#### Biosketch

| NAME | POSITION TITLE  |
|------|---|
|      | Chief, Laboratory of Behavioral and Genomic Neuroscience, National<br>Institute on Alcohol Abuse and Alcoholism, National Institutes of<br>Health |

#### EDUCATION/ EMPLOYMENT

| INSTITUTION AND LOCATION   | POSITION         | YEAR(s)   | FIELD OF STUDY                                   |
|--|------------------|-----------|--|
| Department of Psychology, University of Newcastle upon Tyne, UK                  | B.A. (Hons)      | 1992-1995 | Psychology                                       |
| Department of Psychology, University of Leeds, UK                                | Ph.D.            | 1995-1998 | Behavioural Pharmacology<br>(Mentor, RJ Rodgers) |
| National Institute of Mental Health,<br>National Institutes of Health (NIH), USA | Visiting Fellow  | 1999-2003 | Behavioral Neuroscience<br>(Mentor, JN Crawley)  |
| National Institute on Alcohol Abuse and Alcoholism, NIH, USA                     | Section Chief    | 2004-2010 | Neuroscience                                     |
| National Institute on Alcohol Abuse and Alcoholism, NIH, USA                     | Laboratory Chief | 2011-     | Neuroscience                                     |

### Awards and honors

2022: National Institute on Alcohol Abuse and Alcoholism Scientific Achievement Award for '*scientists* who have made an outstanding contribution to scientific research.'

2020: Elected Fellow, International Behavioral Neuroscience Society

2019: National Institutes of Health Director's Award 'In recognition for discovering novel neural mechanisms of learning and drug effects, outstanding leadership in the neuroscience addiction field, and exemplary mentoring skills.'

2017: National Institute on Alcohol Abuse and Alcoholism Scientific Achievement Award for '*scientists* who have made an outstanding contribution to scientific research.'

2016: American College of Neuropsychopharmacology Daniel H. Efron Research Award for '*outstanding basic research contributions to neuropsychopharmacology*.'

2014: Society for Biological Psychiatry A.E. Bennett Research Award for '*international research in biological psychiatry by young investigators*.'

2013: Elected Amygdala in Health & Disease 2017 Gordon Research Conference Chair

2012: Society for Neuroscience Jacob P. Waletzky Award for Addiction Research for '*significant conceptual* and empirical contributions to the understanding of drug addiction.'

2012: TEDx speaker

2010: F1000 Prime Faculty member (2010-2015)

2008: Alcoholism and Stress Conference Young Investigator Award

2007: Senior Preclinical Wyeth British Association of Psychopharmacology Award for '*excellence in non-clinical psychopharmacology*.'

2007: Featured in Harper's Magazine article: 'Of men and mice: How a twenty-gram rodent conquered the world of science' by Greg Crister, December 2007 issue.

2006: International Behavioural and Neural Genetics Society Young Scientist Award for 'scientific importance of research discoveries/record of achievement.'

2005: National Alliance for Research on Schizophrenia and Depression Young Investigator Award for 'the most promising young scientists conducting neurobiological research.'

2004: NIH Pre-IRTA Committee Awards for outstanding contributions to the post-baccalaureate training and education

2003: Anxiety Disorders Association of America Career Development Travel Award

2003: Howard Hughes Medical Institute Student Mentor Award 2002: NIH Fellows Award for Research Excellence

2002: New York Academy of Sciences Travel Award

2001: American College of Neuropsychopharmacology/Bristol-Myers Squibb Travel Award European Neuropeptide Club Travel Award

- 2001: Howard Hughes Medical Institute Student Mentor Award
- 2000: Howard Hughes Medical Institute Student Mentor Award
- 1998: University of Leeds, School of Psychology Travel Award
- 1997: British Association of Psychopharmacology Travel Award
- 1997: University of Leeds, School of Psychology Travel Award
- 1996: British Psychological Society Special Travel Award
- 1996: British Association of Psychopharmacology Travel Award 1996: Brain Travel Award
- 1995: University of Leeds Ph.D. Scholarship

# **Extramural funding**

2014-2016: PI, Uniformed Services University, Center for Regenerative Medicine - \$400,000 2008-2014: co-PI, Department of Defense - \$543,672

2010-2012: co-PI, Uniformed Services University, Center for Regenerative Medicine - \$582,348

2010-2011: PI, Uniformed Services University, Center for Regenerative Medicine - \$164,536

2008-2012: Co-PI, United States/Israel Binational Science Foundation - \$180,000

2005-2007: PI, National Alliance for Research on Schizophrenia and Depression - \$60,000

# **Editorial board activities**

Editor in Chief: Genes, Brain and Behavior (2012-)

Associate Editor: Current Protocols in Neuroscience (2006-), Genes, Brain and Behavior (2007-2012), Frontiers in Behavioral Neuroscience (2007-2012), Frontiers in Neuropharmacology (2010-2015) Guest Reviewing Editor: eLife (2019) Editorial Boards: Neuropharmacology (2016-), Addiction Biology (2012-), Stress & Brain (2019-), Acta Neuropsychologica (2010-), Neuroscience Next (2019-), Psychopharmacology (2012-2019)

### Grant review

Member (2010-2016), National Institutes of Health Center for Scientific Review Biobehavioral Regulation, Learning and Ethology (BRLE) study section.

*Ad hoc* for National Institutes of Health Center for Scientific Review: Silvio O. Conte Center for Neuroscience Research, 2006; International Biobehavioral Study Section, 2006; Bioinformatics Tools and Systems, 2006); Member Conflict Special Emphasis Panel, 2007; Special Emphasis Panel, 2007.

<u>Other</u>: German Research Foundation; German-Israeli Foundation for Scientific Research and Development; Institut National de la Santé et de Recherche Médicale (INSERM); Medical Research Council; Swiss National Science Foundation; The Netherlands Organisation for Health Research and Development; Wellcome Trust

### **Grant consultant**

Scientific advisory board NIH-P50 (MH093320) Center for the Translational Neuroscience of Alcoholism. PIs: J Krystal, S O'Malley, Yale University

Grant advisory board (2009) United States/Israel Binational Science Foundation, Israel Grant review board (2005) Alzheimer's Research Trust, United Kingdom

NIH-R01 (MH093320) Organic cation transporters as targets for novel antidepressant drugs. PI: LC Daws, University Texas Health Sciences Center San Antonio

NIH-R01 (AA019455-01A1) Alcohol action on extended amygdala glutamate synapses. PI: D Winder, Vanderbilt University

NIH-R01 (AA10422-14A1) Ethanol mechanisms in GABAAR gene targeted mice. PI: G Homanics, University Pittsburgh

NIH-R01 (MH64480) Mechanisms regulating serotonin clearance in vivo: Studies using knockout mice. PI: LC Daws, University Texas Health Sciences Center San Antonio

NIH-R21 (MH075905) Intranasal immune challenge, brain cytokines and gender differences in depression. PI: LH Tonelli, University of Maryland

### Ad hoc journal reviewer

Addiction Biology; Alcohol; Alcoholism: Clinical and Experimental Research; American Journal of Medical Genetics; American Journal of Psychiatry; Annals of Neurology; Behavioural Brain Research; Behavioral Neuroscience; Behavioural Pharmacology; Biology of Mood & Anxiety Disorders; Biological Psychiatry; Brain Research; British Journal of Pharmacology; Cell; Cell Reports; CNS Drugs; CNS Spectrums; Current Protocols in Neuroscience; Developmental Cognitive Neuroscience; Drug Therapy Today; eLife; European Journal of Neuroscience; European Neuropsychopharmacology; European Journal of Pharmacology; Experimental Neurology; Expert Reviews in Molecular Medicine; Genes, Brain and Behavior; Hippocampus; Hormones and Behavior; International Journal of Neuropsychopharmacology; Journal of Molecular Neuroscience; Journal of Neurochemistry; Journal of Neuroscience; Journal of Neuroscience Methods; Journal of Psychopharmacology; Laboratory Animals; Learning & Memory; Life Sciences; Molecular Brain Research; Molecular Pharmacology; Molecular Psychiatry; Nature; Nature Aging; Nature Neuroscience Nature Communications; Nature Methods; Nature Reviews Neuroscience; Naunyn-Schmiedeberg's Archives of Pharmacology; Neural Plasticity; Neuroendocrinology; Neuropeptides; Neurobiology of Aging; Neuron; Neuropharmacology; Neuropsychopharmacology; Neuroscience & Biobehavioral Reviews; Neuroscience Letters; Pharmacology, Biochemistry and Behavior; Physiology & Behavior; PLoS One; Proceedings of the National Academy of Sciences, USA; Progress in NeuroPsychopharmacology & Biological Psychiatry; Psychoneuroendocrinology; Psychopharmacology; Synapse; Translational Psychiatry; Trends in Molecular Medicine; Trends in Neuroscience; Trends in Pharmacological Sciences

### Service and scientific society activities

NIAAA Controlled Substance Program Coordinator (2020-) NIH Earl Stadtman Investigator Search Sub-Committee Co-Chair (2019, 2020), member (2013-14) NIAAA Promotion and Tenure Committee member (2018-) NIAAA Employee Awards Review Board (2017-2020) NIAAA Seminar Series Director (2013-) NIAAA Animal Care and Use Committee, Vice Chair (2014-) NIAAA Honorific Awards Committee member (2018-2020) International Behavioral and Neural Genetics Society Program Committee Chair (2007-2008) International Behavioral Neuroscience Society Program Committee Chair (2006-2007) NIH Advisory Committee on the National Research Council 'Guidelines for the Care and Use of Mammals in Neuroscience and Behavioral Research' (2005) Chief Judge of Genetics Section, NIH Fellows Award for Research Excellence Award (2003)

#### **Former trainees**

Post-doctoral:

*Alicia Izquierdo* (2004-2006). Currently Professor, Department of Psychology, University California Los Angeles, Los Angeles.

*Janel Boyce-Rustay* (2004-2006). Currently Senior Director, Product Development and Regulatory Affairs, Genentech, San Francisco. Winner NIH Fellows Award for Research Excellence 2005.

Marguerite Camp (2009-2011). Currently Senior Associate in the Public Sector Practice at

PricewaterhouseCoopers, Washington DC. Winner NIH Fellows Awards for Research Excellence 2010.

*Jonathan Brigman* (2007-2011). Currently Associate Professor, Department of Psychology, University of New Mexico, Albuquerque. Winner NIH Fellows Awards for Research Excellence 2008, 2010.

*Giovanni Colacicco* (2011-2012). Currently Lecturer, Department of Anatomy, Zurich University, Switzerland.

Sophie Masneuf (2011-2012). Currently post-doctoral fellow, Zurich University.

Paul Fitzgerald (2008-2012). Currently post-doctoral fellow, University of Michigan.

*Charles Pickens* (2012-2013). Currently Assistant Professor, Department of Psychological Sciences, Kansas State University.

*Hadley Bergstrom* (2013-2015). Currently Assistant Professor, Department of Psychology, Vassar College, Poughkeepsie, New York. Winner NIH Fellows Awards for Research Excellence 2014.

*Nicolas Jury* (2013-2015). Currently Health Policy Science Analyst, National Heart Lung and Blood Institute, Bethesda, Maryland. Winner NIH Director's Award 2018.

*Courtney Pinard* (2012-2016). Currently Education and Awards Program Specialist, The American Association of Immunologists, Rockville, Maryland.

*Anna Radke* (2012-2016). Currently Assistant Professor, Department of Psychology, Miami University, Oxford, Ohio.

*Lindsay Halladay* (2013-2017). Currently Assistant Professor, Department of Psychology, Santa Clara University, Santa Clara, California. Winner NIH Fellows Awards for Research Excellence 2016. *Lucas Glover* (2016-2018). Currently post-doctoral fellow, Johns Hopkins University. Winner NIH Fellows Awards for Research Excellence 2017.

Mio Nonaka (2015-2019). Currently Research Associate, Weizmann Institute of Science, Tel Aviv, Israel.

<u>Graduate student</u>: Carolyn Graybeal graduated Brown University 2011, Carly Kiselycznyk graduated Karolinska Institute 2012, Ruairi O'Sullivan current graduate student at Oxford University, Ayesha Sengupta graduated Oxford University 2018 (Winner NIH Fellows Awards for Research Excellence 2017, 2019), Shana Silverstein current graduate student at University College London (Winner NIH Fellows Awards for Research Excellence 2017, 2019).

Pre-doctoral/post-baccalaureate (subsequent employer or program of study): Munisa Bachu (Psychology PhD, Nairobi University), Emma Brockway (Neuroscience PhD, UT Austin), Erica Busch (Psychology Masters, King's College London), Tiffany Campbell, Lauren DePoy (Neuroscience PhD, Emory University), Rachel Daut (Neuroscience, University Colorado Boulder), Michael Feyder (Neuroscience, Karolinska Institute), Daniel Fisher (Medical school, University Chicago), Shaun Flynn (Medical school, UPENN), Kathryn Hefner (Clinical Psych, University Wisconsin-Madison), Benita Hurd (Medical school, Howard University), Lauren Lederle (Medical school, UCSF), Abby Lieberman (Research assistant, University of Maryland), Kathryn Martin (Neuroscience PhD, Emory University), Katherine Kaugars (Medical school, Einstein College of Medicine), Adrina Kocharian (MD-PhD, University of Minnesota), Aaron Limoges (Neuroscience PhD, Columbia University), Poonam Mathur (Medical school, Nova Southeastern University), Kerry McFadden (Medical history Masters, University College Dublin), Rachel Millstein (Clinical Psych, UCSD), Jessica Ihne (Neuroscience PhD, Georgetown University), Sarvar Oreizi-Esfahani (Medical school, Oakland University) William Beaumont School of Medicine), Benjamin Palachick (Medical school, Drexel University), Aaron Plitt (Medical school, University Texas Southwestern), Abby Postle (Pre-Med, Case Western University), Tanner Rigg (teaching English abroad), Erica Sagalyn (Psychology PhD, UPENN), Julia Schaffer (Medical school, Yale), Niole Schwab (Research assistant, George Washington University), Sawyer Smith (Pathobiology PhD, Brown University), Nathen Spitz (Medical school, University of Iowa) Susanna Weber (Neuroscience PhD, Gottingen University), William Taylor (Neuroscience PhD, Emory University), Lisa Wiedholz (Associate Pharmacologist, Abbot Research Laboratories), Tara Wright (Medical school, University North Carolina), Rebecca Yang (Cardiovascular nurse, Mayo Clinic, Rochester), Mark Yde (Scientsit, Stem Cell Technologies). PhD thesis examiner/committee member: Greg Bissonette (University of Maryland, USA), Nicola Chen (University of Melbourne, Australia), Samantha Line (University of Oxford, UK), Garth Hargreaves (University of Sydney, Australia), Patrick Fisher (University of Pittsburgh, USA), Rayna Carter (Brown University, USA), Joyonna Gamble-George (Vanderbilt University, USA), Emmanuel Cruz Torres (Ponce School of Medicine, Puerto Rico), Enrica Paradiso (Innsbruck University, Austria).

