

## **SARAH ELIZABETH (SINGER) CANETTA, PHD**

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### **ACADEMIC APPOINTMENTS**

- 7/2020- **Columbia University Irving Medical Center and Research Foundation for Mental Hygiene, New York State Psychiatric Institute, New York, NY**  
Assistant Professor of Clinical Neurobiology and Research Scientist  
Division of Developmental Neuroscience, Department of Psychiatry
- 6/2016- **Columbia University Irving Medical Center, New York, NY**  
Assistant Professor of Clinical Neurobiology  
Division of Molecular Therapeutics, Department of Psychiatry
- 3/2016- **Research Foundation for Mental Hygiene, New York State Psychiatric Institute, New York, NY**  
Research Scientist  
Division of Molecular Therapeutics, Department of Psychiatry
- 7/2015-2/2016 **Columbia University Irving Medical Center, New York, NY**  
Associate Research Scientist (laboratory of Dr. Christoph Kellendonk), Division of Molecular Therapeutics, Department of Psychiatry
- 7/2013-6/2015 **Columbia University Irving Medical Center, New York, NY**  
Sackler Fellow in Developmental Psychobiology (laboratory of Dr. Christoph Kellendonk)
- 7/2010-7/2013 **Columbia University Irving Medical Center, New York, NY**  
T32 Post-doctoral Fellow in Child Psychiatry (laboratory of Dr. Christoph Kellendonk)

### **EDUCATION**

- 9/2004-10/2010 **Columbia University, New York, NY**  
PhD, Neurobiology and Behavior  
PhD Thesis (Laboratory of Dr. Lorna Role and Dr. David Talmage): *Type III Neuregulin1 Signaling in Peripheral Sensory Neurons Affects Thermal Pain Sensation and Hyperalgesia*
- 9/2004-6/2007 **Columbia University, New York, NY**  
MPhil, Neurobiology and Behavior
- 9/2004-6/2005 **Columbia University, New York, NY**  
MS, Neurobiology and Behavior
- 9/1999-5/2003 **Yale University, New Haven, CT**  
BA, Psychology (Behavioral Neuroscience), Cum Laude

### **TEACHING EXPERIENCE**

- 2023 **Department of Psychiatry, Columbia University Irving Medical Center, New York, NY**  
Guest lecturer for *Neurobiology of Disease* course, April 2023
- 2022 **Department of Psychiatry, Columbia University Irving Medical Center, New York, NY**  
Guest lecturer for *Neuroimmunology* course, May -June 2022
- 2018- **Department of Psychology, Columbia University, New York, NY**  
Adjunct Assistant Professor, *Critical Periods in Brain Development and Behavior*. Developed the syllabus and curriculum for this seminar taught Fall 2018, Spring & Fall 2020, Spring 2022, Spring 2023.
- 2019 **Mailman School of Public Health, Columbia University Irving Medical Center, New York, NY**  
Guest lecturer, *Neurobiology of Psychiatric Disorders* course
- 2013 **Department of Neuroscience, Columbia University, New York, NY**  
Teaching assistant, section leader and guest lecturer for *Developmental and Systems Neurobiology*. Assisted with syllabus development, exam generation and grading. Led a

weekly one-hour seminar with 15-20 undergraduate students where we reviewed and evaluated primary source literature, which I helped select, related to the lecture topic. Guest lectured.

2012 & 2005

**Department of Neuroscience, Columbia University, New York, NY**

Teaching assistant and section leader for *Molecular and Cellular Neurobiology*. Led review sessions and assisted with exam generation and grading. Led a weekly one-hour seminar with 15-20 undergraduate students where we reviewed and evaluated primary source literature, which I helped select, related to the lecture topic.

