Curriculum Vitae

Wayne N. Frankel, Ph.D., Professor
Columbia University Irving Medical Center

EDUCATION

1982	B.A. (Biology), The University of Pennsylvania, Philadelphia, PA
1984	M.S. (Genetics), Albert Einstein College of Medicine, Bronx, NY
1987	Ph.D. (Genetics), Albert Einstein College of Medicine, Bronx, NY

AWARDS AND HONORS

1982-1987	Scholarship, Immunology & Immunooncology Training Fellowship, Albert Einstein College of Medicine, Bronx, NY
1987-1990	Leukemia Society of America Fellowship, Tufts University School of Medicine, Boston, MA
1990-1993	Leukemia Society of America Special Fellowship, Tufts University School of Medicine, The Jackson Laboratory, Bar Harbor, ME
1994-1997	Klingenstein Fellowship in the Neurosciences, The Jackson Laboratory, Bar Harbor, ME
2014-2021	Javits Neuroscience Investigator Award (MERIT), National Institute of Neurological Disorders and Stroke
2024	GRI Patient Impact Award, CureGRIN

RESEARCH POSITIONS

1982-1987	Graduate Student, Department of Genetics, Albert Einstein College of Medicine, Bronx, NY (advisor: T. V. Rajan)
1987-1991	Postdoctoral Fellow, Tufts University School of Medicine, Boston, MA (mentor: John M. Coffin).
1992-1995	Assistant Professor, The Jackson Laboratory, Bar Harbor, ME
1995-2002	Associate Professor, The Jackson Laboratory, Bar Harbor, ME
2002-2015	Professor, The Jackson Laboratory, Bar Harbor, ME
2004-2015	Adjunct Professor, The University of Maine, Orono, ME
2011-2015	Professor, Tufts University School of Medicine, Boston, MA
2011-2015	Professor, Tufts University School of Medicine, Sackler School of Graduate Biomedical Sciences, Boston, MA
2015-2021	Adjunct Professor, The Jackson Laboratory, Bar Harbor, ME
2015-2023	Professor, Institute for Genomic Medicine, Columbia University Irving Medical Center, NY, NY
2015-2024	Professor, Department of Genetics and Development, Columbia University Irving Medical Center, NY, NY
2023-2024	Director, Center for Translational Research in Neurodevelopmental Disease, Columbia University Irving Medical Center, NY, NY
2024-present	Clinical Professor of Neurology (in the Department of Genetics and Development), Columbia University Irving Medical Center, NY, NY

PROFESSIONAL ACTIVITIES

Editorial and Advisory Board Membership

1994-2010	Editorial Board, *Mammalian Genome*
1995-2003	Scientific Advisory Board, Digital Gene Technologies, La Jolla, CA
1996-1997	Editorial Board, *Genomics*
1997-2005	Associate Editor, *Genomics*
1997-1998	Secretariat, International Mammalian Genome Society
2000-2002	Founding Editor-in-Chief, *Gene Expression Patterns*
2001-2005	Member, *Faculty of 1000*, Animal Genetics section
2002-present	Editorial Board, *Genes, Brains and Behavior*
2005-2008	Founding Editor-in-Chief, *PLOS Genetics (Public Library of Science)*
2005-2009	Scientific Advisory Board, The EuroHear Consortium
2007-2008	Editorial Board, *Epilepsia*
2009-2010	Advisory Board *Faculty of 1000* Reports
2008-2012	Member, Board of Scientific Counselors, NIH–NIDCD
2010-2012	Chair, Board of Scientific Counselors, NIH–NIDCD
2008-present	Associate Editor, *PLOS Genetics (Public Library of Science)*
2017-2023	Member, (area co-lead from 2022) Epilepsy Research Benchmarks Stewards Committee, (*American Epilepsy Society*)
2017-2019	Advisory Board, Alliance for Genome Resources (AGR)
2024-	Contributing Editor, *Epilepsy Currents*

Specific Extramural Grant Review and Planning Groups:

