CURRICULUM VITAE

CONTACT INFORMATION

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           Reif Lab http://reif-lab.org/
           ToxPi https://toxpi.org/
           Google Scholar http://scholar.google.com/citations?user=0853ilkAAAAJ
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EDUCATION AND TRAINING

2006-2008   U.S. Environmental Protection Agency (Research Triangle Park, NC)
             Post-doc in Computational Toxicology
2002-2006   Vanderbilt University (Nashville, TN)
             Ph.D. in Human Genetics
2003-2005   Vanderbilt University (Nashville, TN)
             M.S. in Applied Statistics
1998-2002   College of William & Mary (Williamsburg, VA)
             Monroe Scholar Honors Program
             B.S. in Biology (Major) & Finance (Minor)

POSITIONS AND PROFESSIONAL EXPERIENCE

2022-Current   Branch Chief & Senior Scientist,
                   Predictive Toxicology Branch,
                   Division of Translational Toxicology,
                   National Institute of Environmental Health Sciences, RTP, NC
2020-2022   Professor,
                   Department of Biological Sciences (Primary Appointment),
                   Bioinformatics Research Center (Resident Member),
                   Department of Statistics (Associate Faculty),
                   NC Agromedicine Institute (Member),
                   Chancellor's Faculty Excellence Program (Bioinformatics Cluster),
               Director, Bioinformatics Consulting and Service Center,
               Director, Environmental Health Bioinformatics Training Program
               Director, Data Management and Analysis Core (DMAC), Superfund Center for
                   Environmental and Health Effects of PFAS,
               Co-Director, Integrated Health Science Facility Core (IHSFC), Center for Human Health
                   and the Environment
                   North Carolina State University, Raleigh, NC
2013-2020   Associate Professor,
                   Department of Biological Sciences (Primary Appointment),
                   Bioinformatics Research Center (Resident Member),
                   Department of Statistics (Associate Faculty),
                   NC Agromedicine Institute (Member),
                   Chancellor's Faculty Excellence Program (Bioinformatics Cluster),
               Director, Bioinformatics Consulting and Service Center,
               Lead, Bioinformatics Team, Center for Human Health and the Environment
                   North Carolina State University, Raleigh, NC
2013-current   Affiliate Member,

	Center for Pharmacogenomics and Individualized Therapy, University of North Carolina, Chapel Hill, NC
2008-2012	Principal Investigator (Statistician), National Center for Computational Toxicology, U.S. Environmental Protection Agency, Research Triangle Park, NC
2009-2012	Adjunct Assistant Professor, Department of Statistics, North Carolina State University, Raleigh, NC
2008	Visiting Scholar, Department of Statistics, North Carolina State University, Raleigh, NC
2006-2008	Federal post-doc (Biologist), National Center for Computational Toxicology, U.S. Environmental Protection Agency, Research Triangle Park, NC (advisor: Elaine Cohen Hubal)
2002-2006	Graduate Research Assistant, Center for Human Genetics Research, Vanderbilt University, Nashville, TN (advisors: Jason Moore and Jonathan Haines)
1999-2001	Research Assistant, Department of Biology, College of William & Mary, Williamsburg, VA (advisor: Patty Zwollo)
2001	Summer Associate, Navigant Consulting, Washington, DC

SELECTED HONORS, AWARDS, AND APPOINTMENTS

2021-current	Member, Toxic Substances Control Act (TSCA) Science Advisory Committee on Chemicals (SACC), U.S. Environmental Protection Agency
2020-current	Co-Chair, Data Working Group, U.S. FDA Botanical Safety Consortium
2020-current	Advisory Committee, Pacific Northwest Center for Translational Environmental Health Research, Oregon State University
2020-current	Advisory Board, College of Sciences Mentorship Program, North Carolina State University
2019	Invited Expert, "Implementing a Class Approach to Hazard Assessment of Organohalogen Flame Retardants", National Academy of Sciences (NAS)
2018	Committee Member, "Committee on a Scoping Plan to Assess the Hazards of Organohalogen Flame Retardants", National Academy of Sciences (NAS)
2018	Planning Committee & Session Moderator, "Informing Environmental Health Decisions Through Data Integration", National Academy of Sciences (NAS)
2018	NIEHS Paper of the Month, "Elucidating Gene-by-Environment (GxE) Interactions Associated with Differential Susceptibility to Chemical Exposure"
2017	Working Group, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans – "Benzene", World Health Organization (WHO) International Agency for Research on Cancer (IARC)
2015	Working Group, IARC Monographs on the Evaluation of Carcinogenic Risks to Humans – "Some Organochlorine Insecticides and Some Chlorphenoxy Herbicides", World Health Organization (WHO) International Agency for Research on Cancer (IARC)
2014	Committee Member & Chapter Lead, "Predictive Toxicology Approaches for Military Assessments of Acute Exposures", National Academy of Sciences (NAS)
2014	STAA Level II Award, for the Expocast project, Office of Research and Development, U.S. EPA
2013	STAA Level I Award, for Advancing Chemical Safety Assessment via the Development of Predictive Reproductive and Developmental Toxicity Models, Office of Research and Development, U.S. EPA

