



PROGRAM

**AMERICAN CHEMICAL SOCIETY
AGRO DIVISION
FALL 2022 HYBRID MEETING AND EXPO
Chicago, Illinois, USA**

Sustainability in a Changing World

August 21 - 25, 2022



AMERICAN CHEMICAL SOCIETY AGRO DIVISION

Fall 2022 Hybrid Meeting and Exposition

Sustainability in a Changing World

August 21 – 25, 2022

AGRO SCHEDULE AT A GLANCE

Time (CDT)	Sunday August 21	Monday August 22	Tuesday August 23	Wednesday August 24	Thursday August 25
8:00 AM		In-Person 1 & Hybrid 1 8:00 AM - 12:00 PM	In-Person 1 & Hybrid 1 8:00 - 10:40 AM	In-Person 1 & Hybrid 1 8:00 AM - 12:00 PM	In-Person 1 & Hybrid 1 8:00 AM - 12:00 PM
9:00 AM	ACS Opening Session	Coffee Break 9:45-10:15	Coffee Break 9:20-9:45	Coffee Break 9:45-10:15	Coffee Break 9:45-10:15
10:00 AM					
11:00 AM		<i>International Award</i>	Sterling Hendricks Award Address 10:45 AM - 12:00 PM	<i>JAF C Paper Kathryn C. Hach Awards</i>	
12:00 PM		Graduate Student Lunch S503b (South Building, McCormick Place Convention Center)	Sterling Hendricks Reception S501bc (McCormick Place Convention Center)	AGRO Virtual Poster Session	AGRO In-Person Poster Session Hall F2 (McCormick Place Convention Center)
1:00 PM			In-Person Expo 11:00 AM - 6:00 PM		
2:00 PM	In-Person 2 & Hybrid 2 2:00 PM - 6:00 PM	In-Person 2 & Hybrid 2 2:00 PM - 6:00 PM	In-Person 2 & Hybrid 2 2:00 PM - 6:00 PM	In-Person 2 & Hybrid 2 2:00 PM - 6:00 PM	In-Person 2 & Hybrid 2 2:00 PM - 6:00 PM
3:00 PM	Coffee Break 3:45-4:15	Coffee Break 3:45-4:15	Coffee Break 3:45-4:15	Coffee Break 3:45-4:15	Coffee Break 3:45-4:15
4:00 PM					
5:00 PM		<i>Innovation Award</i>			
6:00 PM	Grow with AGRO venue change Grand Horizon G (Marriott Marquis Hotel)		Blues 'N' Brews 6:30 pm - 7:30 pm Skyline Ballroom W375c (West Building, McCormick Place Convention Center)	AGRO Awards Social Skyline Ballroom W375c (West Building, McCormick Place Convention Center)	
7:00 PM					
8:00 PM		Sci-Mix & Poster Session Hall F2 (McCormick Place Convention Center)			
9:00 PM					

American Chemical Society AGRO Division

ACS National Hybrid Meeting and Exhibition
August 21 – 25, 2022 (Central Daylight Time)

McCormick Place Convention Center

Chicago, Illinois, USA

Heidi Irrig, *Program Chair*; Qing Li, *Division Chair*

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PROGRAM

DIVISION BUSINESS AND PLANNING

AGRO Business Meeting

Will be rescheduled in September

SUNDAY – 6:00 to 9:00 PM

Grow with AGRO

- Learn more about AGRO Committees and activities
 - Hors d'oeuvres, cash bar, and cool SWAG
- Marriott Marquis Chicago, Grand Horizon G*

TUESDAY – 6:30 to 7:30 PM

Program Planning – AGRO Blues-N-Brews

- Members and others with ideas are welcome
- Free beverages

McCormick Place Convention Center

Skyline Ballroom W375c

SOCIAL EVENTS

AGRO Coffee Break/Intermission

SUNDAY: 9:45 – 10:15 AM; 3:45 – 4:15 PM

MONDAY: 9:45 – 10:15 AM; 3:45 – 4:15 PM

TUESDAY: 9:15 – 9:45 AM; 3:45 – 4:15 PM

WEDNESDAY: 9:45 – 10:15 AM; 3:45 – 4:15 PM

THURSDAY: 9:45 – 10:15 AM

MONDAY – 12:00 – 1:00 PM

AGRO Graduate Student/Post-Doc Luncheon

- Network with scientists and explore career and AGRO opportunities
- Reservations required, Sara Whiting, sara.whiting@bayer.com

McCormick Place Convention Center, S503b

TUESDAY – 12:00 – 01:00 PM

Sterling Hendricks Award Reception

- Follows lecture and discussion

McCormick Place Convention Center, S503b

WEDNESDAY – 6:00 – 8:00 PM

AGRO Awards Social

- Hors d'oeuvres, cash bar
- Announcement of NIA and Student winners
- Members/Speakers/Guests welcome

McCormick Place Convention Center

Skyline Ballroom W375b

AGRO POSTER SESSION

WEDNESDAY, 12:00 – 2:00 PM

McCormick Place Convention Center, Hall F2

SUNDAY MORNING

Advances in the Control of Medical, Agricultural, and Veterinary Disease Vectors

Co-sponsors: ANYL, BIOT, ENVR, MEDI

Aaron Gross, Daniel Swale, Organizers

Kumudini Meepagala, Edmund Norris, Organizers, Presiders

****Oral – In-person only****

McCormick Place Convention Center, S501d

8:00 AM – Introductory Remarks

8:05 AM – 3741566. Spatial repellents for disease vector control: updates on public health value assessment. **N. Achee**

8:30 AM – 3754900. Small molecule phytochemical attractants for malaria mosquitoes. **T. Anderson**

8:55 AM – 3740553. Comparative efficacy of DEET-based mosquito repellents and synergy mechanism of vanillin against the Asian tiger mosquito, *Aedes albopictus*. **J.-H. Tak**

9:20 AM – 3736728. Understanding the mosquito biting deterrence effect of fatty acids and triglycerides from traditionally used plants. **C. Cantrell**

9:45 AM – Intermission

10:15 AM – 3755677. Current research to control agricultural pests and disease vectors at the USDA-ARS San Joaquin Valley Agricultural Sciences Center. **A. Perez de Leon**

10:40 AM – 3738344. Why so many sodium channel mutations confer insect resistance to pyrethroids? **K. Dong**

11:05 AM – Discussion

11:30 AM – Concluding Remarks

Environmental Fate, Transport, and Modeling of Agriculturally Related Chemicals

Financial Co-Sponsor: Stone Environmental, Intrinsik Corp.

Co-sponsors: AGFD, ANYL, ENVR

Scott Jackson, Ralph Warren, Organizers, Presiders

Oral – Hybrid

McCormick Place Convention Center, S501bc

8:00 AM – Introductory Remarks

8:05 AM – 3739855. Effects of tank mixtures in soils. **C. Wijntjes**

8:30 AM – 3726160. Investigation of the sunlight photolysis of the veterinary antibiotic tiamulin. **J. Congilosi**

8:55 AM – 3747025. Degradation of isopirazam in water: Kinetics, pathways, transformation products identification and toxicity prediction. **H.L. Zhao**

9:20 AM – 3750236. Photodegradation of pyraclostrobin in water: Kinetics, transformation products identification and toxicity prediction. **W. Li**

9:45 AM – Intermission

10:15 AM – 3753740. Identification of neonicotinoid photoproducts in the aquatic environment. **C. Beggs**

10:40 AM – 3738579. Chiral separation of metolachlor metabolites (MESA and MOXA) as conservative tracers for agricultural nitrogen in water and water dating. **M. Bianca**

11:05 AM – 3729526. Spectrophotometric determination of glyphosate, aminomethylphosphonic acid (AMPA), and glufosinate using pre-column derivatization. **P. Martin**

11:30 AM – 3743254. Assessment of glyphosate, glufosinate, and aminomethylphosphonic acid (AMPA) presence in central Kentucky watersheds using liquid chromatography-tandem mass spectrometry. **P. Martin, A. Woods**

11:55 AM – Concluding Remarks

Human Health Paradigms: Exposure, Risk Assessment and Policies for Agrochemicals Regulatory Policy Overviews

Co-sponsors: AGFD, TOXI

Cheryl Cleveland, Katoria Tatum-Gibbs, *Organizers*

Tharacad Ramanarayanan, Cecilia Tan, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

8:00 AM – Introductory Remarks

8:05 AM – 3734330. Rethinking chronic toxicity and carcinogenicity assessment for agrochemicals. **G. Hilton**

8:30 AM – 3743018. Higher tier refinements to drinking water exposure concentrations: A cotton herbicide case study. **M. Winchell**

8:55 AM – 3745420. Bayesian integration of Monte Carlo exposure and pharmacokinetic modeling for lambda-cyhalothrin with urinary 3PBA measurements. **N. Cuvelier**

9:20 AM – 3749948. What does USDA PDP data reveal about dietary exposure to pesticides in animal commodities? **O.A. Szarka**

9:45 AM – Intermission

10:15 AM – 3738039. Evaluating use of CARES NG for conducting probabilistic acute dietary risk assessments for pesticides. **S. Flack**

10:40 AM – 3743678. Exploring the functionality and verifying the accuracy of CARES-NG for conducting probabilistic acute dietary risk assessments for pesticides. **M. Munday**

11:05 AM – 3753776. New approach method to waive subchronic inhalation study. **S. Webb**

11:30 AM – Panel Discussion

11:55 AM – Concluding Remarks

Sustainable Agriculture: A Promise for the Future

Co-sponsors: AGFD, ENVR

Peter Maienfisch, Leah Riter, Amy Ritter, John Rohanna *Organizers*

Shanique Grant, Natalia Peranginangin, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501a

8:00 AM – Introductory Remarks

8:05 AM – 3739828. New chemical interventions for a sustainable agriculture. **J. Pickett**

8:55 AM – 3725684. Improving sustainability in chemical weed control: applications for rapid diagnostics in herbicide resistance management. **R. Edwards**

9:20 AM – 3753962. Towards a future of sustainable dust-free seed planting. **R. Colletti**

