Conference Agenda

Information & Program

NANOVAX 2024

14-16 May 2024

nanovaccine.iastate.edu
All you need to know about this
Conference

General Information

May 14 - 16, 2024
Reiman Gardens, Ames, Iowa

This conference is centered on bringing nanoparticle-based research on the development of next-generation vaccines and therapeutics to patients within a Systems Framework. As the recent SARS-CoV-2 pandemic revealed, the health of people and global social-ecological systems are closely intertwined, and so the solutions to emergent diseases must be able to be effective within the social-ecological system in which humans and animals co-exist. The foundation of the conference is based on communication, coordination, and collaboration to advance equitable health solutions that span the continuum from basic research through formulation, testing, and manufacturing and regulatory protocols.

Thank you to our Sponsors

This event is supported by the USDA National Institute of Food and Agriculture, AFRI project 2023-12077.
Thank you to the

2024 Scientific Planning Committee

Mark A. Arnold
University of Iowa

Bailey Arruda
USDA National Animal Disease Center

Anne Bronikowski
Michigan State University

Ken Carson
Southwest Research Institute

Maneesh Jain
University of Nebraska Medical Center

Sean Kelly
Nanovaccine Institute

Kevin Legge
University of Iowa

Jodi McGill
Iowa State University

Balaji Narasimhan
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Inna Ovsyannikova
Mayo Clinic

Mike Roof
Iowa State University

Kathleen Ross
Nanovaccine Institute

Timothy Sullivan
Zeteo Biomedical LLC

Michael Wannemuehler
Nanovaccine Institute
Code of Conduct

The Nanovax conference is an annual event with a core goal to encourage a welcoming and safe environment for learning, networking, and engaging with new ideas. Regardless of race, ethnicity, status as a veteran, sexual orientation, physical appearance, gender identity, profession, religion, disability, or any other status protected by university policy or local, state, or federal law, we are committed to providing a professional working and learning environment that is fair and responsible; that supports, nurtures, and rewards educational and employment growth based on relevant factors such as ability and performance.

If you witness or are subject to any unwanted behavior, immediately report it to the Iowa State University system by submitting a confidential report of discrimination, harassment, retaliation, or interpersonal violence to the Office of Equal Opportunity at Iowa State University (https://cm.maxient.com/reporting.php?iowastateuniv). Reporting can occur via email, phone call, or in person. Reporting should not be done over social media.
Location

Facilities

**Advanced Teaching and Research Building (ATRB)**
2213 PAMMEL DR AMES, IOWA
Metered parking is available on the Iowa State University campus. Visit https://www.parking.iastate.edu/visitor for maps and information.

**Reiman Gardens**
1407 UNIVERSITY BLVD AMES, IOWA
Reiman Gardens is a 17-acre university-owned public garden located immediately south of Jack Trice Stadium on the Iowa State University campus in Ames, Iowa. Reiman Gardens is a year-round garden with events, programs, lectures, and tours that has consistently been one of the top visited attractions in Central Iowa. Parking is free.

**Alluvial Brewing Company**
3715 W 190TH STREET, AMES, IA
4.5 miles north of ATRB, this Iowa “free range” taproom invites conversation and solace nestled within a forty acre organic farm. Our May 14th opening dinner will be in the private room at the brewery. Food provided. Beverages available for purchase.