# Publications

Google Scholar h index = <u>86</u> (25,540 citations<sup>†</sup>) (Google scholar <sup>†</sup>Citation #182 added manually)

- 1. Rodgers RJ, Cao BJ, Dalvi A, **Holmes A** (1997) Animal models of anxiety: an ethological perspective. <u>Brazilian Journal of Medical and Biological Research</u> 30:289-304
- Holmes A, Rodgers RJ (1998) Responses of Swiss-Webster mice to repeated plus-maze experience: further evidence for a qualitative shift in emotional state? <u>Pharmacology, Biochemistry & Behavior</u> 60:473-488
- 3. Holmes A, Rodgers RJ (1999) Influence of spatial and temporal manipulations on the anxiolytic efficacy of chlordiazepoxide in mice previously exposed to the elevated plus-maze. <u>Neuroscience & Biobehavioral Reviews</u> 23:971-980
- 4. Rodgers RJ, Haller J, **Holmes A**, Halasz J, Walton T, Brain PF (1999) Corticosterone response to the plus-maze: high correlation with risk assessment in rats and mice. <u>Physiology & Behavior</u> 68:47-53
- 5. Holmes A, Parmigiani S, Ferrari PF, Palanza PJ, Rodgers RJ (2000) Behavioral profile of wild mice in the elevated plus-maze test for anxiety. <u>Physiology & Behavior</u> 71:509-516
- Holmes A, Crawley JN (2000) Promises and limitations of transgenic and knockout mice in modeling psychiatric symptoms. In <u>Contemporary Issues in Modeling Psychopathology</u>. M Myslobodsky and I Weiner (Eds). Kluwer, Boston
- 7. Holmes A, Hollon TR, Liu Z, Sibley DR, Dreiling J, Gleason TC, Crawley JN (2001) Behavioral characterization of dopamine D5 receptor null mutant mice. <u>Behavioral Neuroscience</u> 115:1129-1144
- 8. Holmes A, Iles JP, Mayell SJ, Rodgers RJ (2001) Prior test experience compromises the anxiolytic efficacy of chlordiazepoxide in the mouse light/dark exploration test. <u>Behavioural Brain Research</u> 122:159-167
- Steiner RA, Hohmann JG, Holmes A, Wrenn CC, Cadd G, Jureus A, Clifton DK, Luo M, Gutshall M, Ma SY, Mufson EJ, Crawley JN (2001) Galanin overexpression provokes selective cognitive deficits and reduces cholinergic survival in a transgenic mouse model of Alzheimer's disease. <u>Proceedings of the National Academy of Sciences USA</u> 98:4184-4189
- 10. Holmes A (2001) Targeted gene mutation approaches to the study of anxiety-like behavior in mice. Neuroscience & Biobehavioral Reviews 25:261-273
- 11. **Holmes A**, Murphy DL, Crawley JN (2002) Reduced aggression in mice lacking the 5-HT transporter. <u>Psychopharmacology</u> 161:160-167
- Holmes A, Wrenn CC, Harris AP, Thayer K, Crawley JN (2002) Behavioral profiles of inbred strains on novel, olfactory, spatial and emotional tests for reference memory in mice. <u>Genes, Brain and</u> <u>Behavior</u> 1:55-69
- Williams RW, Dubnau J, Enoch MA, Flaherty L, Sluyter F, Gannon KS, Maxson SC, Riedl CAL, Williams KD, Holmes A, Bolivar VJ, and Crusio WE (2002) Hot topics in behavioral and neural genetics. <u>Genes, Brain and Behavior</u> 2:117-130
- 14. **Holmes A**, Yang RJ, Crawley JN (2002) Evaluation of an anxiety-related phenotype in galanin overexpressing transgenic mice. Journal of Molecular Neuroscience 18:151-165
- 15. Holmes A, Yang RJ, Crawley JN, Murphy DL (2002) Evaluation of antidepressant-related behavioral responses in mice lacking the serotonin transporter. <u>Neuropsychopharmacology</u> 27:914-923
- Kinney JW, Starosta G, Holmes A, Wrenn CC, Yang RJ, Harris AP, Long KC, Crawley JN (2002) Deficits in trace cued fear conditioning in galanin-treated rats and galanin-overexpressing transgenic mice. <u>Learning & Memory</u> 9:178-190
- Wrenn CC, Marriott L, Kinney JW, Holmes A, Wenk G, Crawley JN (2002) Galanin peptide levels in hippocampus and cortex of galanin overexpressing transgenic mice evaluated for cognitive performance. <u>Neuropeptides</u> 36:413-426
- Holmes A, Kinney JW, Wrenn CC, Li Q, Yang RJ, Ma L, Vishwanath J, Saveedra MC, Innerfield CE, Jacoby AS, Shine J, Iismaa TP, Crawley JN (2003) Galanin GAL-R1 receptor null mutant mice display increased anxiety-like behavior specific to the elevated plus-maze test. <u>Neuropsychopharmacology</u> 28:1031-1044

- Holmes A, Li Q, Murphy DL, Gold E and Crawley JN (2003) Abnormal anxiety-related behavior in serotonin transporter null mutant mice; the influence of genetic background. <u>Genes, Brain and Behavior</u> 2:365-380
- 20. Holmes A, Rodgers RJ (2003) Prior exposure to the elevated plus-maze sensitizes mice to the acute behavioral effects of phenelzine and fluoxetine. <u>European Journal of Pharmacology</u> 459:221-230
- Holmes A, Yang RJ, Lesch KP, Crawley JN, Murphy DL (2003) Mice lacking the serotonin transporter exhibit 5-HT1A receptor-mediated abnormalities in anxiety-like and exploratory behavior. <u>Neuropsychopharmacology</u> 28:2077-2088
- 22. Murphy DL, Ren-Patterson R, **Holmes A**, Hall FS, Uhl G (2003) Experimental gene interaction studies with mutant mice as models for human polygenic traits and disorders. <u>Genes, Brain and Behavior</u> 2:350-364
- Holmes A, Heilig M, Rupniak, NMJ, Steckler T, Griebel G (2003) Neuropeptides as novel therapeutic targets for stress-related disorders; recent developments. <u>Trends in Pharmacological Sciences</u> 24:580-558
- 24. Holmes A, Murphy DL, Crawley JN (2003) Abnormal behavioral phenotypes of serotonin transporter knockout mice; parallels with human anxiety and depression. <u>Biological Psychiatry</u> 54:953-959
- 25. Holmes A, Hariri AR (2003) Genetic variation in serotonin transporter function and negative emotionality: placing single gene effects in the context of genetic background and environment. <u>Genes</u>, <u>Brain and Behavior</u> 2:332-335
- 26. Wrenn CC, Kinney JW, Marriott LK, **Holmes A**, Harris AP, Saavedra MC, Innerfield CE, Jacoby AS, Shine J, Wenk G, Iismaa TP, Crawley JN (2004) Learning and memory performance in GAL-R1 null mutant mice. <u>European Journal of Neuroscience</u> 19:1384-1396
- 27. Li Q, Holmes A, Ma L, Murphy DL (2004) Medial hypothalamic 5-HT1A receptors may be involved in the regulation of defensive behaviors, but not exploratory anxiety-like behaviors in mice. <u>The Journal of</u> <u>Neuroscience</u> 24:10868-10877
- Holmes A, Lachowicz JE, Sibley DR (2004) Phenotypic analysis of dopamine receptor knockout mice; recent insights into the functional specificity of dopamine receptor subtypes <u>Neuropharmacology</u> 47:1117-1134
- 29. Holmes A, Heilig M, Griebel G, Steckler T (2004) Reply to Roessler et al. Neuropeptides as novel therapeutic targets for stress-related disorders; recent developments. <u>Trends in Pharmacological</u> <u>Sciences</u> 25:242-243
- Holmes A, Li Q, Koenig EA, Gold E, Stephenson D, Yang RY, Crawley JN (2005) Phenotypic assessment of galanin overexpressing and galanin receptor R1 knockout mice in the tail suspension test for depression-related behavior. <u>Psychopharmacology</u> 178:276-28
- Karlsson RM, Holmes A, Heilig M, Crawley JN (2005) Anxiolytic-like actions of centrallyadministered neuropeptide Y, but not galanin, in C57BL/6J mice. <u>Pharmacology, Biochemistry and</u> <u>Behavior</u> 80:427-436
- Ren-Patterson RF, Cochran LW, Holmes A, Sherrill S, Huang S-J, Tolliver T, Lesch, K-P, Lu B, Murphy DL (2005) Loss of brain-derived neurotrophic factor gene allele exacerbates brain monoamine deficiencies and increases stress abnormalities of serotonin transporter knockout mice. <u>Journal of</u> <u>Neuroscience Research</u> 79:756-771
- 33. Boyce-Rustay JM, **Holmes A** (2005) Functional roles of NMDA receptor NR2A and NR2B subunits in the acute intoxicating effects of ethanol in mice. <u>Synapse</u> 56:222-225
- Esaki T, Cook M, Shimoji K, Murphy DL, Sokoloff L, Holmes A (2005) Developmental disruption of serotonin transporter function impairs cerebral responses to whisker stimulation in mice. <u>Proceedings of</u> <u>the National Academy of Sciences USA</u> 102:5582-5587
- 35. Rustay NR, Wrenn CC, Kinney JW, Holmes A, Bailey KR, Sullivan T, Harris AP, Long KC, Saavedra MC, Starosta G, Innerfield CE, Yang RJ, Dreiling JL, Crawley JN (2005) Galanin impairs performance on learning and memory tasks: findings from galanin transgenic and GAL-R1 knockout mice. <u>Neuropeptides</u> 39:237-241
- 36. Holmes A, le Guisquet A-M, Vogel E, Millstein RA, Leman S and Belzung C (2005) Early life genetic, epigenetic and environmental factors shaping emotionality in rodents. <u>Neuroscience &</u> <u>Biobehavioral Reviews</u> 29:1335-1346

- Kim D-K, Tolliver TJ, Huang SJ, Martin BJ, Andrews AM, Wichems C, Holmes A, Lesch KP, Murphy DL (2005) Altered serotonin synthesis, turnover and dynamic regulation regions of mice lacking the serotonin transporter. <u>Neuropharmacology</u> 49:798-810
- Cryan, JF, Holmes A (2005) The ascent of mouse: advances in modeling human depression and anxiety. <u>Nature Reviews Drug Discovery</u> 4:775-790
- Zhao S, Edwards J, Carroll J, Wiedholz L, Millstein RA, Murphy DL, Lanthorn TH, Holmes A (2006) Mutant mice reveal an essential functional role for the C-terminus of the 5-HT transporter. <u>Neuroscience</u> 140:321-334
- 40. Adamec RA, Burton P, Blundell J, Murphy DL, **Holmes A** (2006) Vulnerability to mild predator stress in serotonin transporter knockout mice. <u>Behavioural Brain Research</u> 170:126-140
- 41. Millstein RA, Ralph RJ, Yang RJ, **Holmes A** (2006) Effects of repeated maternal separation on prepulse inhibition of startle across inbred mouse strains. <u>Genes, Brain & Behavior</u> 5:346-354
- 42. Izquierdo A, Wellman CL, **Holmes A** (2006) Brief uncontrollable stress causes dendritic retraction in infralimbic cortex and resistance to fear extinction in mice. <u>The Journal of Neuroscience</u> 26:5733-5738
- Izquierdo A, Wiedholz LM, Millstein RA, Yang RJ, Bussey TJ, Saksida LM, Holmes A (2006) Genetic and dopaminergic modulation of reversal learning in a touchscreen-based operant procedure for mice. <u>Behavioural Brain Research</u> 171:181-188
- 44. Daws LC, Montañez S, Munn JL, Owens WA, Baganz NL, Boyce-Rustay JM, Millstein RA, Wiedholz LM, Murphy DL, Holmes A (2006) Ethanol inhibits clearance of brain serotonin by a serotonin transporter-independent mechanism. <u>The Journal of Neuroscience</u> 26: 6431-6438. \*News Highlight 'Neurophysiology: Under the influence,' Nature Reviews Neuroscience 7:593
- 45. Ren-Patterson R, Cochran LW, **Holmes A**, Lesch K-P, Lu B, Murphy DL (2006) Gender- dependent modulation of brain monoamines and anxiety-like behaviors in mice with genetic serotonin transporter and BDNF deficiencies. <u>Cellular and Molecular Neurobiology</u> 26:753-778
- 46. Boyce-Rustay JM, **Holmes A** (2006) Genetic inactivation of the NMDA NR2A subunit has anxiolyticand antidepressant-like effects in mice. <u>Neuropsychopharmacology</u> 31:2405-1414
- 47. Boyce-Rustay JM, **Holmes A** (2006) Ethanol-related behaviors in mice lacking the NMDA receptor NR2A subunit. <u>Psychopharmacology</u> 187:455-466
- Boyce-Rustay JM, Wiedholz LM, Millstein RA, Carroll J, Murphy DL, Daws LC, Holmes A (2006) Behavioral responses to ethanol in serotonin transporter knockout mice. <u>Alcoholism: Clinical and</u> <u>Experimental Research</u> 30:1957-1965
- 49. Holmes A, Picciotto M (2006) Galanin; a novel target system for stress-related disorders and addiction? <u>Current Drug Targets</u> 5:225-232
- 50. Hariri AR, **Holmes A** (2006) Genetics of emotional regulation: the role of the serotonin transporter in neural function. <u>Trends in Cognitive Sciences</u> 10:182-191
- 51. Karlsson RM, **Holmes A** (2006) Galanin as a modulator of anxiety and depression and a therapeutic target for affective disease. <u>Amino Acids</u> 31:231-239
- 52. Wrenn CC, **Holmes A** (2006) A role for galanin in modulating stress-related pathways. <u>Drug News and</u> <u>Perspectives</u> 19:461-467
- 53. Holmes A, Cryan JF (2006) Measuring anxiety- and depression-related behaviors in the mouse. In <u>Transgenic and Knockout Models of Neuropsychiatric Disorders</u>. GS Fisch and J Flint (Eds). Humana Press, New Jersey
- 54. Holmes A (2006) Mouse models of anxiety. In <u>Handbook of Behavioral Genetics of the Mouse</u>. WE Crusio, F Sluyter, RT Gerlai (Eds). Cambridge University Press, Cambridge
- 55. Fisch GS, **Holmes A** (2006) Recent developments in the use of animal models of psychiatric disease. Behavior Genetics 37:259-263
- 56. Caldwell HK, Stewart S, Wiedholz LM, Millstein RA, Holmes A, Young SW, Wersinger S (2007) The acute intoxicating effects of ethanol are not dependent on the vasopressin 1a or 1b receptors. <u>Neuropeptides</u> 40:325-337
- 57. Millstein RA, **Holmes A** (2007) Effects of repeated maternal separation on anxiety- and depressionrelated phenotypes in different mouse strains. <u>Neuroscience & Biobehavioral Reviews</u> 31:3-17
- 58. Hefner KM, **Holmes A** (2007) Ontogeny of fear-, anxiety- and depression-related behavior across mouse adolescence. <u>Behavioural Brain Research</u> 176:210-215

