OMB No. 0925-0001 and 0925-0002 (Rev. 09/17 Approved Through 03/31/2020)

BIOGRAPHICAL SKETCH

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NAME: Diana Martinez

eRA COMMONS USER NAME (credential, e.g., agency login): DMM437

POSITION TITLE: Professor of Psychiatry

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 |
| --- | --- | --- | --- |
| St. John College | BA | 05/1988 | Philosophy |
| Cornell University Medical College | MD | 05/1994 | Medicine |

**A. Personal Statement**

I am a Professor of Psychiatry at Columbia University Irving Medical Center and a Psychiatrist II at the New York State Psychiatric Institute. My research career has largely focused on imaging the neurochemistry of addiction. Much of this work combined imaging with clinical outcomes, such as drug seeking behavior and response to treatment. More recently, I have performed research using repetitive Transcranial Magnetic Stimulation (rTMS) in substance use disorders and a study using spectroscopy (MRS) in a clinical trial of tinnitus. Throughout my career, I have also taken on the role in mentoring junior researchers who have gone on to their own successful careers in a wide range of fields.

In this application, I will serve as a mentor to Dr. Blevins as he investigates the impact of rTMS on alcohol use disorder. The results will indicate whether rTMS to the medial prefrontal cortex and anterior cingulate cortex reduces alcohol cravings and self-administration. Using MRS, this study will also investigate the effect of rTMS on neurochemistry to demonstrate target engagement.

I am pleased to serve as a mentor to Dr. Blevins on this project. As a board-certified psychiatrist with an established career in research, I am dedicated to mentoring a clinician pursuing a similar trajectory. I have used rTMS in studies of substance use disorders and will provide guidance on this intervention. Working with Dr. Juchem, I will assist Dr. Blevins with the inclusion of imaging into the study design, which will improve our understanding of the mechanism underlying the effect of rTMS in the brain. I am also serving as Dr. Blevins’ mentor for his K23 application to investigate the use of rTMS on chronic pain in patients with opioid use disorder.

Publications that highlight my experience that is relevant to this proposal include:

1. Transcranial Magnetic Stimulation of Medial Prefrontal and Cingulate Cortices Reduces Cocaine Self-Administration: A Pilot Study. Martinez D, Urban N, Grassetti A, Chang D, Hu MC, Zangen A, Levin FR, Foltin R, Nunes EV. Front Psychiatry. 2018 Mar 16;9:80.
2. Multimodal predictive modeling of individual treatment outcome in cocaine dependence with combined neuroimaging and behavioral predictors. Luo SX, Martinez D, Carpenter KM, Slifstein M, Nunes EV. Drug Alcohol Depend. 2014 Oct 1;143:29-35.
3. Kappa Antagonist JDTic in Phase 1 Clinical Trial. Chavkin C, Martinez D. Neuropsychopharmacology. 2015 Aug;40(9):2057-8.

**B. Positions and Honors**1994-1998 Resident in Psychiatry, Cornell University Medical College / The Payne Whitney Clinic

1998-2000 Assistant Attending, Columbia Presbyterian Medical Center

1998-2000 Postdoctoral Clinical Fellow and Assistant in Clinical Psychiatry, Columbia Presbyterian Medical Center