2012	Impact Award, for Comptox Chemical Toxicity Databases, Office of Research and Development, U.S. EPA
2012	Honor Award (Bronze Medal), for Development of Reproductive, Developmental, Vascular Disruption and Cancer Predictive Models, Office of Research and Development, U.S. EPA
2012	STAA Level III Award, for the Analysis of Eight Oil Spill Dispersants Using Rapid, In Vitro Tests for Endocrine and Other Biological Activity, Office of Research and Development, U.S. EPA
2012	STAA Level III Award, for the Endocrine Profiling and Prioritization of Environmental Chemicals Using ToxCast Data, Office of Research and Development, U.S. EPA
2011	Presidential Early Career Award for Scientists and Engineers (PECASE), Executive Office of the President
	The first time an EPA scientist won a PECASE, which is "The highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers"
2011	Science Achievement Award in Health Sciences, Office of Research and Development, U.S. EPA
	An Agency-level award selected by an external peer panel to recognize significant advances in health sciences and impact on regulatory programs
2011	EPA Gold Coin Award, Office of the Administrator, U.S. EPA
	A special award to recognize the rapid scientific response to the Deep Water Horizon oil spill emergency
2011	Honor Award (Bronze Medal), for the Mechanistic Indicators of Childhood Asthma (MICA) study, Office of Research and Development, U.S. EPA
2011	STAA Level II Award, for the Toxicity Reference Database (ToxRefDB), Office of Research and Development, U.S. EPA
2011	Quality Step Increase (QSI) Award, Office of Research and Development, U.S. EPA
2010	OTS Award, Office of Public Affairs, U.S. EPA
2010	S (Superior Accomplishment) Award, National Center for Computational Toxicology, U.S. EPA
2010	S (Superior Accomplishment) Award, National Health and Environmental Effects Research Laboratory, U.S. EPA
2009	OTS Award, National Center for Computational Toxicology, U.S. EPA
2007	OTS Award, Human Studies Division, U.S. EPA
2005	International Travel Grant, Vanderbilt University
2003-2005	NIH Training Grant in Human Genetics, Vanderbilt University
2002	Phi Sigma Biology Honors Fraternity, College of William & Mary
2001	Omicron Delta Kappa Leadership Fraternity, College of William & Mary
2001	Monroe Scholarship Supplemental Award for International Research, College of William & Mary
2000-2001	Howard Hughes Medical Institute Undergraduate Research Grant, College of William & Mary
1998-2002	Monroe Scholar, College of William and Mary

RESEARCH INTERESTS (KEYWORDS)

Predictive Toxicology; Translational Toxicology; Bioinformatics; Data Integration; Computational Toxicology; Environmental Health Sciences; Statistical Genetics; Epidemiology (Genetic, Veterinary, Agricultural, Environmental); Translational Research; Computational Modeling; Environmental Exposure; Risk Assessment; Gene-Environment Interactions; Visual Analytics and Statistical Graphics; Aquatic Model Organisms (Zebrafish); High Throughput Screening; Bioassay Development; Software Development; Environmental Statistics; New Approach Methodologies (NAMs); Geographic Information Systems (GIS)

PROFESSIONAL SOCIETIES (ACTIVE)

Society of Toxicology (SOT), Full Member, 2008 – current
Federation of American Scientists (FAS), Board of Sponsors, 2012 – current
International Society of Exposure Science (ISES), Member, 2016 – current
American Society of Human Genetics (ASHG), Member, 2017 – current

EDITORIAL AND REVIEWER SERVICE

Publications

Editorial Board, *Frontiers in Toxicology*, 2019 – current
Associate Editor, *Environmental Health Perspectives (EHP)*, 2016 – current
Editorial Board, *Journal of Exposure Science and Environmental Epidemiology (JESEE)*, 2016 – current
Associate Editor, *BioData Mining*, 2018 – current
Managing Editor, *BioData Mining*, 2015 – 18
Journal Reviewer for:
Bioinformatics; Biotechniques; BMC Bioinformatics; Environmental Health Perspectives; Environmental Pollution; Environmental Toxicology and Chemistry; Frontiers in Environmental Science; Genetic Epidemiology; Human Genetics; IEEE/ACM Transactions on Computational Biology and Bioinformatics; Journal of Agricultural, Biological, and Environmental Statistics; Journal of Exposure Science and Environmental Epidemiology; Journal of Infectious Disease; Journal of Statistical Software; Journal of the American Statistical Association; Medical Science Monitor; Neuropsychiatric Genetics; Nucleic Acids Research; Pharmacogenomics; PLoS Genetics; PLoS One; Toxicological Sciences

Grants

Grant Reviewer, Superfund Research Program (P42),
    National Institutes of Health
Grant Reviewer, Medical Research Council (MRC),
    Research Councils UK
Study Section *ad hoc* Member, Systemic Injury and Environmental Exposure (SIEE),
    National Institutes of Health
Study Section *ad hoc* Member, Digestive, Kidney and Urological Systems (DKUS),
    National Institutes of Health
Study Section *ad hoc* Member, Bioengineering Sciences and Technologies (BST),
    National Institutes of Health
Grant Reviewer, National Center for Environmental Research (NCER),
    U.S. Environmental Protection Agency
Study Section *ad hoc* Member, Biomedical Computing and Health Informatics (BCHI),
    National Institutes of Health
Grant Reviewer, Division of Information and Intelligent Systems (IIS),
    National Science Foundation

Professional and Fellowships

External Tenure Evaluator,
    City University of New Year (CUNY)
    University of Indiana
Promotion Committee,
    National Institutes of Environmental Health Sciences
Graduate Fellowship Reviewer, Science to Achieve Results (STAR),
    U.S. Environmental Protection Agency

Translational and Regulatory

Expert Reviewer,
    CalEPA's Proposed Toxicological Priority (ToxPi) Framework
    Office of Environmental Health Hazard Assessment (OEHHA), State of California
Peer Reviewer,
    National Academy of Sciences (NAS)
Peer Reviewer,
    International Agency for Research on Cancer (IARC)

TEACHING

Full Semester Courses

2019-current	Course Co-Director & Lecturer, *Computational Environmental Health Sciences (BIO 592)*, North Carolina State University, Raleigh, NC, USA [Spring Session]
2014-current	Course Director & Lecturer, *Introduction to Bioinformatics (GN 427)*, North Carolina State University, Raleigh, NC, USA [Fall Session]
2011	Lab Course Director & Lecturer, *Statistical Genetics Practicum (STAT 489, STAT 498)*, North Carolina State University, Raleigh, NC, USA [Summer Session]
2010	Lab Course Director & Lecturer, *Statistical Genetics Practicum (STAT 489, STAT 498)*, North Carolina State University, Raleigh, NC, USA [Summer Session]
2010	Course Director & Lecturer, *Introduction to R* (*STAT 610*), North Carolina State University, Raleigh, NC, USA [Spring Session]
2008	Course Director & Lecturer, *Introduction to R* (*STAT 610*), North Carolina State University, Raleigh, NC, USA [Spring Session]
2006	Teaching Assistant & Guest Lecturer, *Statistics for Biomedical Researchers (IGP 304)*, Vanderbilt University, Nashville, TN, USA [Spring Session].