## MENTORSHIP

2010-present

**Department of Psychiatry, Columbia University Irving Medical Center, New York, NY**

Current PhD Students: Emily Cambre (Pharmacology), Amanda Anqueira (Neurobiology and Behavior). Directly supervised 2 MD/PhD, 1 graduate students, 12 undergraduate students (including 4 senior thesis projects) as well as 3 technicians

2005-2010

**Department of Neurobiology, Columbia University, New York, NY and Stony Brook University, Stony Brook, NY**

Directly supervised 2 undergraduate students and several volunteers doing research in the Role and Talmage Laboratory

## UNIVERSITY SERVICE

2022-

**Assist with the Department of Neurobiology and Behavior NSF grant writing course**

2022-

**Department of Neurobiology and Behavior Curriculum Committee**

2022-

**Department of Psychiatry Grand Rounds Speaker Organizing Committee**

2019-2020

**Area Point Person for Psychiatry Winter Science Celebration**

2016-2018

**Organizing Committee of Columbia EPSC (External Postdoctoral Seminars at Columbia) Seminar Series**

Organized and hosted external postdoctoral speakers presenting their research at Columbia University Medical Center

2011-2012

**Division of Child Psychiatry, Columbia University, New York, NY**

Appointed co-chief fellow of T32 Fellowship in Child Psychiatry. Organized weekly seminar series, scheduled program speakers and performed other administrative functions

## HONORS AND AWARDS

2023

Berrie Neuroscience-Obesity Pilot Award, Columbia University

2021

Depression Pilot Award, Columbia University Department of Psychiatry

2021

Invited C3N Seminar Speaker, Columbia University Department of Psychiatry

2020

Panel speaker, American College of Neuropsychopharmacology

2020

Biological Sciences Seminar Speaker, Fordham University

2020

Hot topics speaker, Columbia University Department of Psychiatry Grand Rounds

2019

American College of Neuropsychopharmacology Travel Award

2018

Symposium speaker, International Society for Developmental Psychobiology (selected as the Sackler Award Symposium)

2018

Brain and Behavior Research Foundation Young Investigator Award

2017

Invited short talk, Cold Spring Harbor *Wiring the Brain* Conference

2015

International Congress of Schizophrenia Research Young Investigator Travel Award

2015

Invited short talk, International Congress of Schizophrenia Research

2014

Brain and Behavior Research Foundation Young Investigator Award

2013

Sackler Fellowship in Developmental Psychobiology

2010

T32 Fellowship in Child Psychiatry, appointed co-Chief Fellow (2011-2012)

2009

Travel Scholarship, Keystone Conference, "Neurobiology of Pain and Analgesia"

2009

Invited short talk, Keystone Conference, "Neurobiology of Pain and Analgesia"

2008-2009

NIH T32 Translation Research Training Scholarship, Columbia University

2008

'Best Poster', Stonybrook University Graduate Neuroscience Symposium

## FELLOWSHIP AND GRANT SUPPORT

1/2023-	Berrie Neuroscience-Obesity Pilot Award, \$50,000/year for 1 year
7/2022-	R01, NIMH, \$1,785,051 direct costs/5 years
9/2021-8/2022	Depression Pilot Research Award, \$50,000/year for 1 year
1/2018-1/2021	Brain and Behavior Research Foundation Young Investigator Award, \$35,000/year for 2 years
3/2016-7/2020	K01 Mentored Career Development Award, NIMH, \$732,083 over 4 years
1/2014-1/2016	Brain and Behavior Research Foundation Young Investigator Award, \$30,000/year for 2 years
7/2013-7/2015	Sackler Fellowship in Developmental Psychobiology, \$50,000/year in salary support for 2 years
7/2010-7/2013	T32 Fellowship in Child Psychiatry, Full salary support

## PROFESSIONAL ORGANIZATIONS AND SOCIETIES

### JOURNAL REVIEWER (ad hoc)

Biological Psychiatry  
 Frontiers in Cell and Developmental Biology  
 Schizophrenia Bulletin  
 Brain, Behavior and Immunity  
 Bipolar Disorders  
 Journal of Affective Disorders  
 eNeuro  
 Translational Neuroscience  
 European Neuropsychopharmacology

## PUBLICATIONS

2023:

1. Cambre E, Christenfeld E, Torres-Herraez A, **Canetta S**. *Measuring Motivation Using the Progressive Ratio Task in Adolescent Mice*. Current protocols in Neuroscience. Accepted. *Designed and oversaw experiments and wrote the manuscript.*

2022:

2. **Canetta SE\***, Holt ES, Benoit LJ, Teboul E, Ogden RT, Harris AZ, Kellendonk C\*. *Mature parvalbumin interneuron function in prefrontal cortex requires activity during a postnatal sensitive period*. *Elife* 11, doi:10.7554/eLife.80324 (2022).  
 \*Denotes corresponding author  
*Designed experiments, collected and analyzed data and wrote the manuscript.*
3. Benoit LJ, Holt ES, Posani L, Fusi S, Harris AZ\*, **Canetta S\***, Kellendonk C\*. *Adolescent thalamic inhibition leads to long-lasting impairments in prefrontal cortex function*. *Nat Neurosci*. 2022;25(6):714-25. doi: 10.1038/s41593-022-01072-y. PubMed PMID: 35590075; PMCID: PMC9202412.  
 \*Denotes equal contribution  
*Designed and oversaw experiments, collected data and wrote the manuscript.*
4. Benoit LJ, **Canetta S**, Kellendonk C. *Thalamocortical Development: A Neurodevelopmental Framework for Schizophrenia*. *Biol Psychiatry*. 2022. doi: 10.1016/j.biopsych.2022.03.004. PubMed PMID: 35550792.  
*Wrote the manuscript.*

5. Pekarskaya EA, Holt ES, Gingrich JA, Ansorge MS, Javitch JA, **Canetta SE**. *Tianeptine, but not fluoxetine, decreases avoidant behavior in a mouse model of early developmental exposure to fluoxetine*. Sci Rep. 2021;11(1):22852. doi: 10.1038/s41598-021-02074-9. PubMed PMID: 34819526; PMCID: PMC8613176. *Designed and oversaw experiments and wrote the manuscript.*

2020:

**Canetta S**, Teboul E, Holt E, Bolkan SS, Padilla-Coreano N, Gordon JA, Harrison NL, Kellendonk C. *Differential Synaptic Dynamics and Circuit Connectivity of Hippocampal and Thalamic Inputs to the Prefrontal Cortex*. Cereb Cortex Commun. 2020;1(1):tgaa084. doi: 10.1093/texcom/tgaa084. PubMed PMID: 33381761; PMCID: PMC7750130. *Designed experiments, collected and analyzed data and wrote the manuscript.*

6. Benoit LJ, Holt ES, Teboul E, Taliaferro JP, Kellendonk C\*, **Canetta S\***. *Medial Prefrontal Lesions Impair Performance in an Operant Delayed Non-match to Sample Working Memory Task*. Behavioral Neuroscience. 2020;134(3):187-97. doi: 10.1037/bne0000357.

\*Denotes co-senior authorship

*Designed and oversaw experiments and wrote the manuscript.*

2019:

7. **Canetta, S** and Kellendonk, C. *When Time Matters: An Adolescent Intervention to Prevent Adult brain dysfunction*. Cell, 2019. **178**(6): p. 1282-1284.

*Wrote the manuscript.*

8. Padilla-Coreano N\*, **Canetta S\***, Mikofsky RM, Alway E, Passecker J, Myroshnychenko MV, Garcia-Garcia AL, Warren R, Teboul E, Blackman DR, Morton MP, Hupalo S, Tye KM, Kellendonk C, Kupferschmidt DA, Gordon JA. *Hippocampal-Prefrontal Theta Transmission Regulates Avoidance Behavior*. Neuron. 2019. Epub 2019/09/16. doi: 10.1016/j.neuron.2019.08.006.

\*Denotes equal authorship.

*Contributed to electrophysiology data collection and analysis and wrote the manuscript.*

2018:

9. **Canetta S** & Kellendonk C. *Can we use mice to study schizophrenia?* Philos Trans R Soc Lond B Biol Sci. 2018 Mar 19; **373**(1742).

*Wrote the manuscript*

2017:

10. Garcia-Garcia AL, **Canetta S**, Stujenske JM, Burghardt NS, Ansorge MS, Dranovsky A, Leonardo ED. *Serotonin inputs to the dorsal BNST modulate anxiety in a 5-HT1A receptor-dependent manner*. Mol Psychiatry. 2017.

