**Elissa J. Chesler, Ph. D.**
*Professor*
*Ann Watson Symington Chair in Addiction Research*
*Senior Director, Integrative Data Science*
The Jackson Laboratory
600 Main St
Bar Harbor, ME 04609
elissa.chesler@jax.org
207-288-6453

***Curriculum Vitae***

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**Institutional Affiliations:**

University of Connecticut Department of Psychology
School of Biomedical Sciences, External Graduate Faculty, University of Maine
Tufts University School of Medicine, Genetics Program and Neuroscience Program
Emory University Department of Psychology

**Positions Held:**

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|---|---|
| 2023 – Present | Senior Director, Integrative Data Science |
| 2021 – Present | Ann Watson Symington Chair in Addiction Research |
| 2018 – Present | The Jackson Laboratory, Bar Harbor, ME<br>Professor |
| 2012 – 2018 | The Jackson Laboratory, Bar Harbor, ME<br>Associate Professor, Bioinformatics and Computational Biology |
| 2009 – 2012 | The Jackson Laboratory, Bar Harbor, ME<br>Assistant Professor, Bioinformatics and Computational Biology |
| 2006 – 2009 | Oak Ridge National Laboratory – UT-Battelle, LLC<br>Group Leader, Systems Genetics Group (Former Mammalian Genetics and Genomics Group),<br>Biosciences Division (Former Life Sciences Division) |
| 2005 – 2006 | Oak Ridge National Laboratory – UT-Battelle, LLC<br>Staff Scientist, Mammalian Genetics and Genomics Group, Life Sciences Division |
| 2005 – 2013 | University of Tennessee, Knoxville, TN<br>Adjunct Assistant Professor, Genome Science and Technology Program |
| 2004 – 2005 | University of Tennessee Health Science Center, Memphis, TN<br>Assistant Professor (Non-tenure track)<br>Department of Anatomy and Neurobiology, Center for Genomics and Bioinformatics |
| 2002 – 2004 | University of Tennessee Health Science Center, Memphis, TN<br>Post-Doctoral Research Trainee, Department of Anatomy and Neurobiology, Center for Genomics and<br>Bioinformatics. Advisors: Dr. Robert W. Williams, Dr. Daniel Goldowitz |

## Education:

2002         Doctor of Philosophy in Neuroscience, University of Illinois at Urbana-Champaign
Neuroscience Program, Advisor: Dr. Jeffrey S. Mogil
Thesis: Use of Inbred Strains for the Study of Individual Differences in Pain Related Phenotypes in the Mouse.

1997 – 1998    University of Illinois College of Medicine, First year medical curriculum, Medical Scholars Program
University of Illinois at Urbana-Champaign

1997         Master of Science, University of Illinois at Urbana-Champaign
Biological Psychology, Medical Scholars Program, Advisor: Dr. Janice M. Juraska
Thesis:  Sex and age effects on dendritic spine density of CA1 hippocampal pyramidal neurons

1995         Bachelor of Science, University of Connecticut
Double Major in Psychology/Physiology and Neurobiology
Honors in Psychology, Summa Cum Laude, University Scholar, Advisor: Dr. John D. Salamone
Thesis: A rat model for anti-parkinsonian effects of Clozapine:  Interactions of clozapine with cholinomimetic drugs

## Honors & Awards:

1993         Summer Undergraduate Research Fellow, University of Connecticut School of Medicine

1994 – 1995    Julias A. Elias Scholarship, University of Connecticut

1995         Outstanding Woman Scholar from College of Liberal Arts & Sciences, University of Connecticut
Phi Beta Kappa, Psi Chi, Phi Kappa Phi, and Alpha Lambda Delta Honor Societies

1995 – 1996    Fellow, Graduate College, University of Illinois at Urbana-Champaign

2006         Early Career Award for Scientific Accomplishment-UT-Battelle Oak Ridge National Laboratory

2007         Young Scientist Award, International Behavioral and Neurogenetics Society

2019         International Behavioral and Neural Genetics Society Fellow

2022         Distinguished Scientist Award International Behavioral and Neural Genetics Society.

## Grant Review Panels:

2004         NIH Special emphasis panel for NIDCR and NINDS RFA-DE-05-004 "Mechanisms of orofacial pain: Anatomy, genomics, and proteomics"

2006         Israel Science Foundation, Ad Hoc Reviewer.

2006 – Present   National Science Foundation, Ad Hoc Reviewer

2007         NIH Special Emphasis Panel NIEHS Environmental stress centers U54 RFA-ES-06-012 and U01 RFA-ES-06-013 Biological response indicators of environmental stress.

2007         NIH Ad hoc reviewer "Biobehavioral Regulation, Learning and Ethology Study Section (BRLE)"

2007; 2009     Wellcome Trust, Ad Hoc Reviewer

2008         NIH Ad hoc reviewer "Genomics, Computational Biology and Technology Study Section (GCAT)"

2009         Biotechnology and Biological Sciences Research Council, UK, Ad Hoc Reviewer

2009         Genome Canada, Ad Hoc Reviewer

2009 – 2015    Member NIH: Genomics, Computational Biology and Technology Study Section (GCAT)

2015         NIH Ad hoc reviewer "Bioengineering Sciences and Technologies (BST)" member conflict panel

2015         NIH SEP reviewer "NHGRI Training Program Data Access and Coordinating Center (DACC)" RFA-HG-15-025

2016         NIH SEP reviewer NCI "Genomic Data Analysis Network (U24)"

2017; 2019     NIH SEP reviewer NIDA PAR-16-009 (P50 Research Center of Excellence) & PAR-14-186 (P30 Core Center of Excellence)

2018; 2019;2022 NIH SEP Phase II interviewer NIDA PAR-16-357 Avenir Award Program for Genetics or Epigenetics of Substance Use Disorders (DP1)

2021         NIH Ad hoc reviewer "Biological Data Management and Analysis (BDMA)

## Committees and Additional Professional Activities:

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|---|---|
| 1998 – 2001 | Medical Scholars Program Advisory Committee, Co-Chair |
| 2000 | International Behavioral Neuroscience Society, Student Representative to Council. |
| 2002 | International Behavioral Neuroscience Society, Student Member of Program Committee |
| 2003 – 2004 | Consultant, Protocol power analysis, Uniformed Services University of the Health Sciences |
| 2005 | UT-Knoxville Genome Science and Technology Computational Biology & Bioinformatics Task Force |
| 2005 | International Phenome Database Integration Committee |
| 2009 – 2010 | Society for Neuroscience, Neuroinformatics Committee |
| 2010 – 2013 | International Behavioral and Neurogenetics Society (Executive Committee Member at Large) |
| 2011 | Scientific Advisory Committee, The Jackson Laboratory |
| 2011 – 2023 | External Advisory Board, NIH NIAAA Monkey Alcohol Tissue Research Resource. |
| 2012 – 2013 | International Mouse Phenotyping Consortium (IMPC) Statistical Working Group, Chair |
| 2014 – Present | External Advisory Board, NIH NIDA P50 Center for GWAS in Outbred Rats |
| 2012 – Present | Editorial Board, Genes, Brain, Behavior |
| 2012 – Present | Editorial Board, Mammalian Genome |
| 2013 | External Advisor to SYSGENET European Union COST consortium |
| 2013 | NIH Big Data to Knowledge Workshop on Enhancing Training for Biomedical Big Data, Participant |
| 2014 | NIH Office of Behavioral and Social Sciences Research Workshop on Challenges in Replication of GXE, Workshop Speaker |
| 2015 – 2017 | International Behavioral and Neurogenetics Society (President-Elect, President, Past President) |
| 2014 – 2017 | International Behavioral and Neurogenetics Society (Program Committee) |
| 2015 | Phenotype Research Coordination Network Workshop on the Integration of Animal Behavior Ontology and Neurobehavioral Ontology (NBO-ABO), Participant. |
| 2016 | NIH National Advisory Mental Health Council (NAMHC) Workgroup on Future Directions of Genomics at NIMH |
| 2017 | Program Committee, 15th Annual Meeting Complex Trait Community. |
| 2017 – 2018 | International Mouse Phenotyping Consortium (IMPC) Behavioral Working Group, Co-Chair |
| 2018 – 2020 | External Advisory Board NSF Research Traineeship "Science of Learning and the Art of Communication (SLAC)", University of Connecticut, Psychological Sciences, PI Jim Magnuson |
| 2018 – Present | Associate Editor, Genetics |
| 2020 | Advisory Board, JAX Specialty Mouse Strain Resource P40 |
| 2023 – Present | Scientific Advisory Board, Monarch Initiative |

## Active Memberships:

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|---|---|
| 1994 – Present | International Mouse Genome Society; Genetics Society of America |
| 1996 – 2020 | Society for Neuroscience |
| 2002 – Present | Complex Trait Consortium |
| 2003 – 2023 | Research Society on Alcoholism |
| 2003 – 2023 | International Behavioral and Neurogenetics Society (IBANGS) |
| 2009 – Present | International Society of Computational Biology |

## Manuscript Referee:

*Genetics; Genome Research; Genomics; Alcoholism: Clinical and Experimental Research; Current Biology; Public Library of Science (PLOS) Biology; Public Library of Science (PLOS) Genetics; Genes, Brain, and Behavior; Bioinformatics; Nature; Nature Genetics; BMC Genomics; Mammalian Genome; Science, Biological Psychiatry; Biomedical Informatics*

**Post-Doctoral Trainees:**

Dr. Roumyana Yordanova Kirova, 2005–2006. *Present Position*: Assistant Professor, Institute of Mathematics and
      Informatics, Bulgarian Academy of Sciences.
Dr. Ryan Logan, 2011–2012. *Present Position*: Associate Professor, University of Massachusetts, Worcester
Dr. Juliet Ndukum, 2012-2014. *Present Position*: Biostatistician, Arizona
Dr. Price Dickson, 2012-2020. Present Position: Assistant Professor, Marshall University
Dr. Michael Saul, 2018-2019. Present Position: Computational Scientist, The Jackson Laboratory
Dr. Udita Datta, 2018-2021. Present Position: Pharmaceutical Industry Position, France.