Short Courses

2019	*Introduction to R and Biostatistics* (with Ken Rice), Winter Institute in Statistical Genetics, NYU - Abu Dhabi, Abu Dhabi, United Arab Emirates [Short Course]
2016	*Bioinformatics* (with Nadia Singh and Dahlia Nielsen), Research Initiative for Scientific Enhancement (RISE) program, Fayetteville State University, Fayetteville, NC, USA [Short Course]
2015-2016	*Practical Bioinformatics: Introduction to R*, North Carolina State University, Raleigh, NC, USA [Short Course].

Lectures

2021-current	*Computational Toxicology and Exposure Science (ENVR 890)*,	
	University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.	
2016-current	*Responsible Conduct in Science (GN 850 / TOX 820)*	
	North Carolina State University, Raleigh, NC, USA.	
2015-2017	*Biochemical and Molecular Toxicology (TOXC / ENVR 442)*,	
	University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.	
2015-current	*Principles of Toxicology (TOX 710)*,	
	North Carolina State University, Raleigh, NC, USA.	
2015-2018	*Advanced Toxicology (TOXC / ENVR 707)*,	
	University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.	
2013	*Genetic Algorithms (CSC 530)*,	
	North Carolina State University, Raleigh, NC, USA.	
2011	*Analytics Methods and Applications (Institute for Advanced Analytics)*,	
	North Carolina State University, Raleigh, NC, USA.	
2006	*General Biology I & II*,	
	Nashville State Technical College, Nashville, TN, USA.	

Research & Academic Program Participation and Direction

2019-2021	Associate Director
	Environmental Health Bioinformatics (T32 Training Grant) Program
	North Carolina State University
2015-current	Training Faculty
	Environmental Science and Engineering
	University of North Carolina at Chapel Hill
2014-current	Training Faculty
	Toxicology
	North Carolina State University
2013-current	Training Faculty
	Genetics
	North Carolina State University
2013-current	Training Faculty
	Statistics
	North Carolina State University
2013-current	Training Faculty
	Bioinformatics
	North Carolina State University
2013-current	Training Faculty
	Functional Genomics
	North Carolina State University
2011-2012	Faculty Mentor & Computational Lab Director
	Computation for Undergraduates in Statistics Program
	National Science Foundation (PI: Sujit Ghosh)
2010-2011	Faculty Mentor & Computational Lab Director
	Computation for Undergraduates in Statistics Program
	National Science Foundation (PI: Sujit Ghosh)

MENTORING AND MANAGEMENT

Graduate Students Mentored (As Primary Supervisor)

2021-current	Jessie Chappel (joint with Erin Baker, UNC Chapel Hill)
	Bioinformatics PhD (expected 2023)

	North Carolina State University
2020-current	Nnamdi Osakwe
	Bioinformatics PhD (expected 2023)
	North Carolina State University
2020-current	Jonathan Fleming
	Bioinformatics PhD (expected 2023)
	North Carolina State University
2019-current	Preethi Thunga
	Bioinformatics PhD (expected 2022)
	North Carolina State University
2019-2022	Dylan Wallis
	Toxicology PhD (graduated)
	North Carolina State University
2019-2021	Melody Hancock
	Bioinformatics MS (graduated; currently Bioinformatics PhD student)
	North Carolina State University
2017-current	Aldo Carmona-Baez (joint with Reade Roberts)
	Genetics PhD (expected 2020)
	North Carolina State University
2016-2019	Marissa Kosnik
	Toxicology PhD (graduated)
	North Carolina State University
2015-2019	Kimberly To
	Bioinformatics PhD (graduated)
	North Carolina State University
2014-2018	Kyle Roell
	Bioinformatics PhD (graduated)
	North Carolina State University
2014-2017	Michele Balik-Meisner
	Bioinformatics PhD (graduated)
	North Carolina State University
2013-2016	Guozhu Zhang
	Bioinformatics PhD (graduated)
	North Carolina State University
2013	Ankita Kalantri
	Department of Computer Science MS (graduated)
	North Carolina State University

Postdoctoral Scholars Mentored (As Primary Supervisor)

2019-2022	Adrian Green, PhD
	Bioinformatics Research Center
	North Carolina State University
2012	Lisa Truong, PhD
	National Center for Computational Toxicology
	U.S. Environmental Protection Agency
2012	Cory Strope, PhD
	National Center for Computational Toxicology
	U.S. Environmental Protection Agency

Scientific Staff Management (As Direct Supervisor)

2022-current	Scientists and Staff,
	Predictive Toxicology Branch, Division of Translational Toxicology
	National Institute of Environmental Health Sciences
2018-2022	Alison Dickey (PhD, Research Associate)

Bioinformatics Consulting and Service Core
                        North Carolina State University
2018-2021   Elizabeth Scholl (PhD, Research Scholar)
                        Bioinformatics Consulting and Service Core
                        North Carolina State University
2014-2022   Skylar Marvel (PhD, Research Associate)
                        Department of Biological Sciences
                        North Carolina State University
2015-2016   Galen Collier (PhD, Research Scholar)
                        Department of Biological Sciences
                        North Carolina State University
2012   Sean Watford (BS, Research Fellow)
                        National Center for Computational Toxicology
                        US EPA
2011-2012   Dayne Filer (BS, Research Fellow)
                        National Center for Computational Toxicology
                        US EPA
2011-2012   Parth Kothiya (MS, Research Fellow)
                        National Center for Computational Toxicology
                        US EPA