- 59. Carroll J, Boyce-Rustay JM, Millstein RA, Yang RJ, Wiedholz LM, Murphy DL, Holmes A (2007) Effects of mild early life stress on abnormal emotional behaviors in 5-HTT knockout mice. <u>Behavior</u> <u>Genetics</u> 37:214-222
- 60. Mozhui K, Hamre K, **Holmes A**, Lu, L, Williams RW (2007) Genetic and structural analysis of the mouse basolateral amygdala complex. <u>Behavior Genetics</u> 37:223-243. \*Featured article 'Pump up the volume' Nature Neuroscience <u>https://www.nature.com/articles/aba1717.pdf?origin=ppub</u>
- 61. Wellman CL, Izquierdo A, Garrett JE, Martin KP, Carroll J, Millstein RA, Lesch K-P, Murphy DL, Holmes A (2007) Impaired stress-coping and fear extinction and abnormal corticolimbic morphology in serotonin transporter knockout mice. <u>The Journal of Neuroscience</u> 27: 684-691
- 62. Hefner KM, **Holmes A** (2007) An investigation of the behavioral actions of ethanol across adolescence in C57BL/6J mice. <u>Psychopharmacology</u> 191:311-322
- 63. Boyce-Rustay JM, Cameron HA, Holmes A (2007) Chronic swim stress alters sensitivity to acute behavioral effects of ethanol in mice. <u>Physiology & Behavior</u> 91:77-86
- 64. Hasnie FS, Wallace V, Hefner KM, **Holmes A**, Rice ASC (2007) Mechanical and cold allodynia in nerve-injured mice is not associated with anxiety- and depression-related behaviors. <u>British Journal of Anaesthesia</u> 98:816-822
- 65. Hefner KM, **Holmes A** (2007) Short-term and long-term effects of exposure to an unfamiliar male in C57BL/6J mice. <u>Behavioural Brain Research</u> 182:344-348
- 66. Boyce-Rustay JM, Janos A, **Holmes A** (2008) Effects of chronic swim stress on EtOH- related behaviors in C57BL/6J, DBA/2J and BALB/cByJ mice. <u>Behavioural Brain Research</u> 188:133-137
- 67. Karlsson RM, **Holmes A**, Crawley, JN, Heilig, MA (2008) The neuropeptide Y Y1 receptor subtype is necessary for the anxiolytic-like but not antidepressant-like effects of neuropeptide Y. Psychopharmacology 195:547-557
- 68. Brigman J, Feyder M, Saksida LM, Bussey TJ, Mishina M, **Holmes A** (2008) Impaired discrimination learning in mice lacking the NMDA receptor NR2A subunit. Learning & Memory 15:50-54
- Tonelli LH, Holmes A, Postlache TT (2008) Intranasal immune challenge induces sex- dependent depressive-like behavior and cytokine expression in the brain. <u>Neuropsychopharmacology</u> 33:1038-1048
- Fox MA, Andrews AM, Wendland JR, Lesch KP, Holmes A, Murphy DL (2008) A pharmacological analysis of mice with a targeted disruption of the serotonin transporter. <u>Psychopharmacology</u> 195:147-166
- 71. Wiedholz LM, Owens WA, Horton RE, Feyder M, Hefner KR, Sprengel R, Celikel T, Daws LC, Holmes A (2008) Mice lacking the AMPA GluR1 receptor exhibit hyperdopaminergia and schizophrenia-related behaviors. <u>Molecular Psychiatry</u> 13:631-640. \*Commentary by Fisher et al (2008) Dopamine-glutamate interactions at the forefront of schizophrenia research. Cellscience Reviews 5:7-16
- 72. Feyder M, Wiedholz LM, Sprengel R, **Holmes A** (2008) Impaired associative fear learning following complete or partial loss of AMPA GluR1 receptors in mice. <u>Frontiers in Behavioral Neuroscience</u> 1:4
- 73. Palachick B, Chen Y-C, Enoch AJ, Karlsson RM, Sprengel R, Mishina M, Holmes A (2008) Role of major NMDA or AMPA receptor subunits in MK-801 potentiation of ethanol intoxication. <u>Alcoholism:</u> <u>Clinical and Experimental Research</u> 32:1479-1492
- 74. Adamec RA, **Holmes A**, Blundell J (2008) Vulnerability to lasting anxiogenic effects of brief exposure to predator stimuli: sex, serotonin and other factors relevance to PTSD. <u>Neuroscience & Biobehavioral Reviews</u> 32:1287-1292
- 75. Parker CC, Ponicsan H, Spencer RL, **Holmes A**, Johnson TE (2008) Restraint stress and exogenous corticosterone differentially alter sensitivity to the sedative-hypnotic effects of ethanol in ILS and ISS mice. <u>Alcohol</u> 42:477-485
- 76. Karlsson RM, Hefner KM, Sibley DR, **Holmes A** (2008) Comparison of dopamine D1 and D5 receptor knockout mice for cocaine locomotor sensitization. <u>Psychopharmacology</u> 200:117-127.
- 77. Boyce-Rustay JM, Palachick B, Hefner KM, Chen YC, Karlsson RM, Millstein RA, Harvey-White J, Holmes A (2008) Desipramine potentiation of the acute depressant effects of ethanol: modulation by alpha2-adrenoreceptors and stress. <u>Neuropharmacology</u> 55:803-811
- 78. Norcross M, Mathur P, Enoch AJ, Karlsson RM, Brigman J, Cameron HA, Harvey-White J, **Holmes A** (2008) Effects of adolescent fluoxetine treatment on fear-, anxiety- or stress-related behaviors in

C57BL/6J and BALB/cJ mice. Psychopharmacology 200:413-424

- 79. Karlsson RM, Heilig, MA, Holmes A (2008) Loss of mouse GLAST (EAAT1) mediated glutamate reuptake causes locomotor hyperactivity and exaggerated responses to psychotomimetics in mice. <u>Biological Psychiatry</u> 64:810-814. \*Media <u>www.sciencedaily.com/releases/2008/10/081027115427.htm</u>
- 80. Hefner KM, Whittle N, Juhasz J, Norcross M, Karlsson RM, Saksida LM, Bussey TJ, Singewald N, Holmes A (2008) Impaired fear extinction learning and cortico-amygdala circuit failure in a common genetic mouse strain. <u>The Journal of Neuroscience</u> 28:8074-8085. \*Journal Club article: Sotres-Bayon F, Corcoran KA, Peters J, Sierra-Mercado D (2008) Neural correlates of individual variability in fear extinction. The Journal of Neuroscience 28:1-3
- Yang RJ, Mozhui K, Karlsson R-M, Cameron HA, Williams RW, Holmes A (2008) Variation in mouse basolateral amygdala volume is associated with differences in fear learning and stress- reactivity. <u>Neuropsychopharmacology</u> 33:2595-2604
- Bavis AR, Shields AD, Brigman J, Norcross M, McElligott ZA, Holmes A, Winder DG (2008) Yohimbine impairs cocaine conditioned place preference in an alpha2-adrenergic receptor independent process. <u>Learning & Memory</u> 15:667-676
- 83. Holmes A Stein, MB, Steckler T (2008) Modeling anxiety in mice. In <u>Animal and translational models</u> of psychiatric disorders. RA McArthur and F Borsini (Eds). Elsevier, London
- 84. Murphy, DL, Fox MA, Timpano KR, Moya P, Ren-Patterson R, Andrews A, Holmes, A, Watts SW, Wendland J, Lesch KP (2008) How the serotonin story is being rewritten by new gene- based discoveries principally related to *SLC6A4*, the serotonin transporter gene, whose functions influence the entire serotonin system. <u>Neuropharmacology</u> 55:932-960
- 85. Holmes A (2008) Genetic variation in cortico-amygdala serotonin function and risk for stress-related disease. <u>Neuroscience & Biobehavioral Reviews</u> 32:1293-1314
- 86. Fegley DB, **Holmes A**, Riordan T, Faber CA, Weiss JR, Ma S, Sleeman M, Usdin TB (2008) Regulation of anxiety and fear by tuberoinfundibular peptide of 39 residues. <u>Genes, Brain & Behavior</u> 7:933-942.
- 87. Holmes A (2008) The pharmacology of anxiolysis. In <u>Handbook of Anxiety and Fear</u>. R Blanchard, DC Blanchard, DJ Nutt (Eds). Elsevier, London
- Mathur P, Graybeal C, Feyder M, Holmes A (2009) Fear impairing effects of systemic treatment with the NMDA NR2B subunit antagonist, Ro 25-6981, in mice: attenuation with ageing. <u>Pharmacology</u>, <u>Biochemistry & Behavior</u> 91:453-460
- Brigman J, Ihne J, Saksida LM, Bussey TJ, Holmes A (2009) Effects of subchronic phencyclidine (PCP) treatment on social behaviors, and operant discrimination and reversal learning in C57BL/6J mice. <u>Frontiers in Behavioral Neuroscience</u> 3:2
- 90. Chen YC, Holmes A (2009) Effects of topiramate and other anti-glutamatergic drugs on the negative intoxicating actions of ethanol in mice: modulation by genetic strain and stress. <u>Neuropsychopharmacology</u> 34:1578-1589
- 91. Holmes A, Wellman CL (2009) Stress-induced prefrontal reorganization and executive dysfunction. Neuroscience & Biobehavioral Reviews 33:773-783
- 92. Witkiewitz K, **Holmes A**, Ray LA, Murphy LG, Richardson HN, Chen YC, McDevitt-Murphy ME, Cruz MT, Roberto M (2009) Young investigator award symposium. <u>Alcohol</u> 43:499-508
- Crusio WE, Goldowitz D, Holmes A, Wolfer D (2009) Standards for the publication of mouse mutant studies. <u>Genes, Brain & Behavior</u> 8:1-4. \*Nature Neuroscience editorial 'Troublesome variability in mouse studies' <u>https://www.nature.com/articles/nn0909-1075</u>
- 94. Karlsson RM, Tanaka K, Saksida LM, Bussey TJ, Heilig M, Holmes A (2009) Assessment of glutamate transporter GLAST (EAAT1) deficient mice for phenotypes relevant to the negative and executive/cognitive symptoms of schizophrenia. <u>Neuropsychopharmacology</u> 34:1454-1446
- 95. Brigman J, Mathur P, Lu L, Williams RW, **Holmes A** (2009) Genetic relationship between fear- and anxiety-related behaviors in BXD recombinant inbred mice. <u>Behavioural Pharmacology</u> 20:204-209
- 96. Camp M, Norcross M, Whittle N, Feyder M, D'Hanis W, Yilmazer-Hanke D, Singewald N, Holmes A (2009) Impaired Pavlovian fear extinction is common across genetic lineages of the 129 inbred mouse strain. <u>Genes, Brain & Behavior</u> 8:744-752
- 97. Zhou R, Holmes A, Du J, Malkesman O, Yuan P, Wang Y, Damschroder-Williams P, Chen G, Guitart

X, Manji HK (2009) Genome-wide gene expression profiling in GluR1 knockout mice: Key role of the calcium signaling pathway in glutamatergically-mediated hippocampal transmission. <u>European Journal of Neuroscience</u> 30:2318-2326

- 98. Brigman JL, Wright T, Talani G, Prasad-Mulcare S, Jinde S, Seabold GK, Mathur P, Davis MI, Bock R, Alvarez VA, Nakazawa K, Delpire E, Lovinger DM, Holmes A (2010) long-term depression, reduces dendritic spine density, and disrupts learning. <u>The Journal of Neuroscience</u> 30:4590-4600
- 99. Fraser L, Brown RE, Hussin A, Fontana M, Whittaker A, O'Leary T, Lederle L, **Holmes A**, Ramos A (2010) Measuring anxiety-related and locomotion behaviours in mice: a new way of using old models. <u>Psychopharmacology</u> 211:99-112
- 100. Mozhui K, Karlsson RM, Kash TL, Ihne J, Norcross M, Fitzgerald PF, Patel S, Camp M, Cameron HA, Ciobanu DC, Winder DG, Williams RW, Holmes A (2010) Strain differences in stress responsivity are associated with divergent amygdala gene expression and glutamate- mediated neuronal excitability. <u>The Journal of Neuroscience</u> 30:5357-5367
- 101. Brigman J, Mathur P, Harvey-White J, Izquierdo A, Saksida LM, Bussey TJ, Murphy DL, Deneris E, Holmes A (2010) Pharmacological or genetic inactivation of the serotonin transporter improves reward-based cognitive flexibility on a mouse touchscreen-based assay. <u>Cerebral Cortex</u> 20:1955-1963
- 102. Caspi A, Hariri A, Holmes A, Uher R, Moffit TE, (2010) Genetic sensitivity to the environment: the case of the serotonin transporter and its implications for studying complex diseases and traits. <u>American Journal of Psychiatry</u> 167:509-527
- 103. **Holmes A**, Quirk GJ (2010) Pharmacological facilitation of fear extinction and the search for adjunct treatments for anxiety disorders the case of yohimbine. <u>Trends in Pharmacological Sciences</u> 31:2-7
- 104. Brigman JL, Graybeal, **Holmes A** (2010) Predictably irrational: assaying cognitive inflexibility in mouse models of schizophrenia. <u>Frontiers in Neuroscience</u> 4
- 105. Feyder M, Camp MC, Holmes A, Chen Y-C (2010) Ethanol and NMDA receptor interactions: Implications for pharmacotherapeutic treatments. Journal of Medical Sciences 30:3-10.
- 106. Graybeal C, Kiselycznyk C, **Holmes A** (2010) The prefrontal cortex and stress. Current Topics in Behavioral Neurosciences. JF Cryan, A Reif (Eds). Spinger, Heidelberg
- 107. Caspi A, Hariri A, **Holmes A**, Uher R, Moffit TE, (2010) Genetic sensitivity to the environment: the case of the serotonin transporter and its implications for studying complex diseases and traits. Gene-environment Interactions in Developmental Psychopathology. KA Dodge, M Rutter (Eds). Guildford Press, New York
- 108. Whittle N, Hauschild M, Lubec G, Holmes A, Singewald S (2010) Rescue of impaired fear extinction and normalization of cortico-amygdala circuit dysfunction in a genetic mouse model by dietary zinc restriction. <u>The Journal of Neuroscience</u> 30:13586-13596
- Fitzgerald PF, Barkus C, Feyder M, Wiedholz L, Chen YC, Karlsson RM, Machado-Vieira R, Camp MC, Graybeal C, Sharp T, Zarate C, Harvey-White J, Du J, Sprengel R, Gass P, Bannerman D, Holmes A (2010) Does gene deletion of AMPA GluA1 phenocopy features of schizoaffective disorder? <u>Neurobiology of Disease</u> 40:608-621
- 110. Baganz NL, Horton RE, Martin KP, Gould GG, **Holmes A**, Daws LC (2010) Repeated swim impairs serotonin clearance via a corticosterone-sensitive mechanism: organic cation transporter 3, the smoking gun. <u>The Journal of Neuroscience</u> 30:15185-15195
- 111. Feyder M, Karlsson RM, Mathur P, Lyman MT, Bock R, Momenan R, Munasinghe J, Scattoni ML, Ihne J, Camp M, Graybeal C, Strathdee D, Begg A, Alvarez VA, Kirsch P, Rietschel M, Cichon S, Walter H, Meyer-Lindenberg A, Grant SGN, Holmes A (2010) Association of mouse Dlg4 (PSD-95) gene deletion and human DLG4 gene variation with phenotypes relevant to autism spectrum disorders and Williams' syndrome. <u>The American Journal of Psychiatry</u> 167:1508-1517. \*Media <u>https://www.spectrumnews.org/news/mutant-mouse-pins-psd-95-in-williams-syndrome/</u>
- Lederle L, Weber S, Wright T, Feyder M, Brigman JL, Crombag H, Saksida LM, Bussey TJ, Holmes A (2011) Reward-related behavioral paradigms for addiction research in the mouse: performance of common inbred strains. <u>PLoS One</u> 6: e15536
- 113. Camp M, Feyder M, Ihne J, Palachick B, Hurd B, Chen Y-C, Coba MP, Grant SGN, Holmes A (2011) A novel role for PSD-95 in mediating ethanol intoxication, drinking and place preference. <u>Addiction</u> <u>Biology</u> 16:428-439