**Doctoral Trainees:**
Vivek M. Philip, Genome Science and Technology Program, Oak Ridge National Laboratory and University of
     Tennessee, Knoxville, TN, Major advisor, *Present Position*: Computational Science Service, The Jackson Laboratory.
Jeremy Jay, Electrical Engineering and Computer Science, University of Maine, Orono, ME, *Present Position:* Department
     of Bioinformatics and Genomics, UNC Charlotte.

**Master's Trainees:**
Tyler Roy, University of Maine, Orono
Ashley Olson, University of Maine, Orono
Troy Wilcox, University of Maine, Orono

**Dissertation Committee Memberships:**

Bhavesh Borate, Genome Science and Technology Program, Oak Ridge National Laboratory and University of
     Tennessee, Knoxville, TN, *Present Position*: Applied Statistics, Fred Hutchinson Cancer Research Center
Leslie Jellen, Department of Psychology, Pennsylvania State University, Happy Valley, PA
Yun Zhang, Computer Science Department, University of Tennessee, Knoxville, TN, *Present Position*: Pioneer Hybrids
Joshua R. New, Computer Science Department, University of Tennessee, Knoxville, TN, *Present Position:* Staff Scientist,
     Building Technologies Research and Integration Center, ORNL.
Suman Duvurru, Genome Science and Technology Program, Oak Ridge National Laboratory and University
     of Tennessee, Knoxville, TN, *Present Position:* Research Scientist, Eli Lilly
Leah Graham, Genetics, Tufts University and The Jackson Laboratory
Timothy Reynolds, Computer Science, Baylor University
Alexandra Goetjen, University of Connecticut School of Medicine
Uma Arora, Tufts University and The Jackson Laboratory
Lauren Kuffler, Tufts University and The Jackson Laboratory
Callan O'Connor, Tufts University and The Jackson Laboratory
Alexis Garretson, Tufts University and The Jackson Laboratory

**Faculty Mentoring Committees:**
Dr. Catherine Kaczorowski, The Jackson Laboratory
Dr. Zhenqing Ouyang, The Jackson Laboratory

**High School and Undergraduate Trainees**

| Date | Name | Institution | Present |
| --- | --- | --- | --- |
| 2007-2008 | Sarah Jo Jenkins | Austin Peay State University | Research Assistant, Vanderbilt University |
| 2008-2009 | Boloye Gomero | Maryville College | The Bullis School, Upper School Mathematics Teacher |
| 2010 | Amanda Ackovitz | N Carolina School of Science and Maths | Assistant Vice-President, Bank of America |
| 2010 | Ashley Hunt | The Maine School of Science and Maths | Implementation Consultant, Avalara, Durham, NC |
| 2011 | Avner Maiberg | University of Maine | Carnegie Mellon |

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| 2011 | Carter Harwood | The Groton School, Groton, MA | John Hopkins University |
| 2011 | Lillian Kang | North Carolina School of Science & Maths | Duke University |
| 2012 | David Wang | North Carolina School of Science & Maths | DevOps, Truecar, Inc. |
| 2012 | Eleonora Hubbell | Mount Desert Island High School | Bowdoin College, Brunswick, ME |
| 2012 | Axis Fuksman-Kumpa | Mount Desert Island High School | Bowdoin College, Brunswick, ME |
| 2012-2014 | Casey Acklin | College of the Atlantic, Bar Harbor, ME | AmeriCorps, VISTA at Dementia Friendly, NV |
| 2012-2014 | Courtney Vaughn | University of North Carolina, Chapel Hill | Churchill Fellowship |
| 2012-2015 | Andrew Gallup | Mount Desert Island High School | Software Engineer, MITRE |
| 2012 | Katie Long | University of Michigan | University of Chicago |
| 2012 | Joshua Higgins | Baylor University | Scientific Curator, Celmatix |
| 2014-2015 | Kathryn McNaughton* | Williams College | Graduate Student, Neuroscience and Cognitive Science, University of Maryland |
| 2014 | Lingfeng Hou | Harvard University | Harvard University |
| 2014 | Astrid Moore | Colby College | Software Engineer, NowPow |
| 2014 | Kathryn Toal | Dartmouth University | Consultant, Trinity |
| 2015 | Summit Liu | Colgate University | Molecular & Cell Biology Technician, The Jackson Laboratory, Bar Harbor, ME |
| 2016 | Nkima Stephenson** | Rockdale Magnet Science & Tech School | Student, bachelor's degree in Neuroscience, Columbia University, New York City |
| 2017 | Satre Nbedeneza | Patterson High School, Baltimore, MD | |
| 2017 | Padam Kumar | University of North Carolina, Chapel Hill | Medical Student, University of Tennessee Science Center |
| 2017 | Robbie Denegre | Mount Desert Island High School | |
| 2018 | Eleanor Bridges | Mount Desert Island High School | |
| 2018 | Ashley Greaves | New York University | Graduate Student and Research Assistance, New York University |
| 2018 | Xochitl Ortiz-Ross | College of the Atlantic | Seasonal Research Assistant/Avian Ecology Intern, Archbold Biological Station, Venus Florida |
| 2018-2020 | Christian Monroy-Hernandez | The Jackson Laboratory Postbaccalaureate Program | Washington University MD/PhD program |
| 2019 | Violet Kimble | Drew University, Madison, NJ | Undergraduate Research Assistant, Drew University |
| 2019 | Pura Ileana Arroya-Morales | University of Puerto Rico, Mayaguez, PR | |
| 2021 | Bailey West | | Johns Hopkins University |
| 2021 | Addison Smith | Mount Desert Island High School | |
| 2022-2023 | Kuranosuke Yamada | Colby College | Colby College |
| 2022 | Matthew Kim | University of British Columbia | University of British Columbia |
| 2023 | Saathvika Diviti | Colby College | Colby College |
| 2023 | Jane Adams | Northeastern University | Northeastern University |
| 2023 | DeAnna James | Morgan State University | |

*Council on Undergraduate Research, NSF Research Experience for Undergraduates Poster Presenter

**NIDA Intel Prize 2017

## Teaching:

### *Courses:*

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|---|---|
| 08/96–12/97 | Behavioral Science for Medical Students, University of Illinois at Urbana-Champaign, Teaching Assistant, Dept. of Psychology and College of Medicine |
| 08/98–12/98 | Gross Anatomy for Medical Students, University of Illinois at Urbana-Champaign, Teaching Assistant, College of Medicine |
| 01/97–05/00 | The Brain and the Mind, University of Illinois at Urbana-Champaign, Teaching Assistant, Dept. of Psychology |
| 08/00–12/00 | Psychopharmacology, University of Illinois at Urbana-Champaign, Teaching Assistant, Dept. of Psychology |
| 08/06–05/09 | Genome Science and Technology I-II, University of Tennessee, Lecturer, Complex Trait Analysis |
| 2019-2020 | Mammalian Genetics, Tufts University, Lecturer, Complex Trait Analysis |

### *Short Courses and Guest Lectures: (out of 21 total courses, some given multiple years)*

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|---|---|
| 11/2003 | Society for Neuroscience Annual Meeting, New Orleans, Louisiana |
| | Faculty— The Bioinformatics of Brains: From Genes and Proteins to Behaviors. Microarray Analysis |
| 05/04-06 | NIMH Workshop on Experimental Neurogenetics of the Mouse, Memphis, TN |
| | Faculty, Gene-Environment Interactions |
| 08/2004 | IBANGS 10th International Summer School in Neurobehavioral Genetics, Memphis, TN |
| | Faculty, Genetics of Gene Expression, WebQTL |
| 09/2004 | The Jackson Laboratory Short Course on Mathematical Approaches to Complex Phenotypes, Bar Harbor, ME. Faculty, Genetics of Gene Expression, WebQTL |
| 07/2005 | IBANGS 11th International Summer School in Neurobehavioral Genetics, Bordeaux, France |
| | Faculty, Bioinformatics, WebQTL |
| 09/2005 | IBANGS 12th International Summer School in Neurobehavioral Genetics, Moscow, Russia |
| | Faculty, Molecular Biology From QTL to Gene, Systems Genetics, WebQTL |
| 2005-2009 | The Jackson Laboratory Short Course on Complex Trait Analysis, Bar Harbor, ME |
| | Faculty, Genetics of Gene Expression, WebQTL |
| 2010-Present | The Jackson Laboratory Short Course on the Genetics of Addiction, Bar Harbor, ME. Course Organizer |
| 2011-2016 | The Jackson Laboratory Short Course on Systems Genetics, Bar Harbor, ME Faculty, GeneWeaver |
| 09/2011 | The Jackson Laboratory Short Course on the Genomic and Proteomic Approaches to Complex Heart, Lung, Blood & Sleep Disorders, Bar Harbor, ME |
| 2014-2016 | The Jackson Laboratory McKusick Short Course on Medical and Experimental Genetics, Faculty, Studying behavior in the laboratory mouse |
| 2016-2019 | The Jackson Laboratory Short Course on Neurotools, Course faculty and organizing committee. "Complex Trait Analysis and Advanced Mouse Populations", Bar Harbor, ME |
| 2016-2020 | The Jackson Laboratory Short Course on 21st Century Mouse Genetics, Course faculty and organizing committee. "Complex Trait Analysis and Advanced Mouse Populations", Bar Harbor, ME |