1993	NICHD Special Review Committee Study Section
1994, 1998	NIA Special Review Committee Study Section
1995	NIAAA Special Review Committee Study Section
1995	NIDCD Special Review Committee Study Section
1996, 1999	Temporary Member, Mammalian Genetics Study Section
	NIMH, Special Review Committee Study Section
1998	NCI Advisory, Preclinical Models for Cancer Workgroup, Mouse Genomics and Genetics
1998	NCI Review Board, Intramural Program
1998	NIH Advisory, Priority Setting for Mouse Genomics/Genetics Workshop
1998	*Ad Hoc* Reviewer, ALTX-3 Study Section
1999-2000	NIH BDCN-4 Study Section
1999	Princeton Mouse Genome Sequencing Meeting
1999	Temporary Member, NIH Biol-1 Study Section
1999	NIH/NINDS Advisory, Future Genetic Strategies for Epilepsy Workshop
1999	Genetics in the New Millennium: Directions for the Future, Bar Harbor
2000	NIH Advisory, Priority Setting Mouse Genomics/Genetics Follow-up
2000	NIMH Advisory, Setting Priorities for Phenotyping the Mouse Nervous System and Behavior
2000	Genetics in the New Millennium: A Neuroscience Prospective, Bar Harbor
2001	NIH/NINDS Advisory, Models for Epilepsy and Epileptogenesis, Bethesda
2001	NINDS Special Review Committee, Innovations in Translational Epilepsy Research Study Section
2001	Mouse Analysis Working Group Meeting (Mouse Genome Sequence Consortium), Whitehead Institute Genome Center, Cambridge, MA

2001	Chair, Mouse Sequencing Liaison Group (NHGRI-based committee to improve and maintain communication between the genome sequencing centers and the mouse research community)
2001	Reviewer, Quality of Life Integrated Projects in Functional Genomics Relating to Human Health (grant solicitation from European Commission)
2001	Reviewer, NIH/NINDS Gene Discovery Panel (RFA), Reviewer
2001	*Ad Hoc* Reviewer, NIH Social Sciences, Nursing, Epidemiology and Methods (SNEM) Integrated Review Group, SNEM-2
2002-2007	Scientific Reviewer, CURE (Citizens United for Research in Epilepsy)
2002	*Ad Hoc* Reviewer, NIH/CSR Special Review Committee for Mammalian Genetics
2003	*Ad Hoc* Reviewer, Veterans Administration, NEUD subpanel
2003	Reviewer, NIH/NINDS Special Review Committee Brain Disorders in the Developing World: Research Across the Lifespan (ZNS1 SRB-H 01)
2003	Subcommittee Member, Medical Research Council, Review of the MRC Mammalian Genetics Unit, Harwell, Oxford, UK
2004	Reviewer, NIH/NINDS Special Review Committee Model Validation for Antiepileptogenic and Resistant Epilepsy Therapies
2005	Panel Reviewer, Genome Canada Competition II. Montreal
2006	Reviewer, NIH/NINDS Neuroscience Blueprint Interdisciplinary Center Core Grant (RFA)
2006	*Ad Hoc* Reviewer, NIH Clinical Neuroplasticity and Neurotransmitters Study Section
2006	*Ad Hoc* Reviewer, NIH Genetics of Health and Disease Study Section
2006	*Ad Hoc* Reviewer, NIH/NINDS Workshop, Model Development in Epileptogenesis and Therapy-Resistant Epilepsy and Models of Geriatric Epilepsy
2007	Panel Reviewer, Genome Canada International Scientific Review Committee (ISRC) for Competition III. Vancouver, BC.
2007	*Ad Hoc* Reviewer, NIH Molecular, Cellular, and Developmental Neuroscience Study Section
2009	*Ad Hoc* Reviewer, Genetics IRG, Challenge grants
2010-2014	Member, NIH/GHD Study Section
2011	Member, Neurotechnology and Neurogenetics Member Conflict Study Section (ZRG1 ETTN A02)
2014	*Ad Hoc* Reviewer, GNOM-G study section (CEGs grants)
2015	Member BDCN N90 Special Emphasis Panel
2016	Ad Hoc Reviewer, CNNT study section, Washington, DC
2016	Ad Hoc Reviewer, ZRG1 BDCN study section, Bethesda, MD
2017	Ad Hoc Reviewer, ZRG1 BDCN-W (05) study section, Bethesda, MD
2017	Ad Hoc Reviewer, ZHG1 HGR-P study section, Bethesda, MD
2019	Member, U42 Mutant Mouse Resource and Research Centers review panel, NIH
2020	Member, P50 Centers for Collaborative Research in Fragile X and FMR1-Associated Conditions
2021-2023	National Library of Medicine Board of Regents: Comparative Genomics Resource Working Group (NLM)

