

Providence/Boston Center for AIDS Research



BASIC SCIENCE CORE



Rami Kantor, MD

Core Director, Basic Science Core, Professor of
Medicine, Brown University



Manish Sagar, MD

Core Director, Basic Science Core, Professor of
Medicine and Virology, Immunology, and
Microbiology, Boston University

The CFAR Basic Science Core (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 implementation of such services to researchers, locally, nationally, and internationally.

Commonly used services include using the intact provirus DNA assay (IPDA) to characterize the HIV-1 latent reservoir; viral load quantitation in conventional and low-cost filter analytes; drug resistance testing using sensitive assays and next generation sequencing in high and low viremia levels; and phylogenetic methods for inference of transmission networks.

For instance, the BSC used IPDA to assess reservoir differences among individuals with different drug abuse histories ([Basukala et. al., *Viruses*, 2023](#)), demonstrating drug use has no significant impact on the HIV-1 reservoir suggesting future cure strategies will be equally effective across wide spectrum of individuals.

Another example is support the BSC provides to the RI Department of Health, in characterizing HIV transmission networks and resistance in the state and exploring if and how such information can be integrated into partner services and augment the HIV transmission prevention ([Novitsky et al. *AIDS* 2023](#)).

Lastly, exemplifying the Core's continued commitment to training and innovation, the BSC supports a CFAR developmental award led by [Dr. Martha Sanchez](#) of Brown University, to

investigate HIV drug resistance and transmission networks in her home country of the Dominican Republic; and a recently NIH-funded study to develop a point care viral load test, led by [Dr. Christine McBeth](#) in the BU Department of BioMedical Engineering.

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.

UPCOMING EVENTS AND TRAININGS

May 10, 2024
8:30am-4pm EST

2024 CFAR Annual Research Forum

Brown University School of Medicine
222 Richmond Street
Providence, RI 02903

Keynote Speaker:

Sandra A. Springer, MD

Professor of Medicine, Yale School of Medicine, Section of Infectious Diseases, Yale AIDS Program

"Prescriptions in Motion: Revolutionizing Delivery of Healthcare to Persons who use Drugs at Risk and Living with HIV in the Community"



**2024
Providence/Boston
Center for AIDS
Research (CFAR)
Annual Research Forum**

[Register Here](#)

CFAR Developmental Awardee Presentations by:

Archana Asundi, MD
Aditya Khanna, PhD
Matthew Mara, EdD
Brooke Rogers, PhD, MPH
Martha Sanchez, MD
Nicholas Tarantino, PhD

Panel Discussion with the CFAR CCERC featuring Paul Goulet and Ray Joseph

"Future Directions for Community Engaged Research"

FUNDING OPPORTUNITIES

NIDA Diversity Scholars Travel Award Program

► Goal is to help defray the costs of in-person attendance to national scientific conferences. Travel award recipients will receive an award in the amount of \$1500

► Please visit the [website](#) for information about conference eligibility and how to apply.

[Apply Now](#)

for round trip meeting travel, lodging, and registration.

**Notice of Special Interest (NOSI):
Resource-Related Research Project
(R24) Applications to Support
Collaborative Implementation Science
to End the HIV Epidemic**

► Please direct any questions to:

Rebecca Mandt (rebecca.mandt@nih.gov)

Eric Refsland (eric.refsland@nih.gov)

► The FY24 receipt dates for this opportunity are **May 7, 2024, September 9, 2024, and January 7, 2025**

[View NOSI](#)



SCIENCE SPOTLIGHT



Joel Hague, MS
Senior Research
Associate, CFAR
Basic Science Core,
Brown University

Joel Hague, MS is Senior Research Associate in the Kantor laboratory of the Basic Science Core. After fifteen years of working in plant molecular biology, he made the transition to working with HIV in the context of a wide variety of studies ongoing in the Kantor lab, focusing on HIV drug resistance and phylogenetic transmission networks. He is responsible for experiments, including amplification and next generation sequencing of viral RNA and proviral DNA genomes of interest. He also manages the lab, optimizes and develops new assays, and participates in multiple national and international collaborations and training opportunities in the lab.