## Invited Talks and Symposia (out of 119 total):

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| 09/30/03 | "Genetic Interactions with the Laboratory Environment" The Neuroscience Institute Neuroscience Seminar Series, University of Tennessee Health Science Center, Memphis TN. Host: Dr. Robyn Wallace |
| 10/20/03 | "Genetic modulation of gene expression and correlations with neurobehavioral traits" Behavioral Neuroscience Seminar, Department of Psychology, University of Connecticut, Storrs, CT. Host: Dr. Steve Maxson |
| 03/03/04 | "Relational genetics from base pair to behavior in WebQTL: Genetic analysis of gene transcription regulation and correlations with neurobehavioral phenotypes" Neuroscience Program Seminar, University of Illinois at Urbana-Champaign, Urbana, IL. Hosts: Graham Huesmann and Dr. David Clayton |
| 08/23/04 | "WebQTL: Genetics of Individual Differences in Gene Expression, Brain, and Behavior in the Mouse CNS." Oak Ridge National Laboratory, Oak Ridge, TN. Host: Dr. Dabney Johnson |

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| 08/28/04 | "From Base Pair to Behavior: Use of Genetic Reference Populations for Genome-wide Analysis of Gene Expression and Systems Level Phenotypes," CBI Seminar, Oak Ridge National Laboratory, Oak Ridge, TN. Host: Dr. Jay R. Snoddy |
| 10/01/04 | "From base pair to behavior: Use of reference populations for genetic analysis of gene expression and systems level phenotypes" University of Pittsburgh Medical College. Host: Dr. William R. Lariviere |
| 10/04/04 | "WebQTL demonstration workshop," Penn State University, State College, PA. Host: Dr. Byron C. Jones |
| 10/11/04 | "WebQTL: Genetics of individual differences in gene expression, brain, and behavior," Southern Illinois University, Springfield, IL. Host: Dr. Linda C. Toth |
| 10/24/04 | "Internet based genetic analysis from base-pair to behavior in inbred mice" in "Neurogenomics of Behavior," Society for Neuroscience, San Diego, CA. Organizer and Chair: Dr. David Clayton |
| 11/15/04 | "WebQTL Tutorial," Wake Forest University, Winston-Salem, NC. Host: Dr. Sara Jones |
| 02/24/05 | "From Base Pair to Behavior: Use of Genetic Reference Populations for Genome-wide Analysis of Gene Expression and Systems Level Phenotypes," Virginia Institute for Psychiatric and Behavioral Genetics, Department of Pharmacology and Toxicology. Hosts: Dr. Kenneth Kendler and Dr. William Martin |
| 06/27/05 | "Progress on Using Mouse Inbred Strains, Consomics and Mutants to Identify Genes Related to Stress, Anxiety and Alcohol Phenotypes" RSA 28th Annual Meeting, Invited Speaker. Organizer: Kathleen Grant, Chair: Daniel Goldowitz |
| 07/29/05 | "WebQTL: Internet based genetic analysis from base-pair to behavior in inbred mice" University of Antwerp, Belgium. Hosts: Dr. Frank Kooy and Vanessa Errygers |
| 10/24/05 | "Systems Genetics: Building Gene to Phenotype Networks for Pain," Wyeth Pharmaceuticals, Princeton, NJ. Host: Dr. Philip Jones |
| 11/16/05 | "Systems Genetics: Gene to phenotype networks in mouse reference populations" NCBI, Bethesda, MD. Host: Dr. Teresa Pryztych |
| 11/18/05 | "Fundamentals of Genomics in the Study of Pain" Special Session on Genomics and Pain, American Society of Regional Anesthesia and Pain Medicine Annual Fall Pain Meeting and Workshops, Miami, FL. Organizer and Chair: Dr. Sunil Panchal |
| 02/15/06 | "Gene to phenotype networks for brain and behavior" Gordon Research Conference on Genes and Behavior, Ventura, CA. Chairperson: Dr. Robert Hitzeman; Session Chairs: Dr. Tamara Phillips and Dr. Eric Schadt |
| 03/27/06 | "Extracting biological networks from basepair to behavior" Center for Alcohol Studies, University of North Carolina, NC. Host: Dr. Fulton Crews |
| 06/27/06 | "What can microarrays tell us about alcoholism that we don't already know and how can we extract this information?" Research Society on Alcoholism, Workshop Organizer. |
| 09/25/06 | "Systems Genetics: the Systems Biology of Populations" University of Chicago Department of Genetics, Chicago, IL. Host: Justin Borevitz |
| 09/29/06 | "The Collaborative Cross at ORNL: Progress and Applications" Keynote Workshop on Complex Traits as Human Diseases, Oak Ridge National Laboratory, TN. Organizer: Dr. Brynn Voy |
| 10/14/06 | "Integrative bioinformatics for neurobehavioral genetics," at "Meet the Experts," Society for Neuroscience, Atlanta, GA. |
| 11/28/06 | "Systems Neurogenetics: Systems Biology of Populations for Brain and Behavior," Neuroscience Program, University of Illinois-at Urbana Champaign, IL. Host: Justin Rhodes |
| 12/07/06 | "Rapid Compilation of Neurobiological Networks from Basepair to Behavior" American College of Neuropharmacology Annual Meeting, Hollywood, FL. Chairs: Dr. Adron Harris and Dr. Igor Ponomarov |
| 01/26/07 | "Interactions of the Laboratory Environment with Mouse Behavior" Appalachian Branch AALAS Winter Quarter Meeting, Knoxville, TN. Chair: Lee Barnett, Bionetics Corporation |
| 02/19/07 | "The collaborative cross at ORNL: a community resource for systems genetics" Gordon Research Conference in Quantitative Genetics and Genomics, Ventura, CA. Session Chairs: Dr. David Threadgill and Dr. Daniel Pomp |
| 03/19/07 | "Ontological Discovery from Genes to Behavior" Portland Alcohol Research Center, Oregon Health Sciences University, Portland Oregon. Host: Dr. Robert Hitzemann |
| 03/21/07 | "Systems Genetics, the systems biology of populations" Institute for Systems Biology, Seattle, WA. Host: Dr. David Galas |
| 05/21/07 | "Ontological Discovery from Genes to Behavior" Young Investigator Awardee Lecture, International Behavioral and Neurogenetics Society, Doorwerth, the Netherlands. |
| 05/30/07 | "The Collaborative Cross a reference population for the systems genetic analysis of addiction" NIH/NIDA Workshop on Addiction, Microarrays and Gene Discovery. Organizers: Dr. Jonathan Pollock and Dr. John Satterlee |

