CFAR
CENTER FOR AIDS RESEARCH
University of Rochester Medical Center

Welcome to the Member Retreat & Advisory Board Meeting June 29, 2015

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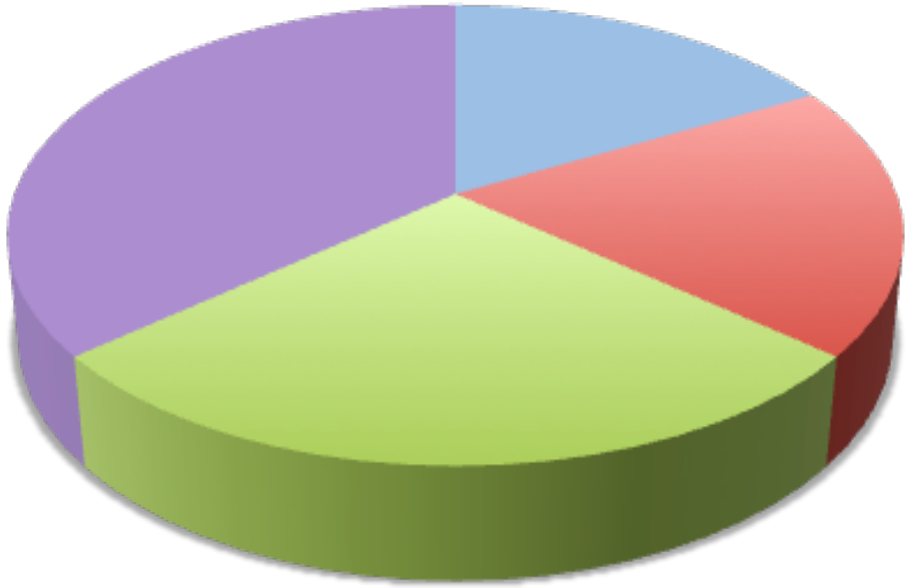
Administrative Core

Michael Keefer, CFAR Co-Director,
Co-Director of Developmental Core

CFAR Membership



- CFAR Users with no prior NIH Funding (16)
- NIH New Investigators (18)
- Bringing into AIDS (Established PIs) (26)
- NIH AIDS PI (34)

2015 Faculty total: 94

*Increase from 88 Faculty last year

CFAR Mission
(Admin Core Mission)

To provide leadership, services & infrastructure to:

- Establish multidisciplinary collaborations that achieve high-impact discoveries
- Support early career development of young HIV/AIDS investigators
- Establish a distinctive scientific identity, placing the UR at the forefront of HIV/AIDS research

Services organized within four cores: (1) Developmental, (2) Clinical and Translational Sciences, (3) Basic Sciences and (4) Biostatistics, Bioinformatics and Computational Biology Core

Administrative Core
Philosophy/Approach

- **Member-centric** (i.e., flexible and responsive to member needs)
- **Promote collaboration** (i.e., fosters new scientific interactions across the campus and between clinical/basic scientists)
- **Nurturing** (i.e., reaches out proactively to young faculty, to help support their career needs)

Administrative Core
Transition from D-CFAR to CFAR

Scientific Program of Excellence (Institutional Recognition)

- HIV/AIDS research now a Scientific Program of Research Excellence within the SMD 5 year Research Strategic Plan
- Includes $100k/year in Dean's support for pilot awards

Partnership With School of Nursing (SON)

- $50K matching pilot funds each year

Administrative Core
Financial Support

Recognition as an Institutional Priority

- Dean (SMD) funding 2 new pilot programs of $50k each from institutional funds for the next 5 years.
- Dean (SON) providing $50k/year in matching pilot support

Synergy from Dean's Support

- Joint pilot award RFA with the UR's new Rochester Aging Research (RoAR) Center. *Dr. Mark Dumont's project "Transmembrane Caax Protease Ste24p: Mechanisms of Peptide Cleavage and Inhibition by HIV Protease Inhibitors"*

Additional Support

- Additional funds (Dept of Medicine) support Cathy Bunce's role

Administrative Core

Selected 2014-2015 Activities

Changes to Structure

- New CFAR Administrator Laura Enders
- Identified Cathy Bunce to provide assistance with clinical research management, regulatory oversight and RSRB assistance and submissions
- Additional administrative assistance from Karen Berk

Administrative Core

Future Plans (Selected)

Plans

- Enhance collaboration with SON, thru the joint pilot program & the nascent HIV & Trauma WG (based largely in SON)
- Develop new RFA to utilize SMD Dean's funds for pilot programs. *Need to define focus: Young faculty? New collaborations? Research in new areas (related to potential future SWGs)?*

