

## Newsletter - Summer 2021

### Upcoming Programs and Events



#### AUGUST 31, 2021

K Award Mentoring Program - Trainees enroll with identified primary mentor

[Click Here to Register](#)

#### SEPTEMBER 18, 2021

Virtual Event: Celebration of Life for Charles C.J. Carpenter

- *More information on page 3*

#### OCTOBER 8, 2021

Fall 2021 Developmental Grant Program Full Applications Due

[Click Here for More Information](#)

#### OCTOBER 12-13, 2021

2021 Virtual Inter-CFAR Women and HIV Symposium

[Click Here to Register](#)

- *Abstract deadline extended to September 3, 2021*

## Providence/Boston CFAR Leadership Updates



**Susan Cu-Uvin, MD** - Director of the Providence/Boston CFAR, Director of Global Health Initiative, Professor of Health Services, Policy and Practice, Professor of Obstetrics and Gynecology,

We are pleased to announce leadership changes within the Providence/Boston CFAR effective July 1st. Curt G.

Beckwith, MD has been named Associate Director and will join Andrew Henderson (Associate Director) and Susan Cu-Uvin (Director) on the CFAR Leadership team. Curt is Associate Professor of Medicine in the Division of Infectious Diseases at the Alpert Medical School of Brown University, PI of the Lifespan/Brown Criminal Justice Research Program on Substance Use and HIV and is the Program Director of the Brown University Infectious Diseases Fellowship. He has served as the Co-Core Director of the BioBehavioral Sciences Core (BBSC) since 2015 and replaces Larry K. Brown as CFAR Associate Director. We are very thankful for the guidance and support that Larry has provided the CFAR over the last six years and are lucky to have him remain in his role of Co-Core Director of BBSC. With the vacancy Curt created in the BioBehavioral Sciences Core, Philip Chan, MD, MS has been named co-Director and joins Drs. Larry Brown and Nina Lin. Dr. Chan is an Associate Professor of Medicine at Brown University and has a secondary appointment in the Department of Behavioral and Social Sciences at the Brown School of Public Health. He is the Medical Director of the RI STD Clinic and the only dedicated PrEP Program in Rhode Island and is the PI of multiple NIH grants to study HIV prevention including intervention to promote PrEP uptake and HIV testing.

In this this edition of the newsletter we highlight the Basic Science Core, and in addition to our standing articles we introduce a new Science Spotlight which focuses on highlighting members who are driving the CFAR forward and announce our most recent CFAR developmental awardees and those who received NIH funded CFAR supplements. Our C-CERC corner focuses on a new initiative put forth by Rhode Island's only needle exchange program, ENCORE, their new Harm Reduction Vending Machines.

INTERNATIONAL WORKSHOP ON

**HIV & AGING 2021** 

VIRTUAL WORKSHOP | 23-24 SEPTEMBER 2021

[Click Here to Register](#)

## Basic Science Core Highlight



**Manish Sagar, MD** - Associate Professor of Medicine and Microbiology, Co-Director, Basic Science Core, Providence/Boston CFAR



**Rami Kantor, MD** - Professor of Medicine, Internal Medicine and Infectious Diseases Physician-Scientist, Co-Director, Basic Science Core, Providence/Boston CFAR

