

## Project Information ?

5K23DA045928-02

DESCRIPTION DETAILS RESULTS HISTORY SUBPROJECTS

**Project Number:** 5K23DA045928-02**Title:** MENTALIZING DEFICITS IN COCAINE ADDICTION, ASSOCIATIONS WITH IMMUNE DYSREGULATION AND CHILDHOOD MALTREATMENT**Contact PI / Project Leader:** [BACHI, KEREN](#)**Awardee Organization:** ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI**Abstract Text:**

PROJECT SUMMARY/ABSTRACT Building on her rich clinical background in addiction treatment, Dr. Keren Bachi, the candidate, aspires to become a cross-disciplinary independent investigator in an area of critical importance within drug addiction: the neuro-immune biomarkers underlying adult social cognitive function (mentalizing; the ability to understand the mental states of others) as associated with exposure to early life stress. Drug addicted individuals frequently experience social stress (e.g., childhood maltreatment, poverty) which may shape neural and physiological responses to social interactions and exacerbate illness risk (e.g., craving, relapse). Training will center on neuro-immune-environment systems approach to drug addiction, with mentorship in neuroimaging of human addiction (primary mentor Dr. Goldstein), immune dysregulation in psychiatry (Dr. Gabbay), neuroinflammation (Dr. Russo), advanced biostatistics (Mr. Weinberg), immunologic assessment (Dr. Kim-Schulze), social cognition (Dr. Moeller), and mechanisms linking stress, immune adaptations, and effects on brain function in addictive behaviors (Dr. Sinha). Goals will be accomplished through didactic training primarily at the Icahn School of Medicine at Mount Sinai, conferences, and mainly by the study of: (I) characterizing the behavioral and neural correlates of deficits in mentalizing in cocaine addicted individuals vs. matched healthy controls, using a well-validated functional magnetic resonance imaging paradigm that robustly activates the mentalizing network; (II) comparing inflammation between the two study groups, using an immune-blood-profile previously associated with cocaine use, but here examined for the first time vis-à-vis mentalizing and childhood maltreatment; and (III) discerning whether inflammation markers mediate the relationships between childhood trauma with altered neural engagement/behavior during the mentalizing task. While neuroimaging allows for spatially specific determination of brain activity, immune biomarkers enable detection of molecular and cellular-pathways, and their joint study would facilitate identification of neuro-immune contributions to core deficits in addiction. Furthermore, testing for a contribution of biographic adversity-history may enable the grounding of the neural and physiological findings in identifiable (and potentially preventable) long-lasting effects of social-environmental stress. Future efforts could capitalize on the putative mediating effects of inflammation, to develop novel treatments in drug addiction incorporating immunomodulatory or anti-inflammatory drugs, which notably have been shown to enhance cognition in other psychiatric patients. Enhancement of social cognition (mentalizing) could augment treatment success and prevent relapse in addiction. Finally, social stress management interventions and prevention efforts could potentially most optimally be deployed in those with severe childhood maltreatment. The experience, and data gained from this study will position the candidate to pursue future NIH funding to build this line of research and develop novel treatments in drug addiction.

**Public Health Relevance Statement:**

PROJECT NARRATIVE Cocaine use is frequently associated with experience of social stress (e.g., childhood maltreatment, low socioeconomic status) which may shape neural and physiological responses to social interactions and promote relapse. We propose to study addicted individuals' ability to understand the mental states of others, which underlies overt behavior, and how this process may be shaped by immune-dysregulation and history of childhood trauma. A better understanding of social cognitive impairments in cocaine addiction, and particularly how they may be related to psychophysiological and social-environmental elements, may inform more effective treatment strategies, improving quality of life and reducing societal burden.

**Project Terms:**

addiction; Addictive Behavior; Address; Adult; Anti-inflammatory; Area; base; Behavior; Behavioral; Biography; Biological Markers; Biometry; Blood; Brain; Brain region; Child Abuse and Neglect; Chronic; Clinical; Cocaine; Cocaine Dependence; cocaine use; Cognition; cognitive function; Complex; craving; Data; Detection; Dimensions; Disease; Drug Addiction; Drug usage; early life stress; effective therapy; Elements; Emotional; Environment; experience; Exposure to; Functional disorder; Functional Magnetic Resonance Imaging; Funding; Future; Goals; Human; hypothalamic-pituitary-adrenal axis; Immune; Immunologic Markers; Immunologics; immunoregulation; Impaired cognition; Impairment; improved; Individual; Inflammation; Inflammatory; inflammatory marker; Interleukins; Intervention; Link; Lipids; low socioeconomic status; Measures; Mediating; Mediation; medical schools; Mental deficiency; mental function; mental state; Mentors; Mentorship; Molecular; Moods; Morals; neural circuit; neural correlate; neuroimaging; Neuroimmune; neuroinflammation; Neuronal Plasticity; neuropsychiatry; novel; Pathway interactions; Patients; Pattern; pediatric trauma; Performance; Peripheral; Pharmaceutical Preparations; Physiological; Positioning Attribute; Poverty; Prefrontal Cortex; prevent; Prevention; Process; Psyche structure; Psychiatry; psychobiologic; Psychophysiology; Quality of life; Reaction Time; Recording of previous events; Relapse; relating to nervous system; Research; Research Personnel; response; Rewards; Risk; Sampling; Self Perception; Shapes; social; social cognition; Social Interaction; social stress; Stress; stress management; Structure of superior temporal sulcus; success; symposium; symptom treatment; Symptoms; System; Testing; Therapeutic; Time; TNF gene; Training; treatment strategy; United States National Institutes of Health

**Contact PI Information:****Name:** BACHI, KEREN**Email:** [Click to view contact PI email address](#)**Title:** ASSISTANT PROFESSOR**Program Official Information:****Name:** KAUTZ, MARY A**Email:** [Click to view PO email address](#)**Other PI Information:**