CONFERENCE ORGANIZATION

1994	Organizer (with A. Messer, R. Reeves, B. Tempel), Workshop in Mouse Molecular Neurogenetics, Bar Harbor
1995	Organizer (with A. Chakravarti, S. Ghosh, N. Schork), Biology and Genetics of Complex Mammalian Traits, Bar Harbor

1996	Organizer (with K. Herrup, J. Noebels, A. Silva), 2nd Biennial Workshop in Mouse Molecular Neurogenetics, Bar Harbor
1996	Organizer (with others), Knockouts and Mutants: Genetically Dissecting Brain & Behavior, San Diego (sponsored by Elsevier)
1999	Organizer (with S. Ackerman, M. MacDonald, G. Sutcliffe), 3rd Biennial Workshop in Mouse Molecular. Neurogenetics, Bar Harbor
2002	Organizer, 4th Biennial Workshop in Mouse Molecular Neurogenetics, Bar Harbor
2004	Organizer, 5th Biennial JAX Neurogenetics Conference (formerly Workshop in Mouse Molecular. Neurogenetics), Bar Harbor
2011	Organizer, Coming Together on Epilepsy Genetics: From Human to Model Organisms, and Back, Conference, Bar Harbor
2014	Co-chair (with S. Petrou), “Precision Therapeutics” session, Epilepsy Genetics in the Era of Precision Medicine, San Francisco, CA

INSTITUTIONAL COMMITTEES/SERVICE

The Jackson Laboratory (1992-2015)

1992-1993	Reinstated/Organized Genetics Interest Group (Weekly Journal Club)
1992-93; 06-07	Training and Education Committee
1993-95; 98-99	Scientific Advisory Committee
1995	Genetic Resources
1995-1997	Staff (Faculty) Recruiting
1998-1999	Courses and Meetings
1998-2000	TJL Mutagenesis/Physiogenomics Service (Staff Supervisor)
1998-2005	Research Grants Committee
1999-2001	Director Search Committee
2000-01; 05-09	Faculty Recruiting Committee
2001	Staff Recruiting Subcommittee, Biophysics
2003-2006	Associate Director and Chair of Research Search Committee
2003-2011	Promotions Committee
2005-2006	Chair, TJL Neuroscience Recruitment Planning Group
2005-2008	University of Maine/TJL Functional Genomics Ph.D. Program Recruiting Committee
2006-2020	Director, Training In Neurogenetics (NIH-NINDS T32 training grant)
2008-2012	Scientific Director of Postdoctoral Training
2008-2013	Postdoctoral Training Committee, Chair
2009-2014	Predoctoral Training Committee
2011-2014	Research Grants Committee
2011-2014	Internal Advisory Board, Jackson Aging Center
2011-2012	Human Resources Senior Director Search Committee
2012-2013	Education Cabinet
2013-2014	Radiation and Lab Safety Committee, Chair
2013-2015	Education Advisory Committee
2014-2015	Predoctoral and Postdoctoral Training Committee

Columbia (2015-present)

2017, 2018	Member, Pew Biomedical Scholars review committee
2018	Member, Research Initiatives in Science and Engineering (RISE) Competition review committee

2018-2021	Co-chair, Columbia Precision Medicine Initiative Supplemental Funding for Mouse Models of Human Disease
2019-2023	Institutional Biosafety Committee
2020	Member, Revson Fellows review committee

TEACHING

1985	Medical Genetics Instructor, Albert Einstein College of Medicine
1989	Infectious Diseases Instructor, Tufts University School of Medicine
1992-93	Lecturer, Short Course in Medical and Experimental Mammalian Genetics
1995-2000	Lecturer, Short Course in Medical and Experimental Mammalian Genetics
1995-96, 98	Lecturer, Grad-level Genetics Course, Tufts University School of Medicine
1996	Lecturer, Short Course: Modern Genetics for Neuroscientists (held at Winter Conference for Brain Research), Snowmass, CO
1996	Lecturer, Society for Neurosciences Annual Meeting Short Course: What's wrong with my mouse?
1997	Director, Grad-Level Course, Experimental Genetics of the Laboratory Mouse: Genetics, Development and the Brain, The Jackson Laboratory
1997	Lecturer, Grad-Level Genetics Course, Albert Einstein College of Medicine
2016	Lecturer, Genetic Approaches II, Genetics & Development Ph.D. program, Columbia University
2017-2023	Lecturer and Course director, Genetic Approaches to Biological Problems II, (Genetics & Development Ph.D. program required course), Columbia University
2017-2020	Lecturer, Molecular Genetics, (CUMC integrated Ph.D. program), Columbia University
2018	Lecturer, Seminar in Modern Biology (for first year undergraduates, Biological Sciences Department), Columbia University