The Providence/Boston Center for AIDS Research Basic Science Core (CFAR BSC) provides laboratory support, consultation, training and mentoring services to junior and senior researchers engaged in or new to HIV research. Core services combine established basic science approaches, innovative methods driven by science or investigator needs, and translational application and implementation of such services to researchers, locally, nationally, and internationally. Examples of commonly used services include HIV viral load quantitation in low-cost filter analytes; HIV drug resistance testing using sensitive laboratory assays and advanced bioinformatics technologies; molecular epidemiology methods for inference of HIV transmission networks; and basic and advanced molecular virology and translational immunology assays. For instance, the BSC provided quantitative polymerase chain reaction (PCR) assessment of HIV virus levels for Dr. Catherine Klapperich, Professor of Engineering at Boston University, whose research is focused on medical devices for low resource settings and at the point of care (POC), including disposable microfluidic diagnostics with on-board sample preparation and minimal instrumentation to enable molecular testing. The BSC helped her test a protocol for a POC HIV plasma virus level assessment (Kolluri et. al., Lab on a chip, 2020), contributing towards the overall CFAR's effort to end the HIV epidemic by improving patient retention in the continuum of HIV care. Another example is the support the BSC provides to the Rhode Island Department of Health, in characterizing HIV transmission networks and drug resistance in the state and exploring if and how such information can be integrated into partner notification activities and augment the prevention of HIV transmission (Novitsky et al. AIDS 2021). Lastly, and demonstrating its development, through a recently awarded CFAR supplement grant, the BSC purchased a state-of-the-art Biorad QX200 Droplet Digital PCR (ddPCR) System, enabling providing investigators highly sensitive and reliable measurements of low quantities of HIV RNA, HIV DNA, and cells in various compartments, tissues and samples. To date, the ddPCR has been used by five investigators with over 10 NIH funded projects. The ddPCR is housed at Boston University and is equally accessible to investigators at the CFAR Providence campuses, supporting intra-CFAR collaborations. The BSC is led by Rami Kantor (Brown University) and Manish Sagar (BU), who together with Core faculty are eager to use their expertise and experience to support investigators and their research.

Those interested in learning more about the BSC and available services are encouraged to email [Kaylyn.Bruciati@bmc.org](mailto:Kaylyn.Bruciati@bmc.org)



### Science Spotlight

Our CFAR has many amazing contributors that keep pushing our research forward. Each newsletter, we will focus on highlighting members who drive the initiatives of the Providence/Boston CFAR forward. We will also be highlighting members on our Twitter monthly. All Science Spotlight individuals have been nominated by someone in the Providence/Boston CFAR.

If you would like to nominate a member of your research group for Twitter or the newsletter, please reach out to [Kaylyn.Bruciati@bmc.org](mailto:Kaylyn.Bruciati@bmc.org)



My name is **Alex Olson** and I am the research lab manager in Section of Infectious Disease at Boston Medical Center working under the direction of Andrew Henderson, Manish Sagar, and Nina Lin. My involvement in CFAR is primarily within the Basic Science core. My role spans various areas including operating the laboratory component of the ID Clinical Research Unit to ensuring that our CFAR translational/basic researchers are provided necessary tools and training to conduct their research. My own research focuses on HIV & Aging, specifically the relationship between the proviral reservoir and inflammatory and immune signatures in people living with ART suppressed HIV. I am interested in identifying areas for clinical intervention to blunt the effects of accelerated aging in our patients. My goal is to go to medical school where I hope to continue this important research and management for patients aging and living with HIV. The CFAR has provided a priceless experience for me to learn not only about the latest advances in research but has also provided the opportunity to collaborate with other researchers through its multi-disciplined initiatives, further developing my desire to continue working in the field. I look forward to continuing my career in this organization to ultimately bring positive change to lives across the world.