9:45 AM – Intermission

10:15 AM – 3743071. Nanoparticle surface charge and aerosol size control for foliar efficacious delivery to plant cells and organelles. **S. Shikha**

10:40 AM – 3728861. Nanoscale sulfur uniquely suppresses fungal disease and increases biomass and yield of crop plants. **Y. Wang**

11:05 AM – 3727798. Long noncoding RNA-EN_181 potentially contributes to the protective effects of *N*-acetylcysteine against non-alcoholic fatty liver disease in mice. **S. Li**

11:30 AM – 3742246. SIVANTO prime: A modern insecticide for sustainable plant protection. **P. Jeschke**

SUNDAY AFTERNOON

Advances in the Control of Medical, Agricultural, and Veterinary Disease Vectors

Co-sponsors: ANYL, BIOT, ENVR, MEDI

Aaron Gross, Daniel Swale, *Organizers*

Kumudini Meepagala, Edmund Norris, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

2:00 PM – Introductory Remarks

2:05 PM – 3741258. Pepper extracts significantly enhance the toxicity and neurophysiological effects of natural pyrethrins in *Aedes aegypti*. **J. Bloomquist**

2:30 PM – 3754255. Diversifying the insecticide toolkit for vector control. **C. Hill**

2:55 PM – 3747426. Targeting kir channels to reduce vector competency of arthropods. **D Swale**

3:20 PM – 3729550. Evolution of different kdr alleles in *Aedes aegypti*. **J. Scott**

3:45 PM – Intermission

4:15 PM – 3737264. Relating laboratory insecticide resistance testing to operational efficacy in mosquitoes. **A. Estep**

4:40 – 3744552. *In vitro* and *in vivo* acaricidal properties of orally delivered ivermectin against the black-legged tick, *Ixodes scapularis*. **J. van Oosterwijk, L. Beimfohr, C. Przybyszewski, A. Li**

5:05 – 3755832. Shut the front door! Protecting hives from small hive beetles through behavioral modification. **A. Gross**

5:30 – Discussion

5:55 – Concluding Remarks

Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals

Financial Co-Sponsor: Stone Environmental, Intrinsik Corp.
Co-sponsors: AGFD, ANYL, ENVR
Scott Jackson, Ralph Warren, Organizers, Presiders

Oral – Hybrid

McCormick Place Convention Center, S501bc

2:00 PM – Introductory Remarks

2:05 – 3731287. Spray atomization in multiphase flow with extensions to tank mixes of agricultural products. **G. Krishnan, S. Cryer**

2:30 PM – 3741549. Novel remote sensing approach for estimating field-scale crop planting and pesticide application timing. **A. Jacobson**

2:55 PM – 3741360. Additives release from agricultural plastic films: Experiment and modeling. **Y. Xu, L. Zeng; Y. He, Z. Lu**

3:20 PM – 3733292. Transport behavior of short-chain and long-chain perfluoroalkyl carboxylic acids (PFCAs) in saturated porous media. **L. Qi**

3:45 PM – Intermission

4:15 PM – 3737768. Uptake of organophosphate pesticides by tissues of common reed (*Phragmites australis*) and seagrass (*Zostera capensis*) from polluted watersheds. **C. Olisah**

4:40 PM – 3755604. Nutrient-enriched rice hull biochar improves water use efficiency by corn grown in acidic soil. **P. Rodrigo**

5:05 PM – 3742394. Combination of irrigation methods and vegetable variety selection can be used as a way to achieve the sustainable development of agriculture. **C. Cao, Y. Yang, Q. Tang, H. Chen**

5:30 PM – 3743433. Over 25 years of ecological and drinking water modeling for pesticide registration. **A. Ritter**

5:55 PM – Concluding Remarks

Human Health Paradigms: Exposure, Risk Assessment and Policies for Agrochemicals

New Assessment Methods

Co-sponsors: AGFD, TOXI
Cheryl Cleveland, Tharacad Ramanarayanan, Organizers
Cecilia Tan, Katoria Tatum-Gibbs, Organizers, Presiders

Oral – Hybrid

McCormick Place Convention Center, S501a

2:00 PM – Introductory Remarks

2:05 PM – 3738796. Value of the 90-day dog study in human health risk assessment of agricultural pesticides. **P. Bishop**

2:30 PM – 3738162. Challenges and opportunities to waive the 90-day dog toxicity study for agrochemical human health risk assessments: Key elements from the 2021 CAAT workshop. **L. Murphy**

2:55 PM – 3746699. Efforts to reduce reliance on animal studies to support pesticide registrations. **M. Perron**

3:20 PM – 3738540. Evaluating dietary exposure models considering a combined modeler- and risk assessor-based perspective. **S. Graham**

3:45 PM – Intermission

4:15 PM – 3725730. Interpreting and predicting internal to external concentration relationships using physiologically based pharmacokinetic modeling. **D. Hoer**

4:40 PM – 3745277. OECD pesticide residue definition update. **M. Doherty, D. Murnane, I. Pilote**

5:05 PM – 3754602. ANVISA's challenge on implementing GHS classification in the reevaluation of pesticides. **L. Muratori Aguiar**

5:30 PM – 3735643. European risk assessment of combined exposure to multiple pesticides. **J. van Klaveren**

5:55 PM – Concluding Remarks

Sustainable Agriculture: A Promise for the Future

Co-sponsors: AGFD, ENVR
Shanique Grant, Natalia Peranginangin, Leah Riter, Amy Ritter, Organizers
Peter Maienfisch, John Rohanna, Organizers, Presiders

****Oral – In-person only****

McCormick Place Convention Center, S502b

2:00 PM – Introductory Remarks

2:05 PM – 3728712. Driving sustainability end to end in discovery, development and manufacturing of crop protection products. **A. Batra**

2:30 PM – 3736509. Value of biocontrols in sustainable agriculture. **P. Marrone**

2:55 PM – 3728559. Fermenting solutions: Rhamnolipid biofungicides for natural crop protection. **S. J. Wolek**

3:20 PM – 3752526. Delivering the promise of RNA for plant health: Sustainable control of agricultural pests and pathogens. **J. Gillian**

3:45 PM – Intermission

4:15 PM – 3738001. Natural products: A source and inspiration for crop protection solutions. **N. Garizi**

4:40 PM – 3741029. Nature-based solutions using banana paper safeguard potatoes. **B. Tonto**

5:05 PM – 3729763. Designing for sustainability – new and old chemical ideas for decreasing environmental footprint of chemical manufacturing. **D. Gribkov**

5:30 PM – 3728968. Establishing an electrochemistry platform in crop protection research: early incorporation of sustainable methods for impacting downstream synthesis. **C. Scarborough**

5:55 PM – Concluding Remarks

2022 ACS International Award for Research in Agrochemicals

Jeffrey Scott

The Many Faces of Insecticide Toxicology: Resistance, Mode of Action, New Insecticides, and Novel Control Strategies

Resistance

*Cosponsored by BIOL, MEDI, POLY, and PROF
Financially supported by CORTEVA Agriscience*

John M. Clark, Ke Dong, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S504bc

8:00 – Introductory Remarks

8:05 AM – 3729546. Lessons learned from decades of investigations into insecticide toxicology. **J. Scott**

8:55 AM – 3741121. Role of *Anopheles funestus* CYP6P9 variants in pyrethroid toxicology and resistance: a biochemical perspective. **R. Nauen**

9:20 AM – 3742140. Hyper pyrethroid-resistant dengue vectors in Indochina Peninsula: threats of concomitant knockdown resistance mutations. **S. Kasai**

9:45 – Intermission

10:15 AM – 3741490. Regional differences in susceptibility to spinosyn insecticides registered for Colorado potato beetle management. **I. Scott**

10:40 AM – 3756100. Transcriptional regulation of detoxification in the polyphagous arthropod pest *Tetranychus urticae*. **T. Van Leeuwen**

Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals

*Financial Co-Sponsor: Stone Environmental, Intrinsik Corp.
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Scott Jackson, Ralph Warren, *Organizers, Presiders**

Oral – In-person only

McCormick Place Convention Center, S501d

8:00 – Introductory Remarks

8:05 AM – 3740069. Integrated approach of regression and machine learning modeling to refine human health risk from pesticides in surface water throughout the conterminous United States. **Y. Wu**

8:30 AM – 3739562. Simulation of pesticide and metabolite concentrations using SWAT+ Landscape routing and conditional management applications. **H. Rathjens, J. Kiesel, M. Miguez**

8:55 AM – 3754908. Using automation techniques and machine learning algorithms to create a multi-source pesticide monitoring database. **Z. Stone**

9:20 AM – 3742815. Probabilistic pesticide usage-based approach to deriving aquatic exposure distributions used in endangered species assessments. **M. Winchell**

9:45 – Intermission

10:15 AM – 3754315. Integrating species-specific landscape information into aquatic exposure

estimates for endangered species assessments. **C. Holmes**

10:40 AM – 3735211. ESASeedPARAM: A seed treatment model for threatened and endangered bird species in the United States. **D. Moore**

11:05 AM – Discussion

11:30 AM – Closing Remarks

Human Health Paradigms: Exposure, Risk Assessment and Policies for Agrochemicals Internal and External Exposure Modeling and Characterization

Co-sponsors: AGFD, TOXI

Cheryl Cleveland, Cecilia Tan, *Organizers*

Tharacad Ramanarayanan, Katoria Tatum-Gibbs, *Organizers, Presiders*

Oral – In-person only

McCormick Place Convention Center, S502b

8:00 – Introductory Remarks

8:05 AM – 3750951. Canadian dietary risk assessment and residues: Challenges and opportunities. **A. Ardiel, H. Griffiths**

8:30 AM – 3755949. Agricultural use and human exposure driven data generation: Impact of drinking water on dietary exposure. **E. Freeman**

8:55 AM – 3721142. Advanced exposure analysis - methods and tools for enhanced human health risk assessment. **J. Doyle**

9:20 – Intermission

9:50 AM – 3739896. Agrochemical evaluation for the 21st century: Achieving the vision. **S. Deglin**

10:15 AM – 3742965. Development of a regulatory package for a new herbicide without the use of animal testing. **T. Ramanarayanan**

