SOT FDA Colloquium
Route-to-Route Extrapolation in the 21st Century

Harvey Clewell, III, PhD, DABT, ATS, Colloquium Chair

Harvey Clewell is currently a Principal Consultant with Ramboll US Health and Environmental Consulting. Previously he was Director of the Center for Human Health Assessment at the Hamner Institutes for Health Sciences. He has more than forty-five years of research experience in environmental transport, toxicology and chemical risk assessment, and has authored more than 200 peer-reviewed scientific publications and book chapters. He has played a seminal role in the incorporation of pharmacokinetic and mode-of-action information in chemical risk assessments, having played a key role in the first uses of physiologically based pharmacokinetic (PBPK) modeling by the EPA, FDA, ATSDR, OSHA and Health Canada. Dr. Clewell has served on many external peer review panels for the EPA and is currently a member of the Chemical Assessment Advisory Committee of the EPA Scientific Advisory Board. He also served as a member of the ECVAM Scientific Advisory Committee from 2012 to 2016.

Clewell received a Master's in Chemistry from Washington University, St. Louis, and a PhD in toxicology from the Utrecht University in the Netherlands. He is a Diplomate of the American Board of Toxicology and a Fellow of the Academy of Toxicological Sciences. In 2007 the Society of Toxicology recognized Clewell with the Arnold J. Lehman Award for his major contributions to chemical safety and risk assessment.

Jeffrey Fisher, PhD, ATS, Colloquium Chair, Roundtable Discussant

Dr. Jeffrey Fisher is a research toxicologist with the US Food and Drug Administration, National Center for Toxicological Research. He was formerly a Professor in the Department of Environmental Health Science, College of Public Health at the University of Georgia (UGA). He joined the University of Georgia in 2000 and served as Department Head of the Department of Environmental Health Sciences from 2000 to 2006 and Director of the Interdisciplinary Toxicology Program at UGA from 2006-2010.

He spent most of his career at the Toxicology Laboratory, Wright Patterson AFB, where he was Principal Investigator and Senior Scientist in the Toxics Hazards Division and Technical Advisor for the Operational Toxicology Branch.

Dr. Fisher's research interests are in the development and application of biologically based mathematical models to ascertain health risks from environmental, food-borne and occupational chemical exposures and the development pediatric PBPK models for drugs. Dr. Fisher's modeling experience includes working with chlorinated and non-chlorinated solvents, fuels, pesticides, perchlorate and bisphenol A, and the construction of biologically motivated models for the hypothalamic-pituitary-thyroid axis in rodents and humans. He is Past President of the Biological Modeling Specialty Section of the Society of Toxicology, reviewer for several toxicology journals, and was Co-Principal Investigator on a National Institutes of Health (NIH)-supported workshop on Mathematical Modeling at the University of Georgia in the fall of 2003. He served as a member of the National Academy of Sciences subcommittee on Acute Exposure Guideline Levels (AEGLs) from 2004-2010 and Science Advisory Board (SAB) for the US EPA (2007-2010). He is an ad hoc member of the SAB for dioxin. He is a fellow of the Academy of Toxicological Sciences and former associate editor for Toxicological Sciences. Dr. Fisher has a BS degree in biology from the University of Nebraska at Kearney, a MS degree in biology from Wright State University, and a PhD in zoology/toxicology from Miami University.

John C. Lipscomb, PhD, DABT, FATS

Dr Lipscomb began his career as a biologist at the National Center for Toxicological Research in Jefferson, Arkansas. He later served as a Captain (research toxicologist) in the US Air Force, where he earned the Air Force Achievement Medal for his pioneering work on the military's first large-scale investigation of human metabolic variability. He completed his federal career as a toxicologist and risk assessor in EPA's National Center for Environmental Assessment and National Homeland Security Research Center in Ohio, where he was a chemical manager for three different risk assessment programs and led the development of EPA guidance for quantitative risk assessment