Xianbao He, MD
Research Scientist,
CFAR Core Lab
Manager, Boston
University

I have an MD background, but my entire professional career is dedicated to laboratory-based research in Microbiology, Immunology and Virology. In 2018, I joined CFAR, and 2 years later I took the position of CFAR core lab manager. I have a broad role from core management, laboratory safety, technical assay development and implementation, trainings for investigators new to HIV laboratory-based research, and overall technical support for all CFAR dedicated experiments. As part of the CFAR basic science core, I maintain HIV viral stocks, provide technical support for quantitative PCR and digital drop PCR, enzyme linked immunosorbent assay (ELISA), chromatin immunoprecipitation (ChIp), and Western blot assays. My contributions continue to facilitate HIV research within the Providence/Boston CFAR.

After work, I enjoy spending time with my wife and children and exercising. I love running and I am a marathon runner! If you are also a runner, I hope we can run the Boston marathon

C-CERC CORNER

The Gateway To Our Bodies: Importance of Oral Health For People Living With HIV

Why the head ever got disconnected from the body when we talk about overall health is a mystery to me. The following excerpt from a recent commentary by Michael Glick sums up the importance of health integration for our patients/clients:

“Whole Health cannot be achieved without recognizing that overall health must include oral health. However, we need more debate on how oral health can be better integrated within not only health but also well-being. Without increasing our awareness and engagement with contemporary health concepts and partners, the gap between medicine and dentistry will only widen.

<https://doi.org/10.1016/j.adaj.2024.02.003> Copyright © 2024 American Dental Association. All rights reserved.”

And in this, perhaps a tiny glimmer of hope that integration is improving:

“Health-care leaders, Thorne says, are beginning to realize that they can improve their patients’ health by incorporating dental care into primary care. It’s sort of crazy, he says, that our mouth and our jaw and our throat have been considered separate from the rest of our body for so long. “It is changing now, and health care is realizing that the mouth is the gateway to so much of our overall health.” (10.1146/knowable-032124-1)

Oral health is essential for overall health, quality of life and means much more than just a healthy mouth. The mouth has been referred to as the gateway to our body, as teeth and saliva prepare our food digestion. The mouth can also show signs of nutritional deficiencies, microbial infections, immune disorders, injuries, and some cancers. It is important to remember that what happens in the mouth, doesn’t stay in the mouth; oral health can significantly impact people with chronic, disabling conditions, and chronic, disabling conditions can significantly impact oral health.

Oral health care is especially important for people living with HIV. Untreated oral disease may lead to infections, weight loss, malnutrition, and diseases, such as diabetes. Oral diseases impact quality of life (e.g., psycho-social problems and limited career opportunities) and has been reported as one of the top unmet needs for people living with HIV. Interprofessional collaboration can be beneficial for the overall health of people living with HIV.

Some of the interprofessional collaborations are as follows:

- Diabetes
 - Diabetes is perhaps the “prototype” condition that illustrates the bidirectional and interrelated nature of oral health and systemic disease. Research suggests that patients with poorly controlled diabetes have a threefold greater risk of developing gingivitis and periodontitis, and those with diabetes whose periodontal disease is treated have improved metabolic control of diabetes.
- Bone density
 - Osteoporosis is another disease with multiple potential effects on oral health. Through its effects on bone, osteoporosis can produce weakness in the jaw bones that support the teeth, and patients taking medications in one of the drug classes used for treating



**Helene Bednarsh, BS,
RDH, MPH**

C-CERC Member, Dental Director, New England AIDS Education & Training Center (NEATC)

- the condition are at risk for a rare but serious adverse effect involving the jaw.
- Bisphosphonates, used for treating osteoporosis can have detrimental impacts on the jaw.
- CVD and other cardiac concerns
 - Evidence to date indicates an associative, not causative, relationship between periodontal disease and atherosclerotic conditions.
 - And don't forget RA – strong association with periodontal inflammation.