Not Applicable

**Organization:****Department / Educational Institution Type:****Congressional District:**

<b>Name:</b> ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI		PSYCHIATRY		State Code: NY	
<b>City:</b> NEW YORK Country: UNITED STATES (US)		SCHOOLS OF MEDICINE		District: 13	
<b>Other Information:</b>					
<b>FOA:</b> <a href="#">PA-16-198</a>		<b>DUNS Number:</b> 078861598		<b>CFDA Code:</b> 279	
<b>Study Section:</b> Biobehavioral Regulation, Learning and Ethology Study Section (BRLE)		<b>Project Start Date:</b> 15-MAR-2018		<b>Project End Date:</b> 28-FEB-2023	
<b>Fiscal Year:</b> 2019 <b>Award Notice Date:</b> 28-FEB-2019		<b>Budget Start Date:</b> 1-MAR-2019		<b>Budget End Date:</b> 29-FEB-2020	
<b>Administering Institutes or Centers:</b>					
NATIONAL INSTITUTE ON DRUG ABUSE					
<b>Project Funding Information for 2019:</b>					
<b>Total Funding:</b> \$129,918		<b>Direct Costs:</b> \$120,528		<b>Indirect Costs:</b> \$9,390	
Year	Funding IC	FY Total Cost by IC			
2019	NATIONAL INSTITUTE ON DRUG ABUSE	\$129,918			
<b>History:</b>					
Total project funding amount for 2 projects is <b>\$259,428*</b>					
* Only NIH, CDC, and FDA funding data.					
Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY Admin IC Funding IC FY Total Cost by IC
5K23DA045928-02		MENTALIZING DEFICITS IN COCAINE ADDICTION, ASSOCIATIONS WITH IMMUNE DYSREGULATION AND CHILDHOOD MALTREATMENT	BACHI, KEREN	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2019 NIDA NIDA \$129,918
1K23DA045928-01		MENTALIZING DEFICITS IN COCAINE ADDICTION, ASSOCIATIONS WITH IMMUNE DYSREGULATION AND CHILDHOOD MALTREATMENT	BACHI, KEREN	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2018 NIDA NIDA \$129,510
<b>Subprojects:</b>					
Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY Admin IC FY Total Cost by IC
No Subprojects information available for 5K23DA045928-02					

NIH...Turning Discovery Into Health®

RePORTER3N

AHA Award Number: 17GRNT33420119

Dear Venkatesh Mani

We are pleased to inform you that the Research Committee of the American Heart Association (AHA) has approved activation of an Award for the period and in the amount indicated below. This Award is contingent upon satisfactory demonstration that alternative funds have not been, nor will be, awarded to this project. AHA policies do not permit mutual funding or supplementation of a project, even when other agencies have reduced budgets.

Award Type: FDA Summer 2016 Grant-in-Aid

Title of Project: Cardiovascular Safety of E-Cigarettes assessed by PET/MRI

The Award begins 01/01/2017, and has been approved at the level of funding indicated below:

Period 1 Start Date: 1/1/2017, End Date: 12/31/2017, Total: \$77000

Period 2 Start Date: 1/1/2018, End Date: 12/31/2018, Total: \$77000

The Award has been approved for this duration; however, each year of funding is contingent upon adequate progress, and is subject to approval by the Affiliate Board of Directors and availability of funds.

The AHA has a web-based Research Administration System, Grants@Heart, for managing our research applications and Awards. This system is available for use by Principal Investigators and designated institutional officers of currently active AHA research Awards. As the Principal Investigator of a newly funded Award, you need to access this system to electronically submit the forms required to activate your Award. These forms include an Acceptance Form, an Agreement, a Medical Subjects Heading (MeSH) Form, a Subject Use Form and a Project Budget.

The deadline for submitting your Acceptance Form is 12/11/2016, and all other activation forms must be submitted by 12/18/2016.



Should the Research Committee need to convey special policies or provisions to you, these will be included on your Acceptance Form as concerns or contingencies that must be addressed by you prior to Award activation.

These policies and provisions as specified will bind you as an Awardee of the AHA. The approved amount of your Award may be less than the amount requested. If your budget was reduced, your Acceptance Form should explain the budgetary reductions.

Please note: The Agreement must be printed and signed by all required parties and returned to the AHA in hard copy or emailed to AHA via [awards@heart.org](mailto:awards@heart.org). A signed copy of your Agreement should be retained for your files, and a copy should be retained by your fiscal office. Your Award is subject to the limitations defined in the Agreement. The AHA reserves the right not to modify the terms and conditions of the Agreement. This Agreement will cover the period and amount as stated above, and you will not be required to submit another Agreement during the term of your Award unless the structure of your Award is altered.

During the tenure of your AHA Award, you should use the online system to submit your annual scientific progress reports and to request Award changes. Scientific progress reports of work accomplished are required annually. Each subsequent year of funding is contingent upon review of a progress report, which is due 12/15 of each interim award period. Scientific reports in the final year are due 12/15. For grant projects, financial reports are due annually from your fiscal office. Check [Grants@Heart](mailto:Grants@Heart) for due dates. Financial reports are not required for fellowship training grants. AHA payments will be withheld if these reports have not been submitted by the due date. The forms for reporting progress and expenditures (if applicable) can be submitted in [Grants@Heart](mailto:Grants@Heart).

The AHA will remit quarterly installments to your institution for your Award. These payments will occur following the end of each quarter via electronic funds transfer. The AHA pays research Awards in the months of January, April, July and October on or around the third Tuesday of the month.

Your research Award was made possible by the dedicated work of people of all ages and backgrounds who volunteer their time and talents to fight heart disease through advocacy efforts and fundraising activities. Please consider joining them. The AHA is a voluntary health agency, and having highly capable volunteers as leaders and decision-makers is crucial to our future success. Supporting research is our No. 1 organizational priority. Without men and women with strong research backgrounds in key leadership positions, our ability to support the most meritorious research could be compromised and that would be tragic. Please contact the AHA at 1-800-AHA-USA-1 or 1-800-242-8721 to find out about volunteer opportunities with the Founders Affiliate or visit us on the web at <http://my.americanheart.org>.