10:40 AM – 3756332. Regulatory flexibility for the implementation of NAMs in pesticide registration. **J. Henriquez**

11:05 AM – Closing Remarks

Support of Agricultural Research and Development using LC-Mass Spectrometry or Extraction Efficiency Testing: New Trends and Best Practices

Co-sponsors: AGFD, ANYL, ENVR

Kaushik Banerjee, Rory Mumford, *Organizers*

Steve Perez, Manasi Saha, James Ferguson, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

8:00 – Introductory Remarks

8:05 AM – 3731297. Novel mass spectrometry tools to speed the identification of metabolites in agricultural research and development. **J. Balcer**

8:30 AM – 3737254. Extraction efficiency: EU guideline requirements, challenges, limitations and recent experiences for plant residue analytical methods. **C. Spangler**

8:55 AM – 3742438. Improving the extractability of polar and thermally unstable pesticides in food- challenges and solutions. **R. Shinde, K. Banerjee**

9:20 AM – 3738742. Benefits of data from instrumentation with higher resolving power in the analysis of some radiolabeled test materials. **J. Ferguson**

9:45 – Intermission

10:15 AM – 3740858. WITHDRAWN

10:40 AM – 3743569. Practical approaches to finding and elucidating the low level metabolite needles in complex matrix haystacks. **O. Chepelin**

11:05 AM – 3734867. PFAS in food: Method comparison and validation of a QuEChERS approach. **R. Taylor**

11:30 AM – 3750260. Agricultural applications of nanotechnology: Controlled release of agrochemicals. **M. Alrbaihat**

11:55 AM – Concluding Remarks

Sustainable Agriculture: A Promise for the Future

Co-sponsors: AGFD, ENVR

Peter Maienfisch, Natalia Peranginangin, Leah Riter, Amy Ritter, *Organizers*

Shanique Grant, John Rohanna, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501a

8:00 – Introductory Remarks

8:05 AM – 3737245. WITHDRAWN

8:30 AM – 3743789. Increased crop rotational diversity improves sustainable nitrogen management. **K. White**

8:55 AM – 3754556. Sustainable postharvest treatments for global food security and safety. **S. Walse**

9:20 AM – 3752184. Natural salicylaldehyde for fungal and pre- and post-emergent weed control. **J. Kim**

9:45 – Intermission

10:15 AM – 3750143. APEX simulations to evaluate effectiveness of field-Level conservation practices in reducing off-field pesticide transport for a stewardship assessment tool. **J. Stryker**

10:40 AM – 3730799. VFSSMOD Input definitions, literature references and sensitivity analyses for evaluating vegetative filter strips in pesticide risk assessment. **A. Ritter, R. Muñoz-Carpena, H. Chen**

11:05 AM – 3752109. Environmental impact reduction of crop protection: How to model, how to measure, how to achieve? **A. Gladbach**

11:30 AM – 3731308. Development of a crop disease forecast system with ties to southern rust movement within the U.S. **S. Cryer**

11:35 AM – Concluding Remarks

MONDAY AFTERNOON

2022 ACS International Award for Research in Agrochemicals: The Many Faces of Insecticide Toxicology: Resistance, Mode of Action, New Insecticides and Novel Control Strategies Resistance and Physiology

Cosponsored by AGFD, TOXI

Financially supported by CORTEVA Agriscience

John M. Clark, Ke Dong, *Organizers*

Ralf Nauen, Kun Zhu, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

2:00 PM – Introductory Remarks

2:05 PM – 3734361. Amitraz resistance in varroa destructor: Insights from monitoring and genomics. **F. Rinkevich**

2:30 PM – 3737322. Fitness advantages and disadvantages of pyrethroid resistance mechanisms in *Aedes aegypti* and their potential consequences to human health. **L. Smith**

2:55 PM – 3739842. NEW INVESTIGATOR FINALIST. Chromosome-level assembly of the “Rockefeller” *Aedes aegypti* mosquito strain powers investigation of the evolution of pesticide resistance in a vector of human and livestock disease. **C. Fisher**

3:20 PM – 3738340. Molecular mechanisms of pyrethrum/pyrethroid repellency in *Aedes aegypti*. **K. Dong**

3:45 PM – Intermission

4:15 PM – 3742219. Loss-of-function of nicotinic acetylcholine receptor subunits reveals distinct insecticidal effects of dinotefuran. **Y. Ozoe**

4:40 PM – 3737424. Insect muscarinic acetylcholine receptors: A target for physiological synergists and the greater effect of the Rdl mutation on the cholinergic system. **A. Gross**

5:05 PM – 3740503. Upregulation of cytochrome P450s in insecticide resistance. **N. Liu**

5:30 PM – Concluding Remarks

Advances in the Control of Medical, Agricultural, and Veterinary Disease Vectors

Co-sponsors: ANYL, ENVR, MEDI, BIOT

Kumudini Meepagala, Edmund Norris, *Organizers*
Aaron Gross, Daniel Swale, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

2:00 PM – Introductory Remarks

2022 AGRO Innovation Award

Financially supported by BASF

Joel Coats

2:05 PM – 3743801. Sustainability in agricultural chemistry. **J. Coats**

2:55 PM – 3754227. NEW INVESTIGATOR FINALIST. Physiological activities of *Melaleuca cajuputi* (Cajuput Oil) to yellow fever mosquito. **E. Johnson**

3:20 PM – 3730802. Synergistic plant essential oils: Exploring their mechanisms of action. **E. Norris**

3:45 PM – Intermission

4:15 PM – 3728867. Development of a peptide bioinsecticide with a novel mode of action. **K. Schneider**

4:40 PM – 3754846. Larvicidal constituents from *Poncirus trifoliata* (Rutaceae). **K Meepagala**

5:05 PM – 3742427. NEW INVESTIGATOR FINALIST. Characterization of the tick *Ixodes ricinus* nicotinic acetylcholine receptors expressed in the synganglion using membrane microtransplantation. **A. Le Mauff**

5:30 PM – Discussion

5:55 PM – Concluding Remarks

Pollinator Risk Assessment Modelling, Methods, and Research

John Purdy, Tom Steeger, *Organizers*
Jennifer Collins, *Organizer, Presider*; Katrina White, *Presider*

Oral – Hybrid

McCormick Place Convention Center, S501bc

2:00 PM – Introductory Remarks

2:05 PM – 3734582. Overview of the framework for assessing risk of pesticides to bees in the United States. **K. White**

2:30 PM – 3740160. Non-*Apis* bee life history traits pose unique agrochemical exposure routes. **T. Pitts-Singer**

2:55 PM – 3754696. Identifying routes of exposure and colony-level effects on honey bees from systemic pesticide pollution associated with processing pesticide-treated seeds through ethanol production in Nebraska. **J. Wu-Smart.**

3:20 PM – 3744261. Rethinking pesticide risk assessments in the face of sustainable agroecosystem management. **A. Seshadri**

3:45 PM – Intermission

4:15 PM – 3739184. Methods to assess the generational effects of maternal exposure to agrochemicals. **J. Fine**

4:40 PM – 3754574. Pesticide risk during apple bloom differs between managed honey bees and wild native bees. **S. McArt**

5:05 PM – 3736975. Lab assays of honey bee queen health and fecundity for ecotoxicology. **A. Hamilton**

5:30 PM – 3754016. Water increases lifespan but worker bees (*Apis mellifera*) Still living half as long as previously observed. **A. Nearman**

5:55 PM – Concluding Remarks

Sustainable Agriculture: A Promise for the Future

Co-sponsors: AGFD, ENVR
Shanique Grant, Leah Ritter, Amy Ritter, John Rohanna, *Organizers*
Peter Maienfisch, Natalia Peranginangin, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S503a

2:00 PM – Introductory Remarks

2:05 PM – 3742689. Enhancing ecosystem services and biodiversity on farm and pasture lands - A climate positive agriculture. **N. Mutti**

2:30 PM – 3740057. Mitigating climate change: Assessment of innovative approaches integrating climate-smart practices and crop protection products to reduce greenhouse gas emissions (GHG) in agriculture. **Y. Wu**

2:55 PM – 3747296. Catalytic ammonia abatement in agriculture. **T. Knorr**

3:45 PM – Intermission

3:20 PM – 37378740. Digital agronomy: Forming the intersection of sustainability and agricultural automation. **J. Hesterman**

3:45 PM – Intermission

4:15 PM – 3742528. Microplastics - Opportunity for innovation and a more sustainable agriculture. **M. Esson**

4:40 PM – 3756128. European regulatory changes in 2021: How the transparency regulation can help and hinder the sustainable future of agriculture. **D. Williams**

5:05 PM – Panel Discussion

5:30 PM – Concluding Remarks

Unmanned Aerial Systems (aka Drones): Pesticide Spraying and Other Agricultural Applications

Financial Co-Sponsor: Stone Environmental, Intrinsik Corp.
Co-sponsors: ANYL, ENVR
Ross Breckels, Zhenxu Tang, *Organizers*
Melissa Bridges, Shanique Grant, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501a

2:00 PM – Introductory Remarks

2:05 PM – 3750379. Application of pesticides by uncrewed aerial spray systems: Work of the OECD subgroup. **G. Stark**

2:30 PM – 3743343. Uncrewed aerial spray systems and equivalency with conventional techniques: spray drift, operator exposure, crop residue, and efficacy. **J. Bonds**

2:55 PM – 3743212. Industry response to pesticide regulators “state of the knowledge” review of UAV use for pesticide application: Overview of the Unmanned Aerial Pesticide Application System Task Force (UAPASTF). **G. Watson**

3:20 PM – 3732402. Transport Canada remotely piloted aircraft systems. **C. Haughton**

3:45 PM – Intermission

4:15 PM – 3742324. Drift of drone and ground applications according to the droplet size. **U. Antuniassi**

4:40 PM – 3743503. Characterization of the spray distribution, swath width, and swath displacement of Uncrewed Aerial Spray Systems (UASS). **J. Bonds**

5:05 PM – 3754469. Model evaluation of spray drift from unmanned aerial system. **Z. Tang, M. Winchell**

5:30 PM – 3738619. Comparison of drift deposition from a UAS application using tracer dye with multiple downwind sampling methodologies. **A. Rice**

