

**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Moeller, Scott J.

eRA COMMONS USER NAME (credential, e.g., agency login): moellers

POSITION TITLE: Assistant Professor of Psychiatry, Associate Vice Chair for Clinical Research

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Stony Brook University Honors College, Stony Brook, NY	BA	05/2005	Psychology
University of Michigan, Ann Arbor, MI	PhD	04/2010	Psychology
Brookhaven National Laboratory, Upton, NY	Postdoc	12/2012	Addiction Imaging
Icahn School of Medicine at Mount Sinai, New York, NY	Postdoc	10/2013	Addiction Imaging

**A. Personal Statement**

I am currently an Assistant Professor and Associate Vice Chair for Clinical Research in the Department of Psychiatry at the Renaissance School of Medicine at Stony Brook University. My graduate training was in Experimental Social Psychology at the University of Michigan, where I studied conscious and unconscious determinants of behavioral and emotional self-control, with applications to substance abuse. I then received an F32 Postdoctoral Fellowship from the National Institute on Drug Abuse (NIDA) to pursue full-time training in the methods of clinical neuroimaging, first at Brookhaven National Laboratory (BNL) and finishing at the Icahn School of Medicine at Mount Sinai. While at Mount Sinai, I received a K01 Award from NIDA, and was promoted to Assistant Professor of Psychiatry and Neuroscience. I then accepted a tenure-track position at Stony Brook University, where I have established NIDA-funded programs of research in opioid use disorder and tobacco use disorder. With over a decade of experience in the field, I have led many studies and projects that have examined addiction-related impairments spanning multiple executive and emotional functions, including investigation into the mechanisms of craving and drug-seeking behavior. Many of these manuscripts have incorporated fMRI, EEG, or other imaging modalities, and more recently I have received funding to conduct PET research. Much of my recent work aims to understand the neurocircuitry underlying *impaired insight* in opioid use disorder. In a similar vein to other psychiatric disorders (e.g., schizophrenia), insight in addiction is anticipated to increase addiction severity and reduce treatment engagement and prognosis.

As Associate Vice Chair for Clinical Research, a role which I have held for approximately 1.5 years, I play an important part in the research training and development of clinical faculty in the Department of Psychiatry. I meet individually with faculty members, consult on research questions and design, and assist them in implementing, analyzing, and writing up the research. I am a mentor on a funded K23 award. I also perform a critical mentoring function in my role as laboratory director. I provide and have provided day-to-day mentorship for members of my various research teams, inclusive of postdocs, graduate/medical students, and clinical research staff. In particular, I conduct meetings to talk through research problems and give statistical consultation; I provide critical feedback and suggestions on grant, manuscript, abstract, and IRB drafts; and I counsel individuals on current and future career plans. Periodically, I also serve on thesis committees. On the Stony Brook University CTSA, for which I will serve as Associate PD for the Workforce Development Module, I will continue and advance my emerging role in research training, by helping to formalize training modules for widespread dissemination to the research community for clinicians and aspiring research coordinators.

**Ongoing and recently completed research support that I would like to highlight include:**

**1R01DA049733-01 (Moeller)**

5/1/2021 – 1/31/2026

NIDA

“Neural, endocrine, and behavioral markers of psychosocial stress predicting drug use outcomes in human opioid addiction”

Role: Principal Investigator

Goals: This study uses a multimodal, longitudinal approach to uncover the neurobiology of psychosocial stress in human opioid use disorder, testing in this population the hypothesis that chronic and acute markers of stress reactivity differ from healthy controls and are potentiated by cumulative life adversity.

**1R01DA051420-01 (Moeller)**

9/1/2020 – 6/30/2025

NIDA

“Neurocircuitry of clinical insight predicting relapse outcomes in opioid addiction”

Role: Principal Investigator

Goals: This study aims to develop a new fMRI task of clinical insight in opioid use disorder, and to use behavior and activation on the task to prospectively predict medication adherence and other clinical outcomes.

**1R21DA048196-01A1 (Moeller)**

4/1/2020 – 3/31/2023

NIDA

“Neural and neurochemical correlates of metacognition impairment in opioid addiction”

Role: Principal Investigator PI

Goals: This study tests for deficits in neurocognition and underlying circuitry in individuals with opioid use disorder, and aims to link the deficits to indices of noradrenergic functioning and drug use.

**1R21DA051179-01 (Moeller)**

5/1/2020 – 4/30/2023

NIDA

“Cholinergic transmission abnormalities associated with smoking behavior in humans”

Role: Principal Investigator

Goals: This study proposes to use the novel radiotracer [<sup>18</sup>F]VAT, which targets the vesicular acetylcholine transporter (VACHT), to test the hypothesis that chronic smokers have deficits in striatal cholinergic tone that relate to clinical severity.