If you have any questions or need assistance with your Award, please contact the AHA Applicant and Awardee Services group via email at [Awards@heart.org](mailto:Awards@heart.org) or by phone at 214-360-6114 . Please reference your AHA Award number at the top of this message.

Congratulations on your AHA Award, and best wishes for a continuing successful career.

Sincerely,

American Heart Association  
Founders Affiliate Research Programs

*\* AHA reserves the right to revise its payment schedule, as it deems necessary, at any time. Awardees and associated Institutions will be notified in advance of any changes to the schedule.*

**"Building healthier lives,  
free of cardiovascular  
diseases and stroke."**

Please remember the American Heart Association in your will.





## AWARD AGREEMENT

Research Administration  
7272 Greenville Avenue  
Dallas, Texas 75231-4596  
E-MAIL: [awards@heart.org](mailto:awards@heart.org)



Please Print or Type

Mani, Venkatesh

Ph.D.

17GRNT33420119

Last Name, First, Middle Initial ("Awardee" or "Principal Investigator")

Degree(s)

AHA Reference Number

Icahn School of Medicine at Mount Sinai

Institution Name ("Institution")

Cardiovascular Safety of E-Cigarettes assessed by PET/MRI

Project Title ("Research Project")

2017-01-01

2018-12-31

Award Period From:

To:

Awardee/Principal Investigator and Institution acknowledge and agree that the award of any funds by the American Heart Association, Inc. (the AHA) shall be subject to Awardee providing the information as requested on this form and acceptance of the terms and conditions attached hereto, as shown by Awardee's and Institution's authorized signatures set out below.

12/09/16

Date

x

Signature of Awardee/Principal Investigator

One, Gustave L. Levy Place, Box 1234, Dept of Radiology

Address

New York, NY 10029

City, State, Zip Code

+1-212-824-8454

Telephone and FAX Numbers

[venkatesh.mani@mssm.edu](mailto:venkatesh.mani@mssm.edu)

Internet E-Mail Address for Awardee

x

Signature of Department Head

BURTON DRAVER, M.D.

Name of Department Head

[burtan.drayer@mountsinai.org](mailto:burtan.drayer@mountsinai.org)

Internet E-Mail Address for Department Head

x

Signature of Grants and Contracts Officer

Michael J. King

Director of Grants and Contracts

Name of Grants and Contracts Officer

[contracts@mssm.edu](mailto:contracts@mssm.edu)

Internet E-Mail Address for Grants Officer

x

Signature of Fiscal Officer

RAJ APPARU

Name of Fiscal Officer

[RAJ.APPARU@MOUNTSINAI.ORG](mailto:RAJ.APPARU@MOUNTSINAI.ORG)

Internet E-Mail Address for Fiscal Officer

MAIL TO: RESEARCH ADMINISTRATION  
AMERICAN HEART ASSOCIATION  
7272 GREENVILLE AVENUE  
DALLAS, TX 75231

Last Name, First, Middle Initial ("Awardee")

AHA Award Number

### AHA Award Agreement Terms and Conditions

**Award:** The AHA will make an Award, in accordance with the AHA's payment and schedule regulations as set out in the notification letter for the type of Award, to the Institution for the Research Project submitted by the Awardee and Institution. The Institution is responsible for disbursing funds to the Awardee (typically the Principal Investigator and Co-Investigator(s), if applicable). In accepting an Award from the American Heart Association (AHA), the Awardee and the Institution assume the obligation to expend Award for the purposes as set forth in the Research Project application submitted to the AHA, and in accordance with the regulations and the policies governing the AHA Award programs or, where not specified, consistent with the policies and practices of the Institution. There can be no duplicate funding for the Research Project, meaning AHA will provide no more than one Award for each Research Project. If the Award is for a fellowship, then the Awardee must devote substantially full time to research, or activities directly related to development into an independent researcher, including without limitation, clinical research and ancillary activities (as opposed to administration, patient care or teaching responsibilities).

**Award Period:** The period for the Award starts and ends on the dates set out above and as stated in the notification letter sent by the AHA to the Awardee or Institution.

**Financial Report:** For Awards (project support), the Fiscal Officer of the Institution must provide the AHA with a Financial Report co-approved by the Awardee by the date set out in the notification letter, or immediately following the end (within 90 days) of each year of the Award Period if no date is set in the notification letter. The Institution must, upon prior notice, make accounting records of disbursements made from the AHA's Award funds available to AHA representatives.

**Scientific Report:** Each year during the Award Period, on or before the date in the notification letter, or at the end (in the last 30 days) of each year of the Award Period if no date is set in the notification, the Awardee must submit a Scientific Report of the Awardee's accomplishments and activities. In the final year of the Award, the Awardee must include in the Scientific Report a list of articles published or accepted for publication plus a summary of the Research Project results.

**Reports and Other Correspondence:** All reports and correspondence must be delivered to the AHA in accordance with the AHA's standard operating procedures, including without limitation, electronic submissions.

**AHA's Non-Receipt of Reports:** If the Financial Report or Scientific Report is not received by the date due, the AHA may withhold all future Award payments until receipt of the report. In addition, the final payment (or some lesser amount determined by the AHA) of the Award may be withheld until all required reports have been received by the AHA. All withheld Award payments revert back to the AHA if the AHA has not received all required reports within six months after the Award period ends.

#### Open Science Policy:

**Public Access:** The AHA requires that all journal articles resulting from AHA funding be made freely available in PubMed Central within 12 months of publication. It will be the responsibility of the author to ensure this occurs.