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| 06/15/07 | "Using genetics and genomics to understand relations among anxiety-like behaviors and other traits" International Behavioral Neuroscience Society, Symposium. Organizer: Dr. Abraham Palmer |
| 11/05/07 | "1000 Mixed-up Mice: Behavioral Phenotyping in the Collaborative Cross—a large population of unprecedented genetic diversity," in speeding up behavioral testing of rodents and zebrafish: high-throughput solutions, challenges, and perspectives. Noldus Information Technology Satellite Symposium, Society for Neuroscience annual meeting 2007. Sponsoring SFN member: Dr. Robert Gerlai |
| 06/03/08 | "Comparison of linkage disequilibrium networks in genetic reference populations," Complex Trait Consortium Meeting, Montreal, QC. |
| 06/08/09 | "Multivariate genetic analysis for the functional genomics of behavior" International Behavioral and Neurogenetics Society, Dresden, Germany. Symposium Chair: Leo Schalkwyk |
| 06/21/09 | "Multidimensional trait assays for genetic prediction of alcohol addiction: Multidimensional analysis of mouse behavior for genetic analysis," RSA 32nd Annual Meeting, Symposium organizer, speaker. Chair: Daniel Goldowitz |
| 05/05/09 | "Extracting and validating gene-phenotype association networks using the ontological discovery environment" Complex Trait Consortium, Manchester UK. |
| 04/23/10 | "Identification of addiction related genes using integrative genetics and genomics" National Institute on Drug Abuse, Webinar. |
| 05/13/10 | "Behavior genetic analysis in the collaborative cross and related populations" International Behavioral and Neural Genetics Society, Halifax, Nova Scotia, Symposium Chair. |
| 06/26/10 | "A Computational System for Integrative Genomics," NIAAA Satellite Symposium: A Systems Biology Approach to Understanding the Effects of Alcohol on the Brain. San Antonio, TX. |
| 07/08/10 | "The Ontological Discovery Environment: Points to Consider When Populating and Using a Virtual Environment for the Application of High-Performance Computing to Discover Phenotypes Through Integrating Gene Sets Across Species, Tissue and Experimental Platform" NIDA Workshop: Informatics for Data and Resource Discovery, Rockville, MD. |
| 10/04/10 | "Discovering the organization of behavioral traits using integrative genetics and genomics" Children's Hospital Boston/Harvard Medical School. Host Dr. Clifford Woolf |
| 11/12/10 | "Systems genetics for identification of addiction-related genes using high-throughput behavioral phenotyping" NIDA Frontiers in Addiction Research Mini-Convention. Organizer: John Satterlee |
| 11/18/10 | "Integrative Genetics and Genomics for Pain Research" Amgen, Thousand Oaks, CA. Host: Sonya Lehto |
| 12/03/10 | "Discovering the organization of behavioral traits using integrative genetics and genomics" University of Maine Department of Psychology, Orono, ME, Host: Alan Rossenwasser |
| 02/11/11 | "OntologicalDiscovery.org: Building an interactive system for the integration of functional genomics data", University of Maine, Computer Science Department, Orono, ME Host: George Markowsky |
| 05/19/11 | "Target Identification Strategies in the Genomic Era" APS 30th Annual Meeting, Austin, TX. Organizer: Luda Diatchenko |
| 06/28/11 | "Integrative Genomics of Alcohol Use and Alcohol Response: Finding Convergent Evidence Across Species and Experimental Systems" RSA 34th Annual Meeting. Chairs: Mary-Anne Enoch and David Goldman |
| 03/18/12 | "Leveraging Different Genomes for Social Behavior" Gordon Research Seminar: Genes and Behavior, Galveston, TX, Discussant. Chairs: Zhengzheng S. Liang and Jesse N. Weber |
| 03/30/12 | "Accelerating discovery in behavioral genetics through integrative genetics and genomics." KBRIN Bioinformatics Summit 2012, Louisville, KY. Plenary Speaker. |
| 09/09/12 | "Cross Species Integrative Functional Genomics of Alcohol Related Behaviors in The Gene Weaver Web based Software System" in the "Neurogenomics of Alcoholism" 16th Congress of International Society for Biomedical Research on Alcoholism, Sapporo, Japan, Symposium Organizer and Speaker. |
| 01/14/12 | "Accelerating discovery for behavioral traits with integrative genetics and genomics" Department of Psychiatry, UConn Health Center. Host: Victor Hesselbrock |
| 04/15/13 | "High Precision Systems Genetic Analysis of Behavior in Advanced Mouse Populations" Human Genome Meeting and 21st International Congress on Genetics, Singapore, Invited speaker. Hosts: Edison T. Liu and Alfred Nordheim |
| 05/29/13 | "Genetics of Hippocampal Gene Expression in Diversity Outbred Mice" Complex Trait Consortium, Madison, WI. |
| 11/02/13 | "Integrative functional genomics using GeneWeaver.org" Maine Neuroscience Symposium, Colby College, ME, Keynote Speaker. Host: Allen Rosenwasser |
| 11/23/13 | "Cross-species integrative functional genomics of aging in the GeneWeaver web-based software system", Gerontological Society of America Meeting and Exposition, New Orleans LA. |

| 11/25/13 | "Advances in Discovery of Mouse Models for Genetics of Addiction" NIDA Genetics Consortium Meeting, Invited Guest. Host: Jonathan Pollock |
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| 12/12/13 | "Conceptual comparison through integrative functional genomics in GeneWeaver.org" 11th Annual Rocky Mountain Bioinformatics Conference, Snowmass, CO, Invited Speaker. Chair: Lawrence Hunter |
| 12/16/13 | "Cross-species integrative functional genomics of alcoholism in GeneWeaver.org" Waggoner Center for Alcohol Studies, Austin TX. Host: Adron Harris |
| 02/26/14 | Integrative Genomics Strategies for the Cross-species Analysis and Classification of Psychiatric Disorders" "Research Education Program in Aspects of Statistical Genetics and Addiction Invited Speaker, Department of Psychiatry, Washington University St Louis. Host: Pamela Madden |
| 02/28/14 | "Integrative Genomics Strategies for the Cross-species Analysis and Classification of Psychiatric Disorders" Anatomy and Neurobiology Department, University of Tennessee Health Science Center. Host: Robert W. Williams |
| 05/13/14 | "Workshop on the Use of Advanced Mouse Populations" International Behavioral and Neurogenetics Society, Workshop Chair. |
| 05/21/14 | "Bioinformatics Strategies to Address GXE in the Study of Behavior" NIH Office of Behavioral and Social Sciences Research Workshop on Challenges in Replication of GXE, Workshop Speaker. |
| 06/03/14 | "Mouse Genetic Technologies" NIDA Genetics Consortium Meeting, Rockville, MD, Invited Speaker. Host: Jonathan Pollock |
| 09/08/14 | "Perspectives on Data Integration" Symposium on Data Integration from the Monkey Model of Alcohol Drinking, Oregon Health & Science University. Host: Kathy Grant |
| 10/02/14 | "Integrative Genetic and Genomic Strategies for the Classification of Psychiatric Disorders" Behavioral Neuroscience Seminar, University of Connecticut, Department of Psychology. Host: Ian Stevenson |
| 01/05/15 | "Beyond Replication and Reproducibility: Finding Consilience in Genetic and Genomic Analyses of Behavior" Workshop on Replicability and Reproducibility, Tel Aviv University. Host: Yoav Benjamini |
| 01/23/15 | "Integrative Genetics and Genomic Strategies for the Classification of Psychiatric Disorders" Transdisciplinary Training Program in Addiction Studies, Department of Pharmacology, Boston University. Host: Camron Bryant |
| 02/23/15 | "Improving the classification of psychiatric disorders through genetics and genomics" Research Center for Group Dynamics, University of Michigan, Ann Arbor, MI. Host: Richard Gonzalez |
| 03/18/15 | "Harnessing Diversity in the CC and DO Populations for the Study of Behavior NIEHS Population-Based Rodent Resources for Environmental Health Sciences Meeting, Invited Speaker. |
| 04/17/15 | "Genetic and Genomic Studies of Addiction in Model Organisms" Maine Medical Professionals Health Program Professionals Conference, Invited Speaker. Hosts: Mike Sloan, DDS, Cathryn Stratton. |
| 05/14/15 | "Integrative Genetic and Genomic Studies of Psychiatric Disorders in Model Organisms" University of Connecticut Health Center Medical Grand Rounds. Host: Steven Angus |
| 06/18/15 | "Behavioral Predictors of drug self-administration in diversity outbred mice" College on Problems of Drug Dependence Annual Meeting, Phoenix, AZ, Symposium Speaker. Chair: David Jentsch |
| 06/24/15 | "Computational Genomics" Frontline Genomics Festival of Genomics, Boston, MA, Panelist. Festival Director: James Bell |
| 09/10/15 | "Finding Cross-Species Phenomic Similarity Through Integration of Heterogeneous Functional Genomic Data", NIH Office of the Director Symposium on Linking Disease Model Phenotypes to Human Conditions, Invited speaker. Host: Oleg Mirochnitchenko |
| 11/03/15 | "Integrative Genetics and Genomic Strategies for the Classification of Psychiatric Disorders and Model Organism Phenotypes" Pharmacology and Systems Therapeutics Seminar Lecture ICAHN Mount Sinai School of Medicine, New York, New York. Host: Paul Kenny |
| 11/11/15 | Workshop on Gene Enrichment Analysis. International Mouse Genome Consortium, Yokohama, Japan. Co-organizer with Dr. Judith A. Blake. |
| 01/04/16 | "GeneWeaver: Finding relations among genes, phenotypes and diseases from heterogeneous functional genomics data" Pacific Symposium on Biocomputing, Big Island of Hawaii. Invited Speaker. Innovative approaches to combining genotype, phenotype, epigenetic and exposure data from precision diagnostics Session. Organizers: Melissa Haendel and Maricel Kann. |
| 03/07/16 | "Refining classification and characterization of behavior with integrative genetics and genomics" Bioinformatics Seminar Series. University of California-Los Angeles. Host: Eleazar Eskin, Wei Wang |
| 06/26/16 | "Integrating the Epigenome with Functional Genomic Studies of Alcoholism and Addiction" Research Society on Alcoholism New Orleans, LA, Symposium Speaker. Chair: Igor Ponomarev |
| 06/27/16 | "Integrating Heterogeneous Functional Genomics Studies of Alcoholism" Research Society on Alcoholism, New Orleans, LA Symposium Chair. |

