Speaker Biosketches

Rodolphe Barrangou, PhD

Department of Food, Bioprocessing and Nutrition Sciences,
College of Agriculture and Life Sciences, North Carolina State University

Rodolphe Barrangou is an Associate Professor in the Department of Food, Bioprocessing and Nutrition Sciences at North Carolina State University, focusing on the molecular biology of CRISPR-Cas immune systems, and their exploitation for genotyping, building immunity against exogenous elements and to edit the genomes of industrially relevant organisms. Initial work in the industry, at DuPont, focused on functional genomic analyses of bacteria involved in biomanufacturing and food fermentation processes, with emphasis on the genetic basis of dairy product fermentation using starter cultures, and on the molecular basis of health-promoting probiotic bacteria. Recent work is focused on harnessing the potential of CRISPR-Cas systems for functional genomic studies and engineering of industrial bacteria.

Maria Bondesson, PhD

Center for Nuclear Receptors and Cell Signaling,
University of Houston

Maria Bondesson is a Research Assistant Professor at the Center for Nuclear Receptors and Cell Signaling at the University of Houston, Houston, TX. Dr. Bondesson has a PhD in virology from the Department of Cell and Molecular Biology at Karolinska Institutet, Stockholm, Sweden. After the completion of her thesis, she did a first postdoc on mapping of genetic alterations in brain tumors (glioblastoma) at the Ludwig Institute for Cancer Research, Stockholm, Sweden, and a second one on thyroid hormone receptors at Karolinska Institutet. In 1998 she became a research group leader at Karolinska Institutet, working on transcriptional regulation by thyroid hormone. In 2004, Dr. Bondesson was recruited to the Department of Biosciences at Karolinska Institutet to work as a Project Manager for the European Commission-funded CASCADE Network of Excellence, a research project on chemical contaminants in food. In 2009, Dr. Bondesson moved to the University of Houston and worked as a Project Manager and researcher for the EPA-funded Texas–Indiana Virtual STAR Center, focusing on developmental toxicity in zebrafish and stem cells. Dr. Bondesson's recent research activities include development of screening models based on zebrafish for endocrine disruption, vascular disruption and neurotoxicity. She has also used zebrafish to screen for obesogens and diabetogens.

Recent publications:

Shirinifard A, McCollum CW, Bondesson M, Gustafsson J-Å, Glazier JA, Clendenon SG. 3D quantitative analyses of angiogenic sprout growth dynamics. Developmental Dynamics 2013 242(5):518–26

Ducharme NA, Peterson LE, Reif D, Benfenati E, McCollum CW, Gustafsson J-Å, Bondesson M. Meta-analysis of toxicity and teratogenicity of 133 chemicals from zebrafish developmental toxicity studies. Reproductive Toxicology 2013 41:98–108

Hao R, Bondesson M, Singh AV, Riu A, McCollum CW, Knudsen TB, Gorelick DA, Gustafsson J-Å. Identification of estrogen target genes during zebrafish embryonic development through transcriptomic analysis. PLoS ONE 2013 8(11): e79020

Katchy A, Pinto C, Jonsson P, Vu T, Pandelova M, Schramm K-W, Gustafsson J-Å, Bondesson M, Williams C. Co-exposure to phytoestrogens and bisphenol A mimic estrogenic effects in a additive manner. Toxicological Sciences 2014 138(1):21-35.

Riu A, McCollum CW, Pinto C, Grimaldi M, Hillenweck A, Perdu E, Zalko D, Bernard L, Laudet V, Balaguer P, Bondesson M, Gustafsson J-Å. Halogenated Bisphenol A analogs act as obesogens in zebrafish larvae (*Danio rerio*). 2014 Toxicological Sciences 2014 Mar 3. [Epub ahead of print]

Jeff Bronstein, MD, PhD

Department of Neurology, School of Medicine, University of California–Los Angeles
Molecular Toxicology Interdisciplinary Program, University of California–Los Angeles

Jeff Bronstein is a movement disorders neurologist and a basic scientist. His research involves the development of cell and zebrafish models to study the causes of Parkinson's disease and to develop novel therapies. Dr. Bronstein earned his bachelor's degree from the University of California–Berkeley and his MD and PhD degree in neuroscience from the University of California–Los Angeles. Since 1991, he has been Director of the UCLA Movement Disorders Program. Recent publications have focused on the roles of pesticide exposure and human genetic variants in the development of Parkinson's disease.

