: What is possible, and what is practical?” and chair the session entitled “Genomic Databases and High-Resolution Mapping Populations” for the EUCARPIA Maize and Sorghum Conference in Opatija, Croatia.
- Invited by Dr. John Wooley to present a seminar entitled “Managing the Data Associated with intraspecific Diversity in Flowering Plants: Maize as a Model” to the Genomic Standard Consortium Diversity Working Group for their meeting in San Diego, CA.
- Invited by organizers for the Iowa State University Women in Science and Engineering Conference to present a seminar to Iowa high school students about MaizeGDB and maize genetics.
- Invited by the Maize Genetics Executive Committee to present a community report entitled “Establishment of the Maize Genome Assembly and Annotation Consortium” for the Annual Maize Genetics Conference, St. Charles, IL.

2010

- Invited to present seminars describing the outreach to American Indians component of the PlantGDB NSF grant at the NSF PGRP Awardees Meeting in Washington, D.C.

2008

- Invited by Dr. Anne-Francoise Lamblin to present a seminar on data integration for the NSF PGRP Awardees Meeting in Washington, D.C.
- Invited by Dr. Kay Simmons, USDA-ARS National Program Leader for Plant Genetics and Grain Crops, to present a seminar about MaizeGDB at the National Plant Genome Initiative Workshop session on Crop Genome Databases in Irvine, California.

2007

- Invited to present a seminar to the USDA-ARS Plant Germplasm Operations Committee annual meeting in Beltsville, Maryland concerning the utility of ontologies for data integration.
- Invited to attend the Allerton Meeting for principal investigators to plan the future of maize research. By request of the meeting organizers, presented a seminar entitled, “Status and needs for MaizeGDB and other plant databases”.

2006

- Invited to present seminars describing the outreach to American Indians component of the PlantGDB NSF grant at the NSF PGRP Awardees Meeting in Washington, D.C.

2005

- Invited by meeting organizers to present a seminar on MaizeGDB at the Workshop on Cereal Genomics at the Cold Spring Harbor Laboratory, New York.

2004

- Department of Agronomy, the University of Missouri, Columbia to present a seminar on bioinformatics tools and resources for the maize genome sequencing project.

2001

- Invited by Jonathon Howard to present a seminar entitled “The Evolution of Microtubule-based Motor Proteins with Particular Emphasis on the Plant Lineage,” at the Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany.

PARTICIPATION IN MEETINGS, TECHNICAL CONFERENCES, & WORKSHOPS

- Women in Data Science (WiDS). Virtual (2021). Student invited seminar.
- North American Plant Phenotyping Network Annual meeting. Virtual (2021). Two student posters (Colleen Yanarella and Jodi Callwood), one student workshop (Henri Chung), one student lightning talk (Ian Braun), one student technology seminar (Leila Fattel).
- Challenges and Opportunities for Working Across the Physiology and Genomics Dimensions in Plants (2020). One of seven conference organizers led by Ivan Baxter.
- International Society for Molecular Biology. Virtual (2020). One oral invited presentation, one oral presentation by graduate student Leila Fattel.
- Illinois Corn Breeders’ School. University of Illinois, Urbana-Champaign (2020). Invited keynote seminar.
- Organizer, EU-US Big Datain Agriculture Webinar miniseries (2019). 2 meetings, 125 participants from 17 countries.
- European Big Data Value Forum. Helsinki, Finland (2019). Represented the Iowa State College of Agriculture.
- International Plant Phenotyping Symposium, Adelaide, Australia (2018). Invited panel participant, three posters. Graduate student Ian Braun was selected for an oral presentation.
- International Conference on Biological Ontology. Eugene, OR (2018). One oral invited presentation, one workshop presentation by graduate student Ian Braun.
- Annual Maize Genetics Conference. Attended 21 meetings, contributed 115 posters, made 3 oral presentations. Also served 4 times as an invited panel member for the community discussion (not including community presentations and updates as member of Maize Genetics Executive Committee; 1998-2021).
- Invited Conference organizer NIFA FACT Big Data Driven Agriculture: Advances, Challenges, and Opportunities. Arlington, VA (2018).
- Invited conference organizer, PHENOME. Two oral invited presentations, four posters, chaired two sessions. Tucson, Arizona (2016-2020).
- Invited organizer for two breakout sessions, NIFA FACT for Genomes to Fields project. Presented one poster and served as primary author for the resulting advisory whitepaper to NIFA. Ames, Iowa (2018).
- DivSeek Working Group meetings. Presented invited seminar in 2017 and 2018, co-leads the FAIR working group and a member of the Divseek Advisory Board (2014-2018).
- Plant and Animal Genome Conference. Attended 13 meetings, contributed 31 posters, conducted 2 computer demonstrations, gave an oral update to 2011 Maize Workshop attendees on the status of maize genome assembly and annotation, and organized two workshops in 2016, two in 2017, two in 2018. Overall conference organizer, 2018 to present. (2004-2019)
    - Organizer, Challenges and Opportunities in Plant Science Data Management Workshop, Plant and Animal Genome Conference (2017-present).
    - Organizer, Plant Phenotyping Workshop, Plant and Animal Genome Conference (2016-present).
- Organizer, North American Plant Phenotyping Network *ad hoc* Board meeting, Ames, IA (2017).