PH.D. THESIS DEFENSE COMMITTEES (COMPLETED)

1994	Outside Examiner, Kenro Kusumi, Mass Institute of Technology (December).
1996	Committee Chair, Cathleen M. Lutz, University of Maine.
2002	Outside Examiner, Jennifer Hughes, Tufts University Sackler School (September)
2004	Outside Examiner, Christopher Tipper, Tufts University Sackler School (June)
2010	Outside Examiner, Mohd Zulqisti Mohd Zulkifli, University of Melbourne (June)
2011	Outside Examiner, Oya Cingoz, Tufts University (October)
2013	Outside Examiner, Tae Hwan Kim, University of Melbourne (September)
2014	Committee Chair, Christian D. Richard, University of Maine
2017	Committee member, Sedef Tinaztepe, Columbia University
2020	Committee member, Meghan Pantella, Columbia University
2021	Alex Whitebirch, Columbia University
2021	Osasumen Virginia Aimiuwu, Columbia University (mentor)
2022	Devin Jones, Columbia University (mentor)
2022	Wanqi Wang, Columbia University (mentor)

INVITED SEMINARS AND PLATFORM PRESENTATIONS

1996	Invited Speaker, “Genetics of epilepsy in mice,” Winter Conference for Brain Research, Snowmass (January)
1996	Platform Speaker, Klingenstein Fellows Annual Meeting, Banbury Center, Cold Spring Harbor (April)

1996 Invited Speaker, Workshop on Behavioral Phenotypes of Inbred Strains of Mice, NIH, Bethesda (April)

1996 Invited Speaker, “Genetics of epilepsy in mice...as of May 30th, 1996,” 10th International Workshop, Molecular Genetics of the Mouse, Spa, Belgium (June)

1997 Invited Seminar, “Genetics of epilepsy in mice,” Cornell Medical School (February)

1997 Invited Seminar, “Genetics of epilepsy in mice,” Department of Human Genetics, University of Florida, Gainesville (February)

1997 Invited Seminar, “Gene hunting (and finding) in mouse models for epilepsy and other neurological disorders, " Albert Einstein College of Medicine, Department of Molecular Genetics, Bronx (December)

1998 Platform Speaker, “Gene hunting in new and old mouse models of epilepsy” at Epilepsy Research Foundation: Workshop on the Use of Animal Models for Elucidating the Molecular Basis of Epilepsy, Oxford, UK (September)

1998 Invited Seminar, “Gene discovery for uncovering molecular mechanisms of neurological disorders” at Department of Biophysics and Physiology, University of Iowa (October)

1998 Platform Speaker, “Gene discovery using mouse models: Overview and strategies of positional cloning for neurological traits” at Knockouts and Mutants: Genetically Dissecting Brain and Behavior (sponsored by Brain Research Interactive) San Diego (November)

1998 Platform Speaker, “The mouse stargazer gene encodes a candidate g subunit for neuronal calcium channels," at 1998 Annual Meeting of the Society for Neurosciences, Los Angeles (November)

1998 Invited Seminar, “Gene hunting in simple and complex mouse models for epilepsy,” at Parke-Davis Mouse Genetics Laboratory, Alameda (April)

1999 Platform Speaker, “Fidgetin – a novel AAA ATPase disrupted in fidget mutant mice,” at Cellular Functions of AAA Proteins, Salk Institute, La Jolla (April)

1999 Invited Seminar and Lecture, "Positional cloning mouse genes: a-stargazin and a-fidgetin and a-voiding complex traits?" and “Complex traits in mouse, NHGRI, Bethesda (May)

1999 Platform Speaker, “In search of seizure susceptibility genes: QTLs vs Mutagenesis,” at Mouse Initiatives: Advanced Functional Genomics, The Jackson Laboratory, Bar Harbor (July)