**Open Data:** Any research data that is needed for independent verification of research results must be made freely and publicly available in an AHA approved repository within 12 months of the end of the funding period (and any no-cost extension). The programs that are currently exempt include Undergraduate Fellowships, Medical Student Research Fellowships, Predoctoral Fellowships, Postdoctoral Fellowships, Mentor/AHA Mentee Awards and Mentored Clinical and Population Research Awards. Please see AHA's Open Science Policy: <http://my.americanheart.org/professional/Research/FundingOpportunities/Open-Science-Policy-Statements-for-AHA-Funded-Research> UCM 461225 Article.jsp

In addition to the Open Data Policy requirements, the AHA may require that all research data needed for independent verification of this research must also be provided in an AHA-approved format to a specific AHA-sponsored data repository within one year after the end of the award. If AHA imposes such requirement, AHA will notify awardee within a reasonable time period after the end of the award.

**Attribution:** It is the responsibility of the Awardee, the Sponsor (depending on the award type, please see a. and b. under Attribution Scope below), and the host Institution to ensure that AHA support is properly acknowledged in all presentations (including oral or poster presentations, news releases, interviews with reporters and all other communications) and publications resulting from work carried out during the tenure of their Award. To enable the accurate evaluation of outcomes from AHA research investments, it is critical that acknowledgements mention AHA as the funding organization, as well as the specific grant ID number and the names of each author supported by each AHA grant. The recommended format follows: "THIS WORK WAS SUPPORTED BY AMERICAN HEART ASSOCIATION GRANT #YYYYPPPP#### (AWARDEE NAME)". YY = year the award started. PPPP = 3 OR 4 letter abbreviation of the program. ### = 7 OR MORE numbers. For example 14BGIA12345678 or 14GIA1234567. The full Grant ID must be included. If more than one AHA award supported the published research, then each Award should be cited separately with the grant ID and name(s) of supported authors.

**Attribution Scope:** The scope of the research to be acknowledged depends on the Award type:

a. Career Development Awards: It is anticipated that publication of all research conducted by Awardees during the tenure of an AHA career development awards will acknowledge support by AHA, whether published during or after the term of award. Career Development Awards include Undergraduate Student Research Program Awards, Health Sciences Fellowship Awards, Pre- and Postdoctoral Fellowship Awards, Mentored Clinical & Population Research Awards, Beginning Grant-in-Aid, Scientist Development Grants, and Established Investigator Awards.

b. Research Project-based Awards: It is expected that publication of research proposed in the grant application or developed during the course of a research project-based award will acknowledge support by AHA, whether published during or after the term of award. Research project-based awards include, Grant-in-Aid, Collaborative Science Award and Strategically Focused Research Networks (SFRN).

**Responsibilities for Reporting Attributions:** The AHA must be notified according to current procedures of all publications and presentations (including oral or poster presentations, news releases, interviews with reporters and other communications) acknowledging AHA support. It is the primary responsibility of the Awardee to notify the Association when a manuscript attributing support to the AHA is published, regardless of whether the work is published during or following the term of award. For Awards where there is a Sponsor, the Association looks to the Sponsor to ensure that there is appropriate attribution and notification of the AHA. The Sponsor serves as a mentor/supervisor for junior investigator awards. The Sponsor's input is particularly important for less experienced trainees and for trainees who have left the Institution after the term of Award. Awards with Sponsors include Undergraduate Student Research Program Awards, Health Sciences Fellowship Awards, Pre- and Postdoctoral Fellowship Awards, and Mentored Clinical & Population Research Awards.

**Publicity:** The Awardee and Institution will not permit release of any publicity regarding the Award or the Research Project without prior review and approval from the AHA. Also, by accepting this award the Institution agrees to include and identify the AHA as a funder/benefactor on any and all reports, either public or private, that detail the Institution's list of donors.

Last Name, First, Middle Initial ("Awardee")

AHA Award Number

**Abstract Submission:** Since AHA Awards are made possible through voluntary contributions by the public, research results should be made available to the public promptly, either by presentation to scientific societies or publication in scientific journals. Within 18 months of the end of the funding period (and any no-cost extension), each AHA Awardee is strongly encouraged to submit the results of his/her AHA-funded work to at least one AHA-sponsored professional scientific meeting. AHA award funds may be used to pay abstract submission fees.

**Award Transfers:** The Awardee must obtain the AHA's prior written approval for a transfer of the Award to another institution. If approval is not obtained, the Award terminates on the date the Awardee leaves or ceases to work at the Institution.

**Leave of Absence/Early Termination:** The Awardee or the Institution's department head will promptly notify the AHA if, for any reason, the Awardee will be absent longer than 60 days from the Research Project. The Award terminates if the AHA does not approve this absence or the Awardee discontinues the Research Project. If the Principal Investigator (or Co-Investigator(s) if applicable) is absent from the Research Project, and the AHA does not receive notice of such absence for a period of 60 days or longer, then the AHA may require the full repayment of the Award.

**Eligibility Requirements:** Throughout the duration of their Award including any authorized extension period, Award recipients must meet all AHA eligibility requirements for the Program Description to which they applied. Eligibility requirements are set out in AHA's Program Descriptions. Awards are subject to termination if the Awardee no longer meets any one of the AHA eligibility requirements. It is the responsibility of the Awardee's Institution (as the visa Sponsor or employer) to ensure Awardee's compliance with AHA eligibility requirements, including any legal verification of citizenship or visa status if applicable.

**Department Head Change:** The Institution and Awardee will promptly notify the AHA of a department head change at the Institution.

**Change in Principal Investigator or Co-Investigator(s) if applicable:** Changes in Principal Investigator for Career Development Awards are prohibited. A permanent change in Principal Investigator or Co-Investigator, if applicable, for a Grant-in-Aid or Sponsor for a Fellowship must be approved in advance in writing by the AHA funding component's research committee.