**1R01DA041528-05 (Goldstein)**

4/1/2016 - 1/31/2023

NIDA

“Using event-related potentials to longitudinally track cue induced craving incubation in cocaine addicted individuals”

Role: Other Significant Contributor

The goal of this project is to use objectively-measured ERPs to test the hypothesis, for the first time in humans, that craving escalates, rather than decreases, with abstinence in association with clinical outcome.

**1R01DA045162-03 (London)**

9/1/2017 - 4/30/2023

NIDA

“Exercise in methamphetamine use disorder: Dopamine receptor upregulation and neural function”

Role: Other Significant Contributor

This project tests whether dopamine receptor availability measured by PET and [<sup>18</sup>F]fallypride can be rescued by exercise.

**1K23DA045928-03 (Bachi)**

4/1/2018 - 3/31/2023

NIDA

“Mentalizing deficits in cocaine addiction, associations with immune dysregulation and childhood maltreatment”

Role: Mentor/Other Significant Contributor

The goal of this K23 is to test for social cognition impairments in active cocaine users, and to associate the functional circuitry impairments with indices of immune function and early childhood stress.

**1R21DA049041-02 (Perlman)**

6/15/2019 - 5/31/2022

NIDA

“Neuromelanin sensitive MRI as a novel, non-invasive index of dopamine function in adolescent-onset substance users”

Role: Co-Investigator

The goal of this project is to examine whether neuromelanin, a novel MRI-based method of assaying dopamine function that is suitable for use in adolescents, is altered by substance use.

**B. Positions, Scientific Appointments, and Honors**Positions

2021 – Current	Associate Editor, <u>Translational Psychiatry</u>
2021 – Current	Associate Editor, <u>Frontiers in Psychiatry</u>
2020 – Current	Associate Vice Chair for Clinical Research, Department of Psychiatry, Renaissance School of Medicine at Stony Brook University, Stony Brook, NY 11794
2018 – Current	Affiliated Faculty, Department of Psychology, Stony Brook University, Stony Brook, NY 11794
2018 – Current	Editorial Board, <u>American Journal of Drug and Alcohol Abuse</u>
2017 – Current	Editorial Board, <u>Experimental and Clinical Psychopharmacology</u>
2017 – Current	Assistant Professor (Tenure Track), Department of Psychiatry, Renaissance School of Medicine at Stony Brook University, Stony Brook, NY 11794
2013 – 2017	Assistant Professor (Research), Departments of Psychiatry (Primary) and Neuroscience (Secondary), Icahn School of Medicine at Mount Sinai
2012 – 2013	Postdoctoral Fellow, Department of Psychiatry, Icahn School of Medicine at Mount Sinai, New York, NY
2010 – 2012	Postdoctoral Fellow, Medical Research, Brookhaven National Laboratory, Upton, NY

Honors

2022	Stony Brook University, 40 Under Forty Alumni Award
2022	ACNP, Elected Full Member
2021	Top 10 Reviewer, <u>Neuropsychopharmacology</u>
2019	Society for Biological Psychiatry (SOBP), Chair’s Travel Award
2016	ACNP, Elected Associate Member
2015	NIDA, Mentored Research Scientist Development Award (1K01DA037452-01A1)
2013	American College of Neuropsychopharmacology (ACNP), Travel Award
2013	NIDA, Director’s Travel Award to attend the College on Problems of Drug Dependence (CPDD)
2012	NIDA, Travel Award to attend “Frontiers in Addiction Research,” a satellite meeting of the Society for Neuroscience Annual Meeting
2010	National Institute on Drug Abuse (NIDA), Individual NRSA Postdoctoral Fellowship (1F32DA030017-01)
2010	University of Michigan, Rackham Graduate School Dissertation Fellowship
2009	University of Michigan, Brickman Memorial Summer Research Fellowship
2006	National Science Foundation (NSF), Graduate Research Fellowship Honorable Mention
2006	National Institute of Mental Health (NIMH), Institutional Predoctoral National Research Service Award (NRSA) Recipient (2T32MH015801-27)

**C. Contributions to Science**

1. A primary area of interest has been investigating the hypothesis that drug-addicted individuals exhibit a lack of insight into their drug-relevant behavior and illness severity. If addicted individuals seek drugs without explicit cognitive oversight, it could help explain in part why relapse occurs despite consciously stated plans to abstain. I led the development of a novel measure of insight/self-awareness impairment in drug addiction that is based in behavior (not self-reports, which could be compromised in such individuals), and we have provided evidence that such insight impairment could have implications for the ability to self-monitor one’s cue-reactivity. We have also examined related impairments of metacognition.