2000 Platform Speaker, “Electroconvulsive screens for mouse strains and mutants,” at Mouse Behavioral Phenotyping, Banbury Center, Lloyd Harbor (August)

2000 Platform Speaker, “Production and screening of mouse neurological mutants: The Jackson Laboratory's Neuroscience Mutagenesis Facility,” at Mutagenesis of the Mouse Genome, University of Georgia, Athens (GA) September

2000 Invited Seminar, "Mutation screens for epilepsy and other neurological disorders in mice" Center for Neurobiology and Behavior, University of Pennsylvania, Philadelphia (November)

2000 Invited Special Speaker, "Mutation screens for epilepsy and other neurological disorders in mice" The Fourth Annual Einstein Postdoctoral Symposium, Albert Einstein College of Medicine, Bronx (December)

2001 Invited Seminar, "Mutation screens for epilepsy and other neurological disorders in mice" Eccles Center for Human Genetics, University of Utah, Salt Lake City (February)

2001 Invited Seminar, "Mutation screens for epilepsy and other neurological disorders in mice" Department of Biochemistry, George Washington University School of Medicine, Washington, DC (February)

2001 Invited Speaker, "Mutation screens for epilepsy and other neurological disorders in mice" at Genetic Basis of Neurological and Behavioral Disorders (sponsored by The

Klingenstein Fund), Cold Spring Harbor Laboratory, Cold Spring Harbor (March)

2001 Invited Seminar, "Mutation screens for epilepsy and other neurological disorders in mice" Program in Genetics, Tufts University School of Medicine, Boston (April)

2001 Invited Speaker, "The effects of natural variants on detection and mapping of novel seizure mutations in mutagenesis screens" at Identification of Genes Underlying ENU-Induced Mutant Phenotypes, McLaughlin Research Institute, Great Falls (July)

2001 Platform Speaker, "Mutation screens for epilepsy and other neurological disorders in mice" at Mouse Genome Initiatives III, The Jackson Laboratory, Bar Harbor (August)

2001 Invited Speaker, “QTLs meets mutagenesis in Bar Harbor,” IBANGS Annual Meeting (International Behavioral and Neuronal Genetics Society), San Diego (November)

2001 Platform Speaker, “Electroconvulsive thresholds and antiepileptic drug responses for mouse mutants and strains” at Society for Neuroscience Annual Meeting, San Diego (November)

2001 Participant, “New mouse behavioral phenotyping assays and mutagenesis for brain and behavior phenotypes, Half Moon Bay (December)

2002 Invited Seminar, “Mutation screens for seizure and other neurological disorders in mice,” Duke University Department of Neurobiology, Durham (January)

2002 Invited Participant, “International Mouse Mutagenesis Consortium” discussion meeting, London (February)

2002 Invited Speaker, “Electroconvulsive thresholds and antiepileptic drug response in mouse mutants and strains” in Nurturing the Genome: A Festschrift for Benson E. Ginsburg, University of Connecticut, Storrs (June)

2002 Invited Speaker, “Progress in the JAX Neuroscience Mutagenesis Facility as it approaches its 2nd birthday” in Workshop on ENU Mutagenesis: Planning for Saturation, Chantilly, VA (July)

2002 Invited Speaker, “Mouse sequencing and mutations” in Mouse Initiatives IV: Comparative Genomic Approaches to the Analysis of Gene Function and Human Disease, Bar Harbor, ME (August)

2002 Invited Seminar, “Progress in mutagenesis screens for new models of epilepsy and other neurological disorders in mice,” Tufts University Department of Molecular Biology and Microbiology, Boston (September)

2002 Invited Speaker, “Seizure genetics in mice” in Neurogenetics of Childhood Epilepsy (Symposium at Annual Meeting of American Society of Human Genetics, Baltimore, MD (October)

2002 Platform Speaker, “Mutant mice with a low electroconvulsive threshold have a spontaneous deletion that includes the Kcnq2 and Chrna4 genes” at Society for Neuroscience Annual Meeting, Orlando, FL (November)

2002 Invited Participant, “Beyond the beginning: the future of genomics II. NHGRI-sponsored conference at Airlie Conference Center (November)

2003 Invited Speaker, “Screening and characterization of epilepsy related and other neurological mutations in mice” in Molecular Basis of CNS Disorders, Bonn, Germany (February)

2003 Platform Speaker, “Spike-wave seizures in the stargazer allelic series,” in Spring Epilepsy Research Conference, Grand Cayman, CI (April)