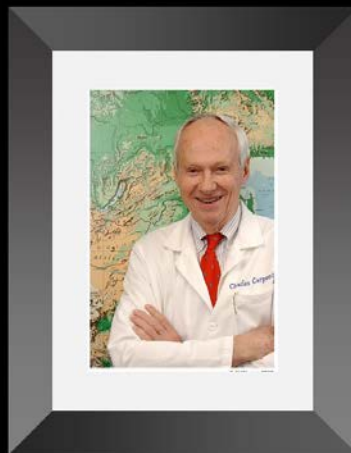


**Vlad Novitsky, MD, PhD**, is an internationally recognized virologist with 20+ years of HIV research. He is an Adjunct Professor at Harvard University, and before joining the Kantor lab in 2018, he has provided the scientific leadership in investigating markers and dynamics of primary infection and the molecular epidemiology of the HIV-1 subtype C epidemic in Botswana. He is a member of the PANGEA-II-HIV steering committee, has presented his research at multiple national and international meetings and conferences, and has published more than 100 papers in peer-reviewed journals. He has been a Providence-Boston CFAR Basic Science Core member since joining the Kantor lab as a staff scientist, and has provided services to multiple Core users. Dr. Novitsky has been actively involved in and is leading studies on dynamics of HIV transmission networks and drug resistance in Rhode Island, in close collaboration with the Rhode Island Department of Health. Using his expertise, he comprehensively evaluates methods for identification and characterization of molecular HIV clusters, research that informs and impacts public health interventions, and better understanding and control of the HIV-1 epidemic in Rhode Island and beyond.

## Diversity, Equity, Inclusion and Belonging (DEIB)

**Our objective is to support scientists who are a) from historically under-represented groups and b) devoted to ending the HIV epidemic. We would like to introduce ourselves and invite you to self-identify by completing a quick survey. Self-identification is completely optional. You can identify as belonging to a historically under-represented group in the scientific enterprise without additional specificity. This information will be only used for sharing funding, mentoring and other relevant resources targeted toward historically under-represented scientists and helping the NIH to track disparities in funding and advancement.**

**Please reach out to our team - Kaku So-Armah ([kaku@bu.edu](mailto:kaku@bu.edu)), Caroline Kuo ([Caroline\\_Kuo@brown.edu](mailto:Caroline_Kuo@brown.edu)), and Timothy Flanigan ([TFlanigan@lifespan.org](mailto:TFlanigan@lifespan.org)) - with your ideas, needs, and suggestions.**



PLEASE JOIN US FOR A  
CELEBRATION OF LIFE

Charles C.J. Carpenter

SEPTEMBER 18, 2021

VIRTUAL EVENT

DETAILS FORTHCOMING

RSVP: [CFAR@LIFESPAN.ORG](mailto:CFAR@LIFESPAN.ORG)

## New Award Highlight



**Rahm Gummuluru, PhD** – Professor & Vice-Chair, Department of Microbiology, Investigator, National Emerging Infectious Diseases Laboratory (NEIDL), Co-Director, Developmental Core, Providence/Boston CFAR



**Andrew Henderson, PhD** – Professor of Medicine and Microbiology, Assistant Dean of Graduate Medical Sciences, Associate Director of Providence/Boston CFAR

Drs. Gummuluru and Henderson were awarded a grant from NIDA (R01 DA055488) to study persistent HIV-1 expression and microglia dysfunction. Microglia are long-lived central nervous system resident innate immune cells that have critical immune surveillance activities and homeostatic functions in the brain including clearance of pathogens and maintaining integrity of neuronal synapses. Microglia are targeted by HIV, have been proposed to be a reservoir for HIV persistent infection and are mediators of HIV-associated inflammation and neuropathogenesis. Importantly, microglia dysfunction is proposed to contribute to HIV associated neurodegeneration and inflammation even when HIV replication is suppressed during antiretroviral treatments. The mechanisms, direct or indirect, that drive microglia to promote inflammation during HIV infection have not been elucidated. In this collaboration between the Gummuluru, Henderson and Mostoslavsky (BU Center of Regenerative Medicine) labs, a primary microglia-neuron coculture model derived from pluripotent stem cells will be used to test the hypothesis that HIV in microglia establishes persistently infected microglia that express aberrant viral RNAs, which mediate inflammasome activation to drive microglia dysfunction, central nervous system inflammation and neuronal injury. Key preliminary data were generated using services provided by the Prov/Bos CFAR Basic Sciences Core including newly developed multiplex digital drop PCR assays for HIV-1 proviral DNA and RNA expression. Specific questions addressed in this proposal include: 1) what is the status of proviruses in HIV infected microglia; 2) what mechanisms drive persistent expression of HIV RNA in microglia; and 3) what are the mechanisms that trigger inflammasome activation in HIV-activated macrophages? Completion of this project will provide general insights into the impact of HIV-1 persistence and expression in the context of microglia. Importantly, these studies will provide insights into mechanisms that contribute to HIV-1 central nervous system comorbidities which persist even with antiretroviral therapy and could lead to new targets and strategies for treatments that will improve the lives of people living with HIV.