**Torrent Brewing Company**
504 BURNETT AVE, AMES, IA
Torrent Brewing Company was founded by home brewer Andy McCormick, longtime resident of Ames, Iowa. Join us at this establishment on May 15th for a social hour. Appetizers provided. Beverages available for purchase.
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<td><strong>Rational Design of Oral Drugs Targeting Mucosa Delivery with Gut Organoid Platforms</strong></td>
<td>Qun Wang (Iowa State University)</td>
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<td><strong>Single-cell Raman Metabolic Profiling: a Rapid Method for Evaluating Treatment Response in Cancer</strong></td>
<td>Gabriel Patrick Cutshaw (Iowa State University)</td>
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<td><strong>Leveraging Raman Spectroscopy Metabolic Profiling and Protein Biomarker Assays to Predict and Differentiate Treatment Response for Locally Advanced Rectal Cancer</strong></td>
<td>Gabriel Patrick Cutshaw (Iowa State University)</td>
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<td><strong>Metabolic Response to Cisplatin Treatment in Tumor Spheroids and Canine-Derived Organoids with Raman Spectroscopy</strong></td>
<td>Siddhant Kothadiya (Iowa State University)</td>
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<td><strong>The Role of Combinatorial Polyanhydride Nanoparticle Vaccination Regimens in Enhancing Immunity and Protection Against Homologous and Heterologous Influenza B Virus Infections</strong></td>
<td>Payton Kahl (University of Iowa); Christopher Lopez (University of Iowa); Kathleen Ross (Iowa State University); Balaji Narasimhan (Iowa State University); Thomas Waldschmidt (University of Iowa); Kevin L Legge (University of Iowa)</td>
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<td>Arunraj B (The University of Texas at Austin)</td>
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<td><strong>Treatment of Microbial Colitis with Inflammation Triggered Micelles</strong></td>
<td>Saman Ghazvini (Iowa State University); Michael J Wannemuehler (Iowa State University)</td>
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<td>Saman Ghazvini (Iowa State University); Saji Uthaman (Iowa State University); Lilly Synan (Iowa State University); Soumik Sarkar (Iowa State University); Donna Santillan (University of Iowa); Mark Santillan (University of Iowa); Rizia Bardhan (Iowa State University)</td>
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<td><strong>Spatially-Defined In Vitro Model of Pancreatic Tumor Microenvironment</strong></td>
<td>Soheyl Mirzababaei (Iowa State University); Lily Towery (Iowa State University); Kaitlyn Quinn (Iowa State University); Josephine Aldrich (Iowa State University); Molly Kozminsky (Iowa State University)</td>
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<td><strong>Applications of Three-Dimensional Cell Culture Platforms for Neural Stem Cell Experimentation</strong></td>
<td>Catherine Fonder (Iowa State University); Renyuan Yang (Iowa State University); Md Fazlay Rubby (Iowa State University); Subin Mao (Iowa State University); Metin Uz (Cleveland State University); Surya Mallapragada (Iowa State University); Long Que (Iowa State University); Donald Sakaguchi (Iowa State University)</td>
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<td><strong>Exploring Cellular Mechanics in Glioblastoma and the Effects of Radioimmunotherapy: An Atomic Force Microscopy Investigation Experimentation</strong></td>
<td>Nabila Masud (Iowa State University); Md Hasibul Hasan Hasib (Iowa State University); Nathan Favre (Iowa State University); Xuan Xuan Lee (Iowa State University); Andrew E. Ekpenyong (Creighton University); Anwesha Sarkar (Iowa State University)</td>
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Characterization of Biomolecule-Attached Single-Walled Carbon Nanotubes (SWCNTs) using Atomic Force Microscopy
Nabila Masud (Iowa State University); Md Hasibul Hasan Hasib (Iowa State University); Seyed Sepehr Hejazi (Iowa State University); Nigel F Reuel (Iowa State University); Anwesha Sarkar (Iowa State University)

Rational Design of Oral Drugs Targeting Mucosa Delivery with Gut Organoid Platforms
Tianjian Tong (Iowa State University)

Elastin-like Polypeptides as Carriers for Decorin LRR6: A Novel Approach for Inhibiting EGFR Signaling in Cancer Cells
Abdulhakim Tofik (Iowa State University); Yuwei Zhang (Iowa State University); Jing Wang (Iowa State University)

Metabolic Profiling of the Gut-Brain Axis in Colitis Model using Raman Spectroscopy
Vandhana Kandavelkumar (Iowa State University); Ansuja Pulickal Mathew (Iowa State University); Ronnit K Nandu (Iowa State University); Rizia Bardhan (Iowa State University); Gabriel Patrick Cutshaw (Iowa State University); Saji Uthaman (Iowa State University)

LASIP: Light-Activated STING Immunotherapeutic Patch for Combinatorial Cancer Immunotherapy
Ansuja Pulickal Mathew (Iowa State University); Saji Uthaman (Iowa State University); Luman Liu (Iowa State University); Rizia Bardhan (Iowa State University); Siddhant Kothadiya (Iowa State University); Balaji Narasimhan (Iowa State University)

Stability of a Model Protein Encapsulated in Polyanhydride Microparticles
Daniela Sanchez (Iowa State University)