2003 Invited Speaker, “New genetically-defined and readily-testable models for epilepsy and for therapy resistance in mice,” Division of Neurology, University of Pennsylvania, Philadelphia (September)

2003 Platform Speaker, “Stateside ENU: overview of neuro-mutagenesis centers funded by the NIH,” The mouse as an instrument for hearing research, Bar Harbor (September)

2003 Invited Speaker, “Evolving the electroconvulsive test as a forward-genetic screen for epilepsy research in mice” in Phenotype screens for mice developing an integrated platform; Eumorphia Annual Meeting, Slough/London, UK (October)

2003	Invited Speaker, “Forward genetics approaches to new mouse models for epilepsy research and therapy resistance,” Wellcome Trust Center for Human Genetics, Oxford, UK (December)
2004	Invited Speaker, “Effect of genetic background on induced and spontaneous mouse models for epilepsy” in joint plenary session of Human Genome Sequence Variation and the Inherited Basis of Common Disease and Natural Variation and Quantitative Genetics in Model Organisms, Keystone Symposia, Breckenridge (January)
2004	Invited Speaker, “Neurological mutations and modeling for epilepsy and other brain disorders in mice," Vermont Genetics Network Third Annual Retreat, Burlington (August)
2004	Invited Speaker, “Genetic studies of new epilepsy mutations and models in mice”, University of Tennessee Neuroscience Institute, Memphis (October)
2005	Invited Speaker, “Genetic studies of epilepsy in mice: Complexities of simple traits” in Distinguished Scientist Seminar Series at Human and Molecular Genetics Center, Medical College of Wisconsin, Milwaukee (March)
2005	Invited Speaker, “New mouse models and genes for epilepsy in mice,” at Stanford University, Stanford (May)
2006	Invited Speaker, “Genetics of new and old mouse models for epilepsy,” Emory University, Atlanta, GA (March)
2006	Invited Speaker, “Compromised mRNA processing and epilepsy in Brunol4 mutant mice,” American Society of Human Genetics Meeting, New Orleans, LA (October)
2006	Invited Speaker, “New and old genetic mouse models for epilepsy,” Department of Human Genetics, University of Michigan Medical School (October)
2007	Invited Speaker, “New and old genetic models for epilepsy in mice,” University of Wisconsin, Madison, WI (April)
2007	Plenary session speaker, “Science, Journalism and Cultural Politics," in the conference "Rethinking Communication in Changing Global Contexts", Orono, ME (June)
2007	Keynote speaker, The Jackson Laboratory Discovery Strategies Conference: The Laboratory Mouse in the Development of New Therapeutic Approaches to the Treatment of Neurological Disease, Bar Harbor, ME (June)
2008	Invited Speaker, "Genetics of absence epilepsy in a common mouse strain," UCI Epilepsy Research Center Symposium, “Hot Topics in Epilepsy” (March)
2008	Invited Speaker, Gordon Research Conference, “Mechanisms of Epilepsy & Neuronal Synchronization: Neuroplasticity in Epilepsy, “ Waterville, ME, (August)
2008	Invited Speaker, Mouse Genetics & Genomics: Development & Disease Conference, “New and old genetic models for epilepsy in mice” Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, (November)
2009	Invited Speaker, Cornell University, “New and old genetic models for epilepsy in mice,” Ithaca, NY, (April)
2009	Invited Speaker, Cambridge University Laboratory of Molecular Biology, “New and old genetics models for epilepsy in mice,” Cambridge, UK (August).
2009	Platform Speaker, International Mouse Genome Conference, “Genetics of absence epilepsy in the C3H superfamily of mouse strains,” La Jolla, CA (November)
2011	Invited Speaker, University of Maryland School of Pharmacy, “Genetic models of epilepsy in mice,” Baltimore, MD (February)
2011	Invited Speaker, Vanderbilt University Medical Center, “Genetic models of epilepsy in mice,” Nashville, TN (April)
2012	Invited Speaker, University of California –Irvine, “Dissecting genetically complex epilepsies in mice: New and old mutants and mechanisms,” Irvine, CA (January)
2014	Invited Speaker, Audiogenic Epilepsy Congress, “Audiogenic Epilepsy: from models to clinic” Salamanca, Spain (September)