**Title to Equipment:** Title to equipment purchased with AHA Award funds shall be vested in the Institution where the Awardee is conducting research with the explicit understanding that such equipment is for use by the Awardee during the term of the Award, which includes any authorized extension. If the AHA approves the transfer of an Award to another Institution, equipment purchased with AHA Award funds will be transferred and title to the equipment vested in the new Institution for the specific use by the designated Awardee. Permanent vesting will be in the Institution where the Research Project is completed or terminated.

**Inventions:** Inventions resulting from the Research Project, and to which the Awardee is a party, and which arise during the Award Period, will be subject to the AHA Patent, Intellectual Property and Technology Licensing Policy (also referred to as the AHA "Patent Policy"), in effect at the time the Award is accepted; as well as being subject to the corresponding policies, if any, of the Institution where the work was performed. The Institution and the Awardee acknowledge and agree to the AHA's right to participate in revenue from Inventions that are the subject of licensing or other revenue-generating agreements, regardless of whether the invention is patented or copyrighted. Unless otherwise agreed to in writing by the AHA, the amount of the AHA's participation shall be guided by the principle that the AHA's sharing of income shall be in proportion to the AHA's portion of support for the work or research giving rise to the Invention. The AHA waives receipt of income until the cumulative net income (i.e., net of any direct out-of-pocket patenting costs) from an Invention conceived or reduced to practice from the performance of an AHA Award exceeds \$500,000.

Institution, Awardee(s), and Co-Investigator(s) if applicable, agree to meet all reporting requirements set out in the AHA Patent Policy relative to any Invention.

**Ethical Issues:** The AHA endorses the principles of the Association of American Medical Colleges (AAMC) report, "The Maintenance of High Ethical Standards In The Conduct of Research." The AHA's *Standards on Falsification of Scientific Data, Plagiarism, and Scientific Misconduct* statement will serve as a guideline when allegations are made or indications arise of falsification of scientific data, plagiarism, or other scientific misconduct. The AHA does not fund scientific research that involves the use of human fetal tissue or the derivation or use of human fetal or human embryonic stem cells. Human adult stem cell research is governed by the AHA's standards for *Ethical Aspects of Research with Human Subjects and Animals*. Prior to AHA's disbursement of any monies from the Award, the Executive Officer of the sponsoring Institution and the Awardee must affirm that research involving human or animal experimentation: 1) has been endorsed by a committee on clinical investigation, or other clearly designated appropriate body, of the sponsoring Institution; 2) that any research involving human subjects will conform ethically with the guidelines prescribed by the National Institutes of Health (NIH) including the provision of suitable explanation to human subjects or their guardians concerning the experimental design and all significant hazards, so that they may be in a position to provide appropriate informed consent prior to the investigations; 3) that research involving animals will conform with the current *Guide for the Care and Use of Laboratory Animals*, NIH publication, DHHS/USPHS, and with federal laws and regulations, and has been approved by the Institution's Animal Care and Use Committee; and 4) that wherever applicable, the research protocol will be reviewed and approved by the Institution's biohazards committee, as well as conforming to NIH guidelines.

**Independent Contractor:** The nature of this arrangement is a funding agreement, and no employment or agency relationship is created between the AHA and the Awardee or Institution.

**Liability:** The AHA is not responsible for any claim, judgment, award, damages, settlement, negligence or malpractice arising from the Research Project or investigation related to this Award. The Awardee and Institution acknowledge responsibility for the conduct of research or investigations related to this Award, and release the AHA from all claims or liability that may arise from the conduct of research or investigations related to this Award resulting from any act or omission on the part of the Awardee and Institution, their employees, agents, or representatives to the extent allowed by applicable law. The AHA reserves the right to modify the terms or conditions of this Agreement upon twelve months prior written notice to the Awardee and Institution.

**Reference to Documents:** All documents referenced in this Agreement, including without limitation AHA policies and regulations, are incorporated by reference in this Agreement and can be found at <http://www.myamericanheart.org/research/> on the AHA's website.

**Use of Awardee Information:** The Awardee and Institution give the AHA the right to use their names and other information in AHA publications, programs, promotional, advocacy and fund raising efforts and further to place their information in collaborative repositories of research awards including the Health Research Alliance's ([www.healthra.org](http://www.healthra.org)), grants in the Health Research Alliance shared portfolio (gHRASP) database.

**Reporting Scientific Accomplishments and Career Progress:** Awardees are required to promptly respond to all requests from AHA for updates on their scientific accomplishments, impact they have made to their science areas, and career progress.

**Survival:** The sections on AHA's Non-Receipt of Reports, Attribution, Inventions, and Liability all survive termination of this Award.

**Applicable Law:** This Agreement and all adversarial proceedings arising out of this Agreement, shall be governed by the substantive laws of the State of Texas, without reference to its conflict of laws provisions. However, if Institution is a governmental entity or state institution, this Agreement shall be interpreted and construed under the substantive laws of the state in which the Institution resides without respect to its conflict of law principles.

**Entire Agreement:** This Agreement and any attachments, constitute the entire agreement of the parties with respect to the subject matter of this Agreement, and supersedes all prior agreements and understandings, whether oral or written, and all negotiations, letters, other papers and documents, except as specifically incorporated by reference herein.





NATIONAL HEART, LUNG, AND BLOOD INSTITUTE

**Grant Number:** 5R01HL071021-15  
**FAIN:** R01HL071021

**Principal Investigator(s):**  
Zahi A. Fayad, PhD

**Project Title:** MR/PET Imaging of coronary atherosclerosis

Jessica Ruth Moise  
Associate Dean for Sponsored Programs  
Icahn School of Medicine at Mount Sinai  
Mount Sinai School of Medicine  
One Gustave L. Levy Place, Box 1075  
New York, NY 100296574

**Award e-mailed to:** Grants@mssm.edu

**Period Of Performance:**

**Budget Period:** 05/01/2018 – 04/30/2019

**Project Period:** 06/01/2002 – 04/30/2020

Dear Business Official:

The National Institutes of Health hereby awards a grant in the amount of \$524,243 (see "Award Calculation" in Section I and "Terms and Conditions" in Section III) to ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI in support of the above referenced project. This award is pursuant to the authority of 42 USC 241 42 CFR 52 and is subject to the requirements of this statute and regulation and of other referenced, incorporated or attached terms and conditions.