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Inter-CFAR Working Groups

Defining the UR CFAR's Unique Role in Inter-CFAR Working Groups (1)

Potential New Inter-CFAR WGs:

- **Non-Human Primate (NHP)/Early Stage Investigator (ESI) WG:** Dr. Keefer leading effort to coordinate with NIAID (Bonnie Mathieson) to renew the HVTN/NRPC ESI program.
- **Faith Based Outreach Initiative WG:**
  - ✓ Pilot project initially from HVTN/HANC, now in sustainability phase
  - ✓ Many UR faculty active in this area with strong community linkages & external partners – Amina Alio, Mike Keefer, LaRon Nelson, Edwin Sanders (Nashville)

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University of Rochester Medical Center

Capacity Building Among African American Faith Leaders to Promote HIV Prevention and Vaccine Research

Amina P. Alio, Cindi A. Lewis, Catherine A. Bunce, Steven Wakefield, Weldon G. Thomas, Edwin Sanders, Michael C. Keefer

Progress in Community Health Partnerships: Research, Education, and Action, Volume 8, Issue 3, Fall 2014, pp. 305-316 (Article)

Published by The Johns Hopkins University Press
DOI: 10.1353/cpr.2014.0050

Defining the UR CFAR's Unique Role in Inter-CFAR Working Groups (2)

Potential New Inter-CFAR WGs:

- **Dissemination & Implementation Research:** UR strong in community engagement and provider education.
- *Questions:*
  - ✓ *Can we extend to D&I of prevention and behavioral interventions, therapeutics; disparities research?*
  - ✓ *Very broad – may be best to focus; if so, should we focus on the black MSM (as the highest risk US population)?*
  - ✓ *Does this overlap too much with the 'Continuum of Care' WG?*

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International Programs

International Programs: Landscape & History

History (DCFAR):

- Focus on South Africa (UCT, U. Wits); led to K23 for D. Adler

Current Landscape (selected):

- Amina Alio - SA (*CFAR Pilot Effect of Religion on Behavior*)
- Tinashe Mudzviti - Zimbabwe (*CFAR Supplement - Evaluate Long-term In-Utero Tenofovir)*
- Gretchen Birbeck - Malawi, Zambia *(CFAR Microgrant Focus: Cerebral Imaging)*

International Programs: Recent Changes & Opportunities

Recent Pilot Applications:

- 2015: LaRon Nelson (SON) – Ghana. *Focus: Linkage to Care among HIV + men (not funded)*. Subsequently submitted as R21 in May 2015

Recent Grant Awards:

- 2015: Gretchen Birbeck (SMD) – Zambia. *Grant title: Cohort of HIV Associated Seizures and Epilepsy study (CHASE R01).*

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Developmental Core

Michael Keefer, CFAR Co-Director,
Director of Developmental Core
Steve Dewhurst, Associate Director
Ben Miller, Associate Director

Developmental Core
Mission

- Stimulate new research by funding pilot awards
- Provide comprehensive, structured mentoring support for the early career development of young faculty, and a grant pre-review service to enhance extramural grant applications.
- Create an outstanding intellectual and scientific environment for HIV/AIDS research
- Support new faculty recruitment

Developmental Core
Philosophy/Approach

Same as Admin Core

- **Member-centric** (i.e., flexible and responsive to member needs)
- **Promote collaboration** (i.e., fosters new scientific interactions across the campus and between clinical/basic scientists)
- **Nurturing** (i.e., reaches out proactively to young faculty, to help support their career needs)

Developmental Core
Transition from D-CFAR to CFAR

- **Mentoring Program:** Being completely overhauled, in conjunction with greater institutional emphasis on annual faculty reviews and improved career advisement. CFAR implementing use of Individual Development Plans (IDPs) for mentored faculty; being more proactive in outreach.
- **Pilot Programs:** New collaborative pilot programs with SON, SMD have been established (including the new RoAR Aging Center).

Developmental Core
Stimulating New Research

Pilot Awards ($20,000-40,000 DC)

- Young faculty members
- Innovative studies with potential for high impact
- Multidisciplinary collaborations

NIH Supplement Funding ($100,000)

- Funding for a broad range of projects to address key gaps in understanding of HIV/AIDS
- Support early stage investigators or well established investigators in non-HIV fields

Microgrants ($2,500)

- To advance research objectives on existing NIH-funded research activity, or generation of preliminary data for planned applications

Developmental Core
Services

CFAR Pilot/Supplement Proposal Critical Review

- Internal application review
  - Opportunity to discuss with members of review committee, with goal of revising and improving proposal

Mentoring

- Multidisciplinary mentoring from a diverse mentorial team
- Cross-departmental: Scientific/Technical and/or Career development