- 114. Kiselycznyk C, Svenningson P, Delpire E, Holmes A (2011) Genetic, pharmacological and lesion analyses reveal a selective role for corticohippocampal GluN2B in a novel repeated swim stress paradigm. <u>Neuroscience</u> 193:259-268
- 115. Kiselycznyk C, Holmes A (2011) All (C57BL/6) mice are not created equal. Frontiers in Neuroscience 5:10
- 116. **Holmes A** (2011) Merger fever: can two mechanisms work together to explain alcoholism? <u>Biological Psychiatry</u> 69:1043-1051
- 117. Graybeal C, Schulman E, Saksida LM, Bussey TJ, Feyder M, Holmes A (2011) Paradoxical reversal learning enhancement by stress or prefrontal cortical damage: rescue with BDNF. <u>Nature Neuroscience</u> 14:1507-1509. \*Faculty 1000 recommended paper <u>https://f1000.com/prime/13405009</u>
- 118. Ihne J, Fitzgerald PJ, Hefner K, Holmes A (2012) Pharmacological manipulation of stress-induced C57BL/6J anxiety-related behavior. <u>Neuropharmacology</u> 62:464-473
- 119. Barkus C, Bannerman DM, Feyder M, Graybeal G, Wright T, Wiedholz L, Izquierdo A, Saksida LM, Bussey TJ, Sprengel R, Holmes A (2012) GluA1 knockout mice exhibit behavioral abnormalities relevant to the negative symptoms of schizophrenia and schizoaffective disorder. <u>Neuropharmacology</u> 62:1263-1272
- Kiselycznyk C, Hoffman D, Holmes A (2012) Effects of genetic deletion of the Kv4.2 voltage-gated potassium channel on murine anxiety-, fear- and stress-related behaviors. <u>Biology of Mood and Anxiety</u> <u>Disorders</u> 2:5
- 121. Camp M, MacPherson K, Graybeal C, Lederle L, Gaburro S, Debrouse L, Ihne J, Bravo JA, O'Connor RM, Wellman CL, Luthi A, Cryan JF, Singewald N, Holmes A (2012) Genetic strain differences in learned fear inhibition associate with variation in neuroendocrine, autonomic and amygdala dendritic phenotype. <u>Neuropsychopharmacology</u> 37:1534-1547. \*Faculty 1000 exceptional paper <u>http://f1000.com/14267267</u>
- 122. Hartley CA, McKenna MC, Salman R, **Holmes A**, Casey BJ, Phelps EA, Glatt CE (2012) A human serotonin transporter polyadenylation polymorphism selectively modulates the retention of fear extinction memory. <u>Proceedings of the National Academy of Sciences, USA</u> 109:5493- 5498
- 123. Maroun M, Birger O, **Holmes A**, Wellman C, Montanis H (2012) Enhanced extinction of aversive memories by high-frequency stimulation of the rat infralimbic cortex. <u>PLoS One</u> 7:e35853
- 124. Chesler EJ, Plitt A, Fisher D, Hurd B, Lederle L, Kiselycznyk C, **Holmes A** (2012) Quantitative trait loci for sensitivity to ethanol intoxication in a C57BL/6J x 129S1/SvImJ inbred mouse cross. <u>Mammalian</u> <u>Genome</u> 23:305-321
- 125. Karlsson RM, Adermark L, Molander A, Pereau-Lenz S, Singley E, Solomon M, Holmes A, Tanaka K, Lovinger DM, Spanagel R, Heilig M (2012) Reduced alcohol intake, lack of alcohol reward and impaired endocannabinoid signaling in mice with a deletion of the glutamate transporter GLAST. <u>Neuropharmacology</u> 63:181-189
- 126. Whittle N Gunduz-Cinar O, Holmes A Singewald N (2012) Deep brain stimulation and adjunctive drug treatments rescue impaired fear extinction in a genetic mouse model. <u>Neuropharmacology</u> 64:414-423
- 127. Holmes A (2012) Genes, Brain and Behavior: At the Vanguard of Behavioral and Genomic Neuroscience. <u>Genes, Brain & Behavior</u> 11:1-2
- 128. Bussey TJ, Holmes A, Lyon L, Mar A, McAllister K, Nithianantharajah J, Oomen CA, Saksida LM (2012) New translational assays for preclinical modelling of cognition in schizophrenia: the touchscreen testing method for mice and rats. <u>Neuropharmacology</u> 62:1191-1203
- 129. Graybeal C, Kiselycznyk C, Holmes A (2012) Stress-induced impairments in prefrontal-mediated behaviors and the role of the N-methyl-D-aspartate receptor. <u>Neuroscience</u> 211:28-38
- 130. Holmes A, Fitzgerald PJ, MacPherson K, DeBrouse L, Colacicco G, Flynn S, Masneuf S, Pleil KE, Li C, Marcinkiewcz CA, Kash TL, Gunduz-Cinar O, Camp M (2012) Chronic alcohol remodels prefrontal neurons and disrupts NMDA receptor-mediated fear extinction encoding. <u>Nature Neuroscience</u> 15:1359-1361. \*Media <u>https://www.sciencedaily.com/releases/2012/09/120902143143.htm</u>, Faculty 1000 must read <u>http://f1000.com/717956468</u>), altimetric score ranked #1 of 72 similarly aged Nature Neuroscience articles, upper 99 percentile of 64,036 similarly aged articles in all journals
- 131. Debrouse L, Hurd B, Plitt A, Todaro A, Kiselycznyk C, Camp M, Holmes A (2013) Probing the

modulation of acute ethanol intoxication by pharmacological manipulation of the NMDAR glycine coagonist site. <u>Alcoholism: Clinical and Experimental Research</u> 37:223-233

- 132. Holmes A, Singewald N Individual differences in recovery from traumatic fear (2013). <u>Trends in Neurosciences</u> 36:23-31. \*Journal front cover and Feature Review
- 133. Kiselycznyk C, Holmes A, Svenningsson P (2013) Reduced phosphorylation of GluA1 subunits relates to anxiety-like behaviors in mice. International Journal of Neuropsychopharmacology 16:919-294
- 134. Brigman JL, Daut R, Wright T, Gunduz-Cinar O, Graybeal C, Davis MI, Jiang Z, Saksida L, Jinde S, Pease M, Bussey TJ, Lovinger DM, Nakazawa K, Holmes A (2013) GluN2B in corticostriatal circuits governs choice learning and choice shifting. <u>Nature Neuroscience</u> 16:1101- 1110. \*Media <u>https://neurosciencenews.com/neurology-learning-addiction-behavior-alteration-294/</u>
- 135. MacPherson K, Whittle N, Camp M, Gunduz-Cinar O, Singewald N, Holmes A (2013) Temporal factors in the extinction of fear in inbred mouse strains differing in extinction efficacy. <u>Biology of Mood</u> <u>and Anxiety Disorders</u> 3:13
- 136. Gunduz-Cinar O, MacPherson KP, Cinar R, Gamble-George J, Sugden K, Williams B, Ramikie TS, Gorka AX, Makriyannis A, Poulton R, Patel S, Hariri AR, Caspi A, Moffitt TE, Kunos G, Holmes A (2013) Convergent translational evidence of a role for anandamide in amygdala- mediated fear extinction, threat processing and stress-reactivity. <u>Molecular Psychiatry</u> 18:813-823. \*Media <u>https://www.sciencedaily.com/releases/2012/06/120612101328.htm</u>, Faculty 1000 2 recommendations 'must read' http://f1000.com/717948500
- 137. Maroun M, Ioannides PJ, Bergman K, Kavushansky A, Holmes A, Wellman CL (2013) Fear extinction deficits following acute stress associate with increased spine density and dendritic retraction in basolateral amygdala neurons. European Journal Neuroscience 38:2611-2620
- 138. Griebel G, Holmes A (2013) The age of anxiety: fifty years of hope and hurdles in anxiolytic drug discovery. <u>Nature Reviews Drug Discovery</u> 12:667-687. \*Journal front cover
- 139. Holmes A, Spanagel R, Krystal J (2013) Glutamatergic targets for new alcohol medications. <u>Psychopharmacology</u> 229:539-554
- Horner AE, Heath CJ, Hvoslef-Eide M, Kent BA, Kim C-H, Nilsson S, Alsiö J, Oomen CA, Holmes A, Saksida LM, Bussey TJ (2013) Using the touchscreen operant platform to test learning and memory in rodents. <u>Nature Protocols</u> 8:1985-2005. \*Featured Review
- 141. Holmes A (2013) Strains, SNPs and selected lines: Genetics factors influencing variation in murine anxiety-like behavior. In <u>Behavioral Genetics of the Mouse</u>: Vol 1, Genetics of Behavioral Phenotypes. WE Crusio, F Sluyter, RT Gerlai, S Pietropalo (Eds). Cambridge University Press
- Mar AC, Alsio J, Nilsson S, Kent BA, Kim CH, Holmes A, Saksida LM, Bussey TJ (2013) The touchscreen operant platform for rodents: tests of executive function. <u>Nature Protocols</u> 8:1961-1984.
  \*Journal Featured Review
- 143. DePoy CL, Daut R, Brigman J, MacPherson KP, Crowley N, Gunduz-Cinar O, Pickens C, Cinar R, Saksida L, Kunos G, Lovinger D, Bussey TJ, Camp MC, Holmes A (2013) Chronic alcohol produces neuroadaptations to prime learning. Proceedings of the National Academy of Sciences, USA 110:14738-14788. \*Media <u>https://www.huffpost.com/entry/brain-alcohol-behavior-control\_n\_3796813</u>, highlighted 'In This Issue' <u>http://www.pnas.org/content/110/36/14505.full</u>
- 144. Wellman CL, Camp M, Jones VM, Martin KP, Ihne J, Fitzgerald P, Maroun M, Deneris E, Holmes A (2013) Convergent effects of mouse *Pet-1* deletion and human *PET-1* variation on amygdala fear and threat processing. <u>Experimental Neurology</u> 250:260-269
- 145. Gunduz-Cinar O, Hill MN, McEwen BS, Holmes A (2013) Amygdala FAAH and anandamide: mediating protection and recovery from stress. <u>Trends in Pharmacological Sciences</u> 34:637-633. \*Media <u>http://www.npr.org/blogs/health/2013/12/23/256610483/could-pot-help-veterans-with-ptsd-brain-scientists-say-maybe</u>, Journal front cover, Editors' 10 best articles of 2013,
- 146. Radke A, Pickens C, Holmes A (2014) Stress and alcohol drinking behavior. In <u>Neurobiology of</u> <u>Alcohol Dependence</u>. ABC Noronha, C Cui, RA Harris, JC Crabbe (Eds). Elsevier
- 147. Holmes A (2014) Introducing G2B Reviews. Genes, Brain and Behavior 13:1
- 148. Graybeal C, Bachu B, Mozhui K, Saksida LM, Bussey TJ, Sagalyn E, Williams RW, Holmes A (2014) Strains and Stressors: an analysis of touchscreen learning in genetically diverse mouse strains. <u>PLoS One</u> 9:e87745

- 149. Fitzgerald PJ, Whittle N, Flynn SM, Graybeal C, Pinard C, Gunduz-Cinar O, Graybeal C, Kravitz A, Singewald N, Holmes A (2014) Prefrontal single-unit firing associated with deficient extinction in mice. <u>Neurobiology of Learning and Memory</u> 113:69-81
- 150. Masneuf S, Lowery-Gionta E, Colacicco G, Pleil KE, Li C, Crowley C, Stamatakis A, Flynn S, Holmes A, Kash T (2014) Glutamatergic mechanisms associated with stress-induced amygdala excitability and anxiety-related behavior. <u>Neuropharmacology</u> 85:190-197
- 151. Bukalo O, Pinard C, **Holmes A** (2014) Mechanisms to medicines: modeling the neural circuitry of fear to reveal new anxiolytic drug targets. <u>British Journal of Pharmacology</u> 171:4690-4718
- 152. Daut R, Busch E, Ihne J, Fisher D, Mishina M, Grant S, Camp M, Holmes A (2015) Tolerance to ethanol intoxication after chronic ethanol: role of GluN2A and PSD-95. Addiction Biology 20:259-262
- 153. Singewald N, Schmuckermair C, Whittle N, **Holmes A**, Ressler KJ (2015) Pharmacology of cognitive enhancers for exposure-based therapy of fear, anxiety and trauma-related disorders. <u>Pharmacology and Therapeutics</u> 149:150-190
- 154. DePoy L, Wright T, Camp M, Crowley N, Noronha B, Lovinger, D, Holmes A (2015) Chronic alcohol alters rewarded behaviors and striatal plasticity. <u>Addiction Biology</u> 20:345-348
- 155. Holmes A (2015) Stress at the intersection of anxiety, addiction and eating disorders. <u>Genes, Brain</u> <u>and Behavior</u> 14:1-3
- 156. Fitzgerald PJ, Pinard CR, Camp MC, Feyder F, Sah A, Bergstrom H, Graybeal C, Liu Y, Schlüter O, Grant SGN, Singewald N, Xu W, Holmes A (2015) Durable fear memories require PSD-95. <u>Molecular Psychiatry</u> 20:901-912. \*Journal front cover and Featured Article
- 157. Thompson SM, Josey M, Holmes A, Brigman JL (2015) Conditional loss of GluN2B in cortex and hippocampus impairs attentional set formation. <u>Behavioral Neuroscience</u> 129:105-112
- 158. Hariri A, **Holmes A** Finding translation: stress research paves a path for defining the biological basis of mental illness. <u>Nature Neuroscience</u> 18:1347-1352. \*Media <u>https://www.pharmaceuticaljournal.com/news-and-analysis/features/anxiety-drugs-stressing-the-importance-ofinnovation/20201479.article</u>
- 159. Kiselycznyk C, Jury N, Halladay L, Nakazawa K, Mishina M, Sprengel R, Grant S, Svenningsson P, Holmes A (2015) NMDA receptor subunits and associated signaling molecules mediating the antidepressant-related effects of NMDA-GluN2B antagonism. <u>Behavioral Brain Research</u> 287:89-95
- 160. Bukalo O, Pinard CR, Silverstein S, Brehm C, Whittle N, Colacicco G, Busch E, Singewald N, Holmes A (2015) Prefrontal inputs to the amygdala instruct fear extinction memory formation. <u>Science</u> <u>Advances</u> 1:e1500251. \*Media <u>https://www.scientificamerican.com/article/how-the-brain-purges-badmemories/</u>, Faculty 1000 exceptional rating <u>https://f1000.com/prime/725862241</u>
- 161. Brigman JL, Daut RA, Saksida LM, Bussey TJ, **Holmes A** (2015) Impaired discrimination learning in interneuronal NMDA-GluN2B mutant mice. <u>NeuroReport</u> 17:484-494
- Holmes A, Chen A. GABA receptors in a state of fear; News & Views. <u>Nature Neuroscience</u> 18:1194-1196
- 163. Radke AK, Nakazawa K, Holmes A (2015) Cortical GluN2B deletion attenuates compulsive-like reward-seeking. <u>Psychopharmacology</u> 232:3753-3761
- 164. Maren S and Holmes A (2016) Stress and fear extinction. <u>Neuropsychopharmacology (Reviews)</u> 41:58-79
- Gunduz-Cinar O, Flynn S, Kaugars K, Ramikie TS, Cinar R, Kunos G, Patel S, Holmes A (2016) Fluoxetine facilitates fear extinction through amygdala endocannabinoids. <u>Neuropsychopharmacology</u> 41:1588-1597
- 166. **Holmes A** (2016) The developmental origins of complex behavior and neuropsychiatric disease. <u>Genes, Brain and Behavior</u> 15:5-6
- 167. Gamble-George JC, Halladay LR, Baldí R, Money K, Kocharian A, Xu S, Mitchner M, DeSilva C, Roberts H, Haymer A, Marnett LJ, Mirnics K, Holmes A, Patel P (2016) Cyclooxygenase-2 inhibition reduces stress-induced affective pathology. <u>eLife</u> 5:e14137
- 168. Didion JP, Morgan AP, Yadgary L, Bell TA, McMullan RC, Ortiz de Solorzano L, Britton-Davidian J, Bult CJ, Campbell KJ, Castiglia R, Ching Y-H, Chunco AJ, Crowley JJ, Chesler EJ, French JE, Gabriel SI, Gatti DM, Garland T, Giagia-Athanasopoulou EB, Giménez MD, Grize SA, Gündüz I, Holmes A, Hauffe HC, Herman JS, Holt JM, Hua K, Jolley WJ, Lindholm AK, López-Fuster MJ, Mitsainas G,