Acceptance of this award including the "Terms and Conditions" is acknowledged by the grantee when funds are drawn down or otherwise obtained from the grant payment system.

Each publication, press release, or other document about research supported by an NIH award must include an acknowledgment of NIH award support and a disclaimer such as "Research reported in this publication was supported by the National Heart, Lung, And Blood Institute of the National Institutes of Health under Award Number R01HL071021. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health." Prior to issuing a press release concerning the outcome of this research, please notify the NIH awarding IC in advance to allow for coordination.

Award recipients must promote objectivity in research by establishing standards that provide a reasonable expectation that the design, conduct and reporting of research funded under NIH awards will be free from bias resulting from an Investigator's Financial Conflict of Interest (FCOI), in accordance with the 2011 revised regulation at 42 CFR Part 50 Subpart F. The Institution shall submit all FCOI reports to the NIH through the eRA Commons FCOI Module. The regulation does not apply to Phase I Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) awards. Consult the NIH website <http://grants.nih.gov/grants/policy/coi/> for a link to the regulation and additional important information.

If you have any questions about this award, please contact the individual(s) referenced in Section IV.

Sincerely yours,

Tracee Foster  
Grants Management Officer  
NATIONAL HEART, LUNG, AND BLOOD INSTITUTE

Additional information follows

---

**SECTION I – AWARD DATA – 5R01HL071021-15****Award Calculation (U.S. Dollars)**

Salaries and Wages	\$166,984
Fringe Benefits	\$47,007
Personnel Costs (Subtotal)	\$213,991
Consultant Services	\$9,000
Travel	\$10,000
Other	\$76,297

Federal Direct Costs	\$309,288
Federal F&A Costs	\$214,955
Approved Budget	\$524,243
Total Amount of Federal Funds Obligated (Federal Share)	\$524,243
<b>TOTAL FEDERAL AWARD AMOUNT</b>	<b>\$524,243</b>

**AMOUNT OF THIS ACTION (FEDERAL SHARE)** **\$524,243**

SUMMARY TOTALS FOR ALL YEARS		
YR	THIS AWARD	CUMULATIVE TOTALS
15	\$524,243	\$524,243
16	\$524,243	\$524,243

Recommended future year total cost support, subject to the availability of funds and satisfactory progress of the project

**Fiscal Information:**

**CFDA Name:** Cardiovascular Diseases Research  
**CFDA Number:** 93.837  
**EIN:** 1136171197A1  
**Document Number:** RHL071021D  
**PMS Account Type:** P (Subaccount)  
**Fiscal Year:** 2018

IC	CAN	2018	2019
HL	8475146	\$524,243	\$524,243

Recommended future year total cost support, subject to the availability of funds and satisfactory progress of the project

**NIH Administrative Data:**

**PCC:** HHTATN / **OC:** 414E / **Released:** GILCHRISTT 05/01/2018  
**Award Processed:** 05/02/2018 12:09:02 AM

---

**SECTION II – PAYMENT/HOTLINE INFORMATION – 5R01HL071021-15**

For payment and HHS Office of Inspector General Hotline information, see the NIH Home Page at <http://grants.nih.gov/grants/policy/awardconditions.htm>

---

**SECTION III – TERMS AND CONDITIONS – 5R01HL071021-15**

This award is based on the application submitted to, and as approved by, NIH on the above-titled project and is subject to the terms and conditions incorporated either directly or by reference in the following:

- The grant program legislation and program regulation cited in this Notice of Award.
- Conditions on activities and expenditure of funds in other statutory requirements, such as those included in appropriations acts.
- 45 CFR Part 75.
- National Policy Requirements and all other requirements described in the NIH Grants Policy Statement, including addenda in effect as of the beginning date of the budget period.



- e. Federal Award Performance Goals: As required by the periodic report in the RPPR or in the final progress report when applicable.
- f. This award notice, INCLUDING THE TERMS AND CONDITIONS CITED BELOW.

(See NIH Home Page at <http://grants.nih.gov/grants/policy/awardconditions.htm> for certain references cited above.)

**Research and Development (R&D):** All awards issued by the National Institutes of Health (NIH) meet the definition of "Research and Development" at 45 CFR Part§ 75.2. As such, auditees should identify NIH awards as part of the R&D cluster on the Schedule of Expenditures of Federal Awards (SEFA). The auditor should test NIH awards for compliance as instructed in Part V, Clusters of Programs. NIH recognizes that some awards may have another classification for purposes of indirect costs. The auditor is not required to report the disconnect (i.e., the award is classified as R&D for Federal Audit Requirement purposes but non-research for indirect cost rate purposes), unless the auditee is charging indirect costs at a rate other than the rate(s) specified in the award document(s).

An unobligated balance may be carried over into the next budget period without Grants Management Officer prior approval.

This grant is subject to Streamlined Noncompeting Award Procedures (SNAP).

This award is subject to the requirements of 2 CFR Part 25 for institutions to receive a Dun & Bradstreet Universal Numbering System (DUNS) number and maintain an active registration in the System for Award Management (SAM). Should a consortium/subaward be issued under this award, a DUNS requirement must be included. See <http://grants.nih.gov/grants/policy/awardconditions.htm> for the full NIH award term implementing this requirement and other additional information.

This award has been assigned the Federal Award Identification Number (FAIN) R01HL071021. Recipients must document the assigned FAIN on each consortium/subaward issued under this award.

This award is not subject to the Transparency Act subaward and executive compensation reporting requirement of 2 CFR Part 170.

In accordance with P.L. 110-161, compliance with the NIH Public Access Policy is now mandatory. For more information, see NOT-OD-08-033 and the Public Access website: <http://publicaccess.nih.gov/>.