5:55 – Concluding Remarks

2022 Kenneth Spencer Award

Financially supported by ACS-Kansas City Divisions
Co-sponsored by AGFD and AGRO

H.N. Cheng

Oral – Hybrid

McCormick Place Convention Center, S504bc

4:55 PM – Spencer Award Introduction

05:05pm – 3739164. Agro-based raw materials as green product platforms. **H.N. Cheng**

MONDAY EVENING

Sci-Mix Poster Session
8:00 – 10 PM

****In-person****

McCormick Place Convention Center, Hall F2

AGRO Posters

3734330, ALSO A PLATFPROM PRESENTATION –

Rethinking chronic toxicity and carcinogenicity assessment for agrochemicals. **G. Hilton**

3754602, ALSO A PLATFPROM PRESENTATION –

ANVISA's challenge on implementing GHS classification in the reevaluation of pesticides. **L. Muratori Aguiar**

3754908, ALSO A PLATFPROM PRESENTATION –

Using automation techniques and machine learning algorithms to create a multi-source pesticide monitoring database. **Z. Stone**

3735275 – Optimization of inward rectifier potassium channel inhibitors to prevent hemipteran feeding. **F. O'Hara**

3737393 – 3D-printed nanocomposite for smart antimicrobial food packaging. **O. Popoola**

3737505 – On the use of science-based thresholds for the interpretation of public environmental monitoring data: Demonstrating glyphosate residues in European surface, ground and drinking water pose no risk to biota, ecosystems or human health. **D. Saltmiras**

3739919 – Disruption of the chemical signaling between potato and cyst nematode *Globodera rostochiensis*. **J. Ochola**

3741893 – Neonicotinoid insecticides in urban underground storm drain systems: Distribution and trends. **N. Sy**

3742819 – Repurposing synthetic β -triketone herbicides to control hematophagous arthropods. **S. McComic**

3743988 – Characterizing the effect of Kir channel modulators on mosquito cardiac contraction and cellular antiviral immunity. **Z. Li**

3745374 – Assessing human carcinogenicity risk without the rodent cancer bioassay. **A. Goetz-Bouchard**

3732194 – Sampling representative test portions of encapsulated ingredients in feed: Vitamin A and D3 nutritional analysis for regulatory and safety requirements. **K. Riter**

3747929 – NAM-based tiered phototoxicity testing and acute dermal exposure: A proposed human health risk assessment framework for agrochemicals. **E. Chikwana**

3747959 – Impact of drinking water assessments on conventional pesticide registrations. **E. Chikwana**

3753791 – Systems pharmacodynamic modelling of 4-hydroxyphenylpyruvate dioxygenase inhibition: Predicting tyrosinaemia. **S. Webb**

3754461 – Sugar compositions drive high attraction of vector mosquitoes. **X. Ng**

3755419 – Characterization of functional interactions between K^+ flux mechanisms that drive insect neural function. **R. Chen**

3757832 – CYP71V7 catalyzes the conversion of 5-pentadecatrienyl resorcinol-3-methyl ether in sorgoleone biosynthesis. **Z. Pan**

3743265 – Analysis of endogenous and radiolabeled natural products derived from ^{14}C -agrochemicals in plant and animal. **B. Osterman**

3743068 – Effect of microplastics on gastropod immunity to *Parelaphostrongylus tenuis* larvae. **L. Koyanagi**

3747037 – Dissipation and dietary risk assessment of difenoconazole in spinach, wax gourd and summer squash under open field conditions in China. **B. Dong**

TUESDAY MORNING

2022 ACS International Award for Research in Agrochemicals: The Many Faces of Insecticide Toxicology: Resistance, Mode of Action, New Insecticides and Novel Control Strategies

New and Novel Insecticides

Cosponsored by AGFD, TOXI

Financially supported by CORTEVA Agriscience

John M. Clark, Ke Dong, *Organizers*

Blair Siegfried, Yoshihisa Ozoe, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

8:00 – Introductory Remarks

8:05 AM – 3739990. Encircle™ remote termite detection system: An innovative approach enabling integrated management from BASF. **C. Leichter**

8:30 AM – 3741300. Insecticidal centrally-acting spider toxin polypeptides. **J. Bloomquist**

8:55 AM – 3730773. New insecticides: "Chance favors the prepared mind". **T. Sparks**

9:20 AM – Intermission

9:45 AM – 3744446. Phycotoxins associated with red tide mass-kill events in filth flies. **E. Burgess**

10:10 AM – 3742237. Deconstructing some recent successes in insect resistance management. **T. Dennehy**

10:35 – Concluding Remarks

Bioisosteric Replacement and Scaffold Hopping for Bioactive Compound Discovery

Co-sponsor: ENVR

Clemens Lambeth, Peter Maienfisch, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

8:00 – Introductory Remarks

8:05 AM – 3738045. Herbicidal diarylheterocyclic propionic acid derivatives: A case study in scaffold hopping strategies. **T. Stevenson**

8:55 AM – 3733698. Isosteric ring exchange as a useful scaffold hopping tool in agrochemistry. **C. Lamberth**

9:20 AM – Intermission

9:45 AM – 3742424. Silicon motifs in life science research.
P. Maiefisch

10:10 – Concluding Remarks

EARLY CAREER SYMPOSIUM

Deciphering Plant-Insect-Microorganism Signals for Sustainable Crop Production

Co-sponsor: AGFD, BIOT, Committee on Technician Affairs (CTA)

Nurhayat Tabanca, Gareth Thomas, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501a

8:00 – Introductory Remarks

8:05 AM – 3737538. Chemical landscape of *Phragmites australis*. **A. Gaffke**

8:30 AM – 3730641. Stored product insect interactions with the microbes, *Aspergillus flavus* and *Fusarium verticillioides* on grain: Insect behavioral response to microbial volatiles and propensity for vectoring after harvest. **W. Morrison**

8:55 AM – 3740468. Bottom-up effects of the rhizobaterium on tritrophic interactions. **D. Magalhães**

9:20 AM – Intermission

9:30 AM – 3756647. Plant phenotypic plasticity in response to biotic and abiotic factors influences plant interactions with flower visitors and plant reproduction. **Q. Rusman**

9:55 AM – 3739434. Deciphering the infochemicals in multitrophic plant -insect- microbe interactions: Exploiting the ecological chemistry for sustainable IPM strategies. **K. Jayanthi**

10:20 AM – 3727396. Characterization of ABC transporter, UDP and CP gene in thiamethoxam-resistant field populations of Asian citrus psyllid, *Diaphorina citri* Kuwayama. **X. Chen**

10:45 AM – Concluding Remarks

Upfront Mitigation: What that Means in the FIFRA/ESA Consultation Process

Co-sponsor: AGFD, ANYL, BIOL, ENVR

Kathryn Bissell, Tilghman Hall, Bernalyn McGaughey, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

8:00 – Introductory Remarks

8:05 AM – 3755189. Simplicity v. Complexity: Finding the balance between safe pesticide use and meaningful mitigation strategies. **T. Hall**

8:30 AM – 3754598. Using data for developing strategies: Mitigations, pesticides, and ESA. **L. Duzy**

8:55 AM – 3750029. Opportunities for using decision science to streamline the pesticide risk assessment process for ESA listed species. **G. Iacona**

9:20 AM – Intermission

9:45 AM – 3752563. Determining upfront mitigation options for atrazine. **T. Burd**

10:10 AM – 3755752. Making mitigations manageable: Recognizing and compensating agricultural producer stewardship. **K. Kunkler**

10:35 – Concluding Remarks

Sterling B. Hendricks Memorial Lectureship Award

Stephen O. Duke

Cosponsored by AGFD

Financially supported by USDA-ARS

John Beck, Cathleen Hapeman, Sharon Schneider, *Organizers*

Michael Appell, *Organizer, Presider*

Oral – Hybrid

McCormick Place Convention Center, S501bc

10:50 AM – Award Presentation by Simon Liu

11:00 AM – 3736505. Natural compounds for the health of plants, humans, and the environment. **S. Duke**

11:50 AM – Discussion

12: 00 to 1:00 PM – Reception

McCormick Place Convention Center, S503b

TUESDAY AFTERNOON

2022 ACS International Award for Research in Agrochemicals: The Many Faces of Insecticide Toxicology: Resistance, Mode of Action, New Insecticides and Novel Control Strategies

Toxicology and Physiology

Cosponsored by AGFD, TOXI

Financially supported by CORTEVA Agriscience

John M. Clark, Ke Dong, *Organizers*

Blair Siegfried, Yoshihisa Ozoe, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

2:00 PM – Introductory Remarks

2:05 PM – 3730825. MIR162 maize event that carries the Vip3A trait gene remains a powerful solution for controlling multiple corn Lepidopteran pests after commercial cultivation for more than 10 years. **Z. Wen**

2:30 PM – 3744241. Toxicological relevance of K⁺ flux pathways in arthropod neural systems. **D. Swale**

2:55 PM – 3738076. Gene drive and anti-viral effectors in the yellow fever mosquito, *Aedes aegypti*. **W. Reid**

3:20 PM – 3739257. Reduced oxidative bioactivation, particularly in nervous system, is responsible for selective resistance to coumaphos in honey bees. **S. Cho, K. Yoon, J. Lee, S. Kim; J. Lee; S. H. Lee**

3:45 PM – Intermission

4:15 PM – 3734420. Transgenic overexpression of P450 genes confers deltamethrin resistance in the fall armyworm, *Spodoptera frugiperda*. **S. Palli**

4:40 PM – 3741461. Breaking down the barriers: Strategies to enhance RNAi efficiency in insects. **K. Zhu**

5:05 PM – 3742579. Gene editing tools for the southern green stink bug, *Nezara viridula*: Challenges and frustrations. **B. Siegfried**

5:30 PM – 3718197. Age-related difference in the action of pyrethroids on native voltage-sensitive sodium channels from juvenile and adult rat brains. **J. Clark**

5:55 PM – Concluding Remarks

Bioisosteric Replacement and Scaffold Hopping for Bioactive Compound Discovery

Co-sponsor: ENVR

Clemens Lambeth, Peter Maienfisch, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