Mathias M, McMillan L, Ramalhinho MG, Rehermann B, Rosshart SP, Searle JB, Shiao M-S, Solano E, Svenson KL, Thomas-Laemont P, Threadgill DW, Queija JV, Weinstock GM, Pomp D, Churchill GA, Pardo-Manuel de Villena F (2016) R2d2 drives selfish sweeps in the house mouse. <u>Molecular Biology</u> and <u>Evolution</u> 33:1371-1395 (Covered in various media, e.g., <u>http://www.eurekalert.org/pub\_releases/2016-02/uonc-nrc022416.php</u>)

- 169. Hartley ND, Conger JR, Gunduz-Cinar O, Halladay LR, Bukalo O, Holmes A, Patel S (2016) 2arachidonoylglycerol signaling prevents short-term fear extinction learning. <u>Translational Psychiatry</u> 6:e749
- 170. Knoll AT, Halladay LR, **Holmes A**, Levitt P. Quantitative trait locus analysis reveals Hcn1 as a novel functional candidate for fear learning. <u>The Journal of Neuroscience</u> 36:6258-6268. \*Media <u>https://www.sciencedaily.com/releases/2016/06/160620100204.htm</u>
- 171. Marcinkiewcz CA, Mazzone CM, D'Agostino G, Halladay LR, Hardaway JA, DiBerto JF, Navarro M, Burnham N, Cristiano C, Dorrier CE, Tipton GJ, Ramakrishnan C, Kozicz T,Deisseroth K, Thiele TW, McElligott ZA, Holmes A, Heisler LK, Kash T (2016) Serotonin engages an anxiety and fear-promoting circuit in the extended amygdala <u>Nature</u> 537:978-101. \*Media <u>https://www.independent.co.uk/news/science/serotonin-happy-hormone-what-it-means-scientists-happiness-a7207421.html</u>
- 172. Halladay LR, Kocharian A, **Holmes A** (2017) Mouse strain differences in compulsive-like ethanol self-administration. <u>Alcohol</u> 58:83-92
- 173. Izquierdo A, Brigman, J, Radke A, Holmes A (2017) The neural basis of reversal learning: An updated perspective. <u>Neuroscience</u> 345:12-26
- 174. Radke AK, Jury NJ, Kocharian A, Marcinkiewcz CA, Lowery-Gionta E.G., Pleil KE, McElligott ZA, McKlveen JM, Kash TL, Holmes A (2017) Chronic EtOH effects on putative measures of compulsive behavior in mice. <u>Addiction Biology</u> 22:423-434
- 175. Jury NJ, Dilberto J, Kash TL, **Holmes A** (2017) Mouse sex differences in the effects of chronic ethanol exposure. <u>Alcohol</u> 58:53-60
- 176. Holmes A (2017) Drug addictions: new insight into causes, comorbidity and potential treatments. Genes, Brain and Behavior 16:5-7
- 177. Radke A, Jury NJ, Delpire E, Nakazawa K, **Holmes A** (2017) Reduced ethanol drinking following selective cortical interneuron deletion of the GluN2B NMDA receptors subunit. <u>Alcohol</u> 58:47-51
- 178. Peterson VL, Jury NJ, Cabrera-Rubio R, Draper LA, Crispie F, Cotter PD, Dinan TG, Holmes A, Cryan JF (2017) Drunk bugs: chronic vapor alcohol exposure induces marked changes in the gut microbiome in mice. <u>Behavioral Brain Research</u> 323-172-176. \*Media <u>http://apc.ucc.ie/drunk-bugs/</u>
- 179. Holmes A (2017) Sex and orexins: Uncovering a mechanism underlying sex differences in stress susceptibility. <u>Biological Psychiatry</u> 81:642-644
- 180. Patel S, Hill MN, Cheer JF, Wotjak C, Holmes A (2017) The endocannabinoid system as a target for novel anxiolytic drugs. <u>Neuroscience & Biobehavioral Reviews</u> 76:55-66
- 181. Bogdan R, Salmeron BJ, Carey CE, Agrawal A, Calhoun VD, Garavan H, Hariri AR, Heinz A, Hill MN, Holmes A, Kalin NH, Goldman D (2017) Imaging genetics and genomics in psychiatry: a critical review of progress and potential. <u>Biological Psychiatry</u> 82:165-175
- 182. Craske M, Stein MB, Eley TC, Milad MR, Holmes A, Rapee R, Wittchen H-U (2017) Anxiety disorders. <u>Nature Reviews Disease Primers</u> 3:17024 . \*Web of Science highly cited paper in clinical medicine
- Jury NJ, Pollack GA, Ward MJ, Pinard CR, Bergstrom HC, Holmes A (2017) Chronic ethanol during adolescence impacts corticolimbic dendritic spines and behavior. <u>Alcoholism: Clinical and Experimental</u> <u>Research</u> 41:1298-1308.

\*Media https://www.sciencedaily.com/releases/2017/06/170614210919.htm

- 184. Sugam JA, Bloodgood D, **Holmes A**, Kash TL (2018). Fear extinction requires infralimbic cortex projections to basolateral amygdala, not nucleus accumbens. <u>Translational Psychiatry</u> 81:60
- 185. Bukalo O and **Holmes A** (2018). Preview: Everything in its right place: a prefrontal-midbrain circuit for contextual fear discrimination. <u>Neuron</u> 97:732-733
- 186. Bergstrom H, Lipkin A, Pinard CR, Gunduz-Cinar O, Brockway E, Bukalo O, Wills TA, Rubio FJ, Li X, Pickens CL, Winder DG, **Holmes A** (2018). Dorsolateral striatum engagement interferes with early

discrimination learning. Cell Reports 23:2264-2272

- 187. Yuan JT, Gatti DM, Kasparek S, Kreuzman D, Mansky B, Sharif K, Taterra D, Taylor W, Thomas M, Holmes A, Chesler EJ, Parker CC (2018). Genome-wide association for testis weight in the diversity outbred mouse population. <u>Mammalian Genome</u> 29:310-324
- 188. Jury NJ, Radke AR, Pati D, Kocharian A, Mishina M, Kash TL, Holmes A (2018). NMDA receptor GluN2A subunit deletion protects against dependence-like ethanol drinking. <u>Behavioral Brain Research</u> 353:124-128. \*Media <u>https://irp.nih.gov/blog/post/2018/07/neuronal-building-block-underlies-alcoholaddiction</u>
- 189. Lohoff F, Sorcher J, Rosen A, Mauro K, Fanelli R, Momenan R, Hodgkinson C, Vendruscolo L, Koob G, Jones I, Holmes A, Zhou Z, Xu M-J, Gao G, Hui S, Phillips M, Muench C, Kaminsky Z, Schwandt M, George D (2018). Methylomic profiling and replication implicates deregulation of PCSK9 in alcohol use disorder. <u>Molecular Psychiatry</u> 23: 1-11
- 190. Lowery-Gionta EG, Crowley NA, Bukalo O, Silverstein S, Holmes A, Kash TL (2018). Chronic stress dysregulates amygdalar output to the prefrontal cortex. <u>Neuropharmacology</u> 139: 68-75
- 191. Piantadosi PP, Lieberman AG, Pickens CL, Bergstrom H, Holmes A (2018). A novel multi-choice touchscreen paradigm for assessing cognitive flexibility in mice. <u>Learning and Memory</u> 26:24-30.
  \*Journal front cover
- 192. Gunduz-Cinar O, Brockway E, Lederle L, Wilcox T, Halladay LR, Ding Y, Oh H, Busch EF, Limoges A, Bukalo O, Kaugars K, Flynn S, MacPherson KP, Masneuf S, Pinard C, Sibille E, Chesler EJ, Holmes A (2019). Identification of a novel gene regulating amygdala-mediated fear extinction. Molecular Psychiatry 24:601-612
- 193. Singewald N, Holmes A (2019). Rodent models of impaired fear extinction. <u>Psychopharmacology</u> 236:21-32
- 194. Zhang J-Y, Liu T-H, He Y, Pan H-Q, Zhang W-H, Tian X-L, Yin X-P, Li B-M, Wang X-D, Holmes A, Yuan T-F, Pan B-X (2019). Chronic stress remodels synapses in an amygdala circuit-specific manner. <u>Biological Psychiatry</u> 85:189-201. \*Preview by Treccani (2019) From Structure to Behavior: Circuit Specificity of Stress-Induced Synaptic Plasticity in the Basolateral Amygdala Projection Neurons. Biological Psychiatry 85:7-9
- 195. O' Connor R, McCafferty CP, Bravo JA, Singewald N, Holmes A, Cryan JF (2019). Increased amygdalar metabotropic glutamate receptor 7 mRNA in a genetic mouse model of impaired fear extinction. <u>Psychopharmacology</u> 236:265-272
- 196. Kenton JA, Castillo R, Holmes A, Brigman JL (2019). Cortico-hippocampal GluN2B is essential for efficient visual-spatial discrimination learning in a touchscreen paradigm. <u>Neurobiology of Learning and</u> <u>Memory</u> 156:60-67
- 197. Milton AL, Holmes A (2019). The Psychopharmacology of Extinction: From Theory to Therapy. <u>Psychopharmacology</u> 236:1-6
- 198. Radke AK, Zweifel LS, **Holmes A** (2019). NMDA receptor deletion on dopamine neurons disrupts visual discrimination and reversal learning. <u>Neuroscience Letters</u> 699:109-114
- 199. Holmes A. The neuroscience and genomics of social behavior (2019). <u>Genes, Brain and Behavior</u> 18:e12551
- 200. Zhang W-H, Liu W-Z, He Y, You W-J, Zhang J-Y, Xu H, Tian X-L, Li B-M, Holmes A, Pan B-X (2019). Chronic stress causes projection-specific adaptation of amygdala neurons via small- conductance calcium-activated potassium channel downregulation. <u>Biological Psychiatry</u> 85:812-828. \*Preview by Morel et al (2019) Small-Conductance, Calcium-Activated Potassium Channels: A Key Circuit Determinant for Stress-Induced Amygdala Dysfunction. Biological Psychiatry 85:784-786
- 201. Holmes A. News & Views: Biological clues to an enigmatic treatment for traumatic stress (2019). Nature 566:335336
- 202. Delgado C, Espinosa, Radke AK, Sengupta A, Henríquez-Belmar F, Utreras E, Wendland JR, Sotomayor-Zárate R, Cho A, Kulkarni AB, Holmes A, Chávez AE, Murphy DL, Moya PR (2019). Increased EAAT3 expression in forebrain neurons elicits OCD-like behaviors. <u>Neuropsychopharmacology</u> 44:1163-1173
- 203. Ferrazzo S, Gunduz-Cinar O, Stefanova N, Pollack G, Holmes A, Schmuckermair C, Ferraguti F (2019). Discriminative effect between the response to a threat and a motivational conflict of distinct

catecholaminergic pathways targeting the mouse amygdala. Neurobiology of Disease 125:55-66

- 204. Hardaway JA, Halladay LR Mazzone CM, Pati D, Bloodgood DW, Kim M, Jensen J, Diberto JF, Boyt KM, Shiddapur A, Erfani A, Hon OJ, Neira S, Sugam JA, Saddoris MP, Tipton G, McElligott Z, Jhou TC, Stuber GD, Bruchas MR, Bulik CM, Holmes A, Kash TL (2019). Central amygdala prepronociceptin-expressing neurons mediate palatable food consumption and reward. <u>Neuron</u> 102:1088. \*Media <u>https://www.independent.co.uk/life-style/junk-food-over-eat-brain-circuit-high-calorie-survivalobesity-unc-a8885616.html</u>
- 205. Marquardt, K, Josey, M, Kenton, J, **Holmes A**, Brigman JL (2019). Impaired cognitive flexibility following NMDAR-GluN2B deletion is associated with altered orbitofrontal-striatal function. <u>Neuroscience</u> 404:338-352.
- 206. Sengupta A, Holmes A (2019). A discrete dorsal raphe to basal amygdala 5-HT circuit calibrates aversive memory. <u>Neuron</u> 103:489-505. \*Previewed by Tiwari et al (2019). The Ministry of Fear: 'The Conjuring' of Fright in the Amygdala by the Raphe. <u>Neuron</u> 103:356-358
- 207. Radke AK, Kocharian A, Covey DP, Lovinger DM, Cheer JF, Mateo Y, Holmes A (2019). Contributions of striatal dopamine to cognitive flexibility. <u>European Journal of Neuroscience</u> 50:2023-2035
- 208. Rovira-Esteban L, Gunduz-Cinar O, Bukalo O, Limoges A, Brockway E, Pinard CR, Müller K, Andrási T, Holmes A, Hájos N (2019). Excitation of diverse classes of cholecystokinin interneurons in the basolateral amygdala facilitates fear extinction. <u>eNeuro</u> 6
- 209. Bjorni M, Rovero N, Yang E, Holmes A, Halladay L (2020). Phasic signaling in the bed nucleus of the stria terminalis during fear learning predicts within- and across-session cued fear expression. <u>Learning</u> <u>& Memory</u> 27:83-90. \*Journal front cover
- 210. Halladay LR, Kocharian A, Piantadosi PT, Authement M, Lieberman AG, Coden K, Spitz NA, Glover L, Costa VD, Alvarez V, Holmes A (2020). Prefrontal regulation of punished ethanol self-administration. <u>Biological Psychiatry</u> 87:967-968. \*Previewed by Hopf (2020) Cortical regulation of the ability to resist temptation for punishment-paired alcohol. <u>Biological Psychiatry</u> 87:940-941, media <u>https://www.sciencedaily.com/releases/2019/12/191218153516.htm</u>, Journal front cover
- 211. Mock ED, Mustafa M, Gunduz-Cinar O, Cinar R, Petrie G, Kantae V, Di X, Ogasawara D, Varga ZV, Paloczi J, Miliano C, Donvito G, van Esbroeck ACM, van der Gracht AMF, Kotsogianni L, Park JK, Martella A, van der Wel T, Soethoudt M, Jiang M, Wendel TJ, Janssen APA, Bakker AT, Donovan CM, Castillo LI, Florea BI, Wat J, van den Hurk H, Wittwer M, Grether U, Holmes A, van Boeckel CAA, Hankemeier T, Cravatt BF, Buczynski MW, Hill MN, Pacher P, Lichtman AH, and van der Stelt M (2020. Discovery of a brain active inhibitor of anandamide biosynthesis that modulates emotional behavior in mice. <u>Nature Chemical Biology</u> 16:667-675. \*Media e.g., <u>https://medicalxpress.com/news/2020-05-body-marijuana-traumatic-memories.html</u>
- 212. Glover LR, Postle AF, Holmes A (2020). Touchscreen-based assessment of risky-choice in mice. Behavioural Brain Research 393:112748
- 213. Bergstrom H, Lieberman AG, Graybeal C, Lipkin A, Holmes A (2020). Dorsolateral striatum engagement during reversal learning. Learning & Memory 27:418-422. \*Journal front cover
- 214. Glover L, **Holmes A** (2020). Anxiety and ambiguity. In <u>Translational Neuroscience in Psychiatry</u>. K Ressler (Ed) Oxford University Press, Oxford in press
- 215. Gunduz-Cinar O, Brockway E, Pollack G, Castillo L, **Holmes A** (2020). Selective sub-nucleus effects of intra-amygdala oxytocin on fear extinction. <u>Behavioural Brain Research</u> 393:112798
- Radke A, Piantadosi PT, Hall FS, Holmes A (2020). Improved visual discrimination learning in mice with partial genetic deletion of 5-HT2B receptors. <u>Neuroscience Letters</u> 738:135378
- 217. Bukalo O, Nonaka M, Weinholtz C, Mendez A, Taylor W, **Holmes A** (2020). Effects of optogenetic photoexcitation of infralimbic cortex inputs to the basolateral amygdala on conditioned fear and extinction. <u>Behavioural Brain Research</u> 396:112913
- 218. Glover LR, McFadden KM, Bjorni M, Smith SR, Rovero NG, Oreizi-Esfahani S, Yoshida T, Postle AF, Nonaka M, Halladay LR, Holmes A (2020). A prefrontal-bed nucleus of the stria terminalis circuit limits fear to uncertain threat. <u>eLife</u> 9:e60812
- 219. Zhang W-H, Zhang J-Y, Holmes A, Pan B-X (2021). Amygdala circuit substrates for stress adaptation and adversity. <u>Biological Psychiatry</u> 89:847-856