- Participant, Meeting to draft advisory whitepaper for the International Treaty on Plant Diversity Convention for Biodiversity's Fact Finding and Scoping Study on the topic of access to digital sequence information. Vancouver, Canada (2017).
- Merrill Research Conference, Nebraska City, NE (2017). Presented one research seminar and one paper.
- International Plant Phenotyping Symposium CIMMYT, El Batan, Mexico (2016). Four posters.
- Midwest Big Data Hub Digital Agriculture Spoke All Hands Meeting (2016) Iowa State University. Presented an invited oral presentation and 3 posters.
- Invited conference organizer, Purdue University North American Plant Phenotyping Network Inaugural Convening (2016). Attended, presented an oral presentation and four posters.
- Funded organizer, Iowa State University Phenotypic Prediction – Image Acquisition and Analysis (2016). Presented one seminar, four posters.
- Funded organizer, Iowa State University Data Driven Science Initiative Workshop (2016). Presented one seminar, four posters.
- Funded organizer, Meeting: High-throughput Plant Phenotyping and Data Analysis, A Series of Workshops at the Plant and Animal Genome Conference XXIV, January 9-13, 2016 San Diego, CA (2016).
- Ag Bio Congress (2015) Amsterdam, Denmark. Organized a workshop on Big Data.
- Plant Genomics Congress (2015) St. Louis. Presented an invited oral presentation.
- CIMMYT meeting for Maize Phenotype Information Platform development (2014) Texcoco, Mexico. Organized the meeting, coordinated international attendees' participation, attended the meeting and reported on activities.
- ASA-CSSA-SSSA International Annual Meeting (2005, 2011, and 2015). Attended 2 meetings and contributed 1 poster. Chaired the 2011 Mysteries of Maize section. Presented an invited seminar in 2015.
- ASTA Genomes to Fields project meeting (2014) Chicago, Illinois. Attended, presented an invited oral presentation.
- American Society for Plant Biology (2014) Portland, Oregon. Attended, presented an invited oral presentation.
- NSF's Phenotype RCN meeting (2012, 2014, 2016). Attended, presented 1 poster.
- Society for Molecular Biology and Evolution (2001, 2014). Attended 2 meeting and contributed 1 poster (2001) and 1 invited seminar (2014).
- Corn Breeding Conference NCCC167 (2013 March and December, 2014, 2015, 2021). Attended, presented an invited oral presentation in 2013. Graduate student Colleen Yanarella presented an invited oral presentation in 2021.
- International Sorghum Genomics Workshop (2012). Attended, presented an invited oral presentation.
- ASPB Plant Science Research Summit participant (2011). Invited attendee (closed event).
- EUCARPIA Maize and Sorghum Conference (2011) Opatija, Croatia. Attended, presented an invited oral presentation, and chaired a session.
- Genomic Standard Consortium Diversity Working Group meeting (2011). Attended and contributed an invited oral presentation.
- American Indian Science and Engineering Society (AISES) meeting (2009, 2011). Attended, presented 3 posters, and organized 2 workshops on outreach to American Indians in plant germplasm and genomics.
- iPlant Collaborative inaugural conference Bringing Plant and Computing Scientists Together to Solve Plant Biology's Grand Challenges (2008). Served as an invited panel member for the breakout group entitled Primary metabolism, physiology, and organismic biology, from molecules to whole organisms.
- USDA-ARS Plant Germplasm Operations Committee Meeting (2007) Beltsville, Maryland. Attended 1 meeting and made 1 invited oral presentation.
- Allerton Retreat for planning the Future of Maize Genetics (2007). Attended and delivered an invited oral presentation.