Graduate Student Committees (*Chair or Co-Chair)

* Guozhu Zhang, Bioinformatics PhD; North Carolina State University
* Michele Balik-Meisner, Bioinformatics PhD; North Carolina State University
Rachel Spreng, Bioinformatics, PhD; North Carolina State University
Ryan Lougee, Toxicology, MS; North Carolina State University
* Kyle Roell, Bioinformatics PhD; North Carolina State University
* Kimberly To, Bioinformatics PhD; North Carolina State University
Sarah Wisotsky, Bioinformatics, PhD; North Carolina State University
Hsieh (Larry) Wu, Bioinformatics, MS; North Carolina State University
William Kohlway, Bioinformatics PhD; North Carolina State University
Ander Wilson, Statistics PhD; North Carolina State University
Ravi Mathur, Bioinformatics PhD; North Carolina State University
Baljinder Kaur, Crop Sciences PhD; North Carolina State University
Sean Watford, Environmental Science and Engineering PhD; University of North Carolina
* Tao Jiang, Bioinformatics PhD; North Carolina State University
Patrick Perkins, Bioinformatics PhD; North Carolina State University
Erin Peterson Genetics PhD; North Carolina State University
* Jun Ma, Bioinformatics PhD; North Carolina State University
Brandon Baker, Genetics PhD; North Carolina State University
Hayden Brochu, Bioinformatics MS; North Carolina State University
Bethany Cook, Chemistry MS; North Carolina State University
* Aldo Carmona-Baez, Genetics PhD; North Carolina State University
Shuping Ryan, Bioinformatics MS; North Carolina State University
* Marissa Kosnik, Toxicology PhD; North Carolina State University
Desiree Unselt, Genetics PhD; North Carolina State University
Yaxu Wang, Bioinformatics PhD; North Carolina State University
Drake Phelps, Veterinary School PhD; North Carolina State University
Matthew Nethery, Functional Genomics PhD; North Carolina State University
Brian Ting, Statistics PhD; North Carolina State University
* Melody Hancock, Bioinformatics MS; North Carolina State University
Mark Simmers, Toxicology PhD; North Carolina State University
Sagi Guillerra, Toxicology PhD; North Carolina State University
Melanie Odenkirk, Chemistry PhD; North Carolina State University
* Preethi Thunga, Bioinformatics PhD; North Carolina State University

* Dylan Wallis, Toxicology PhD; North Carolina State University
* Jonathon Fleming, Bioinformatics PhD; North Carolina State University
* Nnamdi Osakwe, Bioinformatics PhD; North Carolina State University
Yueyang Huang, Statistics PhD; North Carolina State University
Thomas Howard, Bioinformatics MS; North Carolina State University
Jacob Freudenberg, Bioinformatics MS; North Carolina State University
William Marinello, Toxicology PhD; North Carolina State University
Michael Doyle, Chemistry PhD; North Carolina State University
Hannah Starnes, Toxicology PhD; North Carolina State University
Amanda Brucker, Statistics PhD; North Carolina State University
Megan Dillon, Comparative Biomedical Sciences PhD; North Carolina State University
Melody Hancock, Bioinformatics PhD; North Carolina State University

FUNDING AND BUDGET MANAGEMENT

External (Competitive Grant) Research Support

NIH/NIEHS R01 R01ES033243   07/01/2022 – 04/30/2027
Characterizing gene-environment interactions that affect individual susceptibility to an expanding chemical exposome
Role: PI

NIH/NIEHS P42 Diversity Supplement   01/01/2022 – 12/31/2023
Gene-environment interactions causing differential susceptibility to chemical stressors in an expanding chemical exposome
Role: PI of Supplement

NIH/NIEHS P30 ES-025128   04/1/2015 – 03/31/2026
Center for Human Health and the Environment (CHHE)
Role: Co-Director of IHSFC & Co-I (PI: Jane Hoppin, NCSU)

NIH/NIEHS U01 Supplement   10/01/2021 – 08/31/2022
Integrative Machine Learning for Synthesis of Cross-Consortium ENM Data
Role: PI of Supplement

NIH/NIEHS U01 ES-027294   09/01/2016 – 08/31/2022
Multidimensional in vivo Assessments of Engineered Nanomaterials and Biological Interactions
Role: PI of Sub-contract (PI: Robert Tanguay, Oregon State University)

EPA R83948101   01/01/2019 – 12/31/2022
System toxicological approaches to define and predict the toxicity of Per and Polyfluoroalkyl Substances
Role: PI of Sub-contract (PI: Robert Tanguay, Oregon State University)

NIH/NCI R01 CA-161608   04/01/2019 – 03/31/2023
Genetic Etiology of Cancer Drug Response
Role: PI

NIH/EPA P42 ES-031009   04/1/2020 – 03/31/2024
Superfund Center for Environmental and Health Effects of PFAS
Role: Director of DMAC & Co-I (PI: Carolyn Mattingly, NCSU)

NIH RIVER R35 ES-031709   04/1/2021 – 03/31/2029
Discovering Chemical Activity Networks – Predicting Bioactivity Based on Structure
Role: PI of Sub-contract (PI: Robert Tanguay, Oregon State University)

Completed Research Support

NIH R01 ES-19604   10/01/2014 – 09/30/2015
Integrating Big Data and curated literature to advance discoveries about disease
Role: Co-Investigator (PI: Carolyn Mattingly, NCSU)

University Global Partnership Network (UPGN)   07/01/2016 -- 06/30/2017
An international alliance for Population, Wellbeing and Environment Research
Role: Co-Investigator (PI: Jane Hoppin, North Carolina State University)

NIH P42 ES-005948   10/01/2014 – 09/30/2017
Elucidating Risks: From Exposure and Mechanism to Outcome
Role: Co-Investigator (PI: James Swenberg, University of North Carolina at Chapel Hill)

