

Summer School on Innovative Approaches in Science

Johns Hopkins University School of Public Health

Baltimore, MD, USA

June 22-25, 2020

In response to a growing need to be conversant in innovative approaches in toxicology and biomedical sciences, this Summer School will share knowledge and experience with a new generation of scientists on research and testing methods. The program will highlight modern alternatives to the use of animals—including in vitro and computational modeling—in toxicology and biomedical sciences. The state of scientific research will be explored through lectures and discussion.

Draft Program Outline

Monday, June 22, 2020

Add-on Training (separate registration will be required, more details coming soon)

9:00 am **The Mechanics of Expert Literature Searching (3 hours)**
Rob Wright, MLS
Johns Hopkins University, Welch Medical Library

An expert literature search, which strives for comprehensiveness, requires a set of logically combined concepts and a thorough understanding of the controlled vocabulary, field searching, search operators, and other advanced searching capabilities of individual databases. This hands-on session will introduce a search-building workflow for PubMed within an animal replacement context. Participants will practice the following skills: using the MeSH Database to find preferred search terms, using field tags to format keywords, combining concepts and terms with Boolean operators, building searches using the PubMed advanced search feature, and using strategies to assess search quality.

9:00 am **Safety Assessment without Animals: A Real-World Case Example (3 hours)**
NexGen Risk Assessment of Coumarin in face cream: Systemic Toxicity

Monday, June 22, 2020

1:00 pm Registration
2:00 pm Welcome and opening statements
Thomas Hartung, PhD, CAAT, Johns Hopkins University
2:15 pm Keynote address
Warren Casey, Ph.D., NICEATM, National Institutes of Health

Session on Critical Thinking for Using Innovative/New Approach Methodologies

2:45 pm	Science in the 21st century: Is there still a place for animal experimentation? Francesca Pistollato, JRC and Kathrin Herrmann, JHU
3:30 pm	Living the “Ph” in PhD: A focus on science ethics education across the disciplines Gundula Bosch, JHU
4:00 pm	Break
4:15 pm	Panel and group discussion
5:30 pm	<i>Conclude program and leave for Welcome Reception</i>
6:00 pm	Welcome Reception

Tuesday, June 23, 2020

8:30 am Registration

In vitro and In Silico Approaches

Track options

Toxicology Track Options: In Vitro and In Silico Approaches	
Chair: Luciene Balottin, InMetro	
9:00 am	Science Implementation: The regulatory context for New Approach Methodologies (NAMs) in Toxicology Kristie Sullivan, MPH Physicians Committee for Responsible Medicine
9:25 am	Non-animal Testing Methods for Acute Exposures to Ocular, Dermal, Mucosal and Respiratory Epithelia Hans Raabe, IIVS
9:55 am	in silico approaches and cheminformatics Tom Leuchtefeld, Insilica
10:25 am	Break
10:40am	RENAMA: Efforts to implement in vitro and in silico methods in Brazil Talita Marin, LNBio/CNPEM
11:10 am	Lab Tour, Developmental neurotox and 3D human cell model Helena Hogberg, Johns Hopkins University
12:30 pm	Break for Lunch

Biomedical Track Options: In Vitro and In Silico Approaches	
Chair: Charu Chandrasekera, Canadian Centre for Alternatives to Animal Methods	
9:00 am	Computational Modeling to Support Innovative Biomedical Research
9:25 am	Xenofree Stem Cell Cultures to Study Diversity Factors of Disease Ann Lam, PhD Physicians Committee for Responsible Medicine
9:55 am	Modeling Human Lung Diseases in Three Dimension: Introducing Small Airway-on-a-Chip and Breathing-Smoking Lung-on-a-Chip Microfluidic Technologies Kambe Benam, D Phil

	University of Colorado, Anschutz Medical Campus
10:25 am	Break
10:45am	Biomaterial & 3D Printing Approaches for Engineering Tissue
11:10 am	Interactive Session: The Foundations of Expert Literature Searching Rob Wright, MLS Johns Hopkins University, Welch Medical Library
12:30 pm	Break for Lunch

Afternoon Sessions

1:30 pm	Good In vitro Method Practices
2:00 pm	Flash Presentations
2:30 pm	Poster Session

Development and Implementation of Innovative Methods

Track options

Toxicology Track Options: Development and Implementation of Innovative Methods
Chair: Francesca Pistollato, European Commission Joint Research Centre