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| 07/12/16 | "GeneWeaver", Technology Track, Intelligent Systems in Molecular Biology, Orlando FL. |
| 12/05/16 | University of Tennessee Health Science Center, Memphis, TN. Host: Robert W. Williams |
| 03/16/17 | "Integration of heterogeneous functional genomics data in GeneWeaver with applications in toxicology" in "Bioinformatics Tools for Accelerated Hypothesis Generation and Mechanistic Insights" Society of Toxicology, Baltimore, MD. Chairs: Susan Bello, Marc Gillespie |
| 05/05/17 | "Genetic and Genomic Studies in Addiction" Maine Medical Association, Medical Professionals Health Program, Portland, ME |
| 05/17/17 | "Advances in Bioinformatics resources for brain and behavior" Symposium Chair, IBANGS, Madrid, Spain |
| 06/16/17 | GeneWeaver Workshop. Complex Trait Consortium Meeting, Memphis, TN. |
| 06/24/17 | "The use of Model Organisms to Understand Human Genetics of Alcoholism" Research Society on Alcoholism, Denver, CO Symposium Chair and Discussant. |
| 08/04/17 | The Jackson Laboratory, Neuroscience Meets 3D Genome Biology Mini Symposium, "Integrative Genetics and Genomics of Alcohol Use Disorder Related Traits Reveals Functional Variation in the 3D Genome" organizer, Dr. Yijun Ruan |
| 10/11/17 | GeneWeaver. Protein Ontology Consortium Meeting, Bar Harbor ME Organizer: Barry Smith |
| 10/19/17 | "Understanding Behavioral Diversity Through Integrative Genetics and Genomics" John Belknap Memorial Symposium Plenary talk, Portland OR. Organizer: Dr. John C. Crabbe |
| 12/01/17 | "Understanding Behavioral Diversity through Integrative Genetics and Genomics" University of Tennessee Health Science Center, Memphis, TN. Host: Byron C. Jones |
| 01/08/18 | "Strategies to integrate developmental behavioral and genetic data". NIDA Genetics Consortium Meeting, Bethesda, MD. |
| 01/10/18 | "Advanced Mouse Resources: The DO and CC" NIDA Genetics Animal Models Consortium Meeting, Bethesda, MD |
| 03/12/18 | "Integrative Genetic and Genomic Analysis of Addiction Related Behaviors" Icahn School of Medicine at Mount Sinai, New York, NY. Host: Dr. Eric Nestler |
| 05/21/18 | "Integrative Genomics Workshop" IBANGS, Rochester, Minnesota. |
| 06/16/18 | "Characterizing regulatory variants in humans and animals using GeneWeaver" NIDA Genetics Consortium Meeting. Coordinating Efforts Between Human and Animal Opioid Studies. Speaker |
| 06/17/18 | "Finding convergent behavioral features of Alcohol Use Disorder through functional genomic comparison across species" in "Data integration for characterization, prediction and treatment of alcohol use disorders, Speaker, Symposium Chair, Research Society on Alcoholism, San Diego, California |
| 06/29/18 | "Assessing replicability of mouse behavioral genetic studies through aggregated experimental results" in "Factors influencing replicability of behavioral neuroscience studies." International Behavioral Neuroscience Society, Boca Raton, FL. Symposium Chairs: Drs. Polymnia Georgiou & Todd Gould |
| 07/12/18 | "Cross-species functional genomic data integration with GeneWeaver", IMPC Data Analysis Working Group, London, UK. |
| 08/07/18 | "Personal Genetics and Addiction." Jesup Memorial Library, Bar Harbor, ME |
| 09/10/18 | The Opioid Crisis Session Chair Genetics of Neuropathic Pain and its Comorbidities, Program Committee, IASP Genetics &Pain SIG and Neuropathic Pain SIG Joint meeting, Bar Harbor, ME |
| 11/07/18 | "Integrative Genetics and Genomics of Addiction and Predisposing Traits" Translational Research Day 2018: Addiction Research in the Lab, Clinic and Community, Speaker, Tufts CTSI, Boston, MA. |
| 12/20/18 | Seminar Speaker, Fujita Health University, Toyoake, Aichi, Host: Tsuyoshi Miyakawa |
| 12/21/18 | "Finding relations among genes, brain and behavior in heterogeneous functional genomics data" 6th INCF Japan Node International Workshop Advances in Neuroinformatics (AINI 2018) Keynote Speaker, RIKEN, Wako, Japan |
| 02/18/19 | "Finding relations among genes, brain and behavior with heterogeneous functional genomics" Institute for Behavioral Genetics, University of Colorado, Boulder, CO. Host: Marissa Ehringer |
| 04/26/19 | "Genetics of Addiction and the Opioid Crisis" 46th Maine Biological and Medical Sciences Symposium, MDI Biological Laboratory, Bar Harbor, ME, Symposium Chair: Karen Houseknecht. |
| | Panelist, NHGRI "Genetic Modifiers of Phenotype" Webinar and Discussion |
| 01/13/20 | "Interpreting human genetics of SUD using multi-species heterogeneous functional genomics data," NIDA Genetics and Epigenetics Cross-Cutting Research Team Meeting; Rockville, MD |
| 10/23/20 | "Introduction to GeneWeaver: Integrating and analyzing heterogeneous function genomics data" Omics Portal for Addiction Research Webinar Series; Host: Laura Saba. |
| 09/2021 | "Network based prioritization of human GWAS candidates for Schizophrenia using IMPC behavioral phenotypes" International Mouse Phenotyping Consortium 10th Anniversary Symposium |

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| 12/2021 | Panelist, NIDA/NSF workshop "Training in Computer and Addiction Science: Bringing Fields Together" |
| 12/02/2021 | NIDA workshop: "How can we leverage AI/ML, and omics data to better understand the genetics of addiction?" |
| 12/09/2021 | Congressional Staff Briefing "Genetics of Addiction: What can we learn from laboratory mice?" |
| 01/28/2021 | "Integrative Genetics and Genomics of Predisposing Addiction Risk" NIDA Science Friday Webinar. |
| 03/17/2021 | "Prioritization of human GWAS candidates for schizophrenia", International Mouse Phenotyping Consortium Workshop on the Translational Value of Mouse Models in CNS Diseases" |
| 05/25/2022 | "What have you done for me lately? Integrative genetics and genomics for the study of human behavior." Distinguished Scientist Award Talk. International Behavioral and Neural Genetics Society, Memphis, TN. |
| 06/26/2022 | "Understanding and characterizing alcohol related variation through cross-species genetic and genomic data integration" Research Society on Alcoholism, Symposium Speaker. Orlando, FL. Chair Dr. Jason Bubier |
| 07/20/2023 | "The state of addiction research in Maine" Governor Mills Annual Opioid Response Summit |
| 06/19/2024 | "NIDA Research Center of Excellence Grants: How these collaborative Centers Contribute to the Understanding and Treatment of Substance Use Disorders" College on Problems of Drug Dependence 86th Annual Scientific Meeting, Symposium Speaker. Montreal, Canada Chair Dr. Kevin Freeman |

## Extramural Research Support:

*Active:*

5 P50 DA039841 Chesler (PI)                           08/15/16-06/30/27
NIH/NIDA
Center for Systems Neurogenetics of Addiction

The goal of this Center is to assess the impact of multiple, highly relevant behavioral and biological predictors of addiction using a deeply characterized mouse population. Collaborative research projects are supported by three research cores characterize the behavioral, genetic, and genomic basis of predisposition to psychostimulant abuse. Pilot projects and outreach activities support opportunities for trainees and investigators to gain access to systems genetics tools, resources, and methods in the study of the genetics of addiction.
Role: Principal Investigator

5 R01 DA037927 Chesler (PI)                           04/01/15-05/31/26
NIH/NIDA
Discovery of Addiction Related Genes with Advanced Mouse Resources
The goal of this project is to identify biological mechanisms of addiction and predisposing novelty-seeking behavior by harnessing recent advances in mouse genetic resources, including the high precision Diversity Outbred (DO) mouse population, validation in genetically modified mice, gene expression quantitation through RNA sequence analysis, and computational and statistical method development in systems genetics. Previously we developed a canonical correlation strategy for combining behavioral and neurogenomic data through a common set of behavioral observations in a large population. In this renewal we are simultaneously evaluating multiple tissues and deconvolving bulk transcriptomics using founder single-cell data using novel extensions of the PMCA method.
Role: Principal Investigator

5 R25 DA051342 Berwin, Chesler (PI)                   05/01/21-3/31/2026
NIH/NIDA
Growing the Genetics of Addiction Workforce with URM Faculty-Student Research Experiences
The goal of this project is to provide a unique research and training experience designed to encourage and assist members of groups that are under-represented in the biomedical and behavioral sciences to pursue or advance research or science-related careers in addiction related areas.
Role: PD/Principal Investigator

5 R13 DA052199 Chesler (PI)                           07/01/20-06/30/25
NIH/NIDA
Short Course on Genetics of Addiction
In alignment with one of the missions of The Jackson Laboratory, the goal of this program is to provide training and educational opportunities in genetics, genomics, and systems biology to both students and professional scientists.

