

Catherine Jensen Peña, PhD

EDUCATION

PhD	2012	Columbia University, Neurobiology & Behavior
MA, MPhil	2009	Columbia University, Neurobiology & Behavior
BA	2006	University of Pennsylvania, Biological Basis of Behavior major, <i>cum laude</i>

POSITIONS & TRAINING

		Advisors
(2019)	Assistant Professor Princeton Neuroscience Institute, Princeton, NJ	
2013-present	Postdoctoral Fellow Icahn School of Medicine at Mount Sinai (ISMMS), Neuroscience Department, New York, NY <i>Early life stress effects on transcriptomic and epigenomic programming and vulnerability to depression-like behavior in mice</i>	Dr. Eric Nestler
2016-2017	Adjunct Assistant Professor Columbia University, Psychology Department, New York, NY	
2013-2014	Adjunct Assistant Professor Queens College CUNY, Biology Department, Queens, NY	
2007-2012	Graduate Student Fellow Columbia University, Neurobiology & Behavior Program, New York, NY <i>Development and epigenetic regulation of neuroendocrine and reward systems mediating maternal behaviors in rats</i>	Dr. Frances Champagne
2006-2007	Intramural Research Training Award National Institute of Mental Health, Laboratory of Clinical Science, Bethesda, MD <i>Serotonin receptors and transporter genetics and pharmacology</i>	Dr. Dennis Murphy
2005-2006	Research Assistant, Senior Honors Thesis University of Pennsylvania, Biological Basis of Behavior, Philadelphia, PA <i>Interactions of caloric restriction with stress state and neurobiology</i>	Dr. Tracy Bale

PUBLICATIONS

tinyurl.com/CJPena-pubs

1. Cates HM, Heller EA, Lardner CK, Purushothaman I, **Peña CJ**, Walker DM, Cahill M, Neve RL, Shen L, Bagot RC, Nestler EJ. E2F3a in nucleus accumbens affects cocaine action via transcription and alternative splicing. *Biological Psychiatry* (2018).
2. **Peña CJ**, Kronman HG, Walker DM, Cates HM, Bagot RC, Purushothaman I, Issler O, Loh YE, Leong T, Kiraly DD, Goodman E, Neve R, Shen L, Nestler EJ. Early life stress confers lifelong stress susceptibility in mice via ventral tegmental area OTX2. *Science* (2017). PMID: 28619944.
3. Feng J, **Peña CJ**, Purushothaman I, Engmann O, Walker D, Brown AN, Issler O, Doyle M, Harrigan E, Mouzon E, Vialou V, Shen L, Dawlaty MM, Janenisch R, Nestler EJ. Tet1 in Nucleus Accumbens Opposes Depression- and Anxiety-Like Behaviors. *Neuropsychopharmacology* (2017) PMID: 28074830.
4. Lepack AE, Bagot RC, **Peña CJ**, Loh YE, Farrelly LA, Lu Y, Powell SK, Lorsch Z, Issler O, Cates HM, Tamminga CA, Molina H, Shen L, Nestler EJ, Allis CD, Maze I. Aberrant H3.3 dynamics in NAc promote vulnerability to depressive-like behavior. *Proceedings of the National Academy of Sciences* (2016). PMID: PMC5098673.
5. Kiraly DD, Walker DM, Calipari ES, LaBonté B, Issler O, **Peña CJ**, Ribeiro EA, Russo SJ, Nestler EJ. Alterations of the Host Microbiome Affect Behavioral Responses to Cocaine. *Scientific Reports* (2016). PMID: PMC5067576.
6. Bagot RC, Cates HM, Purushothaman I, Vialou V, Heller EA, Yieh L, **Peña CJ**, LaBonté B, Shen L, Wittenberg GM, Nestler EJ. Ketamine and imipramine reverse transcriptional signatures of susceptibility and induce resilience-specific gene expression profiles. *Biological Psychiatry* (2016). PMID: 27569543.
7. Bagot RC, Cates HM, Purushothaman I, Lorsch Z, Wang J, Huang X, Schluter OM, Maze I, Walker DM, **Peña CJ**, Heller EA, Issler O, Wang M, Song W-m, Stein JL, Liu XC, Doyle MA, Neve R, Geschwind D, Dong Y, Shen L, Zhang B, Nestler EJ. Circuit-wide transcriptional profiling reveals specific gene co-expression networks regulating depression susceptibility. *Neuron* (2016). PMID: 27181059.
8. Calipari ES, Bagot RC, Purushothaman I, Davidson TJ, Yorgason JT, **Peña CJ**, Walker DM, Pirpinias ST, Guise KG, Ramakrishnan C, Deisseroth K, Nestler EJ. In vivo imaging identifies temporal signature of D1 and D2 medium spiny neurons in cocaine reward. *Proceedings of the National Academy of Sciences* (2016). PMID: 26831103.