*Contributed to electrophysiology data collection and analysis as well as manuscript preparation*

11. Garcia-Garcia AL, Meng Q, **Canetta S**, Gardier AM, Guiard BP, Kellendonk C, Dranovsky A, Leonardo ED. *Serotonin Signaling through Prefrontal Cortex 5-HT1A Receptors during Adolescence Can Determine Baseline Mood-Related Behaviors*. Cell Rep. 2017; **18**(5): 1144-56.

*Contributed to electrophysiology data collection and analysis as well as manuscript preparation*

2016:

12. **Canetta S** & Kellendonk C. *Molecular mechanisms of cognitive deficits in schizophrenia*. Cyberounds (online CME publication through Albert Einstein College of Medicine). 2016 May 2.

*Wrote the manuscript*

**Canetta S**, Bolkan S, Padilla-Coreano N, Song LJ, Sahn R, Harrison NL, Gordon JA, Brown A, Kellendonk C. *Maternal immune activation leads to selective functional deficits in offspring parvalbumin interneurons*. Mol Psychiatry. 2016;**21**(7): 956-68.  
*Designed experiments, collected and analyzed all the data and wrote the manuscript*

2014

13. **Canetta SE**, Sourander A, Surcel HM, Hinkka-Yli-Salomäki S, Leiviskä J, Kellendonk C, McKeague IW, & Brown AS. *Elevated maternal C-reactive protein is associated with increased risk of schizophrenia in a national birth cohort*. American Journal of Psychiatry. 2014 September 1; **171**(9): 960-8.  
*Assisted with study design, statistical analysis and wrote the manuscript*
14. **Canetta SE**, Bao Y, Co MD, Ennis FA, Cruz J, Terajima M, Shen L, Kellendonk C, Schaefer CA & Brown AS. *Serological documentation of prenatal exposure to influenza and bipolar disorder in adult offspring*. American Journal of Psychiatry. 2014 January 31; **171**(5):557-63.  
*Assisted with study design, statistical analysis and wrote the manuscript*

2012:

15. **Canetta SE** & Brown AS. *Prenatal infection, maternal immune activation, and risk for schizophrenia*. Translational Neuroscience. 2012 December; **3**(4): 320-327.  
*Wrote the manuscript*

2011:

16. **Canetta SE**, Luca E, Pertot E, Role LW & Talmage DA. *Type III Nrg1 back signaling enhances functional TRPV1 along sensory axons contributing to thermal pain sensation and hyperalgesia*. Plos One. 2011 September 29; **6**(9): e25108.  
*Collected and analyzed all the data and wrote the manuscript*

2008:

17. Hancock ML, **Canetta SE**, Role LW & Talmage DA. *Presynaptic Type III Neuregulin1 - ErbB signaling targets  $\alpha 7$  nicotinic acetylcholine receptors to axons*. J Cell Biol. 2008 May 5; **181**(3):511-21.  
*Contributed to cell culture and calcium imaging data collection and analysis as well as manuscript preparation*

2007:

18. Bhansali P, Dunning J, **Singer SE**, David L, & Schmauss C. *Early life stress alters adult serotonin 2C receptor pre-mRNA editing and expression of the alpha subunit of the heterotrimeric G-protein G q*. J Neurosci, 2007. **27**(6): 1467-73.  
*Contributed to sequencing gel data collection and analysis as well as manuscript preparation*

2005:

19. Rossi S, **Singer S**, Shearman E, Sershen H, & Lajtha A. *The effects of cholinergic and dopaminergic antagonists on nicotine-induced cerebral neurotransmitter changes*. Neurochem Res, 2005. **30**(4): 541-58.  
*Contributed to HPLC data collection and analysis*
20. Rossi S, **Singer S**, Shearman E, Sershen H, & Lajtha A. *Regional heterogeneity of nicotine effects on neurotransmitters in rat brains in vivo at low doses*. Neurochem Res, 2005. **30**(1): 91-103.  
*Contributed to HPLC data collection and analysis*

2004:

21. **Singer S**, Rossi S, Verzosa S, Hashim A, Lonow R, Cooper T, Sershen H, & Lajtha A. *Nicotine-induced changes in neurotransmitter levels in brain areas associated with cognitive function*. Neurochem Res, 2004. **29**(9): 1779-92.  
*Collected and analyzed most of the HPLC data and wrote the manuscript*