

1. Objectives/aims

The 30th Conference on Intelligent Systems for Molecular Biology ([ISMB](#)) is the premier international conference for computational biology and bioinformatics. Hosted by the International Society for Computational Biology ([ISCB](#)) this annual conference is expected to assemble over 2,000 participants from a range of biological and computational disciplines with interests in bioinformatics, computational biology, imaging, high throughput sequencing, AI/machine learning, and systems biology as applied to the life sciences. This year the conference will be a hybrid event with in-person activities held from July 10-14th at the Monona Terrace Community and Convention Center in Madison, Wisconsin.

For 2022 the ISMB will feature a one-day [Special Session on Digital Agriculture](#) on July 12th organized by the principal investigators at the invitation of the ISMB Conference Chairs with approval of the ISCB Conferences Advisory Council. The topics and scientific content of the session is being developed with input from academic, government, and industrial participants. The session will feature scientific presentations (10 or 20 minutes), sponsor pitches, and a panel discussion on 'Phenotyping at Scale' with academic and industry participants. A draft schedule is included below. A key goal of this session is to invite and support individuals from the agricultural sciences who have expertise in computational biology, broadly defined, and represent diverse scientific and cultural backgrounds in hopes that participating in this type of event and knowledge exchange opportunity will accelerate the rate of advance in AG2P by engaging the field with innovative thinkers from the agricultural, computational and data science communities. As part of our effort to broaden and diversify the AG2P research community, we request funding from AG2PI to help mitigate the costs of participation for invited participants. This funding will be dedicated to conference registration and travel support.

We have announced the Special Session (<https://digiag.org>) and have initiated the participant invitation process with both targeted outreach to potential speakers and community nominations for speakers and poster presentations. We anticipate three faculty, two researchers from government agencies, and four postdoc/graduate students to request funding.

Session	Time	Topic	Speaker(s)	Affiliation
1	10:30-10:50am	molecular ecology/evolution and antimicrobial resistance	Joao Carlos Gomes Neto	UNL/NIAMRRE
1	10:50-11:10am	TBD; community nominee		
1	11:00-11:30am	pig gut microbiome and bacteriome and mycobiome	Katie Summers	USDA ABBL
1	11:30-11:50pm	plant genome engineering	Tobias Jores	University of Washington
1	11:50-12:00pm	PlantifyAI	Samyak Shrimali	Jesuit High School
1	12:10-12:30pm	TBD; community nominee		
Lunch and Posters	12:30-2:30pm			
2	2:30-3:30pm	Panel Discussion: Phenotyping at Scale (robotics, cyberinfrastructure)	TBD	
Break	3:30-4:00pm			
3	4:00-4:20pm	strawberry genome	Zhen Fan	University of Florida
3	4:20-4:40pm	NMR metabolomics in viticulture	Alexandra Crook	University of Nebraska
3	4:40-5:00pm	TBD		

3	5:00-5:20pm	scRNA for spatial lymphocyte context; challenges in functional pig genome	Chris Tuggle	Iowa State University/FFANG
3	5:20-5:40pm	TBD; community nominee		
3	5:40-6:00pm	TBD; community nominee		

2. Furthering the aims of the AG2PI

The proposed participant support directly furthers the AG2PI aim of building the agricultural genome to phenome community. Specifically, it will address the Community Activities / Working Groups call for proposals by increasing representation of participants from the AG2P community at the ISMB conference, which is closely aligned with AG2PI's mission of broadening participation in AG2PI. The support from AG2PI will be matched by a Session Sponsorship (level 2; see <https://digiag.org/sponsors>) and an ISMB Silver Branding Sponsorship (see <https://www.iscb.org/sponsorship>).

3. Expected outcomes & deliverables The requested travel support will be preferentially allocated to encourage participation by an inclusive and diverse set of speakers. We expect to support up to nine participants. These will be selected to be representative of the AG2P community, e.g., demographics, institutional affiliations, disciplinary expertise. Our hope is to extend the network of computational biology researchers to include more participants from AG2P, and to identify shared research challenges and interests that can be addressed by future meetings and collaborations. The conference will provide an opportunity for these participants to learn about the field, attend workshops and community meetings, and find new colleagues for future collaborations. We will share the presentation slides per the AG2PI data management plan and work with AG2PI to share our experience and collaborative opportunities more broadly.

4. Qualifications of the project team

Noah Fahlgren is the Director of Data Science at the Donald Danforth Plant Science Center and a recognized leader in the field of computational biology and bioinformatics for the plant sciences. Camilo Valdes is a postdoctoral researcher in the Genomics Group within the Biosciences and Biotechnology Division at Lawrence Livermore National Laboratory. He has an established publication record in computational biology and machine learning for the microbial sciences. Iddo Friedberg is an Associate Professor of Veterinary Microbiology and Preventive Medicine at the Iowa State University. Dr. Friedberg is a recognized expert in the large scale analyses of proteins, genomes, and metagenomes. He is a student advisor in the ISU Bioinformatics & Computational Biology Graduate Program, and an ISMB 2022 Conference Chair. Dr. Fahlgren, Dr. Valdes, and Dr. Friedberg are members of the International Society for Computational Biology and have attended and helped organize previous ISMB and other scientific conference events. They actively conduct research in computational biology and agriculture, and contribute to building the computational biology community within the agricultural sciences.

5. Proposal timeline

The conference will be held from July 10-14 in Wisconsin, Madison. As soon as funding is available, speakers will be contacted to confirm their interest and arrange travel.

6. Engaging AG2P scientific communities & underrepresented groups

Each speaker will represent an AG2P scientific community including both the plant and animal sciences as well as microbiology and bioinformatics. We will engage speakers from academic, government, and industrial institutions. Many of the speakers will not have engaged previously with AG2PI so these speakers and the session participants will gain exposure to AG2PI research and the AG2PI rolling and working group grant opportunities.