and emergency exposure guidance values. He currently is employed by CTEH in North Little Rock, AR. He has nearly 90 peer-reviewed publication credits. His interests include quantitative risk assessments of single chemicals and chemical mixtures, toxicokinetics, and non-default extrapolations of dosimetry among and between species. Dr. Lipscomb is a Diplomate of the American Board of Toxicology and Fellow of the Academy of Toxicological Sciences. He serves on the Health Advisory Board for NSF International and American Industrial Hygiene Association's Emergency Response Planning Committee. He is past president of the Society for Risk Analysis's Ohio chapter, the Society of Toxicology's Risk Assessment Specialty Section and Ohio Valley Regional Chapter, as well as the American Board of Toxicology. He holds bachelor's and master's degrees in biology from the University of Central Arkansas and a PhD in interdisciplinary toxicology from the University of Arkansas for Medical Sciences and is an adjunct professor of toxicology in the Department of Pharmacology and Toxicology at the University of Louisville.

Alicia Paini, PhD

Alicia Paini holds a degree in Food Science and Technology from the University of Parma (Italy) and a MSc in Food Safety from Wageningen University (The Netherlands). She performed her PhD in toxicology at the Nestlé Research Centre (Switzerland). During her PhD period she gained know-how in generation of data to develop physiologically based kinetic (PBK) models for genotoxic chemicals. In 2012 she was awarded the doctoral degree from Wageningen University. Since April of the same year she has been working on implementing and promoting *in silico* tools (biokinetic and dynamic modelling for human and environmental health, chemical risk assessment, and e-health, etc.) for policy and application in regulatory decision making at the European Commission's Joint Research Centre (JRC)-EURL ECVAM. She is currently leading efforts at the OECD to draft guidance on how to characterize, validate, and report physiologically based kinetic (PBK) models when there is a lack of *in vivo* data. She has been a European Registered Toxicologist since 2013 and a member of the Society of Toxicology since 2017.

John Troutman, MS

John Troutman received a BS and a MS in Biology from Youngstown State University. Early in his career he worked at the University of Cincinnati, College of Medicine, on the development and use of transgenic mouse models in AIDS research. In 1999, he joined Procter & Gamble Pharmaceuticals where he applied pharmacokinetics and metabolism expertise to support early discovery and late-stage drug development programs. John served as study director for *in vitro* and *in vivo* pre-clinical ADME studies and led several metabolism research projects using hepatocytes and liver subcellular fractions. During this time, he also led the development of the peroxidase peptide reactivity assay for screening the skin sensitization potential of chemicals without the use of animal testing. In 2009, he joined Procter & Gamble Company's Global Product Stewardship organization and currently serves as a Senior Scientist, specializing in the development and application of physiologically based pharmacokinetic (PBPK) models to support the risk assessment of cosmetics and consumer products. His research focus is on the development of dermal pharmacokinetic models, the application of enzyme kinetics to study xenobiotic metabolism, and the use of PBPK to improve the extrapolations between different routes of exposure and between different subpopulations.

Shruti V. Kabadi, PhD

Shruti Kabadi is a pharmacologist and toxicology reviewer in the Division of Food Contact Substances (DFCS) at the Office of Food Additive Safety (OFAS) in the Center for Food Safety and Applied Nutrition (CFSAN), US Food and Drug Administration (FDA). She has been recognized as an agency-level expert in pharmacokinetics. She received her PhD in Pharmacology from the Massachusetts College of Pharmacy and Health Sciences, Boston after which she completed her postdoctoral training at the Georgetown University Medical Center, Washington, DC, and the University of Maryland, Baltimore. Since joining the FDA in 2014, Dr. Kabadi has performed primary toxicological reviews of several food contact notifications and prenotification consultations. Dr. Kabadi has also been consulted on many post-market issues for her

specialized expertise in pharmacokinetics. She has published research articles and reviews in many peer-reviewed scientific journals, including *Toxicology and Applied Pharmacology* and *Food and Chemical Toxicology* and she has drafted book chapters on principles and applications of pharmacokinetic and physiologically based pharmacokinetic modeling. Dr. Kabadi has received awards for her work as a reviewer at FDA and has participated in and chaired sessions at international conferences on topics related to application of pharmacokinetic methods for toxicological assessments.