EPA EPA-G2014-STAR-E1   06/01/2015 – 06/30/2018
System toxicological approaches to define flame retardant adverse outcome pathways
Role: PI of Sub-contract (PI: Robert Tanguay, Oregon State University)

EPA G2013-STAR-L1   09/01/2014 – 08/31/2018
Cardiotoxicity Adverse Outcome Pathway: organotypic culture model and in vitro/in vivo extrapolation for high-throughput hazard, dose-response and variability assessments
Role: Co-Investigator (PIs: Ivan Rusyn and David Threadgill, Texas A&M University; Fred Wright, NCSU)

NIH R01 ES-023788   01/01/2015 – 12/31/2019
Advancing mechanism-based studies with cross-species chemical-phenotype data
Role: Co-Investigator (PI: Carolyn Mattingly, NCSU)

NIH/NICEATM Contract   07/01/2018 – 06/30/2019
Integrated Data Analysis for Systematic Evaluation of the Application of Zebrafish in Toxicology
Role: PI

CalEPA Contract   09/01/2018 – 02/28/2019
Bioinformatic and cheminformatic modeling of perfluorinated compounds
Role: PI

Texas A&M Superfund Research Program, Pilot Project   10/31/2018 – 10/31/2019
Translation of multi-stream data into interactive visual profiles
Role: PI

NIH/NIEHS R56 ES-0300007   06/15/2019 – 06/14/2021
Gene-environment interactions causing differential susceptibility to chemical stressors in high-throughput data
Role: PI

NIH/NIEHS R15   06/01/2018 – 03/31/2021
Prenatal Supplementation Reduces the Severity of Toxicant-Induced Birth Defects
Role: Co-Investigator (PI: Krista McCoy, East Carolina University)

Federal Budget and Contracts Management

Predictive Toxicology Branch,   2022 – current
Division of Translational Toxicology,
National Institute of Environmental Health Sciences

Cooperative Research and Development Agreement (CRADA)   2012 – 2013
L'Oréal – U.S. Environmental Protection Agency
Role: PI

Presidential Early Career Award for Scientists and Engineers (PECASE)   2011 – 2012
Office of The White House
Role: PI

ToxCast *in vitro* assay contracts (multiple external vendors)   2009 – 2012
U.S. Environmental Protection Agency
Role: Contract Officer Representative (COR) / Task Order Contract Officer (TOCOR)

DISTRIBUTED SOFTWARE

toxpiR: Open-source R package for ToxPi
  (Public software and Github documentation)
  https://cran.r-project.org/package=toxpiR
  https://toxpi.github.io/toxpiR/

ToxPi*GIS Toolkit: Software suite to create customized ToxPi interactive layers within ArcGIS
  (Public software toolkit and Github documentation)
  https://github.com/Jonathon-Fleming/ToxPi-GIS

COVID19 Pandemic Vulnerability Index (PVI) Dashboard: Web application for analytics of data streams
  related to COVID-19
  (Public web application and open source data repository)
  https://covid19pvi.niehs.nih.gov

ToxPi*GIS: Dashboard for ToxPi built atop geographic information system (GIS) layers
  (Public web application)
  https://toxpi.org/covid-19/map/

ToxPi GUI: Stand-alone Java application for building ToxPi models
  (Free download)
  https://toxpi.org/

MDR R: R implementation of Multifactor Dimensionality Reduction (MDR) modeling and internal validation
  (Free download)
  http://cran.r-project.org/web/packages/MDR/index.html

zfish GUI: Graphical User Interface (GUI) implementation of analysis and graphics pipeline for high-
  throughput, zebrafish experimental data
  (Shiny package for collaborators)

zfish DB: Web-enabled browser interface for access to results and meta-analysis for high-throughput,
  zebrafish experimental data from multiple labs
  (Password-limited to collaborators)

EXTENSION, SERVICE, COMMUNITY OUTREACH, AND MEDIA

2021	Interviewee, "At-home COVID-19 tests offer quick results but can go uncounted in NC totals", ABC11 News
2021	Interviewee, "Biostatistics & Computational Biology in COVID-19", *COVIDCalls* (Apple Podcasts)
2021	Interviewee, "How do vaccines impact an area's risk for COVID-19?", ABC11 News
2021	Member, Carcinogenicity Gene Signature Development, HESI eSTAR Consortium
2021-current	Member, Carcinogenicity Gene Signature Development, HESI eSTAR Consortium
2020-current	Advisory Committee, Pacific Northwest Center for Translational Environmental Health Research, Oregon State University

2020-current	Advisory Board, College of Sciences Mentorship Program, North Carolina State University
2020-current	Co-Chair, Data Working Group, U.S. Food and Drug Administration (FDA) Botanical Safety Consortium
2020	Panelist, DR2 Work Group SARS-CoV-2/COVID-19 Environmental Health Research Needs Panel (NIEHS)
2019	Interviewee, "Why Anti-vax Doctors Are Ordering 23andMe Tests", *The Atlantic*
2019	Interviewee, "Daily Sports Feed – David Reif", ESPN Radio
2018-current	Faculty Workloads and Rewards Program, NC State University [committee member]
2017	Undergraduate Education Seminar Series, Society of Toxicology (SOT) [speaker]
2016	Biomedical Career Symposium, National Institutes of Environmental Health Sciences (NIEHS) [invited speaker]
2016	Bioinformatics short course (with Nadia Singh and Dahlia Nielsen), Fayetteville State University, Research Initiative for Scientific Enhancement (RISE) program
2014	NCSU Genetics Club student-invited speaker
2013-2015	Search Committee, "Bioinformatics Faculty Cluster Hire", North Carolina State University
2008-2012	Program Committee, "Bioinformatics, Computational, and Systems Biology", Genetic and Evolutionary Computation Conference (GECCO)
2011	Guest/Interviewee, *Radio In Vivo,* WCOM-FM, Carrboro, NC
2011	Guest/Interviewee, Federal News Radio, Washington, DC
2009-2011	Chair, NCCT Seminar Series, Research Triangle Park, NC, USA
2010	EPA Volunteer/Presenter, US Science & Engineering Festival on the National Mall, Washington, DC
2009	"Gene-Environment Interactions", *Science Café* presented by the North Carolina Museum of Science, Raleigh, NC, USA [public seminar]
2009	"Lessons on Modern Toxicology: How Darwin Saw It Coming", EPA *Greenversations* weblog
2008-2009	Career Panel, Durham Public Schools "Stay in School" program, Durham, NC, USA
2008	"Human Genetics", EPA-Shaw University Research Associateship Program, Chapel Hill, NC, USA [public seminar]
2007	"Genotyping technology and analysis in cancer research", Association for Biomedical Research, Chapel Hill, NC, USA [public seminar]
2006-2008	EPA Speaker's Bureau, Multiple presentations in high schools on research and careers in science, Cary, NC; Chapel Hill, NC; Durham, NC; Raleigh, NC; Mishawaka, IN