9. Heller EA, Hamilton P, Burek D, Lombroso S, **Peña CJ**, Neve R, Nestler EJ. Targeted epigenetic remodeling of the Cdk5 gene in nucleus accumbens regulates cocaine- and stress-evoked behavior. *Journal of Neuroscience* (2016). PMID: 27122028.
10. Damez-Werno D, Sun H, Scobie KN, Shao N, Rabkin J, Dias C, Calipari ES, Maze I, **Peña CJ**, Walker DM, Cahill M, Chandra R, Gancarz A, Mouzon E, Landry JA, Cates H, Lobo MK, Dietz, D, Guccione E, Turecki G, Defilippi P, Neve R, Hurd YL, Shen L, Nestler EJ. Histone Arginine Methylation in Cocaine Action in the Nucleus Accumbens. *PNAS* (2016), PMID: 27506785.
11. Murgatroyd CA, **Peña CJ**, Podda G, Nestler EJ, Nephew BC. Early life social stress changes in depression and anxiety associated neural pathways which are correlated with impaired maternal care. *Neuropeptides* (2015). PMID: PMC4537387.
12. Bagot RC, Parise E*, **Peña CJ***, Zhang H, Maze I, Chaudhury D, Persaud B, Cachope R, Bolaños-Guzman C, Cheer J, Deisseroth K, Han MH, Nestler EJ. Ventral hippocampal afferents to the nucleus accumbens regulate susceptibility to depression-like behavior. *Nature Communications* (2015). PMID: PMC4430111.
13. Heller EA, Cates HM, **Peña CJ**, Sun H, Shao N, Feng J, Golden SA, Herman JP, Walsh JJ, Mazei-Robison M, Ferguson D, Knight S, Gerber MA, Nievera C, Han M, Russo SJ, Tamminga CS, Neve RL, Shen L, Zhang H, Zhang F, Nestler EJ. Epigenetic reprogramming of single loci for the study of addiction and depression. *Nature Neuroscience* (2014). PMID: PMC4241193.
14. Koo JW, Mazei-Robison M, LaPlant Q, Egervari G, Braunscheidel K, Adank D, Ferguson D, Feng J, Sun H, Scobie K, Damez-Werno D, Riberio EA, **Peña CJ**, Walker DM, Bagot RC, Cahill M, Anderson SA, Labonte B, Hodes G, Browne H, Chadwick B, Robison AJ, Vialou V, Dias C, Lorsch Z, Mouzon E, Lobo MK, Dietz D, Russo S, Neve R, Hurd Y, Nestler EJ. Epigenetic basis of opiate suppression of Bdnf gene expression in the ventral tegmental area. *Nature Neuroscience* (2015). PMID: PMC4340719.
15. **Peña CJ**, Champagne FA. Neonatal over-expression of estrogen receptor α reverses the effects of low maternal care in female offspring. *Developmental Neurobiology* (2014). PMID: PMC4284154.
16. Dias C*, Feng J*, Sun H, Mazei-Robison M, Shao N, Damez-Werno D, Scobie K, Liu X, Bagot RC, Kennedy P, Vialou V, Ferguson D, Mouzon E, Ghose S, Tamminga C, Neve R, Shen L, Labonte B, Ribeiro EA, **Peña C**, Calipari ES, Koo JW, Nestler EJ. β -catenin mediates behavioral resilience through Dicer1/miRNA regulation. *Nature* (2014). PMID: PMC4257892.
17. Koo JW, Lobo MK, Chaudhury D, Labonte B, Friedman A, Heller E, **Peña C**, Han M-H, Nestler EJ. Loss of BDNF signaling in D1R expressing NAc neurons enhances morphine reward by reducing GABA inhibition. *Neuropsychopharmacology* (2014). PMID: PMC4207344.
18. Sarkar A, Chachra P, Kennedy P, **Peña CJ**, Desouza LA, Nestler EJ, Vaidya VA. Hippocampal HDAC4 contributes to postnatal fluoxetine-evoked depression-like behavior. *Neuropsychopharmacology* (2014), PMID: PMC4104341.