Dr. Bronstein has served on a number of study sections for the National Institutes of Health and the National Institute of Environmental Health Sciences. His professional memberships include the American Neurological Association, Movement Disorders Society, and the American Academy of Neurology; he currently serves on the editorial board of Neurology Research International. Honors include the S. Weir Mitchell Award from the American Academy of Neurology and the UCLA Neurology Golden Hammer Teaching Award.

Shawn Burgess, PhD

Developmental Genomics Branch, National Human Genome Research Institute,
U.S. National Institutes of Health

Shawn Burgess received his PhD in Genetics from the Johns Hopkins University School of Medicine, where he studied the genetics of mitochondrial fusion and fission in yeast. He trained with Dr. Nancy Hopkins at Massachusetts Institute of Technology where he was part of a large effort to develop insertional mutagenesis in zebrafish coupled with a genetic screen to identify genes essential for early development of a vertebrate. Since 2001, Dr. Burgess has been at the National Human Genome Research Institute, where he is now a Senior Investigator running the Developmental Genomics Branch. Much of Dr. Burgess' work in the last decade has been focused on developing efficient gene knockout technologies in zebrafish coupled with efficient phenotyping of the gene disruptions.

Michael J. Carvan III, PhD

School of Freshwater Sciences, University of Wisconsin–Milwaukee

Michael Carvan is a Shaw Associate Professor at the University of Wisconsin–Milwaukee School of Freshwater Sciences, where he conducts research that is focused on gene–environment interactions and identifying genes that influence sensitivity and resistance to environmental chemicals, especially those that cause birth defects or developmental problems. Dr. Carvan received his PhD in Toxicology from The Texas A&M University, received postdoctoral training in the Center for Environmental Genetics at the University of Cincinnati Medical Center, and was on the faculty in the University of Cincinnati Medical Center Department of Environmental Health prior to moving to UW–Milwaukee. Dr. Carvan has well over 40 peer-reviewed scientific publications and serves on the editorial board for four scientific journals. He routinely reviews grant applications for the U.S. National Research Council, National Institutes of Health, and National Science Foundation, as well as similar organizations in other countries. He serves on a number of professional committees including the United States Army Medical Research Institute of Chemical Defense Steering Committee for Environmental Health Risk Assessment Methods and the Institute of Medicine Committee for Review of the Health Effects in Vietnam Veterans of Exposure to Herbicides. Current work focuses on the effects of developmental methylmercury exposure, including transgenerational phenotypes, which are likely the result of heritable DNA methylation epimutations.

Warren Casey, PhD, DABT

National Institute of Environmental Health Sciences,
U.S. National Institutes of Health

Warren Casey is Director of the U.S. National Toxicology Program's Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM) at the National Institute of Environmental Health Sciences. He received his undergraduate degree in biochemistry and his PhD in microbiology from North Carolina State University (NCSU). Dr. Casey also serves as an Adjunct Associate Professor in the Department of Microbiology at NCSU and is a Diplomate of the American Board of Toxicology.

Prior to joining NICEATM, Dr. Casey was the Manager of Pharmaceutical Microbiology at Glaxo Inc. from 1994 to 1999; Head of Biomarker Development at GlaxoWellcome, Inc., from 1999 to 2002; and a Senior Scientist in Discovery and Investigative Toxicology at GlaxoSmithKline, Inc., from 2002 to 2009.

Keith Cheng, MD, PhD

Department of Pathology, College of Medicine, Penn State University

Keith Cheng received his BA from Harvard University in biochemical sciences in 1976 and his MD from New York University in 1980. He obtained his PhD in molecular genetics at the Fred Hutchinson Cancer Research Institute and University of Washington in 1987 during his residency in anatomical pathology (begun at Brigham & Women's Hospital and completed at University of Washington Hospitals). He is boarded in anatomic pathology.

Dr. Cheng is a member of the Jake Gittlen Cancer Research Foundation, Distinguished Professor of Pathology and Director of Experimental Pathology at Penn State College of Medicine with joint appointments in the Department of Biochemistry and Molecular Biology and the Department of Pharmacology. He was founding co-director of the Penn State bioinformatics and genomics graduate program, and is director of the Penn State Zebrafish Functional Genomics Core and member of the Penn State Institute for Personalized Medicine.

Dr. Cheng was among the first to use the zebrafish to study the genetics of cancer. He led a team that discovered the key role of *SLC24A5*, the human orthologue of the zebrafish *golden* gene, in the evolution of skin color in people of European ancestry. He was awarded the 2008 Penn State Scholar Medal in the Biological Sciences for this discovery and its use to demystify race and skin color. He is now working to identify polymorphisms responsible for the lighter skin of East Asians. Dr. Cheng also created a virtual atlas of zebrafish microanatomy (zfatlas.psu.edu), and for the past 5 years has been working to create a 3D version of histology using microCT. He believes that accomplishing this goal has the potential to revolutionize our ability to put our understanding of gene function and chemical effects in the context of the whole organism.