In accordance with the regulatory requirements provided at 45 CFR 75.113 and Appendix XII to 45 CFR Part 75, recipients that have currently active Federal grants, cooperative agreements, and procurement contracts with cumulative total value greater than \$10,000,000 must report and maintain information in the System for Award Management (SAM) about civil, criminal, and administrative proceedings in connection with the award or performance of a Federal award that reached final disposition within the most recent five-year period. The recipient must also make semiannual disclosures regarding such proceedings. Proceedings information will be made publicly available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIS)). Full reporting requirements and procedures are found in Appendix XII to 45 CFR Part 75. This term does not apply to NIH fellowships.

**Treatment of Program Income:**

Additional Costs

---

**SECTION IV – HL Special Terms and Conditions – 5R01HL071021-15**

Clinical Trial Indicator: No

### NHLBI FUNDING GUIDELINES

This award is being issued in accordance with the NHLBI FY 2018 Operating Guidelines which can be found at: <https://www.nhlbi.nih.gov/research/funding/general/current-operating-guidelines>

### KEY PERSONNEL

In addition to the PI, any absence, replacement, or substantial reduction in effort of the following individual(s) below, requires written prior approval of the National Institutes of Health awarding component.

Dr. Jason Kovacic, Co-Investigator  
Dr. Ventakesh Mani, Co-Investigator

### GRADUATE STUDENT COMPENSATION

In accordance with the Notice: NOT-OD-02-017 entitled, GRADUATE STUDENT COMPENSATION published on December 10, 2001, in the NIH Guide for Grants and Contracts, total direct costs (salary, fringe benefits and tuition remission) for graduate students are provided at a level not to exceed the NIH maximum allowable amount (zero level of the Ruth L. Kirschstein National Research Service Award stipend in effect at the time of the competing award). Support recommended for future years has been adjusted accordingly, if applicable. The full guide Notice describing the level of compensation allowed for a graduate student can be found at: <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-02-017.html>.

### FOREIGN TRAVEL

Recipients must comply with the requirements of the Fly America Act (49 U.S.C. 40118) which generally provides that foreign air travel funded by Federal funds may only be conducted on U.S. flag air carriers and under applicable Open Skies Agreements.

### STAFF CONTACTS

The Grants Management Specialist is responsible for the negotiation, award and administration of this project and for interpretation of Grants Administration policies and provisions. The Program Official is responsible for the scientific, programmatic and technical aspects of this project. These individuals work together in overall project administration. Prior approval requests (signed by an Authorized Organizational Representative) should be submitted in writing to the Grants Management Specialist. Requests may be made via e-mail.

**Grants Management Specialist:** Sunshine Wilson  
**Email:** wilsonsa2@mail.nih.gov **Phone:** 301-827-8064 **Fax:** 301-451-5462

**Program Official:** Narasimhan Danthi  
**Email:** ndanthi@mail.nih.gov **Phone:** 301-451-5170 **Fax:** 301-480-1454

### SPREADSHEET SUMMARY

**GRANT NUMBER:** 5R01HL071021-15

**INSTITUTION:** ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI

Budget	Year 15	Year 16
Salaries and Wages	\$166,984	\$166,984
Fringe Benefits	\$47,007	\$47,007
Personnel Costs (Subtotal)	\$213,991	\$213,991
Consultant Services	\$9,000	\$9,000
Travel	\$10,000	\$10,000
Other	\$76,297	\$76,297
TOTAL FEDERAL DC	\$309,288	\$309,288
TOTAL FEDERAL F&A	\$214,955	\$214,955
TOTAL COST	\$524,243	\$524,243

Facilities and Administrative Costs	Year 15	Year 16
F&A Cost Rate 1	69.5%	69.5%
F&A Cost Base 1	\$309,288	\$309,288
F&A Costs 1	\$214,955	\$214,955



## Project Information ?

5R01DA041528-04

DESCRIPTION DETAILS RESULTS HISTORY SUBPROJECTS

**Project Number:** 5R01DA041528-04**Title:** USING EVENT-RELATED POTENTIALS TO LONGITUDINALLY TRACK CUE-INDUCED CRAVING INCUBATION IN COCAINE ADDICTED INDIVIDUALS**Contact PI / Project Leader:** [GOLDSTEIN, RITA Z](#)**Awardee Organization:** ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI**Abstract Text:**

DESCRIPTION (provided by applicant): Among the many addictions, cocaine addiction is particularly treatment-resistant, with estimated relapse rates greater than 45%. While most abstaining individuals with cocaine use disorders (iCUD) relapse within the first few weeks of abstinence, relapse continues to occur long after acute withdrawal has abated. Re-exposure to cues previously associated with drug use that evoke craving is a major contributing factor in relapse to drug use. Pre-clinical studies using several animal models of drug addiction (including in cocaine, heroin, alcohol, nicotine, and methamphetamine addiction models) have shown that, contrary to common expectations for the reduction of craving and drug-seeking with abstinence, cue-induced drug craving increases progressively (i.e., incubates) in the first several months of abstinence. Primarily using a cross-sectional study design and subjective measures of craving assessed at different periods of abstinence (from 7 days post abstinence onset up to 24 months of abstinence), several human studies have shown similar effects in nicotine, methamphetamine and heroin use disorders. Together, these studies show highest cue-induced craving at 3 to 6 months of abstinence, suggesting that such incubation of craving renders abstaining drug addicted individuals vulnerable to relapse. However, a systematic investigation that uses objective markers and a within- subjects approach to quantify and longitudinally track the trajectory of cue-induced craving and its incubation for relapse monitoring and prediction is lacking. The late positive potential (LPP) component of the electroencephalography has been shown to objectively track motivated attention to salient stimuli including drug-cues, correlating with cue-induced craving and predicting relapse in cocaine and nicotine addicted individuals. Using LPP, our preliminary data suggests that cue-induced craving increases at 6-months and then decreases at 12-months follow-up compared to a treatment-seeking baseline in initially abstinent iCUD. Thus, we aim to use LPPs to assess cue-induced craving at carefully selected abstinence durations [at 7, 14, 30 days (assessed cross-sectionally) and at 3, 6, 9, and 12 months (assessed longitudinally)] to objectively measure the dynamics of craving incubation in human cocaine addiction. The hypothesized inverted-U shaped trajectory will be elucidated via changes in LPP amplitude, and will be supplemented by measures of simulated drug-seeking and self-reported craving. Our second aim is to use the longitudinal dynamics of craving incubation to monitor and prospectively predict relapse. Results could aid in developing time-sensitive personalized interventions to reduce risk of relapse in treatment-seeking individuals with substance use disorders.