- Collaborative Plant Biology Symposium: University of Wyoming (2006). Attended 1 meeting, contributed 1 poster, and served as an invited panel discussion member.
- Society for Advancement of Chicanos and Native Americans in Science (SACNAS). Attended (2006).
- NSF Plant Genome Research Program Annual Awardee Meeting (2003-2010). Attended 6 meetings, contributed 6 posters and 3 invited presentations.
- Workshop on Cereal Genomics (2005). Attended, contributed 1 poster, and led a training session on the use of MaizeGDB to answer biological questions.
- Biological Database Curator Meeting (2003). Attended and made 1 oral presentation.
- American Society for Cell Biology Annual Meeting (2003). Attended 1 meeting, contributed 1 poster, and served as meeting organizer of a Special Interest Subgroup for a Standardized Kinesin Nomenclature.
- Bioinformatics Open Source Conference (2002). Attended 1 meeting, contributed 1 poster, and made 1 oral presentation.
- Intelligent Systems for Molecular Biology (2000-2002). Attended 3 meetings (California, Denmark, and Canada) and contributed 3 posters.
- Biochemistry and Biophysics of Motor Proteins, Alberta, Canada (2000). Attended 1 meeting and contributed 1 poster.
- Georgia Tech International Conference on Bioinformatics (1999-2001). Attended 2 meetings and contributed 2 posters.
- American Society of Plant Physiologists (1996). Attended 1 meeting and contributed 1 poster (former last name Cogburn).
- National Conference on Undergraduate Research (1995). Attended 1 meeting and contributed 1 poster (former last name Cogburn).
- Arkansas Academy of Science Research Conference (1995). Attended 1 meeting and contributed 1 poster (former last name Cogburn).

TEACHING EXPERIENCE

IOWA STATE UNIVERSITY (INSTRUCTOR)

- **BCBio 322: Introduction to Bioinformatics (undergraduate)** **2015-2019**
  - 3 credits, enrollment limited to 30
  - Responsibility: 100%
  - Problem-oriented, flipped classroom, Modified Moore Method for Inquiry Based Learning
  - Developed the curriculum
  - First to organize and teach this required course for the Bioinformatics and Computational Biology undergraduate major
- **BCBio 110: BCBio Orientation (undergraduate)** **2015-2016**
  - 0.5 credits, ~10 enrolled on average
  - Responsibility: 100%
  - Organized as a seminar series
  - First to organize and teach this required course for the Bioinformatics and Computational Biology undergraduate major
- **ME/GDCB 585: Fundamentals of Predictive Plant Phenomics (graduate)** **2017-2019**
  - 4 credits, includes a lab, enrollment limited to 30
  - Responsibility: 2019: 100% (single instructor).
    2017-2018: 25% (1 of 2 instructors)

- Teaches basics in plant science, engineering, and data science to a diverse student group. Lecture-based, with some lectures (~15%) delivered by students.
- Co-developed the curriculum
- First to co-organize and co-teach this required course for the Predictive Plant Phenomics specialization

- **BCB 690: Graduate Student Seminar** **2013-2014, 2017-2019**
  - 1 credit, ~15 enrolled on average
  - Responsibility: 100%
  - Organized as a seminar series where students lean best practices in scientific seminar preparation and delivery. Students are assessed by peers as well as by the instructor.
- **BCB 691: Faculty Seminar in Bioinformatics** **2017-2018**
  - 1 credit, ~15 enrolled on average
  - Responsibility: 100%
  - Organized as a seminar series where faculty in the graduate Bioinformatics and Computational Biology program describe their research. This serves primarily to familiarize the students with faculty in the program but also enables students to identify research rotation opportunities.

UNIVERSITY OF GEORGIA (TEACHING ASSISTANT)

- **Protistology Lab** **2001**
  - 1 credit, ~10 enrolled
  - Responsible for 1 section
- **Introduction to Botany Lab** **2000**
  - 1 credit, ~10 enrolled
  - Responsible for 1 section

TEXAS TECH UNIVERSITY (TEACHING ASSISTANT)

- **Introduction to Botany Lab** **1996-1997**
  - 1 credit, ~20 enrolled per section
  - Responsible for 3 sections per semester for 3 semesters plus a weekly discussion/video section that included all students across all sections (~120 students total)

MENTORSHIP

POSTDOCTORAL ADVISOR (2)

Von Mark Cruz (Philippines)	male	ISU (2006)
Joan Peterson (USA)	female	ISU (2007)

PHD MAJOR PROFESSOR (5)

Ian Braun (USA)	male	ISU Bioinformatics and Computational Biology (anticipated graduation May 2021)
Leila Fattel (Switzerland & Lebanon)	female	ISU Genetics and Genomics (anticipated graduation May 2024)
Mingze He (China)	male	ISU Bioinformatics and Computational Biology (graduated December 2018)