PRESENTATIONS AND INVITED WORKSHOPS

2021	Genetics and Genomics Initiative (GGI) Seminar Series, "Characterizing Gene-Environment Interactions in an Expanding Chemical Exposome" [invited seminar]
2020	Society of Toxicology (SOT) Risk Assessment Specialty Section Webinar, "Fighting COVID-19 using data science" [invited seminar]
2020	UC Berkeley Superfund, "The Problem of PFAS Contamination: How Can We Make Rapid Progress to Address it?", Berkeley, CA, USA [invited seminar and session chair]
2019	International Neurotoxicology Association, "Systems neurotoxicology: From in vivo towards predictive in vitro models", Dusseldorf, GERMANY, [seminar]
2018	Texas A&M Superfund External Advisory Board Meeting, "ToxPi-GIS: Visual analytics for integrating hazard and geospatial data", College Station, TX, USA [presentation]
2018	ToxCast Seminar, "Behavioral assessment using zebrafish", Durham, NC, USA [invited seminar]
2018	Fish and Amphibian Embryo as Alternative Models in Toxicology and Teratology, "Leveraging high-throughput screening data to find evidence for susceptibility differences in genetically diverse zebrafish", Paris, FRANCE [invited seminar]
2018	Biology Seminar Series, East Carolina University, "Searching for GxE in high-throughput data", Greenville, NC, USA [invited seminar]
2018	Principles of Data Visualization Workshop, "Data Visualization: Effective Communication Across Disciplines", Raleigh, NC, USA [invited seminar].

2017	OpenTox USA Meeting, "Implications of Population Genetic Diversity for Safety Assessment", Durham, NC, USA [invited seminar]
2017	Environmental Mutagenesis and Genomics Society (EMGS), "Gene-Environment Interactions Associated with Differential Susceptibility to Chemical Exposure", Raleigh, NC, USA [invited seminar]
2017	International Neurotoxicology Association, "Analytical methods to distill useful information from high-throughput screening of chemicals", Florianopolis, BRAZIL [seminar]
2017	National Institutes of Health Workshop, "SEAZIT: Overview of zebrafish screening data", Durham, NC, USA [invited seminar]
2017	University of Wollongong, "Bioinformatics for Linking Social and Environmental Determinants of Health", Wollongong, AUSTRALIA [invited seminar]
2017	Tox Forum, "Integrating multiple sources of high-dimensional data to quantify effects of genetic variability in chemical risk assessment", Washington, DC, USA [invited seminar]
2016	Division of Extramural Research and Training (DERT) Data Science Retreat, "Applied Data Science for the Basic Sciences", NIEHS, RTP, NC, USA [keynote seminar]
2016	Aggregate Exposure Pathway: A conceptual framework to support exposure science research and complete the source-to-outcome continuum for risk assessment. U.S. EPA, Durham, North Carolina, USA [invited expert]
2016	New Approach Methodologies in Regulatory Science. European Chemicals Agency (ECHA), Helsinki, FINLAND [invited workshop]
2016	Society of Toxicology Annual Meeting, "Beyond Benchmark Dose: Advancing Probabilistic and Bayesian Approaches in Hazard Characterization", New Orleans, LA, USA [seminar]
2015	North Carolina Department of Health and Human Services (NCDHHS), "Computational Toxicology Resources for Public Health Applications", Raleigh, NC, USA [seminar]
2015	Data Science Seminar Series, "Big Data in Environmental Bioinformatics", National Institute of Environmental Health Sciences (NIEHS), RTP, NC, USA [seminar]
2015	"Environmental Bioinformatics", Oregon State University, Corvallis, OR, USA [seminar]
2015	PopMed Forum, "Big Data and High-Throughput Screening in Environmental Toxicology", College of Veterinary Medicine, North Carolina State University, Raleigh, NC, USA [seminar]
2014	Workshop on fish and amphibian embryos as alternative models in toxicology and teratology, "Rapid identification and characterization of chemical bioactivity using an embryonic zebrafish system", Paris, FRANCE [seminar]
2014	"Big Data in Environmental Toxicology", University of Kentucky, Lexington, KY, USA [seminar]
2014	A Collaborative Workshop on Aquatic Models and 21st Century Toxicology, "Rapid identification and characterization of neuromodulator chemicals using an embryonic zebrafish system", NIH/NCSU, Raleigh, NC, USA [seminar]
2014	Workshop on Big Data in Genetics and Toxicogenomics, "ToxPi and other visualization tools for toxicological data", NC Biotechnology Center, Durham, NC, USA [seminar]
2013	Triangle Statistical Genetics Consortium, "High-throughput characterization of behavioral and developmental zebrafish phenotypes in response to chemical exposure: Setting the stage for GxE studies", Duke University, Durham, NC, USA [seminar]
2013	Laboratory for Analytical Sciences (LAS), "Visualization for Interdisciplinary Communication", North Carolina State University, Raleigh, NC, USA [seminar]
2012	Application of Toxicity Testing in the 21st Century – Beyond Environmental Chemicals, Johns Hopkins Center for Alternatives to Animal Testing (CAAT), Ranco, ITALY [invited participant/presenter]
2012	Building for Better Decisions: Multi-Scale Integration of Human Health and Environmental Data, Society of Toxicology, Research Triangle Park, NC, USA [invited participant/presenter]
2011	International Chemical Regulation REACH Workshop Asia, Hangzhou, CHINA [seminar]
2011	Special Awards Seminar, U.S. EPA Office of Science Coordination and Policy, Washington, DC, USA [seminar]
2011	Chemical Prioritization Community of Practice, U.S. NIH & U.S. EPA, Research Triangle Park, NC, USA [seminar]