Dr. Cheng served on the Board of Directors of WITF Harrisburg for nine years, and is a pianist passionate about classical piano solo and chamber music and the application of musical thought processes to science.

John Kenneth Colbourne, PhD

Department of Environmental Genomics, University of Birmingham

John Kenneth Colbourne joined the University of Birmingham in August 2012 and holds its inaugural Chair of Environmental Genomics. He is also an Adjunct Professor at the Mount Desert Island Biological Laboratory and a founding member of the *Daphnia* Genomics Consortium (DGC), and since summer 2014 has been Director of the Joint Centre for Environmental Omics (JCEO) in partnership with the China National GeneBank.

Dr. Colbourne obtained his PhD in evolutionary biology from the University of Guelph and was awarded a Natural Sciences and Engineering Research Council Postdoctoral Fellowship from the University of Oregon. He then moved to Indiana University, where he served from 2005 to 2012 as Genomics Director of the Centre for Genomics and Bioinformatics. During this time, his work was primarily funded by the U.S. National Science Foundation, National Institutes of Health (NIH), and Department of Energy. His work helped pioneer the application of genomics to the study of how the environment influences gene structures, interactions, and gene functions, primarily using the freshwater crustacean *Daphnia* as an evolutionary, ecological, and toxicological model system. This work, in conjunction with the global efforts of the DGC, resulted in *Daphnia's* designation as a biomedical model species by the NIH.

Dr. Colbourne's arrival in Birmingham sparks an industrial approach at obtaining comprehensive knowledge on the effects of synthetic compounds and emerging advanced materials on biology, using new genomic model species (as described in references: Colbourne et al., 2011, Science 331: 555-561; Alföldi et al., 2011, Nature 477:587-591; Werren et al., 2010, Science 327:343-348). He received the Royal Society Wolfson Research Merit Award in 2012 for this work.

Nancy Denslow, PhD

Department of Physiological Sciences and Center for Environmental and Human Toxicology, University of Florida

Nancy Denslow is a professor in the Department of Physiological Sciences and in the Center for Environmental and Human Toxicology at the University of Florida. She received her undergraduate degree in chemistry with honors from Mary Washington College, Fredericksburg, VA. She then received her MS degree in biochemistry and molecular biology from Yale University and a PhD in the same field from the University of Florida. She served as Director of the Proteomics Laboratory in the Interdisciplinary Center for Biotechnology Research at the University of Florida for 15 years before moving to the College of Veterinary Medicine at the University of Florida in 2004.

Dr. Denslow has pioneered the use of molecular technologies for environmental toxicology, especially focusing on endocrine disruption. She has developed estrogen receptor reporter assays to determine the molecular effects of environmental xenoestrogens. In addition, she has pioneered the use of microarray technology for non-model species, adapting technologies used for assessing toxicant effects on human health. She has received several research awards, including the University of Florida 2007 Pfizer Award for Research Excellence and the 2014 Zoetis Award for Veterinary Research Excellence from the College of Veterinary Medicine at the University of Florida, and was named the 2009-2011 University of Florida Research Professor. She has over 150 peer-reviewed publications and is an inventor on four patents relating to protein factors, biomarkers for endocrine disruption and proteomics methodologies.

Dr. Denslow founded two startup biotechnology companies: EcoArray, which commercialized microarrays for non-model fish species, and Banyan Biomarkers, Inc., which specializes in developing diagnostic assays for traumatic brain injury in humans. She is currently a board member of Banyan Biomarkers, Inc. Dr. Denslow's work has been funded by several U.S. federal agencies including the National Institutes of Health, the National Science Foundation, the U.S. Geological Survey, and the Environmental Protection Agency. She is a member of the Society of Toxicology and Society of Environmental Toxicology and Chemistry, among other societies.

Marc Ekker, PhD

Department of Biology, University of Ottawa

Marc Ekker is Full Professor of Biology at the University of Ottawa, Canada, and University Research Chair in Evolutionary Developmental Biology. He was the first director of the Center for Advanced Research in Environmental Genomics from 2004 to 2012.