Grant Review Service

- Increase competitiveness of extramural proposals (new investigators, established investigators new to HIV/AIDS)
  - Proposal Shaping Phase
  - Proposal Refinement Phase
  - Responding to Review Committee Critiques

Developmental Core

Recent Grant Award Successes (Jr. Faculty)

Pilot Awards & Microgrants

- 2015 Pilots: Dmitri Ermolenko, Vincent Silenzio, Mitchell Wharton/ Edward Brockenbrough (SON)
- 2015 Microgrants: Gretchen Birbeck, Amy Braksmajer (SON)

CFAR Supplements, Related Awards

- 2014: Supplements ($100k) Hill Kutscher (UB)
- *2015: Supplements still pending*

Other Extramural Awards

The awards below reflect extensive CFAR mentoring support, grant review assistance and assistance from Core C in developing the human subjects research components of these awards

- 2014: Jian Zhu (new R21/R33 award)
- 2014: Rustchenko-Bulgac (new R01)
- 2015: James Kobie (new R01 and R21 awards)
- 2015: Jian Zhu (new R01 award)

Developmental Core
Enriching the Scientific Environment

Human Subject Research Networking Event (9/14)

- 28 researchers participated (including Trillium Health (ASO) and the University of Buffalo)
- Drs. Teri Senn and James Kobie are now collaborating on a newly funded CFAR pilot titled "The Impact of Trauma on Mucosal Immunity" (30K DC).
- LaRon Nelson joined CTU team (HVTN CRS) as a lead co-investigator on HVTN703/HPTN081 phase IIB trial of passive immunization (VRC01) for HIV prevention in high-risk MSM

Developmental Core
Facilitating Faculty Recruitment

Dr. Dewhurst oversees SMD research strategic plan

Recent Hires of HIV/AIDS Researchers new to UR

- **Brent Johnson:** Assoc Prof – Biostatistics & Computational Biology - joined July 2014 (from Emory)
- **Theresa Senn:** Assoc Prof – SON – joined Nov 2014 (from Brown)
- **Felix Yarovinsky:** Assoc Prof - joined June 2015 (from UT Southwestern)

Planned future Recruits

- Commitment to 1-2 new faculty in Infectious Diseases for CTU renewal, leadership

Developmental Core
Selected 2014-2015 Activities

Unique Opportunity with Deaf Population

- Exploring partnership with National Center for Deaf Health Research (NCDHR, UR) and National Technical Institute for the Deaf (NTID) at the Rochester Institute of Technology (RIT)
- Dr. Dewhurst PI of unique UR/NTID partnership, intended to develop a national model for training of deaf biomedical postdocs
- CFAR exploring parallel collaborations with NCDHR and NTID to develop a deaf health survey focused on HIV/AIDS related themes (and sexual health) using a novel mHealth app
- Opportunity for NCDHR to apply for a NYSDOH/AIDS Institute testing call center for the deaf
- *Question: What are possible additional areas for collaboration – any suggestions welcome!*

Developmental Core
Future Plans (Selected)

CFAR Mentoring: Offers structured mentoring support for the professional development of young investigators.

- *Recognizing mentee targets and pairing them with appropriate <u>team</u> of mentors for meeting on regular basis – initial mentor and mentee pool contains 24 and 43 members respectively.*

Examples of mentee-mentor (primary) pairs identified:

LaRon Nelson: *Jim McMahon*
James Kobie: *Mike Keefer*
Danielle Benoit: *Handy Gelbard*
Tinashe Mudzviti: *Gene Morse*
Melanie Wellington: *Frank Gigliotti*

Hongyu Miao: *Hulin Wu*
Krupa Shah: *Steve Dewhurst*
Jian Zhu: *Ben Miller*
Qiu Xing: *Giovanni Schifitto*

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Mentor training***

- Mentor development activities by URBEST (PI: Dr. Dewhurst)
  - Workshop on Autonomy-Supported Mentoring
  - Based on Self-Determination Theory

- Further mentor development administered by CTSI
  - Online plus real-time mentor development curriculum
  - Based on W. Brad Johnson's "On Being a Mentor: A Guide to Mentoring in Higher Education"
  - Completion of a detailed questionnaire regarding mentorship philosophy and practice

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Mentee Targets and Prioritization***

- Identification of new mentees, including new hires
- Assessment of faculty needs
- Prioritization will follow this general order
  - (1) Junior faculty who are current or recent recipients of CFAR pilots/supplements
  - (2) Junior faculty working in HIV/AIDS and related disciplines
  - (3) Those interested in transitioning to HIV/AIDS and related research
  - (4) Established investigators transitioning to HIV/AIDS
  - (5) Postdocs in or transitioning to HIV/AIDS research
  - (6) Established investigators in HIV/AIDS field

