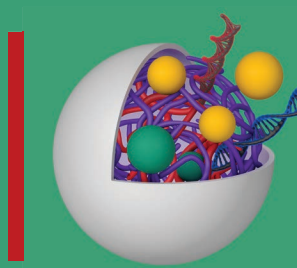


Information & Program



NANOVAX 2024

14-16 May
2024

nanovaccine.iastate.edu

CONFERENCE AGENDA

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
Nanovaccine Institute

Inna Ovsyannikova
Mayo Clinic

Mike Roof
Iowa State University

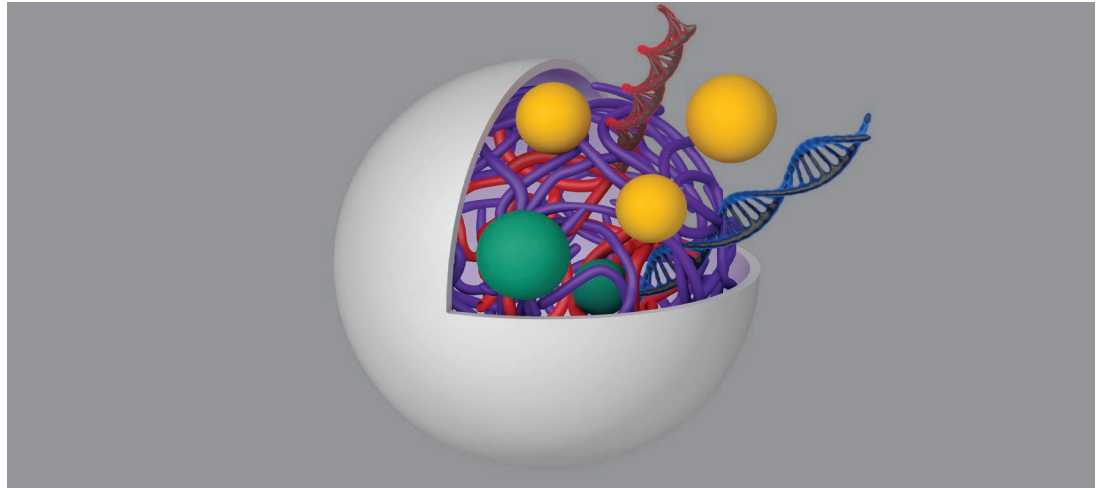
Kathleen Ross
Nanovaccine Institute

Timothy Sullivan
Zeteo Biomedical LLC

Michael Wannemuehler
Nanovaccine Institute

Conference

POLICIES



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.



- Poster # **Rational Design of Oral Drugs Targeting Mucosa Delivery with Gut Organoid Platforms**
1 Qun Wang (Iowa State University)
- Poster # **Single-cell Raman Metabolic Profiling: a Rapid Method for Evaluating Treatment Response in Cancer**
2 Gabriel Patrick Cutshaw (Iowa State University)
- Poster # **Leveraging Raman Spectroscopy Metabolic Profiling and Protein Biomarker Assays to Predict and Differentiate Treatment Response for Locally Advanced Rectal Cancer**
3 Gabriel Patrick Cutshaw (Iowa State University)
- Poster # **Raman Spectroscopy Probes Immunometabolic Response to COVID Vaccine in Patient Sera as a Function of Age, BMI, Exercise, and Stress Factors**
4 Siddhant Kothadiya (Iowa State University)
- Poster # **Metabolic Response to Cisplatin Treatment in Tumor Spheroids and Canine-Derived Organoids with Raman Spectroscopy**
5 Siddhant Kothadiya (Iowa State University)
- Poster # **The Role of Combinatorial Polyanhydride Nanoparticle Vaccination Regimens in Enhancing Immunity and Protection Against Homologous and Heterologous Influenza B Virus Infections**
6 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)
- Poster # **Studying the Structural Transformation in Twilight Protein Pairs for Biomedical Applications**
7 Arunraj B (The University of Texas at Austin)
- Poster # **Treatment of Microbial Colitis with Inflammation Triggered Micelles**
8 Saman Ghazvini (Iowa State University); Michael J Wannemuehler (Iowa State University)
- Poster # **Prediction of Preeclampsia in 1st Trimester With Raman Spectroscopy**
9 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)
- Poster # **Spatially-Defined In Vitro Model of Pancreatic Tumor Microenvironment**
10 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)
- Poster # **Applications of Three-Dimensional Cell Culture Platforms for Neural Stem Cell Experimentation**
11 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)
- Poster # **Exploring Cellular Mechanics in Glioblastoma and the Effects of Radioimmunotherapy: An Atomic Force Microscopy Investigation Experimentation**
12 Nabila Masud (Iowa State University); Md Hasibul Hasan Hasib (Iowa State University); Nathan Faivre (Iowa State University); Xuan Xuan Lee (Iowa State University); Andrew E. Ekpenyong (Creighton University); Anwesha Sarkar (Iowa State University)