Dr. Ekker's research on the characterization of the zebrafish genome and of gene families in this species contributed to the proposed model of an additional whole-genome duplication in teleost genome evolution. Dr. Ekker's main research interest is the study of the role played by *cis*-acting regulatory elements (CREs) in the evolution and functional specialization of genes that belong to gene families. A particular emphasis is placed on the *Dlx* homeobox genes which play important roles in the development of GABAergic interneurons in vertebrates. Functional analysis of *Dlx* CREs in the zebrafish and in the mouse by Dr. Ekker's laboratory has furthered our understanding of the function of *Dlx* paralogs during forebrain development. In recent years, the Ekker laboratory used transgenic zebrafish to specifically label populations of dopaminergic and GABAergic neurons. Ongoing work with these transgenic models is aimed at understanding mechanisms of neurogenesis during development and in adulthood as well as neuronal regeneration following neuronal death, induced chemically, physically, or genetically.

Dr. Ekker is the author of more than 100 publications. His awards include the Investigator Award from the Canadian Institutes of Health Research and the Ontario Premier's Research Excellence Award. He received his BSc from Laval University and his PhD from McGill University.

Jared Goldstone, PhD

Department of Biology, Woods Hole Oceanographic Institution

Jared Goldstone is a Research Specialist in the Biology Department of the Woods Hole Oceanographic Institution (WHOI), where he studies cytochrome P450 enzymes and their involvement in toxicology. Dr. Goldstone received a BS in chemistry from Yale University, an MS in inorganic chemistry from the Massachusetts Institute of Technology (MIT), and a PhD in chemical oceanography in the MIT–WHOI Joint Program. He changed fields and a received a National Institutes of Health Kirschstein (National Research Service Award) Postdoctoral Fellowship to examine reactive oxygen in PCB toxicology.

With John Stegeman, Mark Hahn, and others, Dr. Goldstone has been studying the integrated network of genes that allows an organism to mount an orchestrated defense against toxic chemicals, termed the "chemical defensome." His research interests include the molecular evolution of environmental stress genes, the effects of pharmaceuticals in the environment, and modeling of protein–ligand interactions. He is currently working on the evolution and nomenclature of the cytochrome P450 superfamily in animals with the Human Genome Nomenclature Committee, and on the regulation of detoxification genes in zebrafish via ligand-activated transcription factors.

Dr. Goldstone is a member of the Society of Toxicology, the American Chemical Society, and the Society for Molecular Biology and Evolution.

Mark E. Hahn, PhD

Department of Biology, Woods Hole Oceanographic Institution

Mark Hahn is a Senior Scientist and Chair of the Biology Department at the Woods Hole Oceanographic Institution (WHOI) in Woods Hole, Massachusetts. He received a BS in biological sciences from Harpur College of the State University of New York at Binghamton (1980) and his PhD in environmental toxicology from the University of Rochester School of Medicine and Dentistry in Rochester, New York (1988; advisor: Thomas Gasiewicz). He conducted postdoctoral research at WHOI (1987–1991; advisor: John Stegeman).

Dr. Hahn's research interests include receptor-mediated mechanisms of toxicity, mechanisms of adaptation and evolved resistance to chemical exposure, and the comparative biochemistry and molecular evolution of ligand-activated transcription factors involved in chemical effects, especially the aryl hydrocarbon receptor (AHR) and its repressor (AHRR), and NFE2-related factors (NRF2, NRF1). Model systems include fish, birds, whales, invertebrates, and human cell lines.

Dr. Hahn serves or has served on editorial boards of several journals: *Toxicological Sciences* (Associate Editor), *Aquatic Toxicology* (Associate Editor), *Chemico-Biological Interactions*, and *Environmental Toxicology and Chemistry*. Previously, he served as Chair of the Joint Committee on Biological Oceanography of the WHOI/Massachusetts Institute of Technology (MIT) Joint Graduate Program in Oceanography and Oceanographic Engineering. Dr. Hahn is author or co-author of ~135 papers in peer-reviewed journals and books.

Matthew Harris, PhD

Children's Hospital Boston

Matthew Harris studied marine science at Boston University at the Marine Biological Laboratories in Woods Hole. He received his doctorate in cell and molecular biology at the University of Wisconsin–Madison, working in the lab of John Fallon on the evolution and development of avian skin appendages. Further postdoctoral work was done in the Nuesslein–Volhard laboratory at the Max Planck Institute for Developmental Biology in Tuebingen, Germany. There, he initiated work looking at the genetic control of postembryonic development in the zebrafish and how changes in this developmental period influence or bias the generation of morphological diversity.

The members of Dr. Harris' laboratory study fish as models to understand the genetic regulation of postembryonic development of the skeleton and the inherent capacity for growth and repair in vertebrates. They use the power of forward genetics in fish of diverse lineages as a means to identify genetic variants that regulate development and disease and that are associated with the evolution of form.