1998-2000 Research Fellow, The New York State Psychiatric Institute

2000-2006 Assistant Professor of Psychiatry

2007-2016 Associate Professor of Psychiatry

2016-present Professor of Psychiatry

**C. Contributions to Science**

1. My previous contribution to science is using imaging to investigate the underlying neurobiology of addiction. These include studies of the dopamine, serotonin, and glutamatergic systems using radiotracers specific for these cellular targets in the brain. This work has spanned almost 20 years, and includes studies in alcohol, cocaine, and heroin dependence. My role in these studies is as the principal investigator, where I oversaw and managed the subject recruitment, scan acquisition, data analysis and interpretation of results, and manuscript preparation.
2. Martinez D, Slifstein M, Nabulsi N, Grassetti A, Urban NB, Perez A, Liu F, Lin SF, Ropchan J, Mao X, Kegeles LS, Shungu DC, Carson RE, Huang Y. Imaging Glutamate Homeostasis in Cocaine Addiction with the Metabotropic Glutamate Receptor 5 Positron Emission Tomography Radiotracer [11C]ABP688 and Magnetic Resonance Spectroscopy. Biol Psychiatry. 2014 Jan 15;75(2):165-71.
3. Martinez D, Slifstein M, Matuskey D, Nabulsi N, Zheng M, Lin S, Ropchan J, Urban N, Grassetti A, Chang D, Salling M, Foltin R, Carson RE, Huang. Kappa-opioid Receptors, Dynorphin, and Cocaine Addiction: A Positron Emission Tomography Study. Neuropsychopharmacology 44 (10), 1720-1727 Sep 2019
4. Martinez D, Greene K, Broft A, Kumar D, Liu F, Narendran R, Slifstein M, Van Heertum R, Kleber HD. Lower Level of Endogenous Dopamine in Patients with Cocaine Dependence: Findings from PET Imaging of D2/D3 Receptors Following Acute Dopamine Depletion. Am J Psychiatry. 2009 Sep 1.
5. Martinez D, Slifstein M, Narendran R, Foltin RW, Broft A, Hwang DR, Perez A, Abi-Dargham A, Fischman MW, Kleber HD, Laruelle M. Dopamine D1 Receptors in Cocaine Dependence Measured with PET and the Choice to Self-Administer Cocaine. Neuropsychopharmacology. 2009 Jan 28.
6. A number of these imaging studies have investigated the link between neurobiology and behavior. These behavioral paradigms include clinically relevant parameters, such as the severity of disease, the choice to self-administer drugs of abuse in humans, and response to treatment. My role in these studies has been to perform the imaging studies and I have worked closely with colleagues with expertise in clinical outcome measures, laboratory models of drug self-administration, and treatment studies.
7. Martinez D, Carpenter KM, Liu F, Slifstein M, Broft A, Friedman AC, Kumar D, Van Heertum R, Kleber HD, Nunes E. Imaging Dopamine Transmission in Cocaine Dependence: Link Between Neurochemistry and Response to Treatment. Am J Psychiatry. 2011 Mar 24. PMC3235735
8. Martinez D, Narendran R, Foltin RW, Slifstein M, Hwang DR, Broft A, Huang Y, Cooper T, Fischman MW, Kleber HD, Laruelle M. Amphetamine-induced dopamine release is markedly blunted in cocaine dependence and predictive of the choice to self-administer cocaine. American Journal of Psychiatry. 2007 Apr;164(4):622-9.
9. Martinez D, Slifstein M, Gil R, Hwang DR, Huang Y, Perez A, Frankle WG, Laruelle M, Krystal JK, Abi-Dargham A. Positron emission tomography imaging of the serotonin transporter and 5-HT(1A) receptor in alcohol dependence. Biol Psychiatry. 2009 Jan 15;65(2):175-80.
10. Urban NB, Kegeles LS, Slifstein M, Xu X, Martinez D, Sakr E, Castillo F, Moadel T, O'Malley SS, Krystal JH, Abi-Dargham A. Sex differences in striatal dopamine release in young adults after oral alcohol challenge: a positron emission tomography imaging study with [¹¹C]raclopride. Biol Psychiatry. 2010 Oct 15;68(8):689-96.
11. More recent work has focused directly on treatment development. These publications include the use of rTMS for substance use disorder, pioglitazone for tobacco dependence, and ibudilast in opioid use disorders.
12. Martinez D, Urban N, Grassetti A, Chang D, Hu MC, Zangen A, Levin FR, Foltin R, Nunes EV. Transcranial Magnetic Stimulation of Medial Prefrontal and Cingulate Cortices Reduces Cocaine Self-Administration: A Pilot Study. Front Psychiatry. 2018 Mar 16;9:80.
13. Comer SD, Mogali S, Saccone PA, Askalsky P, Martinez D, Walker EA, Jones JD, Vosburg SK, Cooper ZD, Roux P, Sullivan MA, Manubay JM, Rubin E, Pines A, Berkower EL, Haney M, Foltin RW. Effects of acute oral naltrexone on the subjective and physiological effects of oral D-amphetamine and smoked cocaine in cocaine abusers. Neuropsychopharmacology. 2013 Nov;38(12):2427-
14. Cooper ZD, Johnson KW, Pavlicova M, Glass A, Vosburg SK, Sullivan MA, Manubay JM, Martinez DM, Jones JD, Saccone PA, Comer SD. The effects of ibudilast, a glial activation inhibitor, on opioid withdrawal symptoms in opioid-dependent volunteers. Addict Biol. 2016 Jul;21(4):895-903.
15. Other work I have conducted as a co-investigator include identifying biomarkers in addiction, radiotracer development (including kappa receptors), and rodent work investigating the effect of D2 receptor overexpression on motivated behavior.
16. Talbot PS, Narendran R, Butelman ER, Huang Y, Ngo K, Slifstein M, Martinez D, Laruelle M, Hwang DR. 11C-GR103545, a radiotracer for imaging kappa-opioid receptors in vivo with PET: synthesis and evaluation in baboons. J Nucl Med. 2005 Mar;46(3):484-94.
17. Trifilieff P, Feng B, Urizar E, Winiger V, Ward RD, Taylor KM, Martinez D, Moore H, Balsam PD, Simpson EH, Javitch JA. Increasing dopamine D2 receptor expression in the adult nucleus accumbens enhances motivation. Mol Psychiatry. 2013 Sep;18(9):1025-33. PMC4030518
18. Narendran R, Hwang DR, Slifstein M, Hwang Y, Huang Y, Ekelund J, Guillin O, Scher E, Martinez D, Laruelle M. Measurement of the proportion of D2 receptors configured in state of high affinity for agonists in vivo: a positron emission tomography study using [11C]N-propyl-norapomorphine and [11C]raclopride in baboons. J Pharm Exp Ther. 2005 Oct;315(1):80-90

**D. Additional Information: Research Support and/or Scholastic Performance**

A-20620 (PI; Martinez) Department of Defense 05/01/18 – 04/30/22

Investigation of the NMDA Antagonist Ketamine as a Treatment for Tinnitus

This study is designed to investigate the efficacy of ketamine on tinnitus using MRS.

**K02 DA026525-05 (PI: Martinez) NIDA 07/15/14 – 06/30/20**

**Using PET to Image the Neurochemistry of Addiction**

**This is an independent research award to support the PI in her research including imaging studies that explore the neurobiology and pharmacology of substance abuse and addiction.**

**1R21 AA026049-01 (PI: Martinez) NIAAA 08/01/16 – 07/31/20**

Effect of rTMS to the Prefrontal Cortex in Alcohol Use Disorders

**The goal of this study is to investigate the effect of transcranial magnetic stimulation on the choice to self-administer alcohol in AUD. MRS will also be obtained to image brain metabolites, GABA and glutamine.**

Clinical Trial Award **(PIs: Martinez, Haney)** TFFI (Private Foundation) 08/01/18 – 08/31/21

The Effect of Oral Cannabinoids on Taxane-Induced Peripheral Neuropathy

The goal of this research is to investigate the effect of cannabinoids in chemotherapy induced peripheral neuropathy induced by taxanes as treatment for breast cancer. This is a clinical trial.