Kokulapalan Wimalanathan (Sri Lanka)	male	ISU Bioinformatics and Computational Biology (graduated December 2018)
Colleen Yanarella (USA)	female	ISU Bioinformatics and Computational Biology (anticipated graduation May 2023)

PHD CO-MAJOR PROFESSOR (7)

David Hufnagel (USA)	male	ISU Bioinformatics and Computational Biology (graduated May 2021)
Parnal Joshi	female	ISU Bioinformatics and Computational Biology (anticipated graduation May 2023)
Gaurav Kandoi (India)	male	ISU Bioinformatics and Computational Biology (graduated May 2019)
Nancy Manchanda (India)	female	ISU Bioinformatics and Computational Biology (anticipated graduation August 2021)
Viraj Muthye (India)	male	ISU Bioinformatics and Computational Biology (graduated December 2019)
Jacob Stai (USA)	male	ISU Bioinformatics and Computational Biology (anticipated graduation May 2023)
Jesse Walsh (USA)	male	ISU Bioinformatics and Computational Biology (graduated May 2016)

PHD COMMITTEES (27)

Ryan Andrews	male	ISU Biochemistry, Biophysics, and Molecular Biology
Nicholas Boerman	male	ISU Plant Breeding
Bhagyaschree Birla	female	ISU Bioinformatics and Computation Biology
Tanner Cook	male	ISU Plant Biology
Li Fan	female	ISU Interdepartmental Genetics and Genomics
Brianna Griffin	female	ISU Plant Biology
David Hessel	male	ISU Interdepartmental Genetics
Sarah Hill-Skinner	female	ISU Interdepartmental Plant Biology
Katerina Holan	female	ISU Interdepartmental Plant Biology
Jennifer Jaqueth	female	ISU Interdepartmental Genetics and Genomics
Roshan Kulkarni	male	ISU Interdepartmental Genetics and Genomics
Zhaohhui Li	female	ISU Agricultural and Biosystems Engineering
Hung-Ying Lin	male	ISU Interdepartmental Genetics and Genomics
Ang-Yu Liu	male	ISU Interdepartmental Genetics and Genomics
Qiang Liu	female	ISU Interdepartmental Genetics and Genomics
Zachary Lozier	male	ISU Bioinformatics and Computational Biology
Carla Mann	female	ISU Bioinformatics and Computational Biology
James McNellie	male	ISU Interdepartmental Genetics and Genomics
Maxwell McReynolds	male	ISU Interdepartmental Plant Biology
Divya Mistry	male	ISU Bioinformatics and Computational Biology

Karthik Murugan	male	ISU Molecular, Cellular, and Developmental Biology
Sweta Roy-Carson	female	ISU Bioinformatics and Computational Biology
Matthew Wilkerson	male	ISU Bioinformatics and Computational Biology
Jenna Hoffman	female	ISU Interdepartmental Genetics
Liang Ye	male	ISU Bioinformatics and Computational Biology
Zihao Zheng	male	ISU Interdepartmental Genetics and Genomics
Naihui (Ashley) Zhou	female	ISU Bioinformatics and Computational Biology

MS MAJOR PROFESSOR (1)

Vincent (Antonio) Brazelton (USA)	male minority	ISU Genetics and Genomics (graduated December 2015)

MS COMMITTEES (3)

Meghan Harvey	female	ISU Interdepartmental Genetics
Gokhan Kir	male	ISU Interdepartmental Genetics
Geyhun Lee	female	ISU Interdepartmental Genetics

PREPARING FUTURE FACULTY SCHOLARS (4)

Keting Chen (China)	female	ISU Preparing Future Faculty mentorship (research & teaching). (2016-2017).
John Hsieh (USA)	male minority	ISU Preparing Future Faculty mentorship (teaching). (2015-2016). Hsieh co-instructed BCBio322x and attended two conferences where he presented seminars at both (the 2015 Legacy of R.L. Moore Conference and the 2016 Plant and Animal Genome Conference).
Arun Seetharam (India)	male	ISU Preparing Future Faculty mentorship (research). (2014 2015).

FULBRIGHT (1)

Dennis Psaroudakis (Germany)	male	Invented way to use gene function annotations to carry out comparative functional genomics studies. (2019-2020).