- Poster # **Characterization of Biomolecule-Attached Single-Walled Carbon Nanotubes (SWCNTs) using Atomic Force Microscopy**
13
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)
- Poster # **Rational Design of Oral Drugs Targeting Mucosa Delivery with Gut Organoid Platforms**
14
Tianjian Tong (Iowa State University)
- Poster # **Elastin-like Polypeptides as Carriers for Decorin LRR6: A Novel Approach for Inhibiting EGFR Signaling in Cancer Cells**
15
Abdulahkim Tofik (Iowa State University); Yuwei Zhang (Iowa State University); Jing Wang (Iowa State University)
- Poster # **Metabolic Profiling of the Gut-Brain Axis in Colitis Model using Raman Spectroscopy**
16
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)
- Poster # **LASIP: Light-Activated STING Immunotherapeutic Patch for Combinatorial Cancer Immunotherapy**
17
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)
- Poster # **Stability of a Model Protein Encapsulated in Polyanhydride Microparticles**
18
Daniela Sanchez (Iowa State University)
- Poster # **Gallium-Based Nanotherapeutics: A Novel Approach to Treating Skin Disorders**
19
Victor De Albuquerque Wanderley Sales (Iowa State University); Myla Lôbo de Souza (Federal University of Pernambuco); Cicero Pola (Iowa State University); Carmen Gomes (Iowa State University); Larissa Araújo Rolim (Federal University of Vale do São Francisco); Pedro José Rolim Neto (Federal University of Pernambuco)
- Poster # **Flexible Biosensors for Gaseous Biomarkers Exuded from Patients with Parkinson's Disease**
20
McKayla Kling (Iowa State University); Levi Riesberg (Iowa State University); Nicole Hashemi (Iowa State University)
- Poster # **Manufacturing a Physiological Model by Simultaneously Seeding and Encapsulating Cells**
21
Mychal Trznadel (Iowa State University); McKayla Kling (Iowa State University); Nicole Hashemi (Iowa State University)
- Poster # **Analysis of Mechanisms Underlying the Efficacy of Novel Neuroblastoma Therapy Regimens**
22
Benjamin Gephart (University of Nebraska Medical Center); Joyce Solheim (University of Nebraska Medical Center)
- Poster # **To Determine the Pro- and Anti-inflammatory Effects of Natural and Synthetic Progesterone**
23
Apurva Patel (University of Iowa); Aracely Miron-Ocampo (University of Iowa); Stephanie Peterson (University of Iowa); Ashutosh K Mangalam (University of Iowa)
- Poster # **Gut Bacteria from Multiple Sclerosis Patients Modulate Gut Microbiota to Exacerbate Disease in a Mouse Model of Multiple Sclerosis**
24
Sudeep Ghimire (University of Iowa); Peter Lehman (University of Iowa); Leeann Aguilar Meza (University of Iowa); Shailesh Shahi (University of Iowa); Ashutosh K Mangalam (University of Iowa)

Day 1

of the Conference

14 | May | 2024
Tuesday

Room 1302, Advanced Teaching
and Research Building

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

Day 2

of the Conference

15 | May | 2024
Wednesday

Reiman Gardens
Garden Room

- 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); Soumik 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 Poly(hydroxybutyrate)-Based Vaccination Platform for Immunization against Bovine Brucellosis**
Paola Boggiatto (USDA/ARS)
- 4:25 - 4:40 PM **Evaluation of Poly(hydroxybutyrate) 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



Season 1 premieres August 2024

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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)

CONFERENCE AGENDA

Thank
YOU!

14-16 May
2024