## Supplemental Awardees



**Kristen Langdon, PhD**, Assistant Professor (Research), Department of Psychiatry and

Dr. Langdon received funds from NIH (\$205,205) for her proposal, “Combined Injectable Treatment for People Living with HIV and Opioid Use Disorder”. This proposal seeks to address NIH priority areas by developing guidelines to effectively implement next generation injectable treatments for HIV and OUD to improve adherence and promote better control of both conditions.



**Joseph Hogan, ScD and the CFAR Biostatistics Core**

Joseph Hogan and the CFAR Biostatistics Core received funds from NIH (\$62,998) to support a CFAR Statistics and Data Science Symposium in 2022. This two-day symposium will be held at Brown University and bring together statistical and data science researchers either working directly in the area of HIV or whose work has direct relevance to problems and data structures encountered in HIV research. Emphasis will be placed on engaging data science researchers in fields such as computer science, engineering and applied mathematics, whose work in related areas might lead to innovative new approaches.

## Spring 2021 Developmental Grant Awardees



**Alexandra Collins, PhD, MSc** - Brown University School of Public Health

*'An ethnographic study on the acceptability of long-acting injectable antiretrovirals (LAIART) among people living with HIV who use drugs'*



**David Meyers, PhD, MPH** - Brown University School of Public Health

*'Understanding the Prevalence and Care Patterns of People Living with HIV in Medicare Advantage'*



**Gemmae Fix, PhD** - Boston University/VA Bedford Healthcare System

*'Providers' perspectives on implementation of a patient-centered system of care for patients with HIV'*



**Nicholas Tarantino, PhD** - Brown University/RIH

*'Development of a Parent-Based SMS Adherence Game for Adolescents Living with HIV in Ghana'*



**Miriam Harris, MD, MSc** - Boston Medical Center

*'Adapting PEP and PrEP for Women Who Inject Drugs and Engage in Sex Work: An Exploratory Study to Support the Development of a Tailored PEP and PrEP Intervention'*



**Tingting Zhang, MD, PhD** - Brown University

*'Use of antiretroviral therapy in older people with HIV during care transitions'*

## C-CERC Corner



*Raynald Joseph - Co-Chair Providence/Boston Center for AIDS Research-Community Engaged Research Council (C-CERC),  
Prevention Supervisor for AIDS Care Ocean State (ACOS)*

### ENCORE New Initiative: Harm Reduction Vending Machines

As Rhode Island's only needle exchange program, ENCORE (Education, Needle Exchange, Counseling, Outreach, and Referrals) serves a wide range of clients infected or at risk for infection with HIV and or Hepatitis C Virus (HCV). Through its on-site and outreach platforms across Rhode Island, ENCORE is in a unique position to serve at-risk individuals who may not otherwise present for prevention, testing and care for HIV and or HCV.

ENCORE has always had a mission to be innovative with its services and applauds its ability to be able to adapt with the times. Throughout the years some examples of innovations include, moving to a needs-based distribution process. With this, clients do not need to exchange dirty syringes for clean ones, rather they can obtain as many syringes as they and their injecting partners will need. Throughout the years ENCORE has made many innovations to its services; in 2002 ENCORE expanded its mobile sites to Woonsocket and Newport, in 2008 ENCORE started its backpack needle exchange program, in 2012 ENCORE developed its home delivery service, all in an effort to better cover the entire state of Rhode Island.