UNDERGRADUATE STUDENTS (12)

Edel Aron (USA)	female minority	ISU Mathematics undergraduate honors project research mentorship and BCBio teaching assistantship. Project in FAIR data (2017 & 2018). PhD student, Yale 2018- present.
Haley Dostalik (USA)	female	ISU Bioinformatics and Computational Biology Undergraduate research for undergraduate honors project research. Project to annotate gene functions to the grape genome (2020).
Benjamin Escobar (USA)	male minority	ISU Computer Science undergraduate research project to design an interface for querying phenotypic

Tiffany Geistkemper (USA)	female	ISU Mathematics undergraduate research for credit. Python programming to generate QR codes (2019). semantic similarity networks (2020).
Reka Keleman (Hungary)	female	ISU Bioinformatics and Computational Biology undergraduate honors project research mentorship. Adapted Morgan2McClintock Translator (http://www.lawrencelab.org/Morgan2McClintock/) to enable a visual output (2010).
Chris Lawrence (USA)	male minority	ISU Genetics undergraduate. Learned Perl and Python, added restriction cut-site functionality to CGAT tool (2014-2016). MS Biology, Oklahoma State University 2018. PhD student, Princeton 2018-present.
Madeline McMullen (USA)	female	ISU Agronomy and Bioinformatics and Computational Biology Project in FAIR data (2018).
Elizabeth Nieves-Perez (USA)	female minority	ISU Bioinformatics and Computational Biology undergraduate. Using Python to evaluate differential functionality among multiple CRISPR target prediction tools (2017).
Johnny Perez-Rivera (USA-Puerto Rico)	male minority	ISU Biology research project to create a proof-of-concept interface for a Genomes to Fields query tool.
Wiriyanat Ployaram (Thailand)	female	ISU Bioinformatics research project to map alleles across maize lines.
Kayla Rasch (USA)	female	ISU Bioinformatics and Computational Biology Undergraduate research project to annotate gene functions to the blueberry genome (2020).
Dollye Starr (USA)	female	ISU Bioinformatics and Computational Biology Undergraduate research for undergraduate honors project research. Project to annotate gene functions to the *Brassica rapa* genome (2021).

HIGH SCHOOL STUDENTS (1)

Kiri Johnston (USA)	female	ISU Cy-TAG (Cyclone Talented and Gifted Program) high school summer research intern. Developed markers to search for the Abnormal 10 chromosome in maize germplasm (2004).

OUTREACH

Led an initiative to bring groups of American Indians students (made up of 3-6 individuals) into plant biological research by involving them in an 8-week research program from 2006-2011. From 2012 onward, this work has continued on a more limited basis (1-2 students each summer, depending on available funding). This work has been in collaboration with the George Washington Carver Internship Program at ISU (http://www.ag.iastate.edu/diversity/gwc). Documentation on summer research programs is available at http://dill-picl.org/outreach/.

UNDERGRADUATES (17)

Marcus Begay	Navajo	2008	
Irene Bitsoi	Navajo	2010, 2011	Poster AISES 2010
Danielle Charley	Navajo	2009, 2010, 2011	Poster AISES 2009, 2010
Nathan Etsitty	Navajo	2006, 2007, 2008	
Sharon Garfield	Navajo	2006	
Titus Harrison	Navajo	2006	
Leslie Nelson	Navajo	2009, 2010, 2011	Poster AISES 2009, 2010; NSF MaGNET travel award to Annual Maize Genetics Conference, 2013
Zach Nelson	Navajo	2007	
Nina Nez	Navajo	2017	Recruited. Research effort with Steve Howell's group.
Larry Morris, Jr.	Navajo	2009	
Alexandra Myhal	Cherokee	2011	Poster AISES 2011
Lamour Peshtony	Navajo	2008	
TJ Redhouse	Navajo	2009	Poster AISES 2009
Regina Sampson	Navajo	2006	
Arlyssia Sells	Navajo	2015	
Delbert Thompson	Sioux	2006	
Alexandra Volker	Cherokee	2006	

HIGH SCHOOL STUDENTS (2)

Robert Shelltrack	Navajo/Sioux	2007	
Jordan Shelltrack	Navajo/Sioux	2007	

TRIBAL ELDERS (21)

Darryl Bitsoi	Navajo	2006, 2007, 2008	Translator, Elder
Thomas Bitsoi	Navajo	2008	Medicine Man
Judith Bitsoi	Navajo	2010, 2011	Elder
Lemanuel Bitsoi	Navajo	2006-present	D.Ed; outreach coordinator and genomic sciences researcher (Rush U, Harvard); MaGNET travel award to Maize Genetics Conference, 2013. Currently Associate Vice President of Diversity Affairs, Fort Lewis College.
Stanley Bitsoi	Navajo	2008-2011	Medicine Man
Rachel Camarillo	Navajo	2007, 2008, 2009	Elder
Novalee Nelson	Navajo	2010	Child