Role: Principal Investigator

5 R01 DA028420 Bogue (PI)                              04/01/20-02/28/25
NIH/NIDA
Mouse Phenome Project
The goal of the Mouse Phenome Project is to support biomedical research by delivering a widely accessed and highly functional data repository for well-documented disease relevant phenotypic data from heterogeneous mouse populations along with a growing suite of analytics for integrative genetic analysis.
Role: Co-Investigator

5 P50DA054071 Johnson (PI)                             09/15/22-5/31/27
NIH/NIDA
Integrative Omics Center for Accelerating Neurobiological Understanding of Opioid Addiction (ICAN)
The goal of this program is to integrate human genetic studies of opioid addiction across multiple omics and other modalities, and to extend and apply cross-species analysis methods to identify and prioritize relevant model organisms.
Role: Project MPI

5 U54OD030187 Lutz, Murray (PIs)                       9/1/2020 - 8/31/2025 NIH/ORIP The Jackson Laboratory Center for Precision Genetics Bioinformatics Core The Bioinformatics Core will develop, implement, disseminate, apply, and validate data-driven approaches to the refinement of mouse models through the computational integration of genetic and phenotypic heterogeneity. Role: Core Lead

### *Completed:*

5 UM1 OD02322-07 Braun/Murray/Svenson (PI)            8/2/16-7/31/22
NIH/NHGRI
The Jackson Laboratory KOMP2 Phenotyping Center
The specific goal of this project is to expand the JAX KOMP2 Center to produce and phenotype 1,500 novel lines of knockout mice on an isogenic C57BL/6N background, and to share these animal resources and data with the scientific community.
Role: Co-Investigator

5 R01DA045401 Bogue (PI)                               07/01/15-04/30/20
NIH/NIDA
CRCNS: Computational Approach to Assess Replicability of Neurobehavior Phenotypes
This collaborative project with Dr. Yoav Benjamini integrates replicability analysis into the Mouse Phenome Database.
Role: Co-Investigator

1 U54 OD020351 Burgess (PI)                            8/15/15-6/30/21
The Jackson Laboratory Center for Precision Genetics: From New Models to Novel Therapeutics.
The goal of the Center is to develop and disseminate new, precise animal models of incurable and genetically complex human diseases. Each of the center's projects address intractable or incurable diseases linked by genetic complexity, molecular genetic data and/or "humanization" that represent diverse stages of preclinical development. The JCPG will: Aim 1) Align investigator-initiated disease model research projects with institution-wide support to create efficient and goal-oriented preclinical pipelines; Aim 2) Use heuristic program development in the pilot center research projects and cores to position JAX to be a fully functional center in five years, while nevertheless achieving tangible outcomes during the pilot period; Aim 3) Embrace both realistic, cutting-edge technological platforms and ambitious high-risk, high-reward platforms as required to advance paths to therapies for heretofore incurable diseases; and Aim 4) Through JAX's many inter-institutional collaborations, identify and engage key clinical, foundation and corporate partners, who share its vision both for specific disease objectives, to help navigate larger center goals. Ultimately, the JCPG will generate new disease modeling processes and pipelines, data resources, research results and models that will be swiftly shared through JAX's proven dissemination pipelines to accelerate translation to medical benefit. Dr. Chesler is a member of the bioinformatics core, led by Dr. Judith A. Blake, which serves the center's projects through data analysis, integration and dissemination for the discovery and characterization of these models.
Role: Co-Investigator

5 R01 AA018776  Chesler (PI)                           9/25/10-6/30/20

NIH/NIAAA

Data Structures, Algorithms and Tools for Ontological Discovery

The aims of this project are: 1) to develop a large data repository for behavioral neuroscience and data structures that more efficiently enable the use of databases to represent graphical network data; 2) to develop algorithms for the analysis of integrated gene centered data across species and experimental platforms to incorporate these developments into a Web-based software system; and 3) to use this tool to find genes underlying relationships between multiple abused substances and behavior.

Role: Principal Investigator

5 R01 DA028420-13 Bogue (PI)                    07/01/15-04/30/20

NIH/NIDA

Mouse Phenome Project

The Mouse Phenome Database (MPD; phenome.jax.org) is a repository of expertly curated, highly integrated, and diverse mouse phenotype data, including significant amounts of data relevant to alcoholism, addiction, neurobehavioral processes, and other physiological domains. Goals for this cycle are to upgrade the MPD system and acquire new data and data types; incorporate evolving technologies for archiving, integrating, and analyzing data; expand activities that promote data reproducibility within and across resources; and ensure interoperability of MPD with other public databases.

Role: Co-Investigator

ANON-FY16-EJC Chesler (PI)                     04/29/16-05/31/18

Anonymous (Industry)

GeneWeaver, Web-based system for integrative functional genomics

This collaborative research agreement enables the enhancement of the public release of GeneWeaver functionality in a manner that also meets specific needs for industry application.

Role: Principal Investigator

2 R13 DA032192 Chesler (PI)                    7/1/11-6/30/20

NIH/NIDA

Workshop on the Genetics of Addiction

The goal of the annual workshop on the Genetics of Addiction proposed in this application is to provide students an opportunity to learn about genetic applications and approaches to drug addiction research.

Role: Principal Investigator

1 U54 HG006332-01 Braun/Svenson (PI)           9/16/11-7/31/16

NIH/NHGRI

The Jackson Laboratory KOMP2 Phenotyping Center

The Knockout Mouse Phenotyping Program (KOMP2) seeks to build a phenotype resource summarizing the function of 20,000 genes in the mouse and to ultimately create a resource for understanding gene function in humans. The Jackson Laboratory will contribute to this goal by efficiently generating and sharing functional data for 833 mouse genes and will enhance the value of these data by linking them with current genetic and biological knowledge, enabling the scientific community to discover the roles of these genes in human health and disease. A supplement to this funding validates addiction predictions from baseline phenotyping.

Role: Co-Investigator

5 P30 AG038070-02 Churchill (PI)               8/15/10-6/30/15

NIH/NIA

Shock Center for Aging Research at The Jackson Laboratory - Core 4: Healthspan Core

The Healthspan Core will: a) provide affordable phenotyping of aging mice by a variety of techniques using defined protocols; b) provide genotypic data for these resources to allow researchers to map genetic and phenotypic associations with aging in the mouse; and c) collect and store valuable tissues from CC strains for distribution to internal and external researchers for further pathology and biochemical studies.

Role: Core Leader

5 R01 DA021198-05 Chesler (PI)                 8/1/09-7/31/12

NIH/NIDA

Genetics of Neuropathic and Inflammatory Hypersensitivity

The goal of this project is to determine novel genetic mechanisms of chronic neuropathic and inflammatory pain for predisposition assessment and treatment development. Dr. Chesler's role is to provide bioinformatics support to the project.

Role: Consortium PI


5 U01 AA016662-05 Miles (PI)                                     2/1/10-1/31/12

NIH/NIAAA

INIA-Stress: Information and Analysis Core

This project focuses on statistical analysis and web tools for data integration across methodologically diverse alcoholism research. This funding primary supports alcoholism specific application and database population for the ODE project.

Role: Consortium PI



5 P50 GM076468-05 Churchill (PI)                                 4/1/06-3/31/12

NIH/NIGMS

Genome Dynamics: Evolution, Organization and Function - Core 2 Subproject 2 (Chesler)

The goal of this subproject is to develop methods of extracting genotype and genetic map information from RNA-seq data for systems genetic analyses from a single source of molecular data in complex populations.

Role: Co-Core Leader


2 P50 GM076468-06 Churchill (PI)                                 7/15/11-6/30/16

NIH/NIGMS

Center for Genome Dynamics - Project E: Data Driven Systems Genetics Workflow for New Experimental Platforms

The goal of this project is the development and application of high throughput RNA sequencing technology (HTPS) as the sole source of transcription and polymorphism data for an expression QTL experiment.

Role: Co-Project Leader


1 R13 DA030036-01 Chesler (PI)                                   7/1/10-6/30/11

NIH/NIDA

Genetics of Drug Addiction

The short course on the Genetics of Addiction proposed in this application will provide students with an opportunity to learn about genetic applications and approaches to drug addiction research.

Role: Principal Investigator


7 U01 AA016669-04 Chesler (PI)                                   11/25/10-1/31/11

NIH/NIAAA

Ontological Discovery for Ethanol Research (INIA Project)

This funding supports development of a web-based software system for integration of ethanol related gene sets and develops methods to analyze the sets and their relationship to behavior using graph algorithms. This funding specifically supports the database and tool development.

Role: Principal Investigator


DOE ERKP 804 (Chesler)                                           10/1/06 – 9/30/09

DOE/Office of Science

Mouse Genetics and Mutagenesis for Functional Genomics

This funding provided the majority of the support for the develop and characterization of the Collaborative Cross reference population and included support for the genotyping and gene expression lab, behavioral, physiological, and morphological phenotyping labs, bioinformatics and biostatistics, breeding operations and Mouse Genetics Research Facility in the Systems Genetics Group at ORNL. External advisors: David Galas, Lisa Stubbs, Rick Woychik, Rudi Balling, Miriam Meisler, Randy Blakely, David Threadgill, John E. French, Robert Ullrich.

Role: Principal Investigator


Ellison Medical Foundation (Chesler)                             2/2/06 – 1/10/10

A Genetic Reference Panel for the Systematic Analysis of Lifetime Factors that Alter Lifespan and Quality of Life

This funding, initially issued to DK Johnson, supported initiation and breeding of 500 lines of the Collaborative Cross. Dr. Chesler served as PI of this project from 7/2006-7/2009.

Role: Principle Investigator

ORNL Laboratory Directors' Research and Development Fund (Chesler)        10/1/07 – 9/30/09

This funding supported genetic analysis of microbial-host interactions in the Collaborative Cross including high throughput sequencing of the gut microbiome using 454, genome wide transcriptional profiling of the surrounding mouse intestine and SNP genotypes in collaborative cross mice and their progenitor strains.