Warren Heideman, PhD

School of Pharmacy, University of Wisconsin—Madison

Warren Heideman is a Professor and Associate Dean for Research in the School of Pharmacy at the University of Wisconsin. He received BA degrees in zoology and chemistry and a PhD degree in pharmacology from the University of Washington. He did postdoctoral work in the Department of microbiology and immunology at the University of California—Berkeley, and in the Department of Pharmacology at the University of California—San Francisco before joining the UW School of Pharmacy faculty in 1988. He holds faculty appointments in biomolecular chemistry, molecular and cellular pharmacology, and environmental toxicology. He is also a Leukemia Society Fellow.

Dr. Heideman's research interests center around signal transduction across biological membranes. Current projects include investigating how yeast regulate the cell cycle in response to external signals and the molecular mechanism by which dioxin disrupts the normal developmental programming of fish.

Jyotshna Kanungo, PhD

Division of Neurotoxicology, National Center for Toxicological Research,
U.S. Food and Drug Administration

Jyotshna Kanungo is a Senior Investigator (Research Biologist) in the Division of Neurotoxicology at the U.S. Food and Drug Administration's (FDA's) National Center for Toxicological Research (NCTR). Before joining NCTR, Dr. Kanungo worked at the National Institutes of Health in Bethesda, MD, from 2000 to 2009, first as a Senior Staff Fellow and later as a Research Scientist.

At NCTR, Dr. Kanungo leads the zebrafish research program; her research focuses on the effects of FDA-regulated drugs and chemicals on zebrafish embryos. In addition to performing image-based high-content screening assays for various chemicals, she conducts mode-of-action studies of drugs and relates the results of those studies to human risk assessment. Using zebrafish embryos and larvae as a model system, these studies seek to understand the molecular mechanism(s) of the manifestations of drug–drug interactions arising from the use of drug combinations in humans. In parallel, her laboratory pursues efficacy studies of a number of FDA-regulated products. She currently serves as a member of the Committee for the Advancement of FDA Science.

Carol Kim, PhD

Department of Molecular and Biomedical Sciences, University of Maine

Carol Kim is a Professor of Microbiology in the Department of Molecular and Biomedical Sciences and the Vice President for Research at the University of Maine. She received her BA in biological chemistry and philosophy from Wellesley College and her PhD in microbiology from Cornell University. Dr. Kim completed her postdoctoral training at Molecular Probes, Inc. (Eugene, OR), where she developed fluorescent probes for biomedical applications. She continued her postdoctoral training in the Department of Microbiology at Oregon State University, where she characterized viruses that infect rainbow trout and salmon and contributed to the development of vaccines against these viral pathogens. In 1998, she accepted a position at the University of Maine as an Assistant Professor in the Department of Molecular and Biomedical Sciences. In 1999, Dr. Kim established and currently directs the University of Maine Zebrafish Facility, a shared resource for researchers using the zebrafish as a model system for diseases of humans and aquatic organisms.

Dr. Kim pioneered the use of the zebrafish model for infectious disease research and developed widely used assays to measure the innate immune response to viral and bacterial infections, in particular those that accompany the progression cystic fibrosis. She is interested in the effects of environmental toxicants, such as arsenic, on the host's ability to resist pathogen infection. Using the zebrafish model system, she is investigating gene–environment interactions at the transcriptome level, with a focus on the effects of arsenic exposure.

Dr. Kim's work has been supported by the National Institutes of Health, National Science Foundation, United States Department of Agriculture, Maine Sea Grant, and the National Aeronautics and Space Administration.

Stephanie Padilla, PhD

Health and Environmental Effects Research Laboratory,
U.S. Environmental Protection Agency

Dr. Stephanie Padilla is a neurotoxicologist in the Integrated Systems Toxicology Division of the National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency (EPA), Research Triangle Park, North Carolina. Dr. Padilla received her PhD in biochemistry from the medical school of the University of North Carolina at Chapel Hill in Chapel Hill, North Carolina. After completing a staff fellowship with the National Institutes of Health in Bethesda, Maryland, she joined the EPA in 1981. Her research interests include developmental neurotoxicity and the use of alternative species for screening chemicals for toxicity.

Dr. Padilla has received numerous awards, including EPA's Scientific and Technological Achievement Awards, as well as Silver and Bronze Medals for Commendable Service. She is an Adjunct Professor in the Curriculum in Toxicology, University of North Carolina at Chapel Hill. Dr. Padilla has served on many professional review boards and as an officer in numerous scientific societies. Additionally, she has authored numerous book chapters and reviews and over 100 peer-reviewed journal articles.