2:00 PM – Introductory Remarks

2:05 PM – 3721206. Applications of bioisosteres in the design of biologically active compounds. **N. Meanwell**

2:55 PM – 3743634. Structure-activity investigations toward the discovery of metarylpicoxamid. **K. Meyer**

3:20 PM – 3739571. Picolinamide complex III inhibitors: A review of quinone inside inhibitors and the importance of bioisosteric principles in the discoveries of these new fungicides. **V. Jackson**

3:45 PM – Intermission

4:15 PM – 3736709. Applications of bioisosteres in the discovery of succinate dehydrogenase inhibitors. **O. Loiseleur**

4:40 PM – 3729900. Discovery of a new chemotype of SDHI fungicides through bioisosteric replacements. **C. Zhou**

5:05 PM – 3743441. Scaffold hopping approaches in the invention pathway to ADEPIDYN™. **R. Rajan**

5:30 PM – 3739277. Discovery of succinate dehydrogenase fungicide via computational substitution optimization. **G.-F. Yang**

5:55 PM – Concluding Remarks

EARLY CAREER SYMPOSIUM

Deciphering Plant-Insect-Microorganism Signals for Sustainable Crop Production

Co-sponsor: AGFD, BIOT, Committee on Technician Affairs (CTA)

Nurhayat Tabanca, Gareth Thomas, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

2:00 PM – Introductory Remarks

2:05 PM – 3753445. Induced volatiles in maize: Examining the interplay of plant genotype and microbe treatment. **E. Ngumbi**

2:30 PM – 3738606. Nosy pests: Exploiting predatory insect odors to control aphid pests in sustainable crop production. **J. Kansman**

2:55 PM – 3743155. Leveraging hyperspectral reflectance to assess volatile organic compound (VOC) mediated induced responses across the genus *Helianthus*. **J. Dowell**

3:20 PM – 3717166. Investigating the role of acute oak decline (AOD) bacterial volatiles on the behavior of the two-spotted oak buprestid *Agrilus biguttatus* (Coleoptera: Buprestidae). **G. Thomas**

3:45 PM – Intermission

4:15 PM – 3737775. Molecularization of metabolom alterations in exudates of *Lotus japonicus* induced by arbuscular mycorrhiza. **S. Schalk**

4:40 PM – 3741295. Mosquito repellency potential of plants' volatiles: Can people's preferences demand future research need on volatile compounds from *Ocimum tenuiflorum*? **J. Osei-Owusu**

5:05 PM – 3737438. *Streptomyces distallicus*, a potential microbial biolarvicide. **S. J. Kim**

5:30 PM – 3734414. Absorption, translocation, and metabolism of flupyraxifen-benzyl in cyhalofop-

butyl-resistant barnyardgrass, *Echinochloa crus-galli* (L.) P. Beauv. **J.-I. Hwang**

5:55 PM – Concluding Remarks

From Colloids to Drift Effect: Bridging Formulations to Fields

Co-sponsor: AGFD, ANYL, ENVR

Naresh Pai, Frederick Salzman, Solito Sumulong, Susannah Banziger, Ricardo Acosta Amado, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, OS501a

2:00 PM – Introductory Remarks

2:05 PM – 3740194. Conversations about the future of dicamba: The science behind off-target movement. **L. Riter**

2:30 PM – 3726170. Field volatility of 2,4 dichlorophenoxyacetic acid in a formulated product (MON 301820). **S. Whiting**

2:55 PM – 3743832. Off-target drift reduction efficacy of hooded sprayers for pre- and post-emergent applications. **B. Brayden**

3:20 PM – 3738578. Qualifying hooded sprayers for reduced downwind spray buffer distances in dicamba-tolerant soybeans. **T. Lane**

3:45 PM – Intermission

4:15 PM – 3742951. Phytoglycogen-based materials as emulsifier, solubilizer, or vaccine adjuvant. **Y. Yao**

4:40 PM – 3734699. Crystal nucleation inhibition of poorly-water soluble actives using novel alkoxylated amino alcohol polymers. **M. Tate**

5:05 PM – 3749326. Compatibility of surfactants and seed coating binders with bacterial and fungal strain. **C. Woelfle-Gupta**

5:30 PM – 3729244. Formulation and planter box application of plant beneficial methylotrophic microbes. **J. Whitteck**

5:55 PM – Concluding Remarks

Upfront Mitigation: What that Means in the FIFRA/ESA Consultation Process

Co-sponsor: AGFD, ANYL, BIOL, ENVR

Kathryn Bissell, Tilghman Hall, Bernalyn McGaughey, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S503a

2:00 PM – Introductory Remarks

2:05 PM – 3754909. Registrant perspective on the US Fish and Wildlife Consultation process for malathion. **A. Frank**

2:30 PM – 3753141. Streamlining ESA mitigation to facilitate pesticide consultations or how to capitalize on the "Benefit of the Commons". **P. Ashfield**

2:55 PM – 3758179. Importance of communication in establishing a sustainable, scientifically-based FIFRA/ESA consultation process. **A. Beehler**

3:20 PM – 3750043. Mitigation strategy tool: A guide for evaluating mitigation measures in FIFRA/ESA consultations. **A. Krueger**

3:45 PM – Intermission

4:15 PM – 3754259. Web-based, site-specific exposure modeling for endangered species assessment. **B. Engel**

4:40 PM – 3741522. Conservation that counts: Scaling up the FIFRA-ESA consultation process and implementation of offsets across space, time, and registration actions. **J. Bickel**

5:05 PM – 3758188. Upfront mitigation: Is there an engagement role for producers? **D. Parker**

5:30 PM – Discussion

5:55 PM – Concluding Remarks

Division of AGFD

Journal of Agricultural and Food Chemistry

AGFD Best Paper Award

*Sponsored by JAFCD
Co-sponsored by AGRO*

Silvio Uhlig, Oscar Daniel Rangel-Huerta, Elin Rolén,
Hege Divon, Kari Pauchon, Mark Sumarah,
Trude Vrålstad, Justin Renaud

Oral – Hybrid

McCormick Place Convention Center, S504bc

2:00 PM – JAFCD Award Introduction

2:05 PM – 3742971. Semi-targeted analysis of peptide ergot alkaloids and indole-diterpenoids in the *Claviceps purpurea* species complex using LC-HRMS/MS diagnostic fragmentation filtering. **S. Uhlig**

WEDNESDAY MORNING

Climate Change and Sustainable Agriculture: Impacts on food security/trade, risk assessment and pesticide fate studies (including Early Career Symposium)

Co-sponsor: AGFD, CELL, ENVR, TOXI

Aleksandra Dean, Patricia Engel, Cornelis Hoogeweg, Pamela Rice, Amy Ritter, *Organizers*

Frederick Salzman, Xavier Poole, Samantha Nedder, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

8:00 – Introductory Remarks

8:05 AM – 3740076. Predicting the response of future food systems to climate change. **W. Easterling**

8:30 AM – 3738620. EPA Pesticide regulatory efforts related to climate adaptation and agriculture. **J. Dawson**

8:55 AM – 3754393. Incorporating climate change into the conduct of chemical risk assessments to inform risk management, adaptation, and mitigation. **W. Landis**

9:20 AM – 3755929. Incorporating climate change predictions into ecological risk assessments. **Z. Stone**

9:45 – Intermission

10:15 AM – 3750632. Comparative assessment of food trade standards. **C. Tiu**

10:40 AM – 3740007. Reuse water for food production: Treatment challenges and consumer concerns. **J. Czarnecki**

11:05 AM – 3738607. Assessing the impact of soil characteristics on the rate of chemical degradation under aerobic conditions. **K. Cabral**

11:30 AM – 3743122. Evaluating the effect of application solvent(s) used during a soil metabolism study with ¹⁴C-glyphosate. **X. Poole**

11:55 AM – Concluding Remarks

INSECTICIDE TARGETS (INSTAR) Summit

Co-sponsor: AGFD, ANYL, BIOT, ENVR

Troy Anderson, Stephen Duke, *Organizers*

Daniel Swale, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

8:00 – Introductory Remarks

8:05 AM – 3741243. Reflections from past INSTAR symposia and perspectives for the future. **J. Bloomquist**

8:20 AM – 3739619. Molecular targets of insecticides and herbicides – Are there useful overlaps? **S. Duke**

8:45 AM – Intermission

8:55 AM – 3758106. Considerations for next generation long-lasting insecticidal net development toward malaria elimination. **M. Hadi**

9:20 AM – 3750066. Increasing chemical and target diversity by blurring the lines between insecticide and herbicide science. **D. Swale**

9:45 AM – Intermission

10:15 AM – Panel Discussion

11:45 AM – Concluding Remarks

New Crop Yield Technology Companies Improving Sustainability

Co-sponsor: AGFD, ANYL, BIOT, ENVR

Pam Marrone, Keith Wing, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

8:00 – Introductory Remarks

Journal of Agricultural and Food Chemistry

AGRO Best Paper Award

*Sponsored by JAFCD
Co-sponsored by AGFD*

Teng Yang, Xiang Zhou, Pengyu Wang, Jianhua Gan,
Baoan Song, Song Yang, and Cai-Guang Yang

8:05 AM – 3743464. Dysregulation of ClpP by small-molecule activators used against *Xanthomonas oryzae* pv. *oryzae* infections. **T. Yang; X. Zhou, C. Yang, S. Yang**

Kathryn C. Hach Award for

Entrepreneurial Success

Sponsored by Kathryn C. Hach Award Fund

Pamela Marrone

8:55 AM – 3736478. Status and potential for biologicals in crop production. **P. Marrone**

9:45 – Intermission

- 10:15 AM – 3743052.** Using small molecule signaling to enable nitrogen fixation in maize. **A. Greenlon, T. Meragelman, T. Bayer**
- 10:40 AM – 3729541.** Data traits: Improving farm sustainability by digitizing crop physiology using novel living sensors and scalable remote monitoring. **R. Shultz**
- 11:05 AM – 3738264.** Reshaping insect pest control for the protection of crop yield. **J. Yuan**
- 11:30 AM – 3748242.** AgriCell: A novel bio-based microencapsulation technology to improve crop protection. **S. Carballo**
- 11:55 AM – Concluding Remarks**