2011	NIH Workshop on the Role of Environmental Chemicals in the Development of Diabetes and Obesity, NIH/NIEHS, Durham, NC, USA [invited participant/presenter]
2010	Office of Chemical Safety and Pollution Prevention Seminar Series, U.S. EPA, Washinton, DC, USA [seminar]
2010	Advancing the Next Generation (NexGen) of Risk Assessment: The Prototypes, National Center for Environmental Assessment, Research Triangle Park, NC, USA [seminar]
2010	Center for Environmental Health Studies, Dartmouth College, Hanover, NH, USA [seminar]
2010	Biomolecular Screening Seminar Series, U.S. NIEHS/National Toxicology Program, Research Triangle Park, NC, USA [seminar]
2009	Chemical Prioritization Community of Practice, U.S. NIH & U.S. EPA, Research Triangle Park, NC, USA [seminar]
2009	ToxCast Data Analysis Summit, U.S. EPA, Research Triangle Park, NC, USA [seminar]
2008	Genetics Department Seminar Series, North Carolina State University, Raleigh, NC, USA [seminar]
2008	Visiting Pulmonary Scholar Seminar Series, University of North Carolina, Chapel Hill, NC, USA [seminar]
2008	International Society of Exposure Analysis-International Society of Environmental Epidemiology (ISEA-ISEE) Joint Annual Meeting, Pasadena, CA, USA [platform presentation]
2008	Human Studies Division Seminar Series, U.S. EPA, Chapel Hill, NC, USA [seminar]
2007	Therapeutic Applications of Computational Biology and Chemistry (TACBAC), Wellcome Trust Conference Centre, Cambridge, UK [seminar]
2007	Community Based Risk Assessment Workshop, "Statistical and Mathematical Modeling for Community-Based Risk Assessment", National Center for Environmental Research, Research Triangle Park, NC, USA [session chair]
2006	Vanderbilt University Genetics Interest Group, Center for Human Genetics Research, Nashville, TN, USA [seminar]
2005	Pacific Symposium on Biocomputing (PSB), Lihue, HI, USA [platform presentation]
2003	Genetic and Evolutionary Computation Conference (GECCO), Chicago, IL, USA [platform presentation]

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Peer-Reviewed Publications (link to Google Scholar profile)

1. Thunga P, Truong L, Rericha Y, Du J, Morshead M, Tanguay RL, Reif DM. Utilizing a Population-Genetic Framework to Test for Gene-Environment Interactions between Zebrafish Behavior and Chemical Exposure. Toxics. 2022 Dec 9;10(12):769. doi: 10.3390/toxics10120769. PMID: 36548602; PMCID: PMC9781692.
2. Watson ATD, Carmona Baez A, Jima D, Reif D, Ding J, Roberts R, Kullman SW. TCDD alters essential transcriptional regulators of osteogenic differentiation in multipotent mesenchymal stem cells. Toxicol Sci. 2022 Nov 12:kfac120. doi: 10.1093/toxsci/kfac120. Epub ahead of print. PMID: 36370075.
3. Carberry CK, Koval LE, Payton A, Hartwell H, Ho Kim Y, Smith GJ, Reif DM, Jaspers I, Ian Gilmour M, Rager JE. Wildfires and extracellular vesicles: Exosomal MicroRNAs as mediators of cross-tissue cardiopulmonary responses to biomass smoke. Environ Int. 2022 Sep;167:107419. doi: 10.1016/j.envint.2022.107419. Epub 2022 Jul 16. PMID: 35863239; PMCID: PMC9389917.
4. Wolkin A, Collier S, House JS, Reif D, Motsinger-Reif A, Duca L, Sharpe JD. Comparison of National Vulnerability Indices Used by the Centers for Disease Control and Prevention for the COVID-19 Response. Public Health Rep. 2022 Jul-Aug;137(4):803-812. doi: 10.1177/00333549221090262. Epub 2022 May 5. Erratum in: Public Health Rep. 2022 Sep-Oct;137(5):1041. PMID: 35514159; PMCID: PMC9257512.
5. Roell K, Koval LE, Boyles R, Patlewicz G, Ring C, Rider CV, Ward-Caviness C, Reif DM, Jaspers I, Fry RC, Rager JE. Development of the InTelligence And Machine LEarning (TAME) Toolkit for Introductory Data Science, Chemical-Biological Analyses, Predictive Modeling, and Database Mining

for Environmental Health Research. Front Toxicol. 2022 Jun 22;4:893924. doi: 10.3389/ftox.2022.893924. PMID: 35812168; PMCID: PMC9257219.

6. Wallis DJ, La Du J, Thunga P, Elson D, Truong L, Kolluri SK, Tanguay RL, Reif DM. Leveraging a High-Throughput Screening Method to Identify Mechanisms of Individual Susceptibility Differences in a Genetically Diverse Zebrafish Model. Front Toxicol. 2022 Apr 29;4:846221. doi: 10.3389/ftox.2022.846221. PMID: 35573279; PMCID: PMC9098949.