- 220. Hagihara KM, Bukalo O, Zeller M, Askoy-Aksel A, Limoges A, Rigg T, Campbell T, Karalis N, Mahn M, Zweifel LS, Ehrlich I, Lüthi A, **Holmes A** (2021). Inhibitory rivalry between intercalated amygdala clusters regulates fear extinction. <u>Nature</u> 594:403-407
- 221. Nonaka M, Taylor WW, Bukalo O, Tucker LB, Fu AH, Kim Y, McCabe JT, Holmes A (2021). Behavioral and myelin-related abnormalities following blast-induced mild traumatic brain injury in mice. Journal of Neurotrauma 38:1551-1571
- 222. Piantadosi P, Radke AR, Halladay LR, **Holmes A** (2021). Recent advances in understanding neural systems mediating risky reward seeking. Journal of Neurochemistry 157:1547-1571
- 223. Whittle N, Fadok J, MacPherspon KP, Botta P, Wolff SBE, Müller C, Herry C, Tovote P, Holmes A, Singewald N, Lüthi A, Ciocchi, S (2021). Central amygdala inhibitory micro-circuits mediate fear extinction. <u>Nature Communications</u> 12:4156. \*Media <u>https://www.sciencedaily.com/releases/2021/07/210716112449.htm</u>
- 224. Hitzeman R, Bergeson SE, Berman AE, Bubier JA, Chesler E, Finn DA, Hein L, Hoffman P, **Holmes** A, Kisby BR, Lockwood D, Lodowski KH, McManus M, Owem JA, Ozburn A, Panthagani P, Ponomarev I, Saba L, Tabakoff B, Walchale A, Williams R, Phillips TJ. Sex Differences in the brain transcriptome related to alcohol effects and alcohol use disorder. <u>Biological Psychiatry</u> in press
- 225. Parker CC, Philip VM, Gatti DM, Busch E, Kasparek S, Kreuzman AM, Kuffler L, Mansky B, Masneuf S, Sagalyn E, Sharif K, Taterra DM, Taylor WM, Thomas M, Palmer AA, Holmes A, Chesler EJ. Genome-wide mapping of ethanol sensitivity in the Diversity Outbred mouse population. <u>Alcoholism:</u> <u>Clinical and Experimental Research</u> in revision

# Invited lectures and symposium presentations

Second Ethopharmacology Meeting, Sopron, Hungary, September 1997: 'The experiential basis of "trial 2 anxiety" in the murine elevated plus-maze.'

Biomedical Science International Workshop on Ethology, Erice, Italy, December 1998: 'Behavioural responses of wild mice in the elevated plus-maze test of anxiety.'

Measuring Anxiety in Animals satellite to the Society for Neuroscience Annual Meeting, Miami, USA, October 1999: 'Anxiety-like behaviors in genetic mouse strains and galanin transgenic mice; methodological issues.'

Winter Conference on Neural Plasticity, St Lucia, West Indies, February 2000: 'Cognitive deficits in galanin overexpressing transgenic mice.'

Third International Conference on Methods and Techniques in Behavioral Research, Nijmegan, The Netherlands, August 2000: 'Multi-tiered strategy for the behavioral phenotyping of transgenic and knockout mice.'

Institute of Psychiatry, Kings College, London, UK, December 2000: 'Evidence of a link between the 5-HT transporter and anxiety behavior in gene mutant mice.'

Merck Research Laboratories, San Diego, USA, February 2001: 'The 5-HT transporter and anxiety; evidence from gene knockout mice.'

Joint Meeting of 11th Annual Meeting of the European Neuropeptide Club and American Summer Neuropeptide Conference, Jerusalem, Israel, May 2001: 'Cognitive deficits in mice overexpressing galanin.' Vanderbilt University Conferences on Genomics, Nashville, USA, May 2001: 'Abnormal emotional behaviors and age-related obesity in 5-HT transporter-deficient mice.'

Primal Inc., Seattle, USA, March 2001: 'Deletion of the serotonin transporter gene; pleiotropic consequences.' Gladstone Institute of Neurological Disease, University California, San Francisco, USA, September 2001: 'Cognitive and emotional phenotypes in galanin transgenic mice.'

NIMH/NINDS Annual Retreat, Arlie, USA, September 2001: 'Abnormal emotional behaviors in serotonin transporter knockout mice.'

Sanofi-Synthelabo, Paris, France, October 2001: 'Assessment of the neuropeptide galanin as a novel target in affective disorders.'

GlaxoSmithKline, Harlow, UK, October 2001: 'Galanin as a novel target for Alzheimer's disease? Evidence from gene mutant mice.'

Julius Maximilians-Universität, Würzburg, Germany, January 2002: 'Genetic basis of anxiety: behavioral analysis of genetically modified mice.'

Department of Pharmacology, Vanderbilt University, Nashville, Tennessee, USA, February 2002: 'Serotonin and emotion: insights from behavioral analysis of genetically modified mice.'

AstraZeneca Plc, Wilmington Delaware, USA, March 2002: 'Serotonin and emotion: insights from behavioral analysis of genetically modified mice.'

Department of Psychiatry, Northwestern University, Chicago, Illinois, USA, April 2002: 'Serotonin and emotion: insights from behavioral analysis of genetically modified mice.'

GlaxoSmithKline, Harlow, UK, May 2002: 'Genetic deletion of the serotonin transporter; pleiotropic consequences for behavior.'

Department of Anatomy and Developmental Biology, University College London, London, UK, June 2002: 'Serotonin and emotion: insights from behavioral analysis of genetically modified mice.'

International Behavioral Neuroscience Society Annual Meeting, Capri, Italy, June 2002: 'Analysis of adultonset obesity and feeding behavior in mice lacking the serotonin transporter.'

Workshop on The Psychobiology of Emotion, Banbury Center, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, USA, October 2002: 'Analysis of emotional behavior in genetically modified mice.' Radio interview for Radio One, Canadian Broadcasting Corporation, February 2003: 'Fighting Fright: the biology of fear.'

First Workshop on Murine Models of Psychiatric Disease, Provence, France, April 2003: 'Gene mutant mouse explains Woody Allen!'

European Molecular Biology Organization/Federation of European Neurosciences Society Practical Course on Mouse Transgenics and Behavior, University of Zurich, Zurich, Switzerland, July 2003: 'Using gene mutant mice to understand the neural and genetic basis of neuropsychiatric disease states – behavioral phenotyping strategies.'

Novartis Pharma AG, Basel, Switzerland, July 2003: 'Galanin; a novel therapeutic target for mood and anxiety disorders?'

Institute of Neurology, London, October 2003: 'How can mouse behavior help us understand the genetic basis of psychiatric illness?'

International Behavioural and Neural Genetics Society. New Orleans, November 2003: 'Abnormal anxietylike and depression-related phenotypes in serotonin transporter knockout mice.'

Society for Neuroscience, Short Course on Behavioral Phenotyping of Mutant Mice, New Orleans, November 2003: 'Mouse tests for neuropsychiatric disease.'

Association for Behavior Analysis Annual Meeting, Boston, USA, May 2004: 'Mouse models of mood and anxiety disorders.'

International Behavioral Neuroscience Society Annual Meeting, Key West, USA, June 2004: 'Genetic variation in serotonin transporter function and risk for emotional disorders: Evidence from gene mutant mice.' Department of Psychiatry, University of Pittsburgh, Pittsburgh, USA, December 2004: 'Genetic modulation of early life trauma in mice.'

American College of Neuropsychopharmacology Annual Meeting, San Juan, Puerto Rico, USA, December 2004: 'Abnormal emotional phenotypes in serotonin transporter knockout mice.'

American College of Neuropsychopharmacology Annual Meeting, San Juan, Puerto Rico, USA, December 2004: 'Genetic modulation of early life trauma in mice.'

Department of Pharmacology, University of Texas Health Science Center at San Antonio, San Antonio, USA, February 2005: 'Dissecting Genetic Susceptibility and Resilience to Emotional Disorders and Addiction in the Mouse.'

Spring Brain Conference, Sedona, Arizona, USA, March 2005: 'Genetic variation in serotonin transporter function and the developmental of emotional disorders; evidence from knockout mice.'

Imperial College London, London, United Kingdom, March 2005: 'Measuring complex behavioral phenotypes in rodents.'

Society of Biological Psychiatry Annual Meeting, Atlanta, Georgia, May 2005: 'Serotonergic modulation of fear.'

Drake University, School of Pharmacy, Des Moines, Iowa, April 2005: 'Mouse models of emotional disorders.'

Amgen, San Francisco, California, June 2005: 'The ascent of mouse: Using mutant mice to study the neural basis of emotional disorders.'

Ninth International Congress on Amino Acids and Proteins, Vienna, Austria, August 2005: 'Galanin; a novel therapeutic target for stress-related disorders?'

European Behavioral Pharmacology Society Annual Meeting, Barcelona, Spain, September 2005: 'Galanin; a novel therapeutic target for stress-related disorders?'

European Brain and Behavior Society Bi-Annual Meeting, Dublin, Ireland, September 2005: 'Genetic modulation of stress in mice.'

Otto-von-Guericke-Universität, Magdeburg, Germany, October 2005: 'Corticolimbic modulation of emotion.' University of Indiana, Bloomington, Indiana, December 2005: 'The ascent of mouse: Using mutant mice to study the neural basis of emotional disorders.'

Gordon Research Conference "Genes and Behavior", Ventura, CA, February 2006: 'Mouse models of emotional disorders and drug abuse.'

**Plenary Lecture**, International Behavioral and Neural Genetics Society Annual Meeting, Vancouver, Canada, May 2006: 'The ascent of mouse: using mice to understand the causes and cures of psychiatric diseases.'

<u>Symposium Chair</u>, International Behavioral and Neural Genetics Society Annual Meeting, Vancouver, Canada, May 2006: 'Recent perspectives on the role of monoamine systems in depression.'

Symposium Chair, International Behavioral Neuroscience Society Annual Meeting, Whistler, Canada, May 2006: 'Genes meet Behavior.'

Serotonin Club Annual Meeting, Sapporo, Japan, June 2006: 'Genetic variation in serotonergic modulation of affect regulation.'

Collegium Internationale Neuro-Psychopharmicologicum Biennial Meeting. Chicago, USA, July 2006: 'Corticolimbic regulation of affect: The influence of genes and environmental stress.'

Japanese Neuroscience Society Meeting Satellite Symposium on Mouse Genetics, Kyoto, Japan, July 2006: 'The ascent of mouse: using mice to understand the causes and cures of psychiatric diseases.'

Japanese Neuroscience Society Annual Meeting, Kyoto, Japan, July 2006: 'Novel methods for assaying higher order behavior in mice.'

International Society for Research on Aggression, Biennial Meeting, Minneapolis, USA, July 2006: 'Influence of genetic variation in serotonin transporter function on aggression and emotion; evidence from mutant mouse models.'

Wellcome Trust Sanger Institute, Cambridge, UK, August 2006: 'The ascent of mouse: using mice to understand the causes and cures of psychiatric diseases.'

International Society for Biomedical Research on Alcoholism, Sydney, Australia, September 2006: 'Genes, stress and alcohol; recent evidence from studies in the mouse.'

International Society for Biomedical Research on Alcoholism, Sydney, Australia, September 2006: 'Stress, monoamine transporters and the behavioral effects of ethanol in mice.'

Symposium Chair, International Society for Biomedical Research on Alcoholism, Sydney, Australia,

September 2006: 'Serotonergic modulation of behavioural and neurochemical actions of alcohol: evidence from the bench to the clinic.'

Helicon Therapeutics, Long Island, New York, October, 2006: 'Developing novel mouse models of executive function.'

University of Maryland, College Park, Maryland, December, 2006: 'Mouse models of psychiatric disease.' Winter Brain Conference, Snowmass, Colorado, January, 2007: 'Serotonergic modulation of fear and anxiety;

evidence from mouse models.'

Georgetown University, Washington DC, February, 2007: 'Genetic modulation of fear and anxiety; evidence from mouse models.'

Howard University, Washington DC, February, 2007: 'Genetic modulation of fear and anxiety; evidence from mouse models.'

National Institute on Drug Abuse, Baltimore, Maryland, March, 2007: 'Genetic modulation of fear and anxiety in mice.'

National Institute of Genetics, Mishima, Japan, March, 2007: 'Serotonergic modulation of emotion and executive function.'

International Behavioral and Neural Genetics Society Annual Meeting, Doorweth, The Netherlands, May 2007: 'Exploring the genetic and neural basis of fear extinction using mouse models.'

Symposium Chair, International Behavioral and Neural Genetics Society Annual Meeting, Doorweth, The Netherlands, May 2007: 'Translational genetic approaches to the study of fear and anxiety.'

Federal University of Santa Catarina, Florianopolis, Brazil, May 2007: 'Genetics of Fear and Anxiety: evidence from mouse models.'

NIMH Workshop, Novel methods for examining prefrontal interactions with cortical and subcortical systems that support complex mental function, Bethesda, USA, July 2007: 'Genetic control of limbic circuits.' American College of Neuropsychopharmacology Annual Meeting, Boca Raton, USA, December 2007: 'Cognitive flexibility in serotonin transporter knockout mice.'

Winter Brain Conference, Snowbird, USA, February, 2007: 'Novel translational approaches to measuring executive function in mice.'

Winter Brain Conference, Snowbird, USA, February, 2007: 'Cognitive flexibility in serotonin transporter knockout mice.'

University of Pennsylvania, Philadelphia, USA, March 2008: 'Developing mouse models of executive function.'

Medical University of South Carolina, Charleston, USA, April 2008: 'Role of serotonin in emotional and executive behavior.'

Society of Biological Psychiatry Annual Meeting, Washington DC, USA, May 2008: 'Genetic Factors Modulating Executive Control in the Mouse.'

Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, May 2008: 'Effects of anti-glutamatergic drugs on sensitivity to ethanol's acute intoxicating effects in mice.'

Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, May 2008: 'Developing novel mouse models of executive control over reward-seeking.'