19. **Peña CJ**, Neugut YD, Calarco C, Champagne FA. Effects of maternal care on the development of offspring midbrain dopamine pathways and reward-directed behavior. *European Journal of Neuroscience* (2014). PMID: 24446918.
20. **Peña CJ**, Neugut YD, Champagne FA. Developmental timing of the effects of maternal care on gene expression and epigenetic regulation of hormone receptor levels in female rats. *Endocrinology* (2013). PMID: PMC3800762.
21. **Jensen Peña C**, Champagne FA. Implications of temporal variation in maternal care for the prediction of neurobiological and behavioral outcomes in offspring. *Behavioral Neuroscience* (2013). PMID: PMC3947603.
22. **Jensen Peña C**, Monk C, Champagne FA. Epigenetic effects of prenatal stress on 11 β -hydroxysteroid dehydrogenase-2 in the placenta and fetal brain. *PLoS One* (2012). PMID: PMC3383683.
23. Curley JP, **Jensen CL**, Franks B, Champagne FA. Variation in maternal and anxiety-like behavior associated with discrete patterns of oxytocin and vasopressin 1a receptor density in the lateral septum. *Hormones and Behavior* (2012). PMID: PMC3312967.
24. Moya PR, Fox MA, **Jensen CL**, Laporte JL, French HT, Wendland JR, Murphy DL. Altered 5-HT_{2C} receptor agonist-induced responses and 5-HT_{2C} receptor RNA editing in the amygdala of serotonin transporter knockout mice. *BMC Pharmacology*. PMID: PMC3080299.
25. Pankevich DE, Teegarden SL, Hedin AD, **Jensen CL**, Bale TL. Caloric restriction experience reprograms stress and orexigenic pathways and promotes binge eating. *Journal of Neuroscience* (2010). PMID: PMC3034235.
26. Fox MA, **Jensen CL**, Murphy DL. Tramadol and another atypical opioid meperidine have exaggerated serotonin syndrome behavioural effects, but decreased analgesic effects, in genetically deficient serotonin transporter (SERT) mice. *International Journal of Neuropsychopharmacology* (2009). PMID: PMC2750095.
27. Fox MA, **Jensen CL**, French HT, Stein AR, Huang SJ, Tolliver TJ, Murphy DL. Neurochemical, behavioral and physiological effects of pharmacologically enhanced serotonin levels in serotonin transporter (SERT)-deficient mice. *Psychopharmacology* (2008). PMID: PMC2584159.
28. Wendland JR, Moya PR, Kruse MR, Ren-Patterson RF, **Jensen CL**, Cromer KR, Murphy DL. A novel, putative gain-of-function haplotype at SLC6A4 associates with obsessive-compulsive disorder. *Human Molecular Genetics* (2008). PMID: 18055562.
29. Fox MA, **Jensen CL**, Gallagher PS, Murphy DL. Receptor mediation of exaggerated responses to serotonin-enhancing drugs in serotonin transporter (SERT)-deficient mice. *Neuropharmacology* (2007). PMID: 17765930.
30. Kalueff AV, **Jensen CL**, Murphy, DL. Locomotory patterns, spatiotemporal organization of exploration and spatial memory in serotonin transporter knockout mice. *Brain Research* (2007). PMID: 17692295.