- a. **Moeller S. J.**, Maloney T., Parvaz M. A., Alia-Klein N., Woicik P. A., Telang F., Wang G-J., Volkow N. D., & Goldstein R. Z. (2010). Impaired insight in cocaine addiction: Laboratory evidence and effects on cocaine-seeking behavior. Brain, *133*(5), 1484-1493. PMID: PMC2912695.
- b. **Moeller, S. J.**, Hajcak, G., Parvaz, M. A., Dunning, J. P., Volkow, N. D., & Goldstein, R. Z. (2012). Psychophysiological prediction of choice: relevance to insight and drug addiction. Brain, *135*(Pt 11), 3481-3494. PMID: PMC3501972.
- c. **Moeller, S. J.**, Konova, A. B., Parvaz, M. A., Tomasi, D., Lane, R. D., Fort, C., & Goldstein, R. Z. (2014). Functional, structural, and emotional correlates of impaired insight in cocaine addiction. JAMA Psychiatry, *71*(1), 61-70. PMID: PMC4193926.
- d. **Moeller S. J.**, Kundu, P., Bachi, K., Maloney, T., Malaker, P., Parvaz, M. A., Alia-Klein, N., London, E. D., & Goldstein, R. Z. (2020). Self-awareness of problematic drug use: Preliminary validation of a new fMRI task to assess underlying neurocircuitry. Drug Alcohol Depend. doi: 10.1016/j.drugalcdep.2020.107930. PMID: PMC7170015.

2. Another primary area of research involves the development of novel drug-choice tasks that test objective preference for pleasant, unpleasant, and neutral, and drug-related images. These tasks have the following notable strengths: unlike classical drug self-administration paradigms, they can be safely administered to abstinent and treatment-seeking individuals; and unlike classical passive viewing cue reactivity paradigms, these tasks entail active drug-related decision-making. Task behavior has been linked to drug use outside the laboratory, genetic polymorphisms related to reward processing, and imaging markers of cue-reactivity and decision-making.

- a. **Moeller, S. J.**, Maloney, T., Parvaz, M. A., Dunning, J. P., Alia-Klein, N., Woicik, P. A., Hajcak, G., Telang, F., Wang, G.-J., Volkow, N. D., & Goldstein, R. Z. (2009). Enhanced choice for viewing cocaine pictures in cocaine addiction. Biol Psychiatry, *66*(2), 169-176. PMID: PMC2742172.
- b. **Moeller, S. J.**, Parvaz, M. A., Shumay, E., Beebe-Wang, N., Konova, A. B., Alia-Klein, N., Volkow, N. D., & Goldstein, R. Z. (2013). Gene  $\times$  abstinence effects on drug cue reactivity in addiction: Multimodal evidence. J Neurosci, *33*(24), 10027-10036. PMID: PMC3682385.
- c. **Moeller, S. J.**, Okita, K., Robertson, C. L., Ballard, M. E., Johnson, M., Konova, A. B., Goldstein, R. Z., Mandelkern, M. A., & London E. D. (2018). Low striatal dopamine D2-type receptor availability is linked to simulated drug choice in methamphetamine users. Neuropsychopharmacology, *43*(4), 751-760. PMID: PMC5809782.
- d. **Moeller, S. J.**, Zilverstand, Z., Konova, A. B., Kundu, P., Parvaz, M. A., Bachi, K., Alia-Klein, N., & Goldstein, R. Z. (2018). Neural correlates of drug-biased choice in currently-using and abstinent individuals with cocaine use disorder. Biol Psychiatry Cogn Neurosci Neuroimaging, *3*(5), 485-494. PMID: PMC5944613.

3. I led or importantly contributed to studies that used sensitive behavioral and neuroimaging assays to predict clinical symptoms and outcomes in drug addiction, using longitudinal designs to establish temporal directionality of the effects.