7. Thessen AE, Marvel S, Achenbach JC, Fischer S, Haendel MA, Hayward K, Klüver N, Könemann S, Legradi J, Lein P, Leong C, Mylroie JE, Padilla S, Perone D, Planchart A, Prieto RM, Muriana A, Quevedo C, Reif D, Ryan K, Stinckens E, Truong L, Vergauwen L, Vom Berg C, Wilbanks M, Yaghoobi B, Hamm J. Implementation of Zebrafish Ontologies for Toxicology Screening. Front Toxicol. 2022 Mar 11;4:817999. doi: 10.3389/ftox.2022.817999. PMID: 35387429; PMCID: PMC8979167.

8. Fleming J, Marvel SW, Supak S, Motsinger-Reif AA, Reif DM. ToxPi*GIS Toolkit: creating, viewing, and sharing integrative visualizations for geospatial data using ArcGIS. J Expo Sci Environ Epidemiol. 2022 Apr 26:1–8. doi: 10.1038/s41370-022-00433-w. Epub ahead of print. PMID: 35474345; PMCID: PMC9039976.

9. Shankar P, Garcia GR, La Du JK, Sullivan CM, Dunham CL, Goodale BC, Waters KM, Stanisheuski S, Maier CS, Thunga P, Reif DM, Tanguay RL. The Ahr2-Dependent wfikkn1 Gene Influences Zebrafish Transcriptome, Proteome, and Behavior. Toxicol Sci. 2022 May 26;187(2):325-344. doi: 10.1093/toxsci/kfac037. PMID: 35377459; PMCID: PMC9308396.

10. Truong L, Rericha Y, Thunga P, Marvel S, Wallis D, Simonich MT, Field JA, Cao D, Reif DM, Tanguay RL. Systematic developmental toxicity assessment of a structurally diverse library of PFAS in zebrafish. J Hazard Mater. 2022 Jun 5;431:128615. doi: 10.1016/j.jhazmat.2022.128615. Epub 2022 Mar 2. PMID: 35263707; PMCID: PMC8970529.

11. Kirkwood KI, Fleming J, Nguyen H, Reif DM, Baker ES, Belcher SM. Utilizing Pine Needles to Temporally and Spatially Profile Per- and Polyfluoroalkyl Substances (PFAS). Environ Sci Technol. 2022 Mar 15;56(6):3441-3451. doi: 10.1021/acs.est.1c06483. Epub 2022 Feb 17. PMID: 35175744; PMCID: PMC9199521.

12. Hubal EAC, DeLuca NM, Mullikin A, Slover R, Little JC, Reif DM. Demonstrating a systems approach for integrating disparate data streams to inform decisions on children's environmental health. BMC Public Health. 2022 Feb 15;22(1):313. doi: 10.1186/s12889-022-12682-3. PMID: 35168583; PMCID: PMC8845296.

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14. Green AJ, Mohlenkamp MJ, Das J, Chaudhari M, Truong L, Tanguay RL, Reif DM. Leveraging high-throughput screening data, deep neural networks, and conditional generative adversarial networks to advance predictive toxicology. *PLoS Comput Biol.* 2021 July 02; 17(7): e1009135.

15. Thunga P, Truong L, Tanguay RL, Reif DM. Concurrent evaluation of mortality and behavioral responses: A fast and efficient testing approach for high-throughput chemical hazard identification. *Frontiers in Toxicology.* 2021 Jun 15; 3.

16. Odenkirk MT, Reif DM, Baker ES. Multiomic big data analysis challenges: Increasing confidence in the interpretation of artificial intelligence assessments. *Anal Chem.* 2021 June 08; 93(22): 7763-7773.

17. Green AJ, Anchang B, Akhtari FS, Reif DM, Motsinger-Reif A. Extending the lymphoblastoid cell line model for drug combination pharmacogenomics. *Pharmacogenomics.* 2021 June 01; 22(9): 543-551.

18. Marvel SW, House JS, Wheeler M, Song K, Zhou Y, Wright FA, Chiu WA, Rusyn I, Motsinger-Reif A, Reif DM. The COVID-19 pandemic vulnerability index (PVI) dashboard: Monitoring county-level vulnerability using visualization, statistical modeling, and machine learning. *Environ Health Perspect.* 2021 jan; 129(1): 17701.

19. Gilchrist PO, Alexander AB, Green AJ, Sanders FE, Hooker AQ, Reif DM. Development of a pandemic awareness STEM outreach curriculum: Utilizing a computational thinking taxonomy framework. *Education Sciences.* 2021; 11(3).

20. Wallis DJ, Truong L, La Du Jane, Tanguay RL, Reif DM. Uncovering evidence for endocrine-disrupting chemicals that elicit differential susceptibility through gene-environment interactions. *Toxics.* 2021; 9(4).
21. Cohen Hubal Elaine A, Reif DM, Slover R, Mullikin A, Little JC. Children's environmental health: A systems approach for anticipating impacts from chemicals. *International journal of environmental research and public health.* 2020 nov; 17(22): 8337.
22. Odenkirk MT, Zin PPK, Ash JR, Reif DM, Fourches D, Baker ES. Structural-based connectivity and omic phenotype evaluations (SCOPE): A cheminformatics toolbox for investigating lipidomic changes in complex systems. *Analyst.* 2020 nov; 145(22): 7197-7209.
23. Reif DM, Chanock SJ, Edwards KM, Crowe JE. Inappropriate citation of vaccine article. *The Journal of infectious diseases.* 2020 sep; 222(8): 1413-1414.
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25. Kosnik MB, Strickland JD, Marvel SW, Wallis DJ, Wallace K, Richard AM, Reif DM, Shafer TJ. Concentration–response evaluation of ToxCast compounds for multivariate activity patterns of neural network function. *Arch Toxicol.* 2020 feb; 94(2): 469-484.
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32. To KT, Truong L, Edwards S, Tanguay RL, Reif DM. Multivariate modeling of engineered nanomaterial features associated with developmental toxicity. *NanoImpact.* 2019 apr; 16: 100185.
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