Kayden Nelson	Navajo	2010	Child
Jonathan Etsitty	Navajo	2006	Elder
Melinda Herrera	Navajo	2011	Elder
Lula Jackson	Navajo	2006	Translator; Elder
Amber Lee	Navajo	2007	Elder
Ray Lee	Navajo	2006	Medicine Man
Melinda Morris	Navajo	2009	Elder
Carolyn Myhal	Cherokee	2011	Elder
Cynthia Thompson	Sioux	2006	Elder
John Tohtsoni	Navajo	2006	High School Educator
Felix Tulley	Navajo	2006, 2007	Medicine Man
Elmer Shelltrack	Sioux	2007	Elder
Judy Wilson	Cherokee	2006	Elder
Lucinda Yazzie	Navajo	2006	Elder

SERVICE TO THE INSTITUTION

ISU

- Facilitated discussion on Advancing data-driven discovery and secure cyber systems for ISU OVPR Research Days (2021).
- Asked to form a committee and design an equitable governance structure that would serve as the foundation for the Department of Agronomy to create a Diversity, Equity, and Inclusion Committee (2020-2021).
- Input for ISU involvement, Promotion and Tenure Innovation and Entrepreneurship Recommendations on behalf of the Office of the Vice President for Research (2020-2021).
- Invited member, Campus Climate Committee (2018-2019).
- Metagenomics Mondays Summer Seminar Series for the Midwest Big Data Hub Digital Agriculture Spoke. Co-organizer along with Iddo Friedberg and Gwyn Beattie (2018).
- Member, Data Science Task Force for the Office of the Vice President for Research. Chair, Faculty Advisory Committee (2018-2020).
- Interim lead, Midwest Big Data Hub Digital Agriculture Spoke (while J. Colletti served as Interim Associate Dean for the College of Agriculture and Life Sciences). Involved attending MBDH meetings, keeping the Digital Agriculture website content up-to-date, and coordinating with other universities in the Midwest as needed (2017-2019).
- Senior person, NSF-funded Unmanned Aerial Systems, Plant Sciences, and Education grant (while J. Colletti served as Interim Associate Dean for the College of Agriculture and Life Sciences).
- Strategic Planning Committee, Iowa State University College of Agriculture and Life Sciences (2017).
- Curriculum Committee, Iowa State University Department of Genetics, Development and Cell Biology (2017-2018).
- Conference organizer (one of five): Novel Candidate Gene Discovery by Computing on Phenotypes. Organized at ISU. Included facility tours, five speakers from ISU, and two speakers brought in from outside institutions (2019).
- Organized the “Biological Ontologies” Fall Seminar Series (2018).
- Plant Phenomics Phridays Summer Seminar Series for the Midwest Big Data Hub Digital Agriculture Spoke. Co-organizer along with Patrick Schnable (2017). Participants included 74 unique institutions and 275 unique participants (144 unique virtual participants and 141 unique in-person attendees). Total registrations for the seminar series was 440 (252 in-person and 188 virtual). Total ISU participants numbered 261 (235 in-person and 26 virtual) and non-ISU participants totaled 179. International participants accounted for 72 and Industry participants numbered 46.

- Phenotypic Prediction: Image Acquisition and Analysis organizer (2016) This 3-day event had 47 registrants with 27 participants joining from non-ISU institutions.
- Member, HPC Committee, Iowa State University (2015-present).
- Member, Data Sciences Curriculum Committee, Iowa State University (2015-2020).
- Elected Member, Graduate Council, Iowa State University (2015-2016). Had to leave the committee due to meetings being after hours and in conflict with timing for childcare constraints.
- Search committee member, Iowa State Department of Mathematics, Bioinformatics (2015-2016).
- Funded founding organizer, Iowa State University Big Data seminar series (2014-2017). During the time under Lawrence-Dill's direction, this seminar series met monthly during the fall and spring semesters. 440 individuals were involved over time with 188 of those connecting as virtual participants. 179 participants were non-ISU and 72 were international. Industry participants numbered 46. The Big Data seminar series now continues with organization and support provided by the ISU Office of the Vice President for Research.
- Funded Data Driven Science Initiative Workshop organizer (2016). This event had 137 registrants with 82 from ISU, the remainder traveling from other institutions.
- Member, Undergraduate Bioinformatics and Computational Biology Program Supervisory Committee, ISU (2014-2017).
- Search committee member, Department of Statistics, Bioinformatics (2014-2017).
- Search committee member, Department of Computer Science, Bioinformatics (2014-2017).
- Elected member, Bioinformatics and Computational Biology Program Supervisory Committee, ISU (2011-2013 and 2015-present). Program co-chair 2015-2017; program chair, 2017 – present).
- Honors and Awards Committee member, Department of Genetics, Development and Cell Biology, ISU (2010-present).