Multiple co-morbidities can impact oral health and these are only a few of the systemic co-morbidities physical co-morbidities, such as Arthritis can impact self-care such as with brushing and flossing.

In a special issue of Public Health reports U.S. Public Health Service Surgeon General Regina M. Benjamin, MD, MBA stated this:

“While good oral health is important to the well-being of all population groups, it is especially critical for people living with HIV/AIDS. Inadequate oral health care can undermine HIV treatment and diminish quality of life, yet many individuals living with HIV are not receiving the necessary oral health care that would optimize their treatment.”

The rise in rates of STIs also support the importance of medical/dental Integration and our collaboration regarding the detection, diagnosis, and treatment of STIs which requires the vigilance, knowledge and comprehensive examination both by medical and oral health professions. The NEAETC recently presented a webinar focusing on STIs, oral health and HIV to highlight the importance of interprofessional collaboration between medical and dental teams to improve health quality. I encourage you to listen to the recording, of Oral Health Concerns with Sexually Transmitted Infections which covers on how Sexually transmitted infections (STIs) often manifest orally, and with proper screening and diagnosis these infections can be treated and not advance further. In her presentation Dr. Fariba Younai, DDS, reviewed the transmission and oral presentation of common STIs and highlight concerns for people with HIV. The oral healthcare team needs to take responsibility in combatting this epidemic. (A recording of this program is available at neaetc.org : <https://www.neaetc.org/events/view/25732>)

There are many opportunities for dental, medical and support teams to collaborate to ensure patients with HIV are linked to social services and co medical and dental care. All of these actions promote better health outcomes and demonstrate the importance of oral systemic connections.

By educating providers and patients on oral health and overall health, we should all understand that a healthy mouth is connected to a healthier life.

FEATURED WORK

Dankwah AB, Siegrist RB Jr., Wilson IB, McKenzie M and **Rich JD** (2024) Attitudes of Black American Christian church leaders toward Opioid Use Disorder, overdoses, and harm reduction: a qualitative study. *Front. Psychiatry* 15:1359826. doi: 10.3389/fpsy.2024.1359826

Rogers BG, Toma E, Harkness A, Arnold T, Nagel K, Bajic J, Maynard M, Almonte A, **Nunn AS**, and **Chan PA** (2024, in press). “Why not just go on PrEP?”: A study to inform implementation of an HIV prevention intervention among Hispanic/Latino men who have sex with men in the Northeastern United States, *Journal of Acquired Immune Deficiency Syndromes (JAIDS)*.

Stephen Kogut, PhD, MBA, University of Rhode Island and Co-Lead, **Judy Kimberly, PhD** Brown

The Providence/Boston CFAR Cores are available to help you with your research. Please click the link to request services.

Request Core Services



ACKNOWLEDGE CFAR (P30AI042853)

Funding from NIH for the CFAR is dependent on evidence that the CFAR is providing value added in the conduct of HIV/AIDS research. One way this support is documented is through the acknowledgement of the Providence/Boston CFAR in publications, abstracts and presentations. If you have received funding, consultation, mentorship, research support services, materials, training, access to shared equipment and/or space from one of the CFAR Cores, please acknowledge the CFAR by using the following statement:

This work was facilitated by the Providence/Boston Center for AIDS Research (P30AI042853).

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The Providence/Boston Center for AIDS Research (CFAR) is a joint research effort between Brown University/Lifespan and Boston University/Boston Medical Center. The Providence/Boston Center for AIDS research is devoted to the pursuit of translational research to reduce the burden of HIV infection worldwide, with special focus on substance users, women, MSM, justice-involved persons, and at-risk youth. To achieve this goal, we are committed to fostering emerging HIV investigators both domestically and within resource-limited settings.