REVIEW ARTICLES AND CHAPTERS

31. **Peña CJ** and Nestler EJ. Progress in Epigenetics of Depression (chapter). *Progress in Molecular Biology and Translational Science: Epigenetics and Psychiatric Disease*, (Accepted).
32. **Peña CJ**. D1 and D2 Medium Spiny Neuron Contributions to Depression. *Biological Psychiatry* (2017). PMID: 28317546.
33. Nestler EJ, **Peña CJ**, Kunakovic M, Mitchell A, Akbarian S. Epigenetic Basis of Mental Illness. *The Neuroscientist* (2015). PMID: 26450593.
34. Bagot RC*, Labonté B*, **Peña CJ***, Nestler EJ. Epigenetic signaling in psychiatric disorders: stress and depression. *Dialogues in clinical neuroscience* (2014). PMCID: PMC4214172.
35. **Peña CJ***, Bagot RC*, Labonté B*, Nestler EJ. Epigenetic Signaling in Psychiatric Disorders. *Journal of Molecular Biology* (2014). PMCID: PMC4177298.
36. **Jensen Peña CL**, Champagne FA. Epigenetic and Neurodevelopmental Perspectives on Variation in Parenting Behavior. *Parenting: Science and Practice* (2012). PMCID: PMC3498455.
37. Curley JP, **Jensen CL**, Mashoodh R, Champagne FA. Social influences on neurobiology and behavior: Epigenetic effects during development. *Psychoneuroendocrinology* (2011). PMCID: PMC2980807.
38. Fagiolini M, **Jensen CL**, Champagne FA. Epigenetic influences on brain development and plasticity. *Current Opinion in Neurobiology* (2009). PMCID: PMC2745597.

FUNDING

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| 2017-present | K99MH115096, Pathway to Independence Award “Epigenetic and cellular markers of stress sensitization by early life stress in mice” |
| 2013-present | Hope for Depression Research Foundation; (PI: E. Nestler) |
| 2013-present | P50 MH096890, Conte Center Grant “Epigenetic Mechanisms of Depression”; (PI: E. Nestler) |
| 2010-2012 | T32 NS064928, <i>competitively awarded</i> Advanced Graduate Training Program, Neurobiology & Behavior; (PI: L Greene) |
| 2008-2010 | DP2OD001674 NIH Young Investigator Award to Dr. Frances A. Champagne, PI |
| 2007-2008 | 5T32HD007430-11, Neurobiology and Behavior Research Training Program, (PI: D. Kelley) |

HONORS & AWARDS

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| 2018 | Poster Award, Stress Neurobiology Meeting 2018, Banff, Alberta, Canada |
| 2018 | Outstanding Postdoctoral Fellow, Friedman Brain Institute, Icahn School of Medicine at Mount Sinai |
| 2017, 2018 | Nominated for Blavatnik Regional Awards for Young Scientists, Icahn School of Medicine at Mount Sinai |
| 2017 | Robin Chemers Neustein Postdoctoral Fellowship , Icahn School of Medicine at Mount Sinai |
| 2017 | Travel Award, American College of Neuropsychopharmacology (ACNP) |
| 2016 | New Investigator Award , Society for Behavioral Neuroendocrinology |
| 2016 | Best Oral Presentation Award, Friedman Brain Institute Retreat, Icahn School of Medicine at Mount Sinai |
| 2015 | Travel Award & Select Presentation, International Symposium for Developmental Psychobiology |
| 2013 | Postdoctoral Travel Award, Greater New York City Chapter Society for Neuroscience |
| 2013 | Frontline Scholar, TEDMED |
| 2012 | Travel Award, Society for Behavioral Neuroendocrinology |
| 2011 | Next Generation Award , Society for Neuroscience |
| 2010 | Capitol Hill Day Travel Award, Coalition for the Life Sciences |
| 2008, 2009 | Graduate Research Fellowship Honorable Mention, National Science Foundation |
| 2006 | Senior Thesis Honors, Biological Basis of Behavior, University of Pennsylvania |
| 2005 | Travel Award, Wisconsin Symposium on Emotion |
| 2004-2006 | Dean's List, University of Pennsylvania |

SEMINARS & INVITED TALKS

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| 2018 | Symposium speaker, Society of Biological Psychiatry, New York, NY |
| 2018 | Princeton Neuroscience Institute seminar, Princeton, NJ |
| 2018 | UCLA Department of Psychology seminar, Los Angeles, CA |
| 2017 | Panel speaker, American College of Neuropsychopharmacology (ACNP), Palm Springs, CA |
| 2017 | Penn Department of Psychology seminar, Philadelphia, PA |
| 2017 | Einstein-Montefiore Department of Neuroscience seminar, Bronx, NY |
| 2017 | Brain Health Institute seminar, Rutgers University, New Brunswick, NJ |
| 2017 | Sackler Seminar Series invited speaker, Weill Cornell, New York, NY |
| 2017 | ISMMS Postdoc Symposium invited speaker, New York, NY |
| 2017 | Yale Child Study Center seminar, New Haven, CT |
| 2017 | External Postdoc Seminars at Columbia (“EPSC”), New York, NY |