Nontarget Arthropod Risk Assessment: Scientific Developments, Challenges and Research Need

Co-sponsor: AGFD, ANYL, BIOL, ENVR

Domenica Auteri, Keith Sappington, Tom Steeger, Organizers

Alessio Ippolito, Katrina White, Organizers, Presiders

Oral – Hybrid

McCormick Place Convention Center, S501a

8:00 – Introductory Remarks

- 8:05 AM – 3758201.** Insect decline in the Anthropocene. **D. Wagner**
- 8:55 AM – 3736226.** Insect decline – Evaluation of potential drivers of a complex phenomenon. **M. Greve**
- 9:20 AM – 3742602.** Non-target arthropods pesticide risk assessment: An EFSA perspective. **A. Ippolito**
- 9:45 – Intermission**
- 10:15 AM – 3739709.** Industry experience with non-target arthropod testing and risk assessment in Europe. **S. Braaker, E. Pilling**
- 10:40 AM – 3741539.** NTA field testing methods in the EU. **S. Knaebe**
- 11:05 AM – 3739668.** Current framework for assessing and managing the risk of pesticides to non-target arthropods in Canada: A regulatory perspective. **N. Lauro**
- 11:30 AM – 3738523.** Pesticide risk assessment of non-target arthropods at USEPA: Challenges and lessons learned from recent listed species assessments. **K. Sappington**
- 11:55 AM – Concluding Remarks**

AGRO POSTER SESSIONS

AGRO Combined Poster Session

Poster - In-person

McCormick Place Convention Center, Hall F2

12:00 PM

***** Student Travel Award Winner**

SM – Sci-Mix Presenter

***** Poster #2027, SM: 3739919** – Disruption of the chemical signaling between potato and cyst nematode *Globodera rostochiensis*. **J. Ochola**

Poster #2029, SM: 3757832 – CYP71V7 catalyzes the conversion of 5-pentadecatrienyl resorcinol-3-methyl ether in sorgoleone biosynthesis. **Z. Pan**

***** Poster #2031, SM: 3735275** – Optimization of inward rectifier potassium channel inhibitors to prevent hemipteran feeding. **F. O'Hara**

Poster #2033, SM: 3736294 – Ingestion bioassay protocol for assessing pesticide toxicity to the solitary bee, *Osmia cornifrons*. **N. Phan**

Poster #2035: 3736552 – Risk estimation for butterflies exposed to permethrin from mosquito control sprays. **T. Bargar**

***** Poster #2037, SM: 3737393** – 3D-printed nanocomposite for smart antimicrobial food packaging. **O. Popoola**

Poster #2126, SM: 3737505 – On the use of science-based thresholds for the interpretation of public environmental monitoring data: Demonstrating glyphosate residues in European surface, ground and drinking water pose no risk to biota, ecosystems, or human health. **D. Saltmiras**

***** Poster #2127, SM: 3755419** – Characterization of functional interactions between K⁺ flux mechanisms that drive insect neural function. **R. Chen**

Poster #2129, SM: 3745374 – Assessing human carcinogenicity risk without the rodent cancer bioassay. **A. Goetz-Bouchard**

***** Poster #2130, SM: 3742819** – Repurposing synthetic β -triketone herbicides to control hematophagous arthropods. **S. McComic**

Poster #2131, SM: 3747929 – NAM-based tiered phototoxicity testing and acute dermal exposure: A proposed human health risk assessment framework for agrochemicals. **E. Chikwana**

Poster #2132: 3743773 – To evaluate the persistence of pesticides in soil based on their biochemical availability. **P. Kaur**

Poster #2133, SM: 3747959 – Impact of drinking water assessments on conventional pesticide registrations. **E. Chikwana**

***** Poster #2134, SM: 3743988** – Characterizing the effect of Kir channel modulators on mosquito cardiac contraction and cellular antiviral immunity. **Z. Li**

Poster #2135: 3738597 – Dicamba volatility changes based on pre/post application events (Dew/Rain). **T. Lane**

***** Poster #2136, SM: 3754461** – Sugar compositions drive high attraction of vector mosquitoes. **X. Ng**

Poster #2137: 3764471 – Pesticide residues in agriculture, ecosystem and environment of cotton and vegetable growing areas and contamination of Ghaggar River. **T. Jindal**

Poster #2226: 3748260 – New SDHI chemistry does not require new cancer bioassays to evaluate human risk. **N. Ryan**

- Poster #2228, SM: 3753791** – Systems pharmacodynamic modelling of 4-hydroxyphenylpyruvate dioxygenase inhibition: Predicting tyrosinaemia. **S. Webb**
- Poster #2230: 3755610** – Predict agrochemical metabolism in early stage by *in vitro* method. **K. Yang**
- Poster #2232: 3732194** – Sampling representative test portions of encapsulated ingredients in feed: Vitamin A and D3 nutritional analysis for regulatory and safety requirements. **K. Riter**
- Poster #2234, SM: 3743265** – Analysis of endogenous and radiolabeled natural products derived from ¹⁴C-agrochemicals in plant and animal. **B. Osterman**
- Poster 3741893** – **WITHDRAWN**
- Poster: 3752364** – **WITHDRAWN**

AGRO Combined Poster Session: Virtual Session

12:00 – 2 :00 PM

Heidi Irrig, *Organizer*

****Zoom Virtual-only****

- 3716634** – Residual characteristics and processing factors of carbendazim in persimmon, *Diospyros kaki* Thunb. **J.-Y. Kim**
- 3728605** – Volatile emissions from exotic fungi vectored by *Euwallacea perbrevis* Schedl (Coleoptera: Curculionidae). **N. Tabanca**
- 3736920** – Residual characteristics of metaflumizone during ginseng cultivation and processing. **N. Eun Shik**
- 3737870** – Decade of dicamba: Water monitoring, drift complaints, and regulation in Minnesota. **K. Hall**
- 3737991** – Maize lectin can function as a defensive protein against insect and fungal pests. **P. Dowd**
- 3741955** – Establishment of multiresidue analysis of over 350 pesticides in soils using a modified QuEChERS method coupled with GC-MS/MS and LC-MS/MS. **Y.-H. Chang**
- 3742511** – Study on the vitality of functional microorganisms complex microflora and its effect. **Y. Wu**
- 3742522** – Residual characteristics of etofenprox and flubendiamide in rice, *Oryza sativa* L. **J.-Y. Kim**
- 3743051** – Impact of organosilicone spray adjuvants on pollinator health and reproduction. **D. Cox-Foster**
- 3743068, SM** – Effect of microplastics on gastropod immunity to *Parelaphostrongylus tenuis* larvae. **L. Koyanagi**
- 3743166** – Landscape modelling for non-target arthropod risk assessment of pesticides: challenges and opportunities. **P. Thorbek**
- 3747037, SM** – Dissipation and dietary risk assessment of difenoconazole in spinach, wax gourd, and summer squash under open field conditions in China. **B. Dong**
- 3754808** – Investigation of gas exchange in pest insect eggs using osmium tetroxide. **J. Powell**
- 3755615** – Total synthesis and biological evaluation of peniciculin A and analogs. **A. Demeritte**

WEDNESDAY AFTERNOON

Bioisosteric Replacement and Scaffold Hopping for Bioactive Compound Discovery

Co-sponsor: ENVR

Clemens Lambeth, Peter Maienfisch, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

2:00 PM – Introductory Remarks

2:05 PM – 3742581. Multidimensional innovations in chiral agrochemicals enabled by the "Chem-Bio" scaffold aryloxazoline. **S. Li**

2:30 PM – 3733591. Fungicidal 5-sulfonyl thiadiazoles and related derivatives. **S.-Y. Hsieh**

2:55 PM – 3735068. Discovery and development of a new class of biaryl ether herbicides. **C. Kalnmals**

3:20 PM – 3736147. Scaffold hopping strategies in the optimization of novel bicyclic herbicides. **D. Barber**

3:45 PM – Intermission

4:15 PM – 3733444. Bioisosteric tactics in the discovery of tetflupyrolimet: A new mode-of-action herbicide. **T. Selby**

4:40 PM – 3734800. Discovery of pyrimidinyl-based kinase herbicides. **P. LePlae**

5:05 PM – 3738494. Novel azolyl *N*-aryloxazolidinone herbicides for *Amaranthus* and grass control in corn and soybeans. **S. De**

5:35 pm – Concluding Remarks

Good Laboratory Practices for the Agrochemical Professional

Co-sponsor: ENVR

Kimberly Frazier, Johanna Mazlo, Barb Munch, *Organizers*
Jennifer Cypher, *Organizer, Presider*

Oral – Hybrid

McCormick Place Convention Center, S501a

2:00 PM – Introductory Remarks

2:05 PM – 3736282. Quality culture: Incorporating quality principles across your organization. **J. Cypher**

2:30 PM – 3737421. Roles and responsibilities of sponsor in a GLP study as per EPA regulations. **A. Pandya**

2:55 PM – 3734238. WITHDRAWN

3:20 PM – 3755259. SOPs: The 'dirty dozen' and how to maintain compliance. **J. Mazlo**

3:45 PM – Intermission

4:15 PM – 3729272. Auditing test facility as per EPA good laboratory practice standards: Regulatory insights. **A. Pandya**

4:40 PM – 3734243. WITHDRAWN

5:05 PM – 3758114. Insights of method validation studies for stability and homogeneity of test substance in carrier: QA perspective. **A. Pandya**

5:30 PM – Concluding Remarks

INsecticide TARgets (INSTAR) Summit

Co-sponsor: AGFD, ANYL, BIOT, ENVR
Troy Anderson, Stephen Duke, *Organizers*
Daniel Swale, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S501d

2:00 PM – Introductory Remarks

2:10 PM – 3754875. Insecticide resistance management: An introduction to past, present and future INSTAR perspectives. **T. Anderson**

2:30 PM – 3736309. Strategies to mitigate herbicide resistance: Where we have been and where we are going. **P. Tranel**