ENCORE's newest model of innovation comes in the form of Harm Reduction Vending Machines. Harm Reduction Vending Machines are common in other countries and have been proven effective with little to no adverse consequences. These Harm Reduction Vending Machines will contain Narcan/Naloxone, Fentanyl Test Strip Kits, Safer Sex Kits (condoms and lubrication), and Harm Reduction Kits (syringes, alcohol prep pads, cotton, clean water, band-aids, antibiotic ointment, tourniquets, cooker/caps, and sharps disposal box). Clients that are enrolled in the ENCORE Program will have access to the

contents of the machine. If a person is not enrolled in the program but

would like to access the machine, there is a phone intake process and within five minutes they can then access the supplies they need. The machines will operate off of a unique code which all ENCORE clients already have and know and can be punched into the pin pad of the machine. Next to each machine will be a sharps disposal kiosk where clients as well as the public can dispose of used syringes.

The ENCORE program will have six Harm Reduction Vending Machines across the state, placed in areas that are at most risk of having either HIV, HCV, or Overdose outbreaks. The hopes are that these machines will give clients access to evidence-based life saving tools and supplies. With at least two of the machines having 24-hour access, and being wide spread across the state, we hope to cast a wider net for clients.

Harm Reduction Vending Machines seem to be hopeful innovation for the expansion of the ENCORE Program and Harm Reduction Services as a whole for the state of Rhode Island. Although this is a pilot program,

ENCORE is confident that these machines will make a major impact in our fight against HIV, HCV and the Overdose Epidemic. ENCORE looks forward to evaluating the long-term impact of the Harm Reduction Vending Machines and the communities we serve.



AIDS Care ENCORE Vending Machine Model



*If you are interested in becoming a member of the CFAR Community Engaged Research Council (C-CERC), please reach out to Paul Goulet ([pbgoulet@hotmail.com](mailto:pbgoulet@hotmail.com)) or ([Kaylyn.Bruciati@bmc.org](mailto:Kaylyn.Bruciati@bmc.org))*

## New NIH Awards to CFAR Faculty

**Katie Biello**, Medicine (Behavioral and Social Sciences), Brown University, received R32 funding in the amount of \$227,845 from NIMH for her research on Making universal, free-of-charge antiretroviral therapy work for sexual and gender minority youth in Brazil.

**Katie Biello** and **Philip Chan**, Medicine (Behavioral and Social Sciences), Brown University received R01 funding in the amount of \$828,199 from NINR for their research on Efficacy of a PrEP uptake & Adherence Intervention among male sex workers using a 2-stage randomization design.

**Tara Bouton**, Medicine (Infectious Diseases), Boston University School of Medicine, received K funding in the amount of \$190,461 from NIAID for her research on Understanding HIV's impact on RR/MDR-TB development and transmission through genomics.

**Larry Brown**, Medicine (Psychiatry and Human Behavior), Rhode Island Hospital, received R25 funding in the amount of \$128,170 from NIMH for his research on Promoting Child and Adolescent Research During Training.

**Omar Galarraga**, (Health Services, Policy and Practice), Brown University, with Co-Investigators, **Stavroula Chrysanthopoulou** (Biostatistics), Brown University, **Mark Lurie** (Epidemiology), Brown University, and **Joseph W. Hogan** (Biostatistics), Brown University, received funding in the amount of \$100,000 from NIH (Fogarty International Center)/CRDF Global for research on Kenya Training for Integrated Modeling Epidemiologic & Economic Long-Term Outcomes in Africa (inMODELA).

**Christine Cheng** and **Andrew Henderson**, Medicine, Boston University School of Medicine received R33 estimated total costs in the amount of \$2,167,157 from NIDA for their research on Effect of Opioid Use Disorder on Latent Reservoirs and Immune Dysfunction Assessed by Single-Cell Transcriptomics.