Role: Principle Investigator

NIH/NIDA, NIAAA 5R01DA020677 (Goldowitz)        7/1/06- 6/30/09

Gene to Phenotype Networks for Alcohol and Drug Addiction

This project supported the characterization of the newly expanded BXD Recombinant Inbred strain panel on over 250 behavioral phenotypes using the Tennessee Mouse Genome Consortium's behavioral phenotyping labs. Dr. Chesler conceived of the project, devised and implemented analysis tools and data management procedures, collected pain related phenotypes, and led the preparation of manuscripts.

Role: Co-Investigator

NIH/NIMH  5 U01 MH61971-05 (Goldowitz)        9/2/00 – 8/31/06

Targeted Mutagenesis of the Mouse Genome and Neural Phenotypes

This funding supports the production and phenotyping of potentially mutant mice to identify mutant mice that serve as models to study human disease.

Role: Collaborator and biostatistician

NIH/NIAAA  5 U01AA013512-05 (Grant/Chesler)        8/1/05 – 12/31/06

The Integrative Neurosciences Initiative on Alcoholism (INIA):  Informatics

This funding supports the statistical analysis and design of web tools for creation of data integration across methodologically diverse behavioral neuroscience research in the context of the INIA.

Role: Co-Investigator

NIH/NIAAA  U01 AA13641-05 (Langston/Chesler)        1/1/06 – 12/31/06

Combinatorial Network Analysis of High Throughput Stress and Alcohol Data

INIA pilot project to apply the combinational algorithms to analysis of data related to stress and alcoholism.

Role: Pilot Principal Investigator

D06 -033 (Voy)        10/1/05 – 9/30/07

ORNL Laboratory Directed Research and Development Funds (LDRD)

A Model System for Analyzing Whole-body Toxicity of TICs, TIMs, and Chemical Warfare Agents

Impact of genetic diversity on response to toxic chemicals in mice.

This funding initially supported toxicology studies in the BXD Recombinant Inbred Strains and was redirected to the development of a genotyping array for the Collaborative Cross.

Role: Co-PI

S08-009 (Chesler)        10/1/07 – 9/30/08

ORNL Laboratory Directed Research and Systems Neurogenetics of Methyl Mercury Exposure

This project investigates the effects of genetic variability on the neurobehavioral and transcriptional response to an important environmental contaminant, Methyl Mercury.

Role: Principle Investigator

NIH/NICHD  1 R01 HD052472-05 (Hamre)        9/5/05 – 6/30/10

Mapping Cerebellar Development in Time and Space

This project examines developmental cerebella gene expression in mouse models including BXD RI lines. Dr. Chesler's lab provided time series analysis of mutant and BXD gene expression data through development and assisted in the design of databases and web resources for this project.

Role: Co-PI

ORNL Technology Transfer and Economic Development (TTED) Royalty Funds (Chesler)          5/15/06

Combination High Throughput Genotyping and Expression Analysis Equipment for Mammalian Systems Genetic Analysis

This equipment grant supported the purchase of an Illumina Infinium Beadstation for Dr. Chesler's group for gene expression genetics and genotyping of the Collaborative Cross using their custom designed genotyping array.


NIH/NCRR 5 U01 CA134240 (Threadgill)                    9/30/07 – 9/29/12

Systems Genetics Resource Consortium

This funding supports the distribution of the collaborative cross lines for profiling. Originally developed as a P30 resource core at ORNL led by Dr. Chesler, this funding supported the provision of mice to UNC Chapel Hill for the Pre-CC proof of concept study.



NIAAA   1R01 AA014425-01A1 (Lu)                    4/1/04 – 3/31/09

Genetic Analysis of Ethanol-mediated Stress Reduction

The major goal of this proposal is to extend transcriptome QTL mapping and trait association in RI strains to the hippocampus of the LXS mice under alcohol and stress exposure to test the role of shared genetic mediation of responses to both treatments. Dr. Chesler developed major aspects of this proposal and the methods used to execute the project.

Role: Co-Investigator


NSF IGERT (Peterson)                    8/08-8/13

SCALE-IT:

This is a grant to develop a graduate program and curriculum in high-performance computing applications in the biological sciences including systems genetics.

Role: Co-Investigator


***NOTES:***

*Laboratory Director's Research and Development Funds are awarded annually on a competitive basis within the Oak Ridge National Laboratory. Applications are reviewed by a committee including external peer reviewers, lab scientific staff and management.  Funding of up to $350,000 per year over a two-year period is awarded.

**ORNL Seed Money Funds are awarded on a competitive basis based on an internal review by Lab scientific staff.

***DOE funding is awarded via the Office of Biological and Environmental Research, Office of Science, US. Department of Energy, requiring annual peer reviewed Field Work Proposal. An external advisory board reviewed progress and directions on the Mouse Genetics Research Facility supported by these funds.

****ORNL Technology Transfer and Economic Development (TTED) Royalty Funds are awarded based on a competitive internal review by a committee consisting of the Director of Technology Transfer and Economic Development and three of the five Associate Lab Directors at ORNL.

**Publications:**

*Review and Commentary:*

1. Lariviere WR, **Chesler EJ**, Mogil JS. 2001. Transgenic studies of pain and analgesia: mutation or background genotype? *Journal of Pharmacology and Experimental Therapeutics*, 297:467-73.

2. **Chesler EJ**, Rodriguez-Zas SL, Mogil JS. 2001. In Silico Mapping of Mouse Quantitative Trait Loci. *Science*, 294:2423.

3. The Complex Trait Consortium: Flaherty L, Abiola O, Angel JM, Avner P, Bachmanov AA, Belknap JK, Bennett B, Blankenhorn EP, Blizard DA, Bolivar V, Brockmann GA, Buck KJ, Bureau J-F, Casley WL, **Chesler EJ,** Cheverud JM, Churchill GA, Cook M, Crabbe JC, Crusio WE, Darvasi A, de Haan G, Demant P, Doerge RW, Elliott RW, Farber CR, Flint J, Gershenfeld H, Gibson JP, Gu W, Himmelbauer H, Hitzemann R, Hsu H-C, Hunter K, Iraqi F, Jansen RC, Johnson, TE, Jones BC, Kempermann G, Lammert F, Lu L, Manly KF, Matthews DB, Medrano JF, Mehrabian M, Mittleman G, Mock BA, Mogil JS, Montagutelli X, Morahan G, Mountz JD, Nagase H, Nowakowski RS, O'Hara BF, Osadchuk AV, Paigen B, Palmer AA, Peirce JL, Pomp D, Rosemann M, Rosen GD, Schalkwyk L C, Seltzer Z, Settle S, Shimomura K, Shou S, Sikela JM, Siracusa LD, Spearow JL, Teuscher C, Threadgill DW, Toth LA, Toye AA, Vadasz C, Van Zant G, Wakeland E, Williams RW, Zhang H-G, Zou F. 2003. The nature and identification of quantitative trait loci: a community's view. *Nature Rev Genet*, 4(11):911-916.

4. Churchill GA, Airey DC, Allayee H, Angel JM, Attie AD, Beatty J, Beavis WD, Belknap JK, Bennett B, Berrettini W, Bleich A, Bogue M, Broman KW, Buck KJ, Buckler E, Burmeister M, **Chesler EJ,** Cheverud JM, Clapcote S, Cook MN, Cox RD, Crabbe JC, Crusio WE, Darvasi A, Deschepper CF, Doerge RW, Farber CR, Forejt J, Gaile D, Garlow SJ, Geiger H, Gershenfeld H, Gordon T, Gu J, Gu W, de Haan G, Hayes NL, Heller C, Himmelbauer H, Hitzemann R, Hunter K, Hsu HC, Iraqi FA, Ivandic B, Jacob HJ, Jansen RC, Jepsen KJ, Johnson DK, Johnson TE, Kempermann, G, Kendziorski C, Kotb M, Kooy RF, Llamas B, Lammert F, Lassalle JM, Lowenstein PR, Lu L, Lusis A, Manly KF, Marcucio R, Matthews D, Medrano JF, Miller DR, Mittleman G, Mock, BA, Mogil JS, Montagutelli X, Morahan G, Morris DG, Mott R, Nadeau JH, Nagase H, Nowakowski RS, O'Hara BF, Osadchuk AV, Page GP, Paigen B, Paigen K, Palmer AA, Pan HJ, Peltonen-Palotie L, Peirce J, Pomp D, Pravenec M, Prows DR, Qi Z, Reeves RH, Roder J, Rosen GD, Schadt EE, Schalkwyk LC, Seltzer Z, Shimomura K, Shou S, Sillanpaa MJ, Siracusa LD, Snoeck HW, Spearow JL, Svenson K, Tarantino LM, Threadgill D, Toth LA, Valdar W, de Villena, FP, Warden C, Whatley S, Williams RW, Wiltshire T, Yi N, Zhang D, Zhang M, Zou, F. 2004. Complex Trait Consortium. The Collaborative Cross, a community resource for the genetic analysis of complex traits. *Nat Genet*, 36:1133-1137.

5. Chesler EJ, Bystrykh L, de Haan G, Cooke MP, Su A, Manly KF, Williams RW. 2006. Reply to "Normalization procedures and detection of linkage signal in genetical-genomics experiments". Nat Genet 38(8):856-8.

6. **Chesler, EJ.** 2006. "Book Review: *Mutagenesis of the Mouse Genome*" M. Justice and M. Bedell, Eds. *Genes, Brain and Behavior*, 5(2): 207.