USDA-ARS

- Selected to serve as a panel member for the USDA-ARS 2014 Research Personnel Evaluation Committee (RPEC), Plant Bioscience Panel Group (2013-2014)
- Charter member, 7-person USDA-ARS Data Advisory Group (DAG) to counsel the Chief Scientific Information Officer for the Agency (Represented 6 National Programs encompassed by Crop Production and Protection; 2013)
- Organized and hosted the April NSF Phenotype RCN plant subgroup meeting in Ames, IA to plan how best to report outcomes of cross-species phenotype associations (2013).
- Conference Organizer, "Big Data and Computing: Building a Vision for ARS Information Management" (2013)
- Writing team member, Agency advisory whitepaper "Big Data and Computing: Building a Vision for ARS Information Management" (2013)
- Founding Member, Seminar Committee, USDA-ARS Corn Insects and Crop Genetics Research Unit, Ames, IA (2012-2013).
- Selected (one of four) for professional development via the USDA-ARS MWA Science Leadership Development Program to enhance leadership skills and learn more about the internal workings of ARS (2012-2013).
- Strategic Planning Committee member, Department of Genetics, Development and Cell Biology, ISU (2011).
- Invited by organizers for the Iowa State University Women in Science and Engineering Conference to present a seminar to Iowa high school students about MaizeGDB and maize genetics (2011).
- ISU Postdoctoral Association (ISUPDA). Invited judge for the Postdoc Research Day competition (2010 & 2011).
- Invited judge, Iowa State University Postdoctoral Association (ISUPDA) ISU Postdoc Research Day competition (2010).
- Created and updated lactation rooms at all USDA-ARS buildings for the Ames Location (2009)
- Seminar committee member, Department of Genetics, Development, and Cell Biology (2007-2008).
- Served as USDA-ARS Authorized Departmental Officer's Designated Representative for two Specific Cooperative Agreements: "Database of Maize Genome Information (DBMGI) – a next generation

maize genome database" and "Development of Novel Maize Sequence Access and Analysis Methods for MaizeGDB." Collaborator: Dr. Volker Brendel of ISU. 2005-2006 and 2007-2010, respectively.

- Appointed member, ARS Midwest Area Outreach, Diversity, and Equal Opportunity Advisory Committee (2007-2009; chair 2009).
- Search Committee member, Assistant Professorship in Systems Biology, Department of Genetics, Development, and Cell Biology, ISU (2006-2007; search canceled).
- USDA-ARS NP 301 Planning and Coordination Workshop session moderator: "Genome Database Stewardship and Informatics Tool Development" (2006).
- Search Committee member, Endowed Professorship in Crop Genomics, Department of Agronomy, ISU (2006).
- Organizer for the weekly "Brown Bag" lunch seminar series, Department of Genetics, Development and Cell Biology, ISU (2006).
- USDA-ARS NP 301 Action Plan Writing Team Member (2005 and 2012).
- Appointed Member, USDA-ARS Ames Area Civil Rights Advisory Committee (2006-2009, serving as elected chair for this committee 2008-2009).
- Facilitator, USDA-ARS National Program 301 (NP 301) Customer and Assessment Workshop third breakout session (2005).

SERVICE TO THE PROFESSION

GRANTS AND PROGRAMS

- National Science Foundation
    - Panel service
        - NRT, NSF Research Traineeship (2020)
        - Plant Genome Research (2018, 2019)
        - ~2 panel invitations per year (often declined due to time constraints)
    - Reverse site visits
        - Advances in Biological Informatics reverse site visit for PDB, the Protein Database (2018)
        - Advances in Biological Informatics reverse site visit for Araport (2013)
    - *ad hoc* reviews (~4 per year)
- EPPN2020 Review Committee for the European Commission, Directorate-General for Research and Innovation (2020)
- Invited expert panel to review proposals to the German Research Initiative "Computational Life Sciences" (Berlin, 2018; declined)
- USDA ARS, NIFA, and others (various and multiple, ~2 *ad hoc* reviews per year)
- NIFA pre-submission reviewer, Iowa State University (2018)
- Presidential Interdisciplinary Research Initiative reviewer, Iowa State University (2020)
- Bailey Awards, Iowa State University (2017, 2020)
- British Biotechnology and Biosciences Research Council (reverse site visits for base funding renewal request for plant sciences centers; London; 2016)
    - Earlham Institute
    - John Innes Centre
    - IBERS (Institute of Biological, Environmental and Rural Sciences)
    - Cross-Institutional Wheat (John Innes Centre, National Institute for Agricultural Botany, University of Nottingham, University of Bristol, and Rothamsted Res.)
- Ohio Plant Biotechnology Consortium Grants Program (2013)
- National Research Support Project - National Animal Genome Research Program (NRSP-8; 2013)
- Invited advisory panel member, site visit of the Bioinformatics-Center Gatersleben-Halle (BIC-GH) located at the Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany (2005).