**Public Health Relevance Statement:**

PUBLIC HEALTH RELEVANCE: This research represents the first systematic attempt to study the psychophysiological correlates of cue- induced craving incubation in humans, a phenomenon observed in animals whereby the propensity for drug relapse escalates (rather than diminishes) upon exposure to drug-related cues during abstinence. This work can therefore help elucidate the biobehavioral regulation mechanisms underlying the high rates of relapse even after the acute withdrawal symptoms have abated and even after prolonged abstinence periods in drug addicted individuals.

**Project Terms:**

Abate; Abstinence; Acute; addiction; Aftercare; Alcohol dependence; Animal Model; Animals; Attention; Behavioral; bench to bedside; biobehavior; Chronic; Cigarette; Cocaine; Cocaine Dependence; cocaine use; cost; craving; Cross-Sectional Studies; Cues; Data; Disease; Drug Addiction; drug craving; Drug Modelings; drug relapse; Drug usage; Electroencephalography; Event-Related Potentials; expectation; Exposure to; follow-up; Future; Goals; Health Personnel; Heroin; Heroin Dependence; heroin use; Human; imaging study; improved; Incubated; Individual; infancy; Intervention; Investigation; Knowledge; Laboratories; Magnetic Resonance Imaging; Measures; Methamphetamine; Methamphetamine dependence; methamphetamine use; Modality; Modeling; Monitor; neuroimaging; Nicotine; Nicotine Dependence; nicotine use; Outcome; outcome prediction; Patient Self-Report; personalized intervention; Pharmaceutical Preparations; preclinical study; preempt; Prevention; Process; prospective; Psychophysiology; public health relevance; Regulation; Relapse; relapse prediction; relapse risk; relating to nervous system; Reporting; Research; Research Design; Resistance; Scanning; Self Administration; smoking cessation; Social Desirability; Stimulus; Substance Use Disorder; Testing; Time; Translations; Withdrawal; Withdrawal Symptom; Work

**Contact PI Information:**

**Name:** GOLDSTEIN, RITA Z  
**Email:** [Click to view contact PI email address](#)  
**Title:** PROFESSOR

**Program Official Information:**

**Name:** GRANT, STEVEN J  
**Email:** [Click to view PO email address](#)

**Other PI Information:**

Not Applicable

**Organization:**

**Name:** ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI  
**City:** NEW YORK Country: UNITED STATES (US)

**Department / Educational Institution Type:**

PSYCHIATRY  
 SCHOOLS OF MEDICINE

**Congressional District:**

State Code: NY  
 District: 13

**Other Information:****FOA:** [PA-13-302](#)

**Study Section:** Biobehavioral Regulation, Learning and Ethology Study Section (BRLE)

**Fiscal Year:** 2019 **Award Notice Date:** 21-FEB-2019**DUNS Number:** 078861598**Project Start Date:** 1-APR-2016**Budget Start Date:** 1-FEB-2019**CFDA Code:** 279**Project End Date:** 31-JAN-2021**Budget End Date:** 31-JAN-2020

Administering Institutes or Centers:									
NATIONAL INSTITUTE ON DRUG ABUSE									
Project Funding Information for 2019:									
Total Funding: \$677,986					Direct Costs: \$399,992			Indirect Costs: \$277,994	
Year		Funding IC			FY Total Cost by IC				
2019		NATIONAL INSTITUTE ON DRUG ABUSE			\$677,986				
History:									
Total project funding amount for 4 projects is <b>\$2,624,117*</b>									
* Only NIH,CDC,and FDA funding data.									
Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY	Admin IC	Funding IC	FY Total Cost by IC	
5R01DA041528-04		USING EVENT-RELATED POTENTIALS TO LONGITUDINALLY TRACK CUE-INDUCED CRAVING INCUBATION IN COCAINE ADDICTED INDIVIDUALS	GOLDSTEIN, RITA Z	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2019	NIDA	NIDA	\$677,986	
5R01DA041528-03		USING EVENT-RELATED POTENTIALS TO LONGITUDINALLY TRACK CUE-INDUCED CRAVING INCUBATION IN COCAINE ADDICTED INDIVIDUALS	GOLDSTEIN, RITA Z	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2018	NIDA	NIDA	\$668,298	
5R01DA041528-02		USING EVENT-RELATED POTENTIALS TO LONGITUDINALLY TRACK CUE-INDUCED CRAVING INCUBATION IN COCAINE ADDICTED INDIVIDUALS	GOLDSTEIN, RITA Z	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2017	NIDA	NIDA	\$654,412	
1R01DA041528-01		USING EVENT-RELATED POTENTIALS TO LONGITUDINALLY TRACK CUE-INDUCED CRAVING INCUBATION IN COCAINE ADDICTED INDIVIDUALS	GOLDSTEIN, RITA Z	ICAHN SCHOOL OF MEDICINE AT MOUNT SINAI	2016	NIDA	NIDA	\$623,421	
Subprojects:									
Project Number	Sub #	Project Title	Contact Principal Investigator	Organization	FY	Admin IC		FY Total Cost by IC	
No Subprojects information available for 5R01DA041528-04									

NIH...Turning Discovery Into Health®

RePORTER3N