Gallium-Based Nanotherapeutics: A Novel Approach to Treating Skin Disorders
Victor De Albuquerque Wanderley Sales (Iowa State University); Myla Lobo de Souza (Federal University of Pernambuco); Cicero Pola (Iowa State University); Carmen Gomes (Iowa State University); Larissa Araujo Rolim (Federal University of Vale do Sao Francisco); Pedro Jose Rolim Neto (Federal University of Pernambuco)

Flexible Biosensors for Gaseous Biomarkers Exuded from Patients with Parkinson’s Disease
McKayla Kling (Iowa State University); Levi Riesberg (Iowa State University); Nicole Hashemi (Iowa State University)

Manufacturing a Physiological Model by Simultaneously Seeding and Encapsulating Cells
Mychal Trznadel (Iowa State University); McKayla Kling (Iowa State University); Nicole Hashemi (Iowa State University)

Analysis of Mechanisms Underlying the Efficacy of Novel Neuroblastoma Therapy Regimens
Benjamin Gephart (University of Nebraska Medical Center); Joyce Solheim (University of Nebraska Medical Center)

To Determine the Pro- and Anti-inflammatory Effects of Natural and Synthetic Progesterone
Apurva Patel (University of Iowa); Aracely Miron-Ocampo (University of Iowa); Stephanie Peterson (University of Iowa); Ashutosh K Mangalam (University of Iowa)

Gut Bacteria from Multiple Sclerosis Patients Modulate Gut Microbiota to Exacerbate Disease in a Mouse Model of Multiple Sclerosis
Sudeep Ghimire (University of Iowa); Peter Lehman (University of Iowa); Leean Aguilar Meza (University of Iowa); Shailesh Shahi (University of Iowa); Ashutosh K Mangalam (University of Iowa)
Pre-Conference Workshop

11:30 AM  Workshop Registration Desk Opens
12:00 PM  Opening Remarks
Balaji Narasimhan (Nanovaccine Institute, Iowa State University)

12:15 PM  Considerations in Scale-up and Commercialization of Spray Drying Processes
Ken Carson (Southwest Research Institute)

1:15 PM  Scalable Synthesis of Polyanhydride Particle-Based Vaccines
Sean Kelly (Nanovaccine Institute), Kathleen Ross (Nanovaccine Institute)

2:15 PM  Break

2:30 PM  Nanovaccine Institute Laboratory Tours and Demonstrations
Nanovaccine Institute Staff

- Required: Closed-toed shoes, full coverage clothing (pants, stockings, or leggings)
- Provided: Safety glasses and lab coats
- Photography prohibited

3:30 PM  Roundtable: Starting a Career in Industry After Graduation
Joseph Bazzill (Nanovaccine Institute), Ken Carson (Southwest Research Institute, Paola Boggiatto (USDA National Animal Disease Center), Lance Daharsh (Genvax Technologies)

Nanovax 2024 Opening Keynote and Reception

4:15 PM  Full Conference Registration Opens

5:00 PM  Opening Keynote: Commercializing a Novel Antigen and Novel Adjuvant (TLR 7/8 Agonist) During a Pandemic
Raches Ella (Bharat Biotech)

6:30 PM  Reception & Dinner
Alluvial Brewing Company
See Page 5 for location and parking
8:30 - 9:30 AM  Registration/Continental Breakfast/Poster Set-up

9:30 - 10:00 AM  Opening Remarks
Iowa Medical Director Robert Kruse
(Iowa Department of Health and Human Services)

10:00 - 11:00 AM  State of the Nanovaccine Institute and Outlook on Next-Generation Vaccines
Balaji Narasimhan (Nanovaccine Institute, Iowa State University)

11:00 - 12:00 PM  Keynote Address: Regulatory Issues to Consider Early in the Development of New Veterinary Biologics
Paul Hauer (EDGE Veterinary Vaccines Consulting Group)

12:00 - 1:00 PM  Lunch/Poster Session

1:00 - 2:50 PM  Thematic Session 1: Human Health

1:00 - 1:30 PM  Pancreatic Cancer Immunotherapy: Progress, Challenges and Opportunities
Maneesh Jain (University of Nebraska Medical Center)

1:35 - 1:50 PM  Nanovaccine-Mediated Immune Protection Against Influenza Virus
Kevin Legge (University of Iowa)

1:55 - 2:10 PM  An Influenza Nanovaccine Effectively Protects Pregnant Dams and Neonates against Severe Influenza Infection
Jennifer Bermick (University of Iowa)