**Andrew Henderson** and **Rahm Gummuluru**, Medicine (Infectious Diseases), Boston Medical Center, received R01 estimated total costs in the amount of \$3,708,561 from NIDA for their research on Persistent HIV-1 Expression and Microglia Dysfunction.

**Rami Kantor**, Medicine (Infectious Diseases), Brown University, received supplement funding in the amount of \$166,708 from NIH for his research on Addressing bioethical research gaps in research with young people living with HIV in Kenya.

**Rami Kantor**, Medicine (Infectious Diseases), Brown University, received supplement funding in the amount of \$275,848 from NIH for his research on The impact of COVID-19 on young people living with HIV in Kenya. Supplement to NIH R01 (AI147333).

**Caroline Kuo**, Medicine (Behavioral and Social Sciences), Brown University, received R34 funding in the amount of \$201,424 from NIMH for her research on Schools Championing Safe South Africa: An Intervention Engaging Teachers and Students in Adolescent Prevention of HIV risk and Intimate Partner Violence.

**Alexander Walley**, Medicine, Boston Medical Center, received R21 funding in the amount of \$286,019 from NIDA for his research on Identifying and Testing Post-Overdose Outreach Adaptations to Enhance Survivor Engagement During the COVID-19 Pandemic.

**Those interested in submitting items of interest, advertised events, awards, or CFAR acknowledged publications in the newsletter please contact [kaylyn.bruciati@bmc.org](mailto:kaylyn.bruciati@bmc.org)**

## CFAR Publications

**\*\*Please remember to cite the CFAR (P30AI042853)\*\***

### Basic Science Publications

Khanna AS, Edali M, Ozik J, Collier N, Hotton A, Skwara A, Ardestani BM, Brewer R, Fujimoto K, Harawa N, Schneider JA. Projecting the number of new HIV infections to formulate the "Getting to Zero" strategy in Illinois, USA. *Math Biosci Eng.* 2021 May 6;18(4):3922-3938. doi: 10.3934/mbe.2021196. PMID: 34198418; PMCID: PMC8281377.

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Sam SS, Rogers R, Gillani FS, Tsongalis GJ, Kraft CS, Caliendo AM. Evaluation of a Next-Generation Sequencing Metagenomics Assay to Detect and Quantify DNA Viruses in Plasma from Transplant Recipients. *J Mol Diagn.* 2021 Jun;23(6):719-731. doi: 10.1016/j.jmoldx.2021.02.008. Epub 2021 Mar 9. PMID: 33706010; PMCID: PMC8279015.

Vreeman RC, Rakhmanina NY, Nyandiko WM, Puthanakit T, Kantor R. Are we there yet? 40 years of successes and challenges for children and adolescents living with HIV. *J Int AIDS Soc.* 2021 Jun;24(6):e25759. doi: 10.1002/jia2.25759. PMID: 34097352; PMCID: PMC8183166.

### BioBehavioral Sciences Publications

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Beckwith CG, Min S, Manne A, Novitsky V, Howison M, Liu T, Kuo I, Kurth A, Bazerman L, Agopian A, Kantor R. HIV Drug Resistance and Transmission Networks Among a Justice-Involved Population at the Time of Community Reentry in Washington, D.C. *AIDS Research and Human Retroviruses.* 2021 May24. doi: 10.1089/aid.2020.0267. Epub 2021 May 24.

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Chai PR, Goodman G, Bustamante M, Mendez L, Mohamed Y, Mayer KH, Boyer EW, Rosen RK, O'Cleirigh C. Design and Delivery of Real-Time Adherence Data to Men Who Have Sex with Men Using Antiretroviral Pre-exposure Prophylaxis via an Ingestible Electronic Sensor. *AIDS Behav.* 2021 Jun;25(6):1661-1674. doi: 10.1007/s10461-020-03082-y. Epub 2020 Nov 21. PMID: 33219877; PMCID: PMC8084862.



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