European Molecular Biology Laboratory, Rome, Italy, May 2008: 'Role of serotonin in emotional and executive behavior.'

Federation of European Neurosciences Society Biennial Meeting, Geneva, Switzerland, July 2008: 'Impaired stress-coping and fear extinction and abnormal corticolimbic morphology in serotonin transporter knock-out mice.'

<u>Symposium Chair</u>, Collegium Internationale Neuro-Psychopharmicologicum Biennial Meeting, Munich, Germany, July 2008: 'Corticolimbic dysfunction in stress-related disorders: From mouse to man, from molecule to medicine.'

Collegium Internationale Neuro-Psychopharmicologicum Biennial Meeting, Munich, Germany, July 2008: 'Genetic modulation of fronto-amygdala morphology and function in mice.'

Serotonin Club Biennial Meeting, Oxford, UK, July 2008: 'Genetic ablation of the mouse serotonin transporter disrupts the neural and behavioral mechanisms modulating emotional trauma.'

European Behavioural Pharmacology Society International Workshop on Behavioural Genetics and NeuroPsychiatric Disorders, Cork, Ireland, August 2008: 'Frontostriatal control of executive function in mice.' **Plenary Lecture**, Centre for Integrative Mammalian Physiology and Pharmacology National Symposium, London, UK, October 2008: 'Rodent models of anxiety and depression.'

University of Innsbruck, Innsbruck, Austria, January 2009: 'Dissecting the genetic and neural basis of stress and emotional trauma'

University of Vienna, Vienna, Austria, January 2009: 'Genetic ablation of the mouse serotonin transporter disrupts the neural and behavioral mechanisms modulating emotional trauma'

Third International Haifa Forum for Brain and Behavior, Haifa, Israel, February 2009: 'Genetic modulation of inhibitory fear control.'

Oregon Health and Sciences University, Portland, USA, March, 2009: 'Glutamate mechanisms underlying alcohol abuse and alcoholism.'

NIH-RISE (Research Initiative for Scientific Enhancement) Conference, San Juan, Puerto Rico, April 2009: 'Translational approaches to finding genetic causes of neuropsychiatric disease.'

**Keynote Lecture**, Iowa Physiological Society Annual Meeting, Des Moines, Iowa, USA, May 2009: 'How mice can help us understand the neural and genetic causes of neuropsychiatric disease.'

Clinical Sciences Centre, Medical Research Council, UK, June, 2009: 'Mice as a research tool for studying psychiatric disease.'

**Plenary Lecture**, Second International Congress on ADHD, Vienna, Austria, May 2009: 'Are GluR1 KO mice a model of schizoaffective disease?'

Symposium Chair, Research Society on Alcoholism Annual Meeting, San Diego, USA, June, 2009: 'The NMDA receptor and ethanol intoxication: recent insights from the bench and the clinic.'

Research Society on Alcoholism Annual Meeting, San Diego, USA, June, 2009: 'NMDA receptor mediation of ethanol intoxication in mice.'

Gordon Research Conference, Amygdala in Health and Disease, Waterville, USA, June, 2009: 'Genetic models of impaired fear extinction.'

Center for Neurogenomics and Cognitive Research, Second Postgraduate Course in Behavioural Neuroscience, Amsterdam, The Netherlands, August, 2009: 'Fear extinction and learned safety as a translational model for anxiety.'

European Behavioural Pharmacology Society 13th Biennial Meeting, Rome, September, 2009, Symposium Organizer: 'Corticolimbic control of emotion.'

European Behavioural Pharmacology Society 13th Biennial Meeting, Rome, September, 2009: 'Genetic modulation of fronto-amygdala morphology and function in mice.'

Fourth Molecular and Cellular Cognition Society Symposium, Asia, Nagoya, Japan, September, 2009: 'Phenotypic abnormalities caused by genetic loss of PSD-95 (Dlg4) reveal a potential role for MAGUKs in autism and Williams Syndrome.'

Japanese Neuroscience Society 32nd Annual Meeting, Nagoya, Japan, September, 2009, Symposium Organizer: 'Neuropsychiatric diseases as disorders of learning and memory mechanisms.'

Japanese Neuroscience Society 32nd Annual Meeting, Nagoya, Japan, September, 2009, Symposium Organizer: 'Phenotypic abnormalities caused by genetic loss of PSD-95 (Dlg4) reveal a potential role for MAGUKs in autism and Williams Syndrome.'

University of Pittsburgh/Carnegie Mellon University Cognitive Neuroscience Colloquium, Pittsburgh, USA, December, 2009: 'Genes for fears: Using mice to uncover the genetic and neural basis of anxiety disorders.' National Defense Medical Center, Taipei, Taiwan, January, 2010: 'Genes for fears: Using mice to uncover the genetic and neural basis of anxiety disorders.'

Chung-Sang Medical University, Taichung, Taiwan, January, 2010: 'Genes for fears: Using mice to uncover the genetic and neural basis of anxiety disorders.'

Tzu Chi University, Hua-Lein, Taiwan, January, 2010: 'Genes for fears: Using mice to uncover the genetic and neural basis of anxiety disorders.'

Department of Molecular Physiology and Biophysics, Vanderbilt University, Nashville, USA, March 2010: 'NMDA receptors regulate corticostriatal dynamics underlying voluntary and automated control of behavior.' Amygdala, Stress and PTSD Conference, Uniformed Services University of the Health Sciences, Bethesda, USA, April 2010: 'Neural, molecular and genetic factors underlying risk for PTSD.' (Subject of article in American Psychiatric Association publication, *Psychiatric News* 

http://pn.psychiatryonline.org/content/45/11/15.3.full)

Seaver Autism Center, Mount Sinai School of Medicine, New York, USA, April 2010: 'The synaptopathy of neurodevelopmental disorders: New evidence linking genetic perturbation of PSD-95 to autism and Williams syndrome.'

Duke Institute for Brain Sciences, Duke University, Durham, USA, September 2010: 'Neural, molecular and genetic factors underlying risk for PTSD.'

NIH-Karolinska Institutet Graduate Training Partnership in Neuroscience Research Symposium, Karolinska Institutet, Stockholm, Sweden, May 2011: 'Uncovering the neural and genetic basis of fear regulation.' University of Innsbruck, Innsbruck, Austria, June 2011: 'Neural, molecular and genetic factors underlying individual differences in fear.'

European Molecular Biology Organization/Federation of European Neurosciences Society Practical Course on Mouse Transgenics and Behavior, University of Zurich, Zurich, Switzerland, June 2011: 'Genetics and the use of mice as models of anxiety and stress-related disorders.'

Symposium Chair, Research Society on Alcoholism Annual Meeting, Atlanta, USA, June, 2011:

'Glutamatergic contributions to EtOH sensitivity and plasticity: a merger of mechanisms?'

Research Society on Alcoholism Annual Meeting, Atlanta, USA, June, 2011: 'Chronic alcohol vapor exposure alters executive functions and cortico-striatal neuronal morphology in mice.'

Gordon Research Conference, Amygdala in Health and Disease, Waterville, USA, August, 2011: 'Models of genetic and early life influences on fear extinction'

Discussion leader, Gordon Research Conference, Amygdala in Health and Disease, Waterville, USA, August, 2011: 'Amygdala, Appetitive & Risk-taking Behavior, and Addiction'

European Behavioural Pharmacology Society Congress, Amsterdam, The Netherlands, August, 2011: 'Genetic and pharmacological serotonergic influences on cognitive flexibility.'

Radboud University Nijmegen, Nijmegen, The Netherlands, August, 2011: 'Neural basis of decision making.' <u>Symposium Organizer</u>, 24th European College of Neuropharmacology Congress, Paris, France, September,

2011: 'Elucidating novel mechanisms and potential treatments for pathological fear and anxiety.'

24th European College of Neuropharmacology Congress, Paris, France, September, 2011: 'Genetic variation driving fear and anxiety.'

XIXth World Congress of Psychiatric Genetics, Washington DC, USA, September, 2011: 'Neural correlates of genetically-driven strain differences in fear.'

15th World Psychiatry Congress, Buenos Aires, Argentina, September, 2011: 'Neural, molecular and genetic factors underlying individual differences in fear.'

Neuropharmacology Satellite to the Annual Meeting of the Society for Neuroscience, Washington DC, USA, November, 2011: 'Neural, molecular and genetic factors underlying individual differences in fear.'

Wurzburg University, Wurzburg, German, November, 2011: 'Genetic basis of trauma and coping.' American College of Neuropsychopharmacology Annual Meeting, Kona Hawaii, USA, December 2011:

'Investigating the genetics of fear in mouse models.'

Institute of Psychiatry, King's College London, London, UK, January 2012: 'A translational perspective on the genetics and neurobiology of fear.'

Howard University, Washington DC, USA, February 2012: 'Alcohol's effects on brain systems subserving executive control.'

Wake Forest University, Winston-Salem, USA, March 2012: 'Chronic alcohol causes neuroadaptations in circuits mediating fear and cognition.'

Institute of Medicine 'Improving translation of animal models,' Washington DC, USA, March 2012: 'Standardization in preclinical models of anxiety: necessary but not sufficient.'

Yale University, New Haven, USA, April 2012: 'Chronic alcohol causes neuroadaptations in circuits mediating fear and decision-making.'

The Jackson Laboratory, Bar Harbor, USA, May 2012: 'Using mouse models to identify neural circuits and genetic factors underlying impaired recovery from traumatic fear.'

Research Society on Alcoholism Annual Meeting, San Francisco, USA, June, 2012: 'Genetic and pharmacological knockout of NMDAR signaling: effects on ethanol intoxication.'

B:Debate, Barcelona, Spain, July, 2012: 'Why do life's stressors affect some and not others? Evidence from preclinical studies.'

University of Innsbruck, Innsbruck, Austria, August, 2012: 'Using mouse models to identify individual differences in risk for PTSD.'

University of Helsinki, Helsinki, Finland, August, 2012: 'Why do life's stressors scar some and not others? Evidence from the mouse.'

The Jackson Laboratory Short Course on Addiction, Bar Harbor, USA, May 2012: 'Modeling alcoholism in mice – choosing your assays and genetic background.'

University of New Mexico, Albuquerque, USA, August, 2012: 'Why do life's stressors scar some and not others? Evidence from the mouse.'

<u>Podcast interview</u>, The Jackson Laboratory, September, 2012: 'High alcohol exposure disrupts fear extinction in mice' <u>http://jaxmice.jax.org/news/2012/Alcohol Fear.html</u>

Tokyo University of Agriculture, Tokyo, Japan, September, 2012: 'Chronic alcohol effects on reward habit and fear extinction.'

Symposium Chair, International Society for Biomedical Research on Alcoholism, Sapporo, Japan, September, 2012: 'Alcohol effects on cognitive functions mediated by the prefrontal cortex and connected subcortical regions?'

International Society for Biomedical Research on Alcoholism, Sapporo, Japan, September, 2012: 'Chronic alcohol effects on reward habit and fear extinction.'

Symposium Chair, NIH Research Festival, Bethesda, USA, October, 2012: 'Translational models of anxiety and addiction.

NIH Research Festival, Bethesda, USA, October, 2012: 'Alcohol reshapes the neural circuitry of behavior regulation.'

**Keynote lecture**. NIDA mini symposium at the Society for Neuroscience Annual Meeting, New Orleans, USA, October, 2012: 'Alcohol reshapes the neural circuitry of behavior regulation.'

Fifth Annual Conte Center Symposium, Nashville, USA, November, 2012: 'Serotonergic modulation of frontostriatal circuitry.'

National Advisory Council on the National Institute of Alcohol Abuse and Alcoholism, Rockville, USA, February, 2013: 'Chronic alcohol reshapes the neural circuits mediating executive functions.'

Ponce University School of Medicine, Ponce, Puerto Rico, USA, February, 2013: 'Chronic alcohol reshapes the neural circuits mediating executive functions.'

Victoria University Wellington, Wellington, New Zealand, March, 2013: 'Chronic alcohol impairs prefrontal mechanisms mediating recovery from trauma.'

Neuroscience Center, University of Helsinki, Helsinki, Finland, April, 2013: 'Genes for Fears: Mouse models to identify the genetic basis of susceptibility to psychological trauma.'

**Plenary Lecture**, Scandinavian Laboratory Animal Science Conference, Tallinn, Estonia, April, 2013: 'Emerging technologies for visualizing the behaving mouse brain.'

<u>Symposium Chair</u>, Scandinavian Laboratory Animal Science Conference, Tallinn, Estonia, April, 2013: 'Refined methods for assessment of cognition in laboratory rodents.'

Society for Biological Psychiatry Annual Meeting, San Francisco, CA, USA, May, 2013: 'BLA volume predicts fear and stress-reactivity.'

College of Drug Dependence Annual Meeting, San Diego, CA, USA, June, 2013: 'Endocannabinoids and alcohol – interactions underlying trauma risk and recovery.'

Gordon Research Conference, Amygdala in Health and Disease, Boston, MA, USA, July 2013: 'Genetic variation in fear extinction.'

Buddhist Tzu Chi General Hospital, Taipei, Taiwan, September, 2013: 'Alcohol impairs recovery from psychological trauma.'

**Keynote Lecture**, Taiwanese Society for Biological Psychiatry Annual Meeting, Taipei, Taiwan, September, 2013: 'Emerging technologies for visualizing the behaving mouse brain.'

Buddhist Tzu Chi University, Hau-lien, Taiwan, September, 2013: 'Alcohol impairs recovery from psychological trauma.'

Korean Behavioral Neuroscience Society Annual Meeting, Seoul, South Korea, September, 2013: 'Genetic and molecular factors underlying fear and extinction.'

Medical College of Wisconsin, Milwaukee, WI, November, 2013: 'Raising the cognitive debt ceiling: Neural circuits underlying learning.'

*Cell* Podcast, November, 2013: 'How manipulation of endogenous marijuana-like chemicals might help treat anxiety disorders with Andrew Holmes'

http://download.cell.com/images/edimages/podcasts/1121cell2013.mp3

Haifa Stress Forum, Haifa, Israel, February, 2014: 'Genetic moderation corticoamygdala circuits mediating fear.'

Gordon Research Conference, Alcohol and the Nervous System, Galveston, TX, USA, February 2014: 'Neural circuits mediating rewarded learning.'

Louisiana State University Health Science Center, New Orleans, LA, USA, March 2014: 'Booze on the brain; alcohol effects on learning and emotional control.'

Calgary University, Calgary, Canada, April 2014: 'Booze on the brain; alcohol effects on cognitive and emotional regulation.'

<u>Symposium Chair</u>, Collegium Internationale Neuro-Psychopharmicologicum Biennial Meeting, Vancouver, Canada, June, 2014: 'New insights into the role of NMDA receptors in cognition and psychosis.'

Collegium Internationale Neuro-Psychopharmicologicum Biennial Meeting, Vancouver, Canada, June, 2014: 'GluN2B-NMDA receptors control corticostriatal learning.' <u>Symposium Chair</u>, 11th International Serotonin Society Research Meeting, Hermanus, South Africa, July, 2014: 'Endocannabinoid and serotonin interactions underlying anxiety.'

17th World Congress on Basic and Clinical Pharmacology, Cape Town, South Africa, July, 2014: 'Corticoamygdala endocannabinoid signaling in fear extinction.'

**Plenary Lecture**, Southern African Neuroscience Society, Cape Town, South Africa, July, 2014: 'Neural circuits mediating recovery from fear.'

Tokyo University of Agriculture, Tokyo, Japan, September, 2014: 'Genetics factors moderating fear and recovery from tauma.'