JOURNALS (SOME 90+ REVIEWS)

- *Bioinformatics*
- *Database*
- *Frontiers in Plant Science*
- *Frontiers in Bioinformatics and Computational Biology (Associate Editor)*
- *Frontiers in Genetics (Associate Editor for Computational Genomics)*
- *Genetics*
- *Genome Biology*
- *International Journal of Plant Genomics*
- *Maydica*
- *Molecular Biology and Evolution*
- *Molecular Biotechnology*
- *Nucleic Acids Research*
- *PeerJ*
- *Plant Cell*
- *Plant Genome*
- *Plant Physiology*
- *Proceedings of the National Academy of Science, U.S.A.*
- *The Plant Phenome Journal (TPPJ; Associate Editor)*
- *Proteins: Structure, Function, and Bioinformatics*
- *The Plant Phenome Journal*
- *Trends in Cell Biology*

INVITED ADVISORY AND CONSULTANT ACTIVITIES

- Iowa Corn Club, undergraduate student organization, Iowa State University (2021-present)
- Member EPPN2020 Review Committee for the European Commission, Directorate-General for Research and Innovation. (2020)
- Invited member American Society of Plant Biologists Science Policy Committee (2018-present)
- Member, Scientific Advisory Board for NSF project entitled “Wheat and Rice Center for Heat Resilience” (2018-present)
- NSF Midwest Big Data Hub Steering Committee member (2018-present)
- Author (one of three primary authors), High Throughput, Field-Based Phenotyping Technologies for the Genomes to Fields (G2F) Initiative whitepaper for NIFA FACT (2018).
- Author (one of nine), whitepaper Open Access to Digital Sequence Information Benefits the Three Objectives of the Convention on Biological Diversity for the International Treaty on Plant Diversity Convention for Biodiversity’s Fact Finding and Scoping Study on the topic of access to digital sequence information. Available online at: https://www.cbd.int/abs/DSI-views/DivSeek.pdf (2017).
- Author (one of four), High-throughput Phenotyping and Data Analysis, advisory whitepaper for the NSF. Available online at:
- http://nappn.plant-phenotyping.org/static/pag_2016/high_throughput_phenotyping_data_whitepaper.pdf (2016).
- Reviewer, reverse site visits for the British Biotechnology and Biosciences Scientific Research Council (BBSRC) Plant Sciences Research Centers (2016).
- Member, Scientific Advisory Board for NSF project entitled "Standards and CyberInfrastructure That Enable "Big-Data" Driven Discovery for Tree Crop Research" (2015-present)
- Outside selection committee member, USDA-ARS Supervisory Plant Physiologist/Research Leader for the National Plant Germplasm System, Fort Collins, CO (2014).
- Member, iPlant/CyVerse Scientific Advisory Board (2013-2017).
- Member, Maize Genetics Nomenclature Committee (2013-2017).
- Member, Maize Crop Germplasm Committee (2006-2016).
- Member, SoyBase Working Group (2010).
- Member, Legume Information System (LIS) Working Group (2010).
- Member, iPlant G2P Data Integration Working Group (2009-2012).
- Chair, NSF Arabidopsis Information Portal (AIP) reverse site visit team (2013).
- Invited participant, American Society for Plant Biology Plant Science Research Summit (2011). Discussions served as the basis for the ASPB whitepaper entitled “Unleashing a decade of innovation in plant science: A vision for 2015-2025” (see https://aspb.org/advocacy/decadal-vision/).

- Invited judge, Iowa State University Postdoctoral Association (ISUPDA) ISU Postdoc Research Day competition (2011).
- Member, CottonDB Steering Committee (2009-2011).
- Invited by Dr. Rich Jorgensen, PI, to serve as an invited panel member for the iPlant Collaborative inaugural conference (2008).
- Member, Germplasm Resource Information Network (GRIN) Interface Review Committee (2006).
- Author, Plant Biology Databases: A Needs Assessment, advisory whitepaper for the NSF, DOE, and USDA Interagency Working Group on Plant Genomes. Available online at http://www.maizegdb.org/PDBNeeds.pdf (2005).