Antonio Planchart, PhD

Department of Biology, North Carolina State University

Antonio Planchart is an Assistant Professor in the Department of Biology at North Carolina State University. Hereceived his BSc from Texas A&M University—Corpus Christi and his PhD from Vanderbilt University. He completed postdoctoral training at the Jackson Laboratory.

Research in the Planchart lab combines high throughput techniques, including next-gen sequencing, proteomics, and transcriptomics, to understand how environmental factors affect vertebrate embryonic development. The laboratory's current focus is on identifying genetic modifiers of craniofacial development that can be modulated by changes in the environment during embryogenesis. Of particular interest is discovery of regulatory genes that confer developmental plasticity, thus buffering an organism from drastic changes in its developmental program that result from changes in its environment.

Kenneth Poss, PhD

Department of Cell Biology, School of Medicine, Duke University

Kenneth Poss is a Professor in the Department of Cell Biology at Duke University School of Medicine. He received his BA in biology from Carleton College in 1992 and his PhD in biology from the Massachusetts Institute of Technology in 1998 for research under Susumu Tonegawa. Dr. Poss was a postdoctoral fellow with Mark Keating at the University of Utah and Boston Children's Hospital.

In 2003, Dr. Poss initiated a research program at Duke to investigate tissue regeneration in the zebrafish model system. He discovered heart regeneration in zebrafish, establishing an important natural model of robust cardiac repair, and his laboratory has identified key mechanisms of heart and fin regeneration over the past decade. His research goal is to elucidate the cellular and molecular mechanisms of vertebrate tissue regeneration, and to use this information to improve the poor regenerative capacity of human tissues like the heart, spinal cord, and limbs.

John Rawls, PhD

Department of Molecular Genetics and Microbiology,
Duke University School of Medicine

John Rawls is an Associate Professor in the Department of Molecular Genetics and Microbiology in the Duke University School of Medicine, with secondary appointments in the Department of Medicine and Center for Genomics of Microbial Systems.

Research in Dr. Rawls' laboratory seeks to understand the genetic and environmental factors regulating intestinal physiology and energy balance. First, his laboratory uses molecular, genetic, and *in vivo* imaging approaches to study how commensal microorganisms (microbiota) interact with vertebrate hosts to regulate innate immunity and nutrient metabolism, as well as the mechanisms underlying assembly of the intestinal microbiota. This work has pioneered the use of germ-free or gnotobiotic zebrafish in which host and microbial cells can be viewed and manipulated a transparent living vertebrate. Second, his laboratory is also utilizing the advantages of the zebrafish system to investigate mechanisms underlying the formation and function of white adipose tissues (AT). Researchers in the Rawls lab have pioneered methods for *in vivo* imaging of zebrafish AT, and are currently using these techniques to explore genetic and environmental factors regulating AT morphogenesis and energy storage.

After completing his undergraduate education at Emory University, Dr. Rawls received a PhD in developmental biology from Washington University under the mentorship of Stephen Johnson. He then trained as a postdoctoral fellow with Jeff Gordon at the Center for Genome Sciences at Washington University.

David M. Reif, PhD

Department of Biological Sciences, Bioinformatics Research Center,
North Carolina State University

David M. Reif is an Associate Professor in the North Carolina State University (NCSU) Department of Biological Sciences and resident member of the Bioinformatics Research Center. His overarching research goal is to understand the complex interactions between health and the environment through the integrated analysis of high-dimensional data from diverse sources. To accomplish this goal, he focuses on analytical/visual methods development, experimental design, and software implementation to distill useful information from epidemiological studies, genetic data, and high-throughput screening (HTS) of environmental chemicals.

Dr. Reif has received several awards for his research, leadership, and outreach efforts, including the Presidential Early Career Award for Scientists and Engineers. Prior to joining NCSU in 2013, he was a Principal Investigator (Statistician) with the U.S. Environmental Protection Agency (EPA) National Center for Computational Toxicology, where he worked on several HTS projects as part of the U.S. government's ToxCast and Tox21 HTS initiatives. He originally came to the U.S. EPA as a postdoctoral fellow under Elaine Cohen Hubal.

Dr. Reif earned his MS in applied statistics and PhD in human genetics from Vanderbilt University, under the mentorship of Jason H. Moore. He earned his BS in biology from the College of William and Mary, where he was a Monroe Scholar.