RIKEN Brain Science Institute, Tokyo, Japan, September, 2014: 'Understanding the neural circuits of fear extinction.'

Japanese Neuroscience Society Annual Meeting, Yokohama, Japan, September, 2014: 'The neural circuits of learning.'

Drake University, School of Pharmacy, Des Moines, Iowa, October 2014: 'A tale of two drugs – how alcohol increases risk for PTSD and cannabinoids may offer a treatment.'

Neuroscience School of Advanced Studies, Cortona, Italy, October 2014: 'Using mice in neuroscience research: controls and caveats.'

PTSD, the Amygdala and Alcohol Use Disorders, NIAAA Satellite to the Society for Neuroscience Annual Meeting, Washington, DC, November 2014: 'Stress, alcohol and the amygdala.'

American College of Neuropsychopharmacology Annual Meeting, Phoenix, USA, December 2014: 'Corticoamygdala circuits instruct fear extinction memory formation.'

Universidad Nacional Autónoma de México, Mexico City, Mexico, January 2015: 'Animal models for neuroscience research.'

Universidad Nacional Autónoma de México, Mexico City, Mexico, January 2015: 'Corticoamygdala circuits underlying trauma recovery.'

**Grand Challenges lecture series**, University of Leeds, Leeds, UK, February 2015: 'The Traumatized Brain: how modern neuroscience is identifying causes & cures for anxiety.'

**Molecular and Cellular Science Seminar**, Rosalind Franklin University, Chicago, IL, March 2015: 'Corticoamygdala circuits underlying fear.'

National Institute of Environmental Health Sciences, Durham, NC, April 2015: 'Corticostriatal modulation of reward learning.'

Society of Biological Psychiatry, Annual Meeting, Toronto, Canada, May 2015: 'Neural circuits underlying individual differences in fear extinction.'

Netherlands Neuroscience Institute, Amsterdam, The Netherlands, June 2015: 'Pharmacological rescue of trauma-related cognitive deficits.'

Dutch Neuroscience Annual Meeting, Lunteren, The Netherlands, June 2015: 'Corticostriatal mediation of rewarded learning.'

Symposium Chair, Ion Channel Retreat, Vancouver, Canada, July 2015: 'Alcohol, Tobacco and Ion Channels.' Ion Channel Retreat, Vancouver, Canada, July 2015: 'Alcohol effects on prefrontal NMDA receptor circuits mediating fear.'

Florey Institute of Neuroscience and Mental Health, Melbourne, Australia, August 2015: 'Circuit based approaches to identifying new anxiolytics.'

International Drug Abuse Research Society, Sydney, Australia, August 2015: 'Towards models of compulsive alcohol intake.'

Translational Research Institute, Brisbane, Australia, August 2015: 'Endocannabinoids and traumatic memory modulation.'

International Society for Neurochemistry, Cairns, Australia, August 2015: 'Alcohol's effects on corticoamygdala mediation of fear extinction.'

International Psychoneuroendocrinology Society Annual Meeting, Edinburgh, UK, September 2015: 'Glucocorticoid mediation of fear extinction.'

European Behavioral Brain Research Meeting, Verona, Italy, September 2015: 'Novel methods for testing cognition in rodents.'

Emotions in Motion, Innsbruck, Austria, September 2015: 'Punishment and pleasure: measuring compulsive-like behavior.'

4th international symposium on Fear, Anxiety and Anxiety Disorders, Munster, Germany, September 2015: 'Punishment and pleasure: measuring compulsive-like behavior.'

University of Los Angeles, California, Los Angeles, California, USA, January 2016: 'Marijuana as medicine.' Eastern Psychological Association Annual Meeting, New York, New York, USA, March 2016: 'Modulation of fear extinction by stress systems.'

Biology of Neuropsychiatric Disorders, International Symposium, Valparaiso, Chile, April 2016: 'Genetic moderation of fear extinction' (\*Media <u>http://ciencias.uv.cl/index.php/noticias-general/73-numind</u>). Addiction in Theory Workshop, London, UK, May 2016: 'Parallel and competitive interactions between

striatal systems in reward learning'

Goethe University, Frankfurt, Germany, June 2016: 'Circuit based approaches to identifying new anxiolytics.' International Behavioral Neuroscience Society Annual Meeting, Budapest, Hungary, June 2016: 'Marijuana as medicine.'

Endophenotypes of Psychiatric Disease Symposium, Yokohama, Japan, July 2016: 'Identifying novel regulators of amygdala-based fear.'

Japanese Neuroscience Society Annual Meeting, Yokohama, Japan, July 2016: 'Corticolimbic circuits underlying fear.'

International Society for Biomedical Research on Alcoholism, Berlin, Germany, September 2016: 'Compulsive alcohol-seeking: underlying neural mechanisms.'

Department of Psychiatry, University of Sao Paolo, Sao Paolo, Brazil, September 2016: 'Circuit based approaches to identifying new anxiolytics.'

**Plenary Lecture**, 48th Brazilian Congress of Pharmacology and Experimental Therapeutics, Foz do Igucu, Brazil, October 2016: 'Circuit based approaches to identifying new anxiolytics.'

Sackler Winter Brain Meeting, Providenciales, Turks and Caicos, January 2017: 'Identifying novel regulators of amygdala-based fear.'

**Keynote presentation**, Canadian Behavioural Neuroscience annual meeting, Fernie, Canada, February 2017: 'Anxiety treatments: Circuit based approaches to identifying new anxiolytics.'

The 1st Munich Winter Conference on Stress, Garmisch-Partenkirchen, Germany, March 2017: 'A novel genetic mechanism for amygdala-mediated fear extinction.'

Brain and Mind Research Institute, University of Ottawa, Ottawa, Canada, April 2017: 'Alleviating anxiety: Strategies Past, Present and Future.'

Douglas Institute, McGill University, Montreal, Canada, April 2017: 'Alleviating anxiety: Strategies Past, Present and Future.'

The Gill Center for Biomolecular Science, Indiana University, Bloomington, USA, April 2017: 'Delineating neural circuits to inform new generation anxiolytics.'

Mediterranean Neuroscience Society Meeting, St. Julian's, Malta, June 2017: 'Identifying novel mechanisms underlying amygdala-based fear inhibition.'

National Brain Research Center, Gurgaon, India, July 2017: 'Deciphering neural circuits to develop new antianxiety medications.'

**Keynote presentation**, Computational Approaches to Memory and Plasticity meeting, Bangalore, India, July 2017: 'Deciphering neural circuits to develop new anti-anxiety medications.'

Tata Institute of Fundamental Research, Gurgaon, India, July 2017: 'Deciphering neural circuits to develop new anti-anxiety medications.'

Second Summer School on Stress & Cognition, Nijmegen, The Netherlands, August 2017: 'Revealing individual differences in fear extinction: from circuits to genes.'

**Conference Chair**, Amygdala Function in Emotion, Cognition and Disease, Easton, MA, USA, August 2017. <u>Symposium Chair</u>, European Behavioural Pharmacology Society Biennial Meeting, Heraklion, Crete, September 2017: 'Novel approaches to dissecting the neurobiology and neuropharmacology of fear extinction.'

European Behavioural Pharmacology Society Biennial Meeting, Heraklion, Crete, September 2017: 'Circuitbased approaches to identifying novel anxiolytic medications for trauma-related disorders.'

National Advisory Council on the National Institute of Alcohol Abuse and Alcoholism, Rockville, USA, September, 2017: 'Pain, pleasure and prefrontal cortex: mechanisms underlying the transition from controlled to compulsive alcohol-seeking.'

Federation of European Neurosciences Regional Meeting, Pecs, Hungary, September, September 2017: 'Dissecting neural circuits mediating fear and fear inhibition.'

Center for Social and Affective Neuroscience annual meeting, Hok, Sweden, October 2017: 'Deciphering neural circuits to develop new anti-anxiety medications.'

Binghamton University State University of New York, Binghamton, NY, USA, November 2017: 'Neural circuits underlying the transition from casual to compulsive alcohol seeking.'

National Institute of Drug Abuse, Baltimore, MD, USA, November, 2017: 'Pain, pleasure and prefrontal cortex: mechanisms underlying the transition from controlled to compulsive alcohol-seeking.'

Max Planck Florida Institute for Neuroscience, Jupiter, FL, USA, January, 2018: 'Traumatic fear memory: Deciphering neural circuits and designing novel treatments.'

Institute of Life Sciences, Nanchang University, Nanchang, China, January, 2018: 'Traumatic fear memory: Deciphering neural circuits and designing novel treatments.'

Institute of Neuroscience, Shanghai, China, January, 2018: 'Traumatic fear memory: Deciphering neural circuits and designing novel treatments.'

School of Biomedical Sciences, Chinese University of Hong Kong, Hong Kong, January, 2018: 'Traumatic fear memory: Deciphering neural circuits and designing novel treatments.'

National Institute on Drug Dependence, Peking University, Beijing, China, January, 2018: 'Traumatic fear memory: Deciphering neural circuits and designing novel treatments.'

Waggoner Center for Alcohol and Addiction Research, The University of Texas at Austin, Austin, TX, USA, November, 2018: 'Pain, pleasure and prefrontal cortex: mechanisms underlying the transition from controlled to compulsive alcohol-seeking.'

Gordon Research Conference, Alcohol and the Nervous System, Galveston, TX, USA, February 2018: 'A cortical circuit regulating resilience to compulsive-like alcohol-seeking.'

Institut de Neurosciences, Universitat Autonoma de Barcelona, Barcelona, Spain, March 2018: 'Anxiety treatments: Circuit based approaches to identifying new anxiolytics.'

Monitoring Molecules in Neurosciences 17th Biennial International Conference, Oxford, UK, March 2018: 'Monitoring and modulating neural circuits during fear.'

The George Washington Institute for Neuroscience, George Washington University School of Medicine, Washington DC, USA, April, 2018: 'Deciphering fear neural circuits and designing novel treatments.'

Le Centre National de la Recherche Scientifique (CNRS), Lyon, France, April 2018: 'Brain systems mediating the traumatic fear memories acquired through social observation.'

European College of Neuropharmacology Preclinical Data Forum, Leiden, The Netherlands, April 2018: 'Posttraumatic Stress Disorder: Promises and Pitfalls.'

Nencki Institute of Experimental Biology, Warsaw, Poland, May 2018: 'Deciphering fear neural circuits and designing novel treatments.'

Joint Meeting of Austrian Neuroscience Consortia, Alpbach, Austria May 2018: 'Traumatic fear memory: combining new and old approaches to decipher neural circuits and design novel treatments.'

Bowles Center for Alcohol Studies, University of North Carolina School of Medicine, Chapel Hill, NC, USA, May, 2018: 'Alcohol: Pain, pleasure and prefrontal cortex.'

Symposium Chair, Stress Neurobiology Workshop, Banff, Canada, June, 2018: 'Stress, Anxiety and Corticolimbic Networks.'

Department of Psychiatry and Behavioral Sciences, Johns Hopkins University School of Medicine, Baltimore, MD, USA, June 2018: 'Neural circuits underlying fear and anxiety.'

Italian Institute of Technology, Genoa, Italy, July 2018: 'Developing novel anti-anxiety treatments from an understanding of the neural circuits underlying fear.'

Federation of European Neurosciences Society Biennial Meeting, Berlin, Germany, July 2018:

'Endocannabinoid control of corticoamygdala circuits modulating fear.'

International Society for Biomedical Research on Alcoholism, Tokyo, Japan, September, 2018: 'Prefrontal cortical control over punished alcohol-drinking.'

Tokyo University of Agriculture, Tokyo, Japan, September, 2018: 'Serotonergic modulation of fear memory.' Riken Brain Science Institute, Tokyo, Japan, September, 2018: 'Serotonergic modulation of aversive memory.' McLean Hospital, Harvard Medical School, Belmont, MA, USA, March, 2019: 'A neural constrain on social-learned fear.'

Vrijie Universiteit Brussels, Brussels, Belgium, March, 2019: 'Evidence for a neural constrain on sociallearned fear.'

Katholieke Universiteit Leuven, Leuven, Belgium, March, 2019: 'A neural circuit constrain on social-learned fear.'

Buddhist Tzu Chi General Hospital, Taipei, Taiwan, May, 2019: 'Neural Circuits Controlling Fear and Emotion.'

Gordon Research Conference, Cognitive Dysfunction in Brain Diseases, Hong Kong, May, 2019: 'Neural Circuits Controlling Fear and Emotion.'

1st International Touchscreen Symposium, London, Ontario, Canada, June, 2019: 'Using touchscreen tests to decipher pre-frontal cortex contributions to high-level cognition.'

Florey Institute of Neuroscience and Mental Health, Melbourne, Australia, June 2019: 'A neural constraint of social-learned fear.'

International Behavioral Neuroscience Society Annual Meeting, Cairns, Australia, June 2019: 'Hippocampal constraint of social-learned fear.'

International Behavioral Neuroscience Society Annual Meeting, Cairns, Australia, June 2019: 'Prefrontal control of punished ethanol self-administration.'

Center for Social and Affective Neuroscience, Linköping, Sweden, July 2019: 'A neural constraint of sociallearned fear.'

4th International Conference on Applications of Neuroimaging to Alcoholism, New Haven, USA, September, 2018: 'Prefrontal control over punished alcohol-drinking.'

<u>Discussion leader</u>, Gordon Research Conference, Amygdala in Emotion, Cognition and Disease, Easton, USA, August, 2019: 'Innate Functions and Hormonal Interactions of the Amygdala

European Behavioural Pharmacology Society, Biennial Meeting, Braga, Portugal, August, 2019: 'Serotonergic modulation of fear.'

<u>Symposium Chair</u>, European Behavioural Pharmacology Society, Biennial Meeting, Braga, Portugal, August, 2019: 'Novel insights into the molecular mechanisms and cell ensembles regulating the neural circuits underlying negative emotion.'

7th Biennial IDARS meeting in Casablanca, Morocco, September, 2019: 'Prefrontal regulation of punished ethanol self-administration'

32nd European College of Neuropsychopharmacology Congress, Copenhagen, Denmark, 2019: 'Top paper session: Highlights in basic research'

Institute of Life Sciences, Nanchang University, Nanchang, China, September, 2018: 'Prefrontal control of ethanol self-administration.'

10th International Brain Research Organization World Congress, Daegu, Korea, September, 2018: 'Prefrontal control of ethanol self-administration.'

National Institute on Drug Dependence, Peking University, Beijing, China, September, 2019: 'Prefrontal control of ethanol self-administration.'

6th Asian College of Neuropsychopharmacology Congress, Fukuoka, Japan, October, 2019: 'Serotonergic modulation of aversive memory.'

Tokyo University of Agriculture, Tokyo, Japan, October, 2019: 'A neural circuit constraint on sociallylearned fear'

<u>Plenary lecture</u>, 15<sup>th</sup> Annual Meeting of the Society for Chilean Neuroscience, La Serena, Chile, November, 2019: 'Neural circuits of emotion.'

EPFL Neuro Symposium, Brain Mind Institute, Lausanne, Switzerland, November, 2019: 'Neural circuits mediating ambiguous threat.'

Department of Biology, University of Texas at San Antonio, San Antonio, Texas, USA, January, 2020: 'Neural basis of social learning.'

Department of Physiology and Neurobiology, University of Connecticut. Storrs, Connecticut, USA, February, 2020: 'Neural circuits mediating basis of social learning.'

Symposium Chair, Gordon Research Conference, Alcohol and the Nervous System, Galveston, TX, USA, February 2020: 'Interoceptive effects of alcohol.'