2017 University of Alabama Birmingham Department of Psychiatry seminar, Birmingham, AL
2016 Molecular Psychiatry (BSTP) invited seminar, Yale, New Haven, CT
2016 Panel Speaker, American College of Neuropsychopharmacology (ACNP), Hollywood, FL
2016 Mood and Anxiety Program invited seminar, ISMMS, New York, NY
2016 Nanosymposium: Early Life Stress, Society for Neuroscience, San Diego, CA
Chair
2016 New Investigator Symposium, Society for Behavioral Neuroendocrinology, Montreal, Canada
Winner of New Investigator Award
2016 Psychology Department Biological Brown Bag invited seminar, University of California Davis, Davis, CA
2016 Friedman Brain Institute at ISMMS Retreat, New York, NY
Winner of Best Oral Presentation Award
2015 International Society for Developmental Psychobiology, San Sebastian, Spain
2015 Nanosymposium: Early Life Stress, Society for Neuroscience, Chicago, IL
2015 ISMMS Postdoc Symposium, New York, NY
2014 International Society for Developmental Psychobiology, Washington, D.C.
2011 Columbia Neuroscience Department Retreat, New Paltz, NY
2011 Experimental Biology Annual Meeting, Washington, D.C.
2011 Columbia Developmental Neuroscience Seminar, New York, NY
2011 Columbia Behavioral Neuroscience Seminar, New York, NY
2006 Honors Presentation Seminar, Penn Biological Basis of Behavior Program, Philadelphia, PA.

TEACHING EXPERIENCE

INSTRUCTOR

2016-2017 Adjunct Assistant Professor, Psychology Department, Columbia University
Behavioral Epigenetics seminar, (PSYC GU4498)
2013-2014 Adjunct Assistant Professor, Biology Department, Queens College CUNY
Neurobiology lecture, (Biol 373)
2009-2012 Instructor, Summer Undergraduate Research Fellowship Program, Biology Department,
Columbia University (Program Director: Dr. Alice Hecklen)
Scientific Communication seminar

TEACHING ASSISTANT & PROGRAMS

2008 Cellular and Molecular Neurobiology, Columbia University (Instructor: Dr. Jian Yang)
2008 Molecular Neuroscience Blitz, Columbia Neurobiology Graduate Student Boot Camp

STUDENT MENTORSHIP

2014-present 1 MD-PhD student, 1 graduate student, 4 undergraduate students, 1 high school student (ISMMS)
2008-2012 4 undergraduate students, 1 postbaccalaureate diversity fellow (Columbia University)
Students are now in PhD programs at Yale and Univ of Arizona, and medical school at Columbia

PROFESSIONAL SERVICE

SOCIETY SERVICE

2017-2021 Professional Development Committee, Society for Behavioral Neuroendocrinology
2011-2015 Trainee Advisory Committee, Society for Neuroscience
2013-2015 Working Group on Advocacy, Society for Neuroscience
2014-2015 Online Programs Advisory Group, Society for Neuroscience

JOURNAL REFEREE

<i>Nature</i>	<i>Biological Psychiatry</i>	<i>Journal of Neuroscience</i>	<i>Hormones & Behavior</i>
<i>Neuroscience</i>	<i>Scientific Reports Epigenetics</i>	<i>Physiology & Behavior</i>	<i>Behavioral Brain Research</i>
<i>The Lancet Psychiatry</i>	<i>Journal of Neurochemistry</i>	<i>Neuroscience Research</i>	

PUBLIC OUTREACH AND EDUCATION

INFORMAL EDUCATION AND EVENTS

2013-2014 Brain Awareness Week Director, Mentoring in Neuroscience Discovery at Sinai (MiNDS) Program, ISMMS
2009-2012 President, Columbia Science Mentors, Mott Hall Middle School
2008-2012 President & Founding Board Member, Columbia University Neuroscience Outreach (CUNO)
Awarded Next Generation Award, SfN (2011)
2005 Workshop leader, Kids Judge Neuroscience, University of Pennsylvania

PUBLIC TALKS

2016 Pint of Science, "Epigenetics: The Nature of Nurture," New York, NY