Andrew J. Rennekamp, PhD

Cardiovascular Research Center, Massachusetts General Hospital

Andrew J. Rennekamp is a postdoctoral research fellow in medicine at Massachusetts General Hospital in the laboratory of Randall T. Peterson. The laboratory is part of the Cardiovascular Research Center at Massachusetts General and has secondary affiliations with the Department of Systems Biology at Harvard Medical School and the Broad Institute. Before moving to Boston, Andrew was a predoctoral fellow at the Wistar Institute and student at the University of Pennsylvania, where he received his PhD in cell and molecular biology. His work with zebrafish began as an undergraduate in the laboratory of Michael Granato in the Department of Cell and Developmental Biology, also at the University of Pennsylvania.

In his current research, Dr. Rennekamp uses zebrafish to rapidly conduct whole-organism, high-throughput chemical screens with the goal of selecting neuroactive small molecules from large collections of compounds. To do this, he has developed novel assays capable of rapidly assessing the behaviors of juvenile fish, which are small enough to fit in 96-well plates. Once an assay is established, they can quickly characterize effects of thousands of drugs and toxins known to have biological activity in humans, as well as effects of completely uncharacterized novel compounds, on freely behaving zebrafish. The amount of data provided by these small fish assays far exceeds what is possible with rodent-based models.

Daniel Solomon, PhD

Department of Statistics, College of Sciences, North Carolina State University

Daniel L. Solomon is Professor of Statistics and Dean of the College of Sciences at North Carolina State University. He began his career in 1968 at Cornell University, moving through the ranks to Professor of Biological Statistics and heading the Biometrics Unit there from 1977–81. In 1981, he came to North Carolina State University as Head of the Department of Statistics, a position that he held until 1993 when he moved into the position of Associate Dean for Academic Affairs. He was named Dean of the College of Physical and Mathematical Sciences in 2000, and Dean of the College of Sciences in 2013.

Dr. Solomon's research focused on applications of mathematics and statistics to the biological sciences, specifically population and community ecology. In more recent years, his efforts have focused primarily on academic administration, with emphasis on the development and promotion of effective pedagogy in higher education, the expansion of research and graduate programs, and the diversification of the science and mathematics workforce. Under his leadership, the Department of Statistics added outstanding faculty, made innovations in the curriculum, and advanced the discipline both locally and nationally. Most importantly, Dr. Solomon has tirelessly supported and encouraged the faculty in their research, teaching, consulting, and personal and professional development. He was presented with the D.D. Mason Award in 1993.

Dr. Solomon is a Fellow of the American Statistical Association and has served that association in many capacities. He is also an elected member of the International Statistical Institute. He has been editor of *Biometrics*, the journal of the International Biometric Society and a member of its International Council. He has been on several panels of the National Academy of Sciences/National Research Council, including its Panel for Information Technology, the Committee on National Statistics, and the Committee on Applied and Theoretical Statistics. He currently chairs the Governing Board of the National Science Foundation-funded Statistical and Applied Mathematical Sciences Institute. He was also instrumental in the founding of the National Institute of Statistical Sciences and has served in various capacities on its Board of Trustees.

Robert Tanguay, PhD

Department of Environmental and Molecular Toxicology, Oregon State University

Robert Tanguay is a Distinguished Professor in the Department of Environmental and Molecular Toxicology and the Director of the Sinnhuber Aquatic Research Laboratory. Over the past several years he has developed automated high-throughput instrumentation to accelerate phenotype discovery in zebrafish. Phenotypic anchoring coupled with the inherent molecular and genetic advantages of zebrafish are used to define the mechanisms by which chemicals, drugs and nanoparticles interact with and adversely affect vertebrate development and function.

Dr. Tanguay received his BA in biology from California State University and his PhD in biochemistry from the University of California-Riverside. He completed postdoctoral training in developmental toxicology at the University of Wisconsin-Madison. He has published over 130 manuscripts and book chapters, primarily in the area of environmental health science.

Daniel Villeneuve, PhD

Mid-Continent Ecology Division, U.S. Environmental Protection Agency

Daniel L. Villeneuve is a research toxicologist at the Mid-Continent Ecology Division of the U.S. Environmental Protection Agency (EPA) in Duluth, MN. He earned a BS in biology and water resources from the University of Wisconsin-Steven Point and a PhD in zoology and environmental toxicology from Michigan State University. He has worked at the Mid-Continent Ecology Division since 2004.

Dr. Villeneuve serves as a project lead for laboratory and field research aimed at the development of adverse outcome pathway knowledge and application of that knowledge to support regulatory toxicology. Dr. Villeneuve's current research is focused on the use of systems biology and ecotoxicogenomic approaches to extend fundamental understanding of the ways in which chemical stressors can interact with the hypothalamic–pituitary–gonadal axis to produce reproductive toxicity in fish and other vertebrates.