- a. **Moeller, S. J.**, Tomasi, D., Woicik, P. A., Maloney, T., Alia-Klein, N., Honorio, J., Telang, F., Wang, G.-J., Wang, R., Sinha, R., Carise, D., Astone-Twerell, J., Bolger, J., Volkow, N. D., & Goldstein, R. Z. (2012). Enhanced midbrain response at 6-month follow-up in cocaine addiction, association with reduced drug-related choice. Addict Biol, *17*(6), 1013-1025. PMID: PMC3394885
- b. **Moeller, S. J.**, Beebe-Wang, N., Woicik, P. A., Konova, A. B., Maloney, T., & Goldstein, R. Z. (2013). Choice to view cocaine images predicts concurrent and prospective drug use in cocaine addiction. Drug Alcohol Depend, *130*(1-3), 178-185. PMID: PMC3609942.
- c. Parvaz, M. A., **Moeller, S. J.**, Uquillas, F. D., Pflumm, A. Maloney, T. Alia-Klein, N. & Goldstein, R. Z. (2017). Prefrontal gray matter volume recovery in treatment-seeking cocaine-addicted individuals: A longitudinal study. Addict Biol, *22*(5), 1391-1401. PMID: PMC5085900.
- d. **Moeller, S. J.**, Hanley, A. W., & Garland, E. L. (2020). Behavioral preference for viewing drug v. pleasant images predicts current and future opioid misuse among chronic pain patients. Psychol Med, *50*(4), 644-652. PMID: PMC7413318

4. I led or importantly contributed to efforts to show that low-dose oral methylphenidate remediates fMRI activations (during inhibitory control and resting-state) in cocaine-addicted individuals.

- a. **Moeller, S. J.**, Tomasi, D., Honorio, J., Volkow, N. D., & Goldstein, R. Z. (2012). Dopaminergic involvement during mental fatigue in health and cocaine addiction. Transl Psychiatry, *2*, e176. PMID: PMC3565817.
- b. Konova, A. B., **Moeller, S. J.**, Tomasi, D., Volkow, N. D., & Goldstein, R. Z. (2013). Effects of methylphenidate on resting-state functional connectivity of the mesocorticolimbic dopamine pathways in cocaine addiction. JAMA Psychiatry, *37(10 Pt 2)*, 2806-2817. PMID: PMC4358734.
- c. **Moeller, S. J.**, Honorio, J., Tomasi, D., Parvaz, M. A., Woicik, P. A., Volkow, N. D., & Goldstein, R. Z. (2014). Methylphenidate enhances executive function and optimizes prefrontal function in both health and cocaine addiction. Cereb Cortex, *24(3)*, 643-653. PMID: PMC3920764.
- d. **Moeller, S. J.**, Konova, A. B., Tomasi, D., Parvaz, M. A., & Goldstein, R. Z. (2016). Abnormal response to methylphenidate across multiple fMRI procedures in cocaine use disorder: feasibility study. Psychopharmacology, *233(13)*, 2559-2569. PMID: PMC4916842.

5. I led and contributed to efforts to explore neuropsychological impairments (e.g., in inhibitory control and reward processing) in individuals with reactive aggression, which like addiction is characterized by compromised self-control. We use similar analytical approaches, and in some cases even compare individuals with reactive aggression directly with addicted individuals. This approach exemplifies the idea of studying psychopathologies by their underlying neurocognitive dysfunctions (Research Domain Criteria: RDoC).

- a. **Moeller, S. J.**, Froböse, M. I., Konova, A. B., Misyrlis, M., Parvaz, M. A., Goldstein, R. Z., & Alia-Klein, N. (2014). Common and distinct neural correlates of inhibitory dysregulation: Stroop fMRI study of cocaine addiction and intermittent explosive disorder. J Psychiatric Res, *58*, 55-62. PMID: PMC4163519.
- b. Alia-Klein, N., Wang, G.-J., Preston-Campbell, R., **Moeller, S. J.**, Parvaz, M. A., Zhu, W., Jayne, M. C., Wong, C., Tomasi, D., Goldstein, R. Z., Fowler, J. S., & Volkow, N. D. (2014). Reactions to media violence: It's in the brain of the beholder. Plos One, *9(9)*, e107260. PMID: PMC4160225.
- c. Gan, G., Preston-Campbell, R. N., **Moeller, S. J.**, Steinberg, J. L., Lane, S. D., Maloney, T., Parvaz, M. A., Goldstein, R. Z., & Alia-Klein, N. (2016). Reward versus retaliation - the role of the mesocorticolimbic salience network in human reactive aggression. Front Behav Neurosci, *10*, 179. PMID: PMC5037197.
- d. Gan, G., Zilverstand, A., Parvaz, M. A., Preston-Campbell, R. N., d'Oleire Uquillas, F., **Moeller S. J.**, Tomasi, D., Goldstein R. Z., & Alia-Klein, N. (2018). Habenula-prefrontal resting-state connectivity in reactive aggressive men - A pilot study. Neuropharmacology. doi: 10.1016/j.neuropharm.2018.10.025.

#### MyBibliography:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/1VAYOqy2jyL5n/bibliography/47421191/public/?sort=date&direction=ascending>.