2015	Invited Speaker, Université de Montréal, “Neurobiology of Epilepsy: from Gene to Networks,” Montréal, Canada (May)
2017	Invited Speaker, Human Genetics in NYC Symposium, “At the Crossroads Where Human and Mouse Epilepsy Genetics Meet,” Mt. Sinai Medical Center, NY (January)
2018	Invited Speaker, Stanford University, “Genetic epileptic encephalopathies modeled in mice: Surprises and opportunities”, Palo Alto, CA (May)
2019	Invited Speaker, University of New England, “Towards precision medicine in new mouse models of severe childhood epilepsy,” Biddeford, ME (July)
2019	Invited Speaker, Emory University Center for Functional Evaluation of Rare Variants, “Mouse Models of GRIN Gain-Of-Function or Dominant Genetic Variants,” Atlanta, GA (September)
2020	Invited Speaker, Winter Conference in Brain Research, “Modeling non-ion channel genetic epilepsies in mice,” Big Sky, MT (January)
2023	GRIConference Boston 2023, Keynote Speaker, “Assessing gene therapy in mouse models of gain-of-function or dominant-negative childhood seizure disorders” (March)
2024	GRICon 2024 (virtual), Invited Speaker, “Knockdown & Replace” Gene Therapy in a Mouse Model of Severe Childhood Epilepsy” (April)

TRAINEES (POSTDOCS, GRADUATE STUDENTS, SUMMER OR SEMESTER INTERNS)

1992-1994	Eric W. Johnson, Ph.D., Postdoctoral Fellow (Iverson Genetics).
1993, 1995	Jennifer Gervais (High School), JAX Summer Student Program
1993-1997	Cathleen M. Lutz, Predoctoral Fellow, Ph.D. 1997, University of Maine.
1994	Audrey Fu (Rice University), JAX Summer Student Program
1994-1998	Gregory A. Cox, Ph.D., Postdoctoral Fellow
1995	Richard Letts (University of Birmingham, UK), TJL Summer Student Program
1995-1999	Marie E. Legare, DVM, Ph.D., Postdoctoral Fellow.
1996	Jason Tarbett (University of Maine), JAX Summer Student Program
1996	Sara Hipkens (high school) JAX Summer Student
1997	Chandrika Rajan (University of Chicago), JAX Summer Student Program
1997	Christopher Berry (Duke University), JAX Summer Student Program
1998	Elizabeth Good (high school), JAX Summer Student Program
1998	Hilary Stanley (high school), JAX Summer Student Program
1999-2004	Arne Nystuen, Ph.D., Postdoctoral Fellow
2001	Terri Myers (high school), JAX Summer Student Program
2001-2006	Yan Yang, Ph.D., Postdoctoral Fellow, The Jackson
2003-2004	Amanda Muscat, College Intern (College of the Atlantic); BRIN Fellowship
2004-2006	Monica Roberts, Ph.D., Postdoctoral Fellow, The Jackson Laboratory
2005	Emily Patek, Rotation Student, University of Maine Ph.D. Program
2007-2010	Satoko Tokuda, DVM, Ph.D., Postdoctoral Fellow, The Jackson Laboratory
2008	Michael Stanley (high school), The Jackson Laboratory Summer Student
2009-2013	Jacy Wagnon, Postdoctoral Fellow, The Jackson Laboratory
2010-2012	Wenzhi Sun, Postdoctoral Fellow/Associate Research Scientist
2010	Zak Strassberg (high school), Undergraduate Intern
2011	Sherie Zhao (University of Virginia), JAX Summer Student Program
2011	Zak Strassberg (McGill University), JAX Summer Student Program
2011	Alexandra Buckley (Penn State), JAX Summer Student Program
2011-2014	Christian Richard, Ph.D. Student, University of Maine