7. The Mouse Phenotype Database Integration Consortium: Hancock JM, Adams NC, Aidinis V, Blake A, Blake JA, Bogue M, Brown SDM, **Chesler E**, Davidson D, Duran C, Eppig JT, Gailus-Durner V, Gates H, Gkoutos GV, Greenaway S, Hrabeʹ De Angelis M, Kollias, Leblanc GS, Lee K, Lengger C, Maier H, Mallon A-M, Masuya H, Melvin DG, Muller W, Parkinson H, Proctor G, Reuveni E, Schofield P, Shukla A, Smith C, Toyoda T, Vasseur L, Wakana S, Walling A, White J, Wood J, Zouberakis M. 2007. Integration of mouse phenome data resources. Mammalian Genome, 2007 Mar;18(3):157-63.

8. **Chesler EJ** (2013) Out of the bottleneck: The Diversity Outcross and Collaborative Cross Mouse populations in Behavioral Genetics Research. Invited Review Mammalian Genome Special Issue

9. Bubier JA, Phillips CA, Langston MA, Baker EJ, **Chesler EJ**. GeneWeaver: finding consilience in heterogeneous cross-species functional genomics data. Mamm Genome. 2015 Jun 20. PubMed PMID: 26092690.

10. Bogue MA, Churchill GA, **Chesler EJ**. Collaborative Cross and Diversity Outbred data resources in the Mouse Phenome Database. Mamm Genome. 2015 Oct;26(9-10):511-20.

11. Saul MC, Philip VM, Reinholdt LG, Center for Systems Neurogenetics of Addiction, **Chesler EJ**. High-Diversity Mouse Populations for Complex Traits. Trends Genet. 2019 May 24; pii: S0168-9525(19)30065-4. doi: 10.1016/j.tig.2019.04.003.


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### *Refereed Computer Science Conference Papers:*

1. Zhang Y, Abu-Khzam FN, Baldwin NE, **Chesler EJ**, Langston MA, Samatova NF. 2005. Genome-Scale Computational Approaches to Memory-Intensive Applications in Systems Biology. *Super Computing*.

2. **Chesler EJ**, Langston MA. 2005. Combinatorial genetic regulatory network analysis tools for high throughput transcriptomic data. *RECOMB First Annual RECOMB Satellite Workshop on Systems Biology and the Second Annual RECOMB Satellite Workshop on Regulatory genomics*.

3. Kirova R, Langston MA, Peng X, Perkins A, **Chesler EJ**. 2006. A Systems Genetic Analysis of Chronic Fatigue Syndrome: Combinatorial Data Integration from SNPs to Differential Diagnosis of Disease. *Critical Assessment of Microarray Data*, Durham, NC.

4. Song J, Lewis C, Lance E, **Chesler EJ**, Kirova R, Langston MA, Bergeson S. 2007. Inferring Transcriptional Regulation through Logical Networks from Temporal Mouse Brain Gene Expression Data. FOSBE, Stuttgart, Germany.

5. Zhang Y, **Chesler EJ**, Langston MA. 2007. On Finding Bicliques in Bipartite Graphs: a Novel Algorithm with Application to the Integration of Diverse Biological Data Types. Hawaii International Conference on System Sciences, Waikoloa, HI.

6. Meehan TF, Carr CJ, Bult CJ, **Chesler EJ**, Blake JA. 2011. Autism Candidate Genes via Mouse Phenomics. AMIA Summit on Translational Bioinformatics. San Francisco, CA.
7. Jay JJ, Eblen JD, Zhang Y, Benson M, Perkins AD, Saxton AM, Voy BH, **Chesler EJ** and Langston MA, "A Systematic Comparison of Genome Scale Clustering Algorithms," Proceedings, International Symposium on Bioinformatics Research and Applications, Changsha, China, May 2011. Proceedings published as Lecture Notes in Bioinformatics 6674 (Jianer Chen, Jianxin Wang and Alexander Zelikovsky, editors), Springer, pages 416-427.
8. Jay JJ, Baker EJ, **Chesler EJ**. A Context-Driven Gene Prioritization Method for Web-based Functional Genomics. ISBRA, 2013, Charlotte, NC.
9. Baker E, Culpepper C, Philips C, Bubier J, Langston M, **Chesler E.** Identifying common components across biological network graphs using a bipartite data model. BMC Proc. 2014 Oct 13;8(Suppl 6 Proceedings of the Great Lakes Bioinformatics Confer):S4. doi: 10.1186/1753-6561-8-S6-S4. eCollection 2014. PubMed PMID: 25374613; PubMed Central PMCID: PMC4202189.
10. Lu Y, Phillips C, **Chesler EJ**, Langston M. Clique Selection and its Effect on Paraclique Enrichment: An Experimental Study. Proceedings, International Conference on Bioinformatics and Computational Biology (BICOB), San Francisco, CA, USA, March 2020.


### *Book Chapters:*

**1. Chesler, EJ.** (2003) "Design and Analysis of Microarray Experiments" in *The Bioinformatics of Brains: From Genes and Proteins to Behaviors,* (Williams RW, ed), Washington, DC, Society for Neuroscience.
**2. Chesler, EJ**, Williams RW. (2004) Brain gene expression: genomics and genetics. *Int Rev Neurobiol*. (Miles MF, ed) 60, 59-95.
**3. Chesler, EJ.** (2006) "Bioinformatics of Behavior" in Neurobehavioral Genetics. (Jones B, Mormede P, eds), CRC press.
**4. Chesler, EJ.** (2007) "*Combining quantitative trait and gene expression data*" in Bioinformatics for Geneticists. (Barnes MG, Gray IC, eds)
**5.** Haendel MA, **Chesler EJ**. Lost and found in behavioral informatics. *Int Rev Neurobiol.* (Chesler EJ, Haendel MA, eds.) 2012;103:1-18.
**6. Chesler EJ**, Haendel MA. The field of bioinformatics. Preface. *Int Rev Neurobiol.* (Chesler EJ, Haendel MA, eds.) 2012;103:xi-xii.
**7. Chesler EJ**, Logan RW. Opportunities for bioinformatics in the classification of behavior and psychiatric disorders. *Int Rev Neurobiol.* (Chesler EJ, Haendel MA, eds.) 2012;104:183-211.
**8. Chesler EJ,** Baker EJ "Contributions of genomic and informatics approaches to understanding alcohol dependence: from genes to networks" Neurobiology of Alcohol Dependence. (Cui, Crabbe, Noronha, eds.) in press
**9.** Jay, J. and **Chesler EJ** (2014) Performing Integrative Functional Genomics Analysis in GeneWeaver.org Methods in Molecular biology. Springer, 1101:13-29.
**10.** Bubier JA, **Chesler EJ** (2015) Integrative Functional Genomics for Systems Genetics in GeneWeaver.org. Systems Genetics. Methods in Molecular Biology. Springer. Methods Mol Biol. 2017;1488:131-152.
**11.** Parker CC, Dickson PE, Philip VM, Thomas M, **Chesler EJ.** Systems Genetic Analysis in GeneNetwork.org. Curr Protoc Neurosci. 2017 Apr 10;79:8.39.1-8.39.20. doi: 10.1002/cpns.23. PubMed PMID: 28398643; PubMed Central PMCID: PMC5548442.

*Internet Resources:*

WebQTL/GeneNetwork. www.webqtl.org, www.genenetwork.org  Design of tools for multi-trait and genetic correlation analysis including Cluster Map, Associative Network, Genetic Correlation and Principal Component Analysis.

Mutrack/MouseTrack. www.tnmouse.org; http://mouse.ornl.gov  Design of robust methods for mutant detection, mutant comparison analysis and tools for complex trait analysis for the Tennessee Mouse Genome Consortium and Integrative Neuroscience Initiative on Alcoholism.

GeneWeaver http://geneweaver.org  formerly the Ontological Discovery Environment. http://ontologicaldiscovery.org Combinatorial analysis of user submitted and curated experimental results in functional genomics.

Mouse Phenome Database. https://phenome.jax.org Redesign of the Mouse Phenome Database to a modern framework, design of an integrative genetics tool set and incorporation of advanced genetic population data for integrative genetic analysis.

GenomeMUSter. A harmonized SNP resource consisting of observed and imputed variant states for 657 strains at over 100M loci connected to the Mouse Phenome Database for trait metanalysis and other applications. https://mpd.jax.org/genotypes

VariantGraphDB A Neo4J graph database for translation of variant effects from mouse to human.


**Outreach Resources.**

LEGO operant chamber.

https://www.jax.org/news-and-insights/2015/july/thinking-outside-the-blocks

"A LEGO box to study drug addiction". Bethany Brookshire, Student Science Eureka! Lab. 11/2/14.

Featured at University of Chicago 4th annual Conte Center for Computational Neuropsychiatric Genomics Brain Awareness Day 2015.

Featured at Sciencia: Blue Hill Teen Science Café, Blue Hill, Maine, November 18, 2015.


**Community.**

Acadia Night Sky Festival, Organizing Committee member and volunteer. 2009-2021.

Town of Bar Harbor Conservation Commission. 2014-2017

Town of Bar Harbor Planning Board. 2021-present; secretary 2022-present

Town of Bar Harbor Comprehensive Plan Committee. 2021-present

Acadia Family Center, Board member, Task force committee member, 2022-present

Jesup Memorial Library. Volunteer, science programming, 2012-2020