4:00 pm	Inhalation risk assessment using CFD and 3D respiratory tissue Doug Wolf, Syngenta
4:30 pm	Collaborative approaches to implementing innovative methods internationally Michelle Embry, Health and Environmental Sciences Institute
5:00 pm	Q&A, group discussion
5:30 pm	End

Biomedical Track Options: Development and Implementation of Innovative Methods
Chair: Kathrin Herrmann, Johns Hopkins University

4:00 pm	Public/Private Development Model for Mini-Brain Technology Lowry Curley, PhD and Helena Hogberg, PhD Axosim and Johns Hopkins University, Center for Alternatives to Animal Testing
4:30 pm	Challenges in the Tissue Chip Field Šeila Selimović, PhD U.S. Department of Health and Human Services
5:00 pm	Q&A, group discussion
5:30 pm	End

6:00 pm Networking and Career Reception

Wednesday, June 24, 2020

Integrated approaches

Track options

Toxicology Track Options: Integrated Approaches

Chair: Esther Haugabrooks, Physicians Committee for Responsible Medicine

9:00 am	Overview of Evidence Integration in Toxicology Daniel Krewski, UOttawa
9:25 am	International Collaboration and Fundamentals of IATAs Maureen Gwinn, Environmental Protection Agency
9:55 am	Understanding IVIVE Andy Nong, Health Canada
10:30 am	Break
10:45am	Introduction to AOPs
11:00 am	The AOP game
12:30 pm	Break for Lunch

Biomedical Track Options: Integrated Approaches

Chair: Kambez Benam, University of Colorado, Anschutz Medical Campus

9:00 am	Diabetes Charu Chandrasekera, PhD Canadian Centre for Alternatives to Animal Methods
9:25 am	The Need to Prioritize 'Replacement' in Alzheimer's Disease Research Francesca Pistollato, PhD European Commission Joint Research Centre
9:55 am	Human Microbiome Chirag Patel, PhD Harvard Medical School
10:25 am	Break
10:45 am	3D Organotypic Tissue Cultures as Predictive Human Disease Models Helena Hogberg, PhD Johns Hopkins University, Center for Alternatives to Animal Testing
11:10 am	Helpathon for Innovative Research
12:30 pm	Break for Lunch

Flash Presentations & Poster Session

- 1:30 pm Flash Presentations
- 2:00 pm Poster Session
- 3:30 pm Laboratory Visits
- 5:30 pm Adjourn

Optional Recreational Activity

Thursday, June 25, 2020

Regulatory Application

Track options

Toxicology Track Options: Regulatory Application and Risk Assessment

Chair: Maureen Gwinn, Environmental Protection Agency

9:00 am	Introduction Maureen Gwinn, Environmental Protection Agency
9:05 am	Regulatory Perspectives on nonanimal approaches for chemical assessment in Health Canada Health Canada
9:30 am	Quantitative Uncertainty and Variability in Risk Assessment
10:00 am	Latin American perspective of Risk Assessment
10:30 am	Break
10:45am	NexGen Risk Assessment of Coumarin in face cream: Skin Sensitisation Maria Baltazar and Gavin Maxwell, Unilever
12:30 pm	Break for Lunch

Biomedical Track Options: Clinical Relevance

Chair: Martin Stephens, Johns Hopkins University

9:00 am	Solving the Human Translation Problem for Cardiac Risk Assessment Misti Ushio, PhD, TARA Biosystems
9:30 am	Phase-0 Including Microdosing Approaches Using In-Vivo Human Data in the Preclinical Selection Process Tal Burt, MD, Phase-0/Microdosing Network
10:00 am	Human Tissue in Biomedical Research
10:30 am	Break
10:45 am	Animal Free Antibodies Rebecca Clewell, PhD, 21st Century Tox Consulting
11:15 am	Relevance of Animals to Human Health and Disease Jarrod Bailey, PhD, Cruelty Free International
12:00 pm	Q&A and Group Discussion
12:30 pm	Break for Lunch

Communication in Science

1:30 pm	Opening lecture
1:45 pm	Communicating Science to Journalists Denise-Marie Ordway, Harvard Kennedy School Shorenstein Center on Media, Politics and Public Policy
2:30 pm	Break

Research Funding for Human Relevant Methods

2:45 pm	Panel Discussion <ul style="list-style-type: none">▪ Seila Selimovic, PhD, U.S. Department of Health and Human Services▪ Daniel Shaughnessy, PhD, NIEHS, National Institutes of Health▪ Additional panel members TBC
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4:00 pm Awards and Recognition Ceremony

5: 00 pm Closing

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