2:15 - 2:30 PM  T Cell Transcriptional Signatures of Influenza A/H3N2 Antibody Response to High Dose Influenza and Adjuvanted Influenza Vaccine in Older Adults
Inna Ovsyannikova (Mayo Clinic)

2:35 - 2:50 PM  Early Detection of Gestational Diabetes Using Raman Spectroscopy in First-Trimester Sera
Ansuja Pulickal Mathew (Iowa State University); Gabriel Patrick Cutshaw (Iowa State University); Olivia Appel (Barnard College); Lilly Synan (Iowa State University); Joshua R Waite (Iowa State University); Xiaona Wen (Iowa State University); Saman Ghazvini (Iowa State University); Souvik Sarkar (Iowa State University); Donna Santillan (University of Iowa Hospitals & Clinics); Rizia Bardhan (Iowa State University)
2:50 - 3:30 PM  
**Poster Session and Break**

3:30 - 5:20 PM  
**Thematic Session 2: Animal Health**

3:30 - 4:00 PM  
**Development of Veterinary Injections and Implants**
Izabela Galeska (Merck)

4:05 - 4:20 PM  
**Sustained Antigen Release Polyanhydride-Based Vaccination Platform for Immunization against Bovine Brucellosis**
Paola Boggiatto (USDA/ARS)

4:25 - 4:40 PM  
**Evaluation of Polyanhydride Nanoparticles as Innate Immunostimulants to Prevent Bovine Respiratory Disease in Cattle**
Fabian E Diaz (Iowa State University); Elizabeth Grego (Iowa State University); Ali Uslu (Iowa State University); Balaji Narasimhan (Nanovaccine Institute, Iowa State University); Jodi McGill (Iowa State University)

4:45 - 5:00 PM  
**Evaluation of a Vaccine Platform for Extended Antigen Release (VPEAR) in Mice**
Nicholas J Bockenstedt (Iowa State University); Paola Boggiatto (USDA/ARS); Sam Humphrey (USDA/ARS); David Verhoeven (Iowa State University); Sean Kelly (Nanovaccine Institute); Balaji Narasimhan (Iowa State University); Douglas Jones (Iowa State University)

5:05 - 5:20 PM  
**Animal Health – Overview of industry challenges and opportunities**
Mike Roof (Iowa State University)

5:45 - 7:45 PM  
**Reception at Torrent Brewing Company — appetizers provided**
See Page 5 for location and parking information
Day 3 of the Conference

Nanovax 2024

Day 3 of the Conference

16 May | 2024

Thursday

Reiman Gardens
Garden Room

7:15 - 8:00 AM
Continental Breakfast/Poster Session

8:00 - 8:30 AM
Opening Remarks
Provost Jonathan Wickert (Iowa State University)

8:30 - 9:30 AM
Keynote Address: Conjugate and mRNA Vaccine Technologies: Enabling Development and Manufacturing of Effective Vaccines
Brenda Carrillo Conde (Pfizer Inc)

9:30 - 10:10 AM
Poster Session and Break

10:10 - 12:00 PM
Thematic Session 3: Vaccine Development, Manufacturing, Regulation & Deployment

10:10 - 10:25 AM
From Academic Discovery to Product Development: An Overview of Considerations
Ken Carson (Southwest Research Institute)

10:30 - 11:00 AM
Transitioning from Basic Discovery to Product Development – A Case Study with Emphasis on Items of Regulatory and Commercial Relevance
Mike Roof (Iowa State University)

11:05 - 11:20 AM
CTRL-V: AI-driven Computational Tracking of Likely Viral Escape Variants by Iterative Integer Optimization
Ratul Chowdhury (Iowa State University)

11:25 - 11:40 AM
Political Partisanship and Vaccination Attitudes
Filip Viskupic (South Dakota State University)

11:45 - 12:00 PM
Q&A/Discussion Session
Moderated by: Ken Carson (Southwest Research Institute), Mike Roof (Iowa State University)

12:00 - 1:30 PM
Panel on the Future of Commercializing Pharmaceutical Products
Brown bag lunch provided

1:30 - 1:45 PM
Poster Competition Awards and Closing Remarks
Balaji Narasimhan (Nanovaccine Institute, Iowa State University)
Thank YOU!

CONFERENCE AGENDA

14-16 May 2024