2:55 PM – 3748049. Use of next-generation sequencing technology to identify the molecular markers of insecticide resistance in mosquitoes. **E. Muturi**

3:20 PM – Intermission

3:50 PM – Panel Discussion

5:20 PM – Concluding Remarks

New Crop Yield Technology Companies Improving Sustainability

Co-sponsor: AGFD, ANYL, BIOT, ENVR
Pam Marrone, Keith Wing, *Organizers, Presiders*

****Oral – In-person only****

McCormick Place Convention Center, S502b

2:00 PM – Introductory Remarks

2:05 PM – 3736299. Peptides for crop protection: How the insecticide SPEAR® ushers in a new era, based on safer molecules and sustainable manufacturing. **B. Kennedy**

2:30 PM – 3725600. Target-based discovery of crop protection chemistries powered by DNA-Encoded libraries. **T. Meade**

2:55 PM – 3741156. WITHDRAWN

3:20 PM – 3750733. Development of a potent and sustainable microbial nematocide from a novel *Burkholderia rinojensis* species. **A. Vasavada**

3:45 PM – Intermission

4:15 PM – 3751638. Nematode pheromone extracts act as boosters for entomopathogenic nematodes' efficacy to control agricultural pests in the soil. **F. Kaplan**

4:40 PM – 3740127. Rapid identification of novel insecticidal actives and MOAs utilizing Micromining™. **A. Guggisberg**

5:05 PM – Panel Discussion

5:50 PM – Concluding Remarks

THURSDAY MORNING

Bioisosteric Replacement and Scaffold Hopping for Bioactive Compound Discovery

Co-sponsor: ENVR
Clemens Lambeth, Peter Maienfisch, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501bc

8:00 – Introductory Remarks

8:05 AM – 3739295. Discovery of succinate dehydrogenase fungicide via receptor-based scaffold-hopping. **G.-F. Yang**

8:30 AM – 3737198. Discovery of novel 1,3,4-trisubstituted pyrazoles and their use as insecticides. **T. Pahutski**

8:55 AM – 3742450. Design, synthesis, and properties of silicon-containing 1,3-diamide insecticides. **X. Quan**

9:20 AM – 3742666. Exploration of fCo TRPV channel modulators for sucking pest control: Postulation of a comprehensive toxophore model. **S. Rendler**

9:45 – Intermission

10:15 AM – 3741282. Structural exploration of novel pyrethroid esters for repellent and insecticidal activity. **J. Bloomquist**

10:40 AM – 3729860. Design, synthesis, and insecticidal activities of Chlorantraniliprole analogues containing α -substituted alcohol and its derivatives. **G. Yang**

11:05 AM – 3757434. Insecticidal isoxazoline bioisosters. **K. Koerber**

11:30 AM – 3742186. 3-Aryl-2-hydroxy-3-(trifluoromethyl)pyrrolidine Core: A new structural feature for insecticides. **P. Jeschke**

11:55 AM – Concluding Remarks

Nontarget Arthropod Risk Assessment: Scientific Developments, Challenges and Research Needs

Co-sponsor: AGFD, ANYL, BIOL, ENVR
Domenica Auteri, Keith Sappington, Tom Steeger, *Organizers*
Alessio Ippolito, Katrina White, *Organizers, Presiders*

Oral – Hybrid

McCormick Place Convention Center, S501a

8:00 – Introductory Remarks

8:05 AM – 3739599. Advancing the environmental risk assessment of non-target arthropods for plant protection products: Ecosystem services and function. **L. Maltby**

8:30 AM – 3738242. Ecological traits and pesticide risk assessment: Vulnerability of bee species to pesticide exposures. **A. Schmolke**

8:55 AM – 3742299. Use of ecological models to assess the effects of a plant protection product on ecosystem services provided by an orchard. **P. Van den Brink**

9:20 AM – 3739477. Exposure assessment goals to define exposure to pesticides in the field and improve the linking to effects observed in ecotoxicological experiments. **P. Adriaanse**

9:45 – Intermission

10:15 AM – 3744329. LD₅₀ at 95: Time for 100-year upgrade for pollinator risk assessment. **M. Berenbaum**

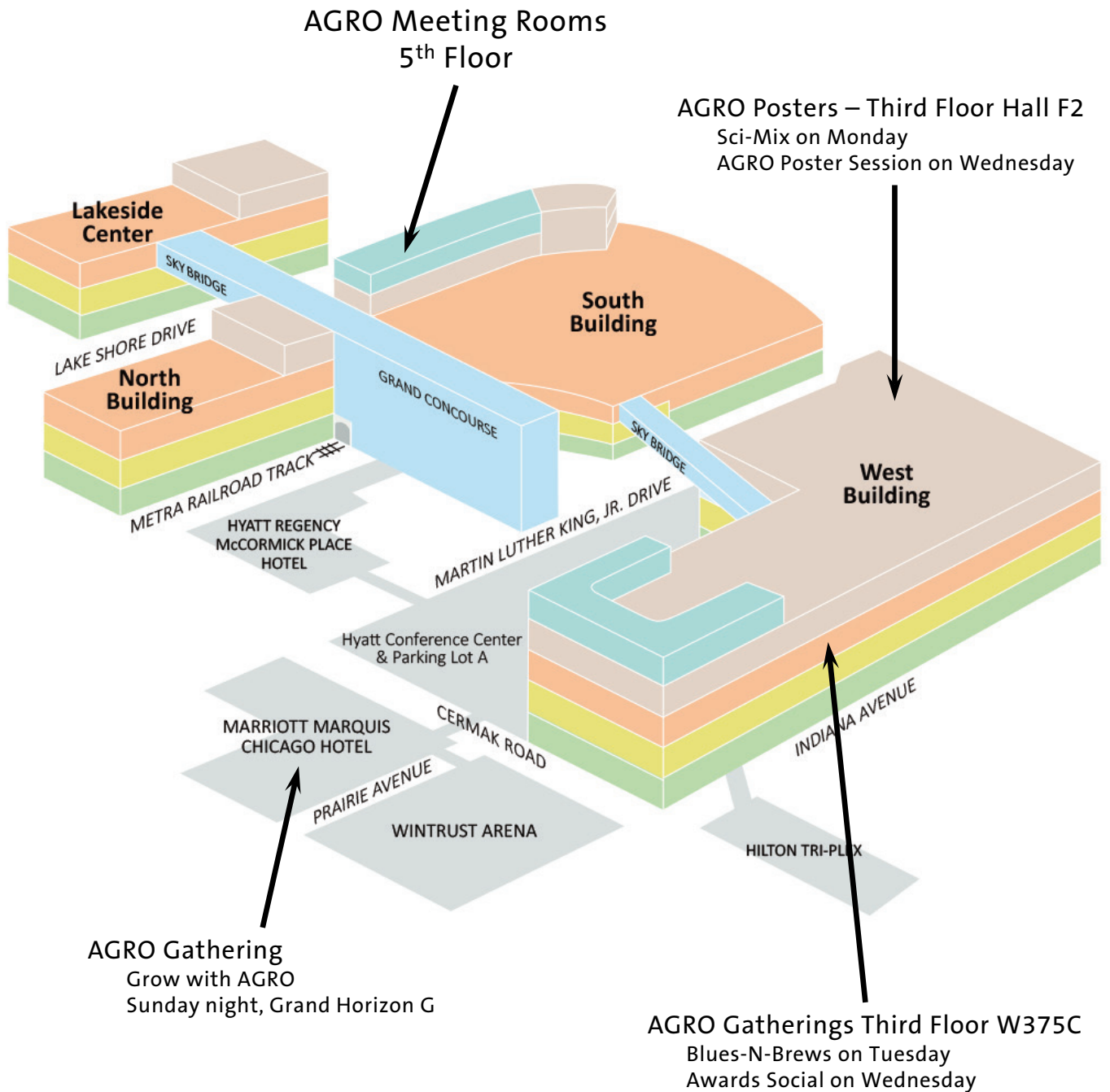
10:40 AM – 3731323. Pesticide risk to managed bees during blueberry pollination is primarily driven by off-farm exposures. **K. Graham**

11:05 AM – 3739634. Calibration of laboratory derived indices for non-target arthropod risk assessment with field data for plant protection products. **E. Pilling**

11:30 AM – 3743636. Assessing risk of insecticide exposures to Lepidoptera: Molecular to population-level effects. **N. Krishnan**

11:55 AM – Concluding Remarks

McCormick Place Convention Center and nearby Hotels



McCormick Place Convention Center South Building 5th Floor

Please note that this is
upside down with respect to
the Convention Center map



Escalator from 4th floor
connects to other escalators
all the way to the 1st floor