2011-2014	Tracy McGarr, MS Student, University of Maine
2012	Katie Long (University of Michigan), JAX Summer Student Program
*2013	Bethany Berry (Williams College), JAX Summer Student Program
2013	Casey Poore (Brown University), JAX Summer Student Program
2014-2017	Narayan Subramanian, Postdoctoral Fellow, The Jackson Laboratory
2015	Daniel Hawkins (Georgia Tech), JAX Summer Student Program
2015	Jacqueline Bridges (HS junior Phila. area), JAX Summer Student Program
*2016-2019	Ariadna Amador, Ph.D. (Scripps RI), Postdoctoral Fellow, Columbia University
2017-2021	Megha Sah, Ph.D. (U. Conn, Storrs), Postdoctoral Fellow, Columbia University
2017-2022	JiaJie Teoh, Ph.D. (Osaka University), Postdoctoral Fellow, Columbia University
*2017, 2018	Elysia Colon (HS junior, Oceanside High School), Summer Intern
*2017-2021	Virginia Aimiuwu (CUMC), Genetics & Development Ph.D. training program
2017-2022	Devin Jones (CUMC), Genetics & Development Ph.D. training program
2018-2023	Wanqi Wang (CUMC), Genetics & Development Ph.D. training program
2018-2019	Jaclyn Dron (Ardsley High School), Summer Intern
2018	Sadi Boddyu (UC Berkeley), Amgen Scholars Program, Summer Intern
2019	Tommy Bocian (Princeton Day School), Summer Intern
2019	Ada Lee (Stuyvesant High School), Summer Intern

*underrepresented minority

PATENTS

1996	In vitro method for identifying a clinical disorder associated with *Nhe1* mutation (US 5,811,244)
1998	Genes encoding neuronal voltage-gated calcium channel gamma subunits (US 6,365,337)

Active Research Support

R01NS031348-30 (PI: Frankel) 01/15/1993 - 07/30/2026

NIH/NINDS

Genetic Determinants of Epilepsy in Murine Systems (PI: Frankel)

In the current iteration of my longstanding NIH grant that uses mice to study genetic epilepsies, using three conditional mouse models of Developmental and Epileptic Encephalopathy developed during the prior (R37) award period, we will 1. Assess seizure activity and comorbid behaviors in mouse pups. For this, in we will employ new methods to assessing the onset and development of key DEE phenotypes in mice at ages that are more appropriate to the human condition. 2. Determine critical windows, and the role of neuron type, in disease development. We will exploit the conditional feature of our models by crossing to specific cre-driver lines to activate mutations in neuron subtypes or at select ages to better understand the cellular and temporal onset and development of key DEE phenotypes in young and adult mice. This will be complemented by an examination of synaptic mechanisms that underlie the in vivo effects of DEE variants in neuron subtypes. 3. Test different approaches to gene therapy. Recognizing that the genetic and mechanistic heterogeneity of genetic DEEs will require a menu of approaches for treatment, we will employ tailored approaches to somatic manipulation of RNA expression in each of three distinct DEE mouse models. This research will be done in collaboration with the laboratories of Jennifer Gelinas (Columbia), Matthew Weston (U. Vermont) and Scott Harper (Nationwide Children's Hospital).

The United States-Israel Binational Science Foundation (PIs: Frankel/Rubenstein)

Mechanisms of GRIN2D Developmental Delay and Epilepsy 10/01/2020-09/30/2024

Funding at Columbia in this study of a novel mouse model for *GRIN2D* related DEE, is to test pharmacological therapies, focusing on NMDAR receptor antagonists and combination drug therapies in the mouse model

CureGrin Foundation (PI: Frankel) 4/1/2023-3/30/2024

RNAi Therapy in a Mouse Model of GRIN2A Developmental and Epileptic Encephalopathy

The major goal of this project is to test whether the approach of targeting abnormal genes directly using RNA interference approach is effective in an established mouse model of GRIN2A disease.

PUBLICATIONS:

Frankel, W., et al. (1985). "Retroviral insertional mutagenesis of a target allele in a heterozygous murine cell line." Proc Natl Acad Sci U S A 82(19): 6600-6604.

Potter, T. A., et al. (1987). "Spontaneous deletion at the B2m locus: evidence for site-specific genetic rearrangement." J Immunol 138(4): 1270-1274.

Potter, T. A., et al. (1987). "Mitotic recombination between homologous chromosomes generates H-2 somatic cell variants in vitro." Proc Natl Acad Sci U S A 84(6): 1634-1637.

Coffin, J. M., et al. (1989). "Genetics of endogenous murine leukemia viruses." Ann N Y Acad Sci 567: 39-49.

Frankel, W. N., et al. (1989). "Effect of proviral insertion on transcription of the murine B2mb gene." J Virol 63(6): 2623-2628.

Frankel, W. N., et al. (1989). "Genetic identification of endogenous polytropic proviruses by using recombinant inbred mice." J Virol 63(9): 3810-3821.

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