Dr. Villeneuve has over 15 years of experience conducting freshwater ecotoxicology research and has been recognized with 14 EPA Scientific and Technological Achievement Awards and two Bronze Medal awards. He is a U.S. National Academy of Sciences and Kavli Foundation Kavli Fellow. He has authored or co-authored over 120 peer-reviewed papers in the field of ecotoxicology. He serves as an associate editor *of Environmental Toxicology and Chemistry* and is an international expert advisor on Molecular Screening and Toxicogenomics to the Organisation for Economic Co-operation and Development.

David C. Volz, PhD

Department of Environmental Health Sciences, Arnold School of Public Health,
University of South Carolina

David C. Volz received a PhD in 2006 from Duke University's Nicholas School of the Environment with a Certificate in Toxicology from Duke's Integrated Toxicology and Environmental Health Program. Following completion of his PhD, Dr. Volz spent three years as a Toxicologist within the Product Safety/Research and Development division of Syngenta, a Switzerland-based global seeds and agrochemical company. Among other responsibilities at Syngenta, he led multidisciplinary project teams that supported early- and late-stage product development, regulatory affairs, and new business opportunities. In August 2009, Dr. Volz returned to academia as a tenure-track Assistant Professor of Environmental Health Sciences within the Arnold School of Public Health at the University of South Carolina-Columbia.

Using zebrafish as a model, Dr. Volz' long-term research goal is to identify xenobiotic-mediated pathways that contribute to adverse outcomes during early vertebrate development, particularly for understudied high-production volume chemicals such as organophosphate-based flame retardants. With support from an active Science to Achieve Results grant from the U.S. Environmental Protection Agency, Dr. Volz is currently leading a three-year project focused on development and initial application of 384-well-based high-content screening assays for identification of chemicals impacting cardiovascular and early nervous system function in zebrafish embryos. He has authored or co-authored 29 peer-reviewed papers and presented at numerous national and international meetings on topics including toxicology, molecular biology, chemicals policy, and animal alternatives.

Since 2009, Dr. Volz has been actively involved in global cross-sector efforts to promote development of tiered strategies for regulatory toxicity testing. He has participated in several related expert workshops sponsored by the Society of Environmental Toxicology and Chemistry and the International Life Sciences Institute's Health and Environmental Sciences Institute. Dr. Volz' teaching interests within the Arnold School focus on environmental health, toxicology, and chemical risk assessment, and, over the last several years, he has also taught international workshops on risk assessment for industry, government, and academia.

Matthew Winter, PhD

School of Biosciences, College of Life and Environmental Sciences
University of Exeter

After completing a PhD in fish endocrinology and postdoctoral training in environmental toxicology, Matthew Winter joined AstraZeneca in 2003 as a research ecotoxicologist. His initial work focused on the development of biomarkers of pollutant exposure and study of the effects of pharmaceuticals in the environment, particularly sublethal effects in fish. In the mid-2000s AstraZeneca became interested in the zebrafish model for use in frontloading drug safety and efficacy assessment, at which time Dr. Winter became the technical lead for zebrafish applications in AstraZeneca Research and Development. This involved promoting, developing, and validating new applications that used zebrafish to meet preclinical drug safety and efficacy assessment requirements. After extensive company reorganization and the effective closure of the AstraZeneca Brixham Laboratory, Dr. Winter and colleagues in the zebrafish research and development team are taking up new positions at the School of Biosciences in the University of Exeter. They will continue to work closely with industry colleagues and academic partners exploring further applications of the zebrafish model for use in drug discovery and development.

Jeffrey A. Yoder, PhD

Department of Molecular Biomedical Sciences, North Carolina State University

Jeff Yoder is an Associate Professor of Innate Immunity in the Department of Molecular Biomedical Sciences at North Carolina State University. He received a BS in biotechnology from Worcester Polytechnic Institute and a PhD in cell and developmental biology from the Division of Medical Sciences at Harvard University. Dr. Yoder's doctoral research was performed at Harvard Medical School and then at Columbia University Medical Center in the lab of Tim Bestor on DNA methyltransferases in mammalian development and host defense. While a postdoctoral fellow in Gary Litman's lab at the University of South Florida/All Children's Hospital, Dr. Yoder transitioned into the field of comparative immunology employing zebrafish as a primary research model.

Dr. Yoder was an Assistant Professor in the Department of Biology at the University of South Florida before moving to North Carolina. He has been a faculty member at North Carolina State University since 2004. His laboratory's research employs the strengths of the zebrafish model for comparative immunology, translational research, and most recently immunotoxicology.