AGRO Meeting Rooms

AGRO Meeting Room
Grad Student/Post-doc Luncheon
Sterling Hendricks Reception

AGRO Meeting Room
International Award

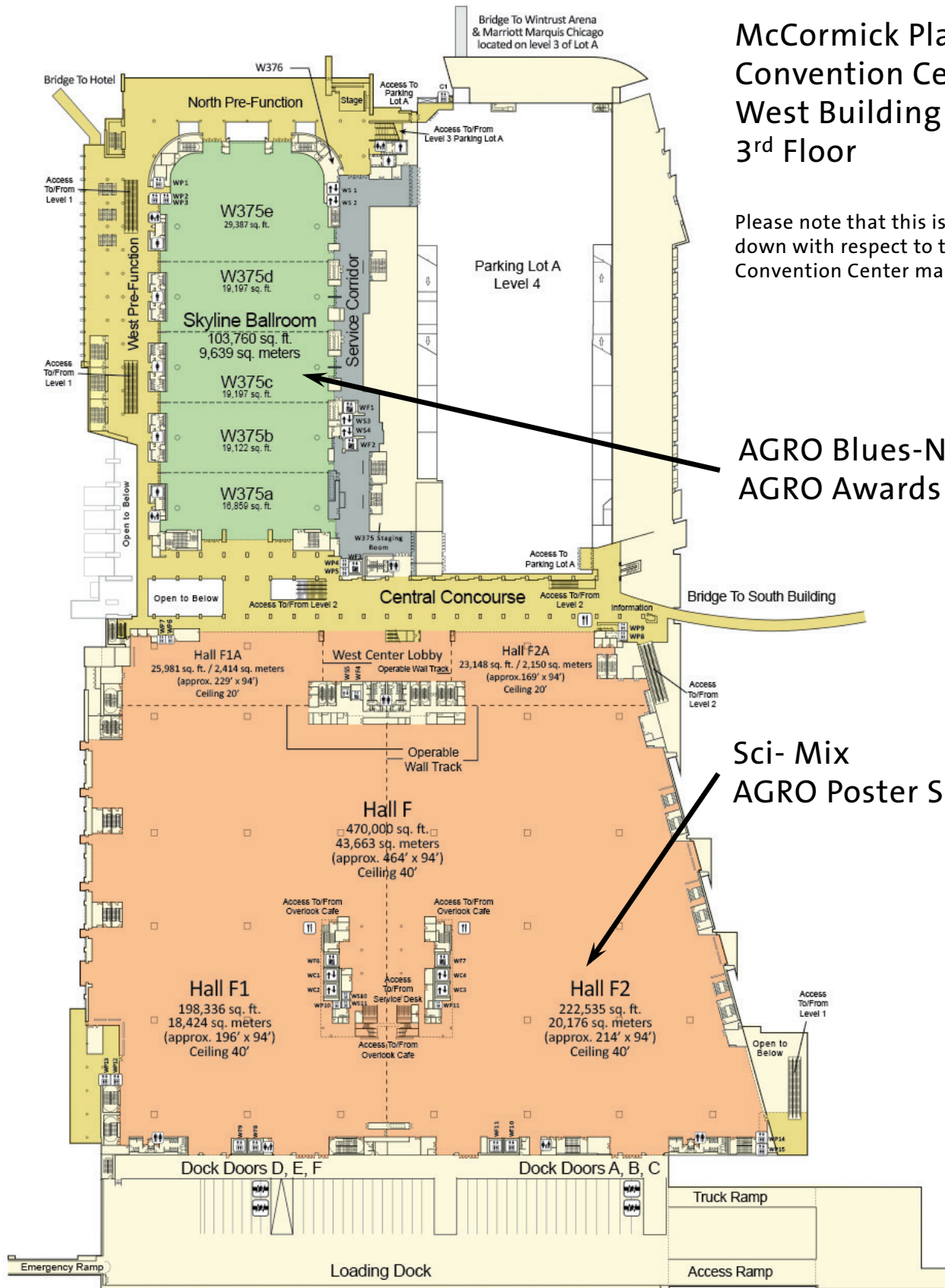
Also... AGFD hosted awards
Spencer Award and JAFC Award

McCormick Place Convention Center West Building 3rd Floor

Please note that this is upside
down with respect to the
Convention Center map

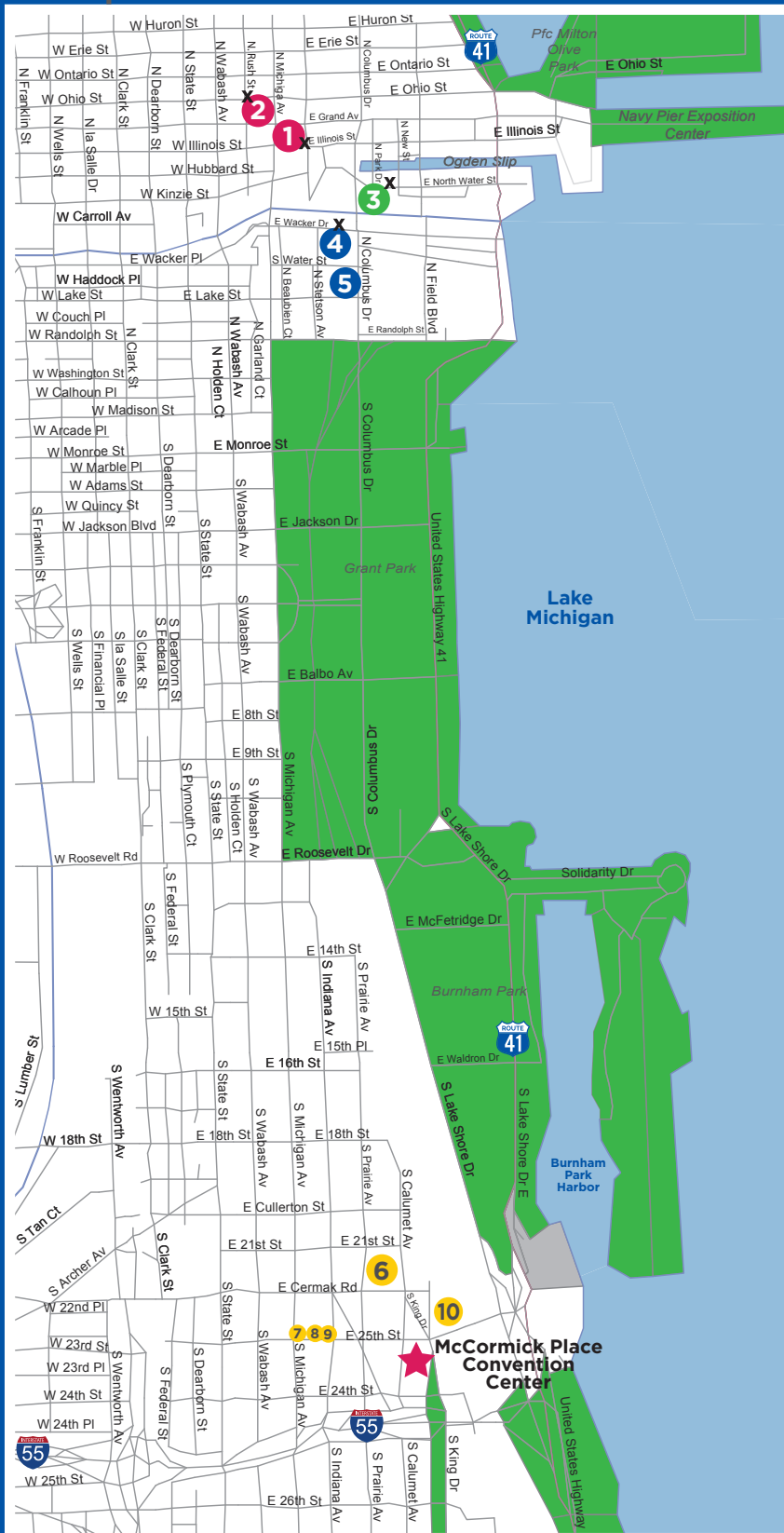
AGRO Blues-N-Brews
AGRO Awards Social

Sci- Mix
AGRO Poster Session



ACS FALL 2022

SUSTAINABILITY IN A CHANGING WORLD



MAP NUMBER	HOTEL AND SHUTTLE BOARDING LOCATION	SHUTTLE ROUTE
1	InterContinental Chicago Magnificent Mile Curbside at the Illinois St. entrance - 505 N. Michigan Ave.	A
2	Chicago Marriott Downtown Magnificent Mile Curbside on Ohio St. at Rush St. - 540 N. Michigan Ave.	A
3	Sheraton Grand Chicago Riverwalk Curbside on North Water St. across street from hotel - 301 E. North Water St.	B
4	Hyatt Regency Chicago Curbside on Wacker Dr. at East Tower - 151 E. Wacker Dr.	C
5	Fairmont Chicago Millennium Park Use the Hyatt Regency stop - 200 N. Columbus Dr.	C
6	Marriott Marquis Chicago McCormick Place 2121 S. Prairie Ave. • Technical Sessions - ANYL, BIOL, CARB, CELL, CINF, ENVR,	WALK
7	Hampton Inn Chicago McCormick Place 122 E. Cermak Rd.	WALK
8	Hilton Garden Inn Chicago McCormick Place 123 E. Cermak Rd.	WALK
9	Home2Suites by Hilton Chicago McCormick Place 123 E. Cermak Rd.	WALK
10	Hyatt Regency McCormick Place 2233 S. Martin Luther King Dr. • Technical Sessions - BMGT, CHAL, CHAS, GEOC, HIST, PROF, SCHB, TOXI, WCC	WALK
★	McCormick Place Convention Center, West and South Buildings • Technical Sessions - AGFD, AGRO, CATL, CHED, COLL, COMP, ENFL, I&EC, INOR, MEDI, MPPG, NUCL, ORGN, PHYS, POLY, PMSE, PRES, YCC	★

Virtual-only Programming: Technical Session - FLUO

SHUTTLE HOURS OF OPERATION

SUNDAY, AUGUST 21

6:30 AM	Morning Special Event (Zumba)
	One departure from Marriott Marquis to Sheraton Grand
7:00 AM - 10:00 AM	Every 12 minutes
10:00 AM - 4:00 PM	Every 24 minutes
4:00 PM - 8:00 PM	Every 10 minutes
8:00 PM - 10:00 PM	Every 12 minutes

MONDAY, AUGUST 22

7:00 AM - 10:00 AM	Every 10 minutes
10:00 AM - 4:00 PM	Every 24 minutes
4:00 PM - 6:00 PM	Every 12 minutes
6:00 PM - 11:00 PM	Every 10 minutes

TUESDAY, AUGUST 23

7:00 AM - 10:00 AM	Every 10 minutes
10:00 AM - 4:00 PM	Every 24 minutes
4:00 PM - 6:00 PM	Every 12 minutes
6:00 PM - 10:00 PM	Every 10 minutes
10:00 PM - 12:01 AM	Evening Special Event
	Service to/from Hyatt Regency Chicago and Rte A, Rte B, Walk Hotels

WEDNESDAY, AUGUST 24

7:00 AM - 10:00 AM	Every 12 minutes
10:00 AM - 4:00 PM	Every 24 minutes
4:00 PM - 6:00 PM	Every 12 minutes
6:00 PM - 10:00 PM	Every 15 minutes

THURSDAY, AUGUST 25

7:00 AM - 1:00 PM	Every 15 minutes
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Schedule subject to change based on traffic conditions



Wheelchair-accessible vehicle will be scheduled on standby during shuttle operating hours. For additional shuttle information, please call 619-921-0307.

CHICAGO PROGRAM



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