Junior Faculty are defined as Tenure Track Assistant Professors, and Early Stage Investigators (Research Assistant and Associate Professors)

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Expectations of the Mentor-Mentee Relationship***

- Mentor – Mentee meetings at least every 6 months
- Review of the IDP
- Mentees participate in peer mentor group
- Mentor establishes a CFAR mentoring committee as needed (i.e. brings in additional senior faculty mentor resources)
- Mentor is intended as an enhancement for, rather than a replacement of, existing departmental mentorship

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Individual Development Plan (IDP)***

- IDP serves as a tool for the mentees to identify their own professional needs and career objectives
- IDP helps find ways to overcome obstacles and maximize opportunities
- IDP facilitates communication between mentee and mentors

UR-CFAR IDP has been outlined. It is expected to be self-initiated and discussed with the primary mentors and further evolve over the time as mentees grow professionally.

IDP training offered. A first IDP development workshop was recently offered through URBEST in April 2015.

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Grant Review Services***

- **Step One: Proposal shaping phase.** Draft specific aims will be orally presented and discussed with customized ad hoc review panel chosen form CFAR mentor pool.
- **Step Two: Proposal 'refinement' phase.** Full proposal draft will be reviewed by the same panel to provide comments using NIH review format.
- **Step Three: Resubmission phase.** Review of critiques and discussion of strategy for moving forward

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Peer Mentoring Group***

- **A Peer Mentoring Group will meet quarterly.** Comprised of untenured faculty, this group will discuss the issues they encounter regarding their career development as well as provide feedback for continuous improvement of CFAR mentoring and programmatic activities

- **Leadership** of the Peer Mentoring Group will initially consist of James Kobie and Teri Senn

Developmental Core
Future Plans (Selected)

CFAR Mentoring: ***Assessment***

- Assessment of the increased participation of the faculty in the program
- Assessment of increased quality of grant applications as judged by their funding
- Assessment of benefits to the mentees and mentors – publications, visibility and development of academic leadership
- Assessment of participation in current and evolving SWGs

Survey Q9: Have you used any of the CFAR mentoring services?

Answer Options	Response Count	Response Percent
No	19	73.1%
Yes. If yes, how can the services be improved?	7	26.9%

26 responses, 1 skipped

Survey Q10: If you are junior faculty, do you have a CFAR Mentor?

Answer Options	Response Count	Response Percent
Yes	5	45.5%
No	6	54.5%

11 responses, 16 skipped

junior faculty = Instructor, Research Assistant Professor, Assistant Professor or untenured Associate Professor

Survey Q10: If you answered no, would you like a CFAR Mentor?

Answer Options	Response Count	Response Percent
Yes	1	16.7%
No	2	33.3%
Unsure	3	50.0%

6 responses, 21 skipped

Survey Q 12. What other things should CFAR do MORE OF or CONSIDER DOING to support junior faculty?

Responses:

1. Assistance with writing and peer review of grants (grant review and feedback, grant writing training, peer review of grants) (x6)
2. *Manuscript review and feedback*
3. *Peer mentoring*
4. *CFAR mentor*
5. *Travel awards*
6. *More early stage grants (i.e., small pilot projects)*
7. *Protected time*
8. *Assist with networking outside institution*

Developmental Core
Future Plans (Selected)

Recruitment of new Researchers (internal to UR)

- Dmitri Ermolenko: Assist Prof – Biochemistry & Biophysics (UR - new to HIV/AIDS) - Current CFAR Pilot
- Kate Cerulli: Assoc Prof – Psychiatry (UR) - in discussion
- Steve Barnett: Assoc Prof – Family Medicine - (UR National Center for Deaf Health Research) – in progress

Developmental Core
Future Plans (Selected)

<u>Interdisciplinary Sexual Health and HIV Research Group (INSHHR)</u>

- WG focused on biopsychosocial determinants of HIV risk, prevention and improved treatment; with emphasis on broader context of sexual health in marginalized populations
- Initiated to leverage the pooled experience, skills and creativity of members to facilitate collaboration and increase scientific contribution
- 13 members (mostly at SON) with diverse methodological expertise, disciplines, and study populations
- Co-Led by Drs. McMahon, Nelson and Senn
- *<u>Question:</u> Current NIH funding limited – is this a concern?*

Developmental Core

Key Contacts:

Michael Keefer, Core Director
Steve Dewhurst, Associate Core Director
Benjamin Miller, Associate Core Director
Laura Enders, Program Administrator

Website
http://www.urmc.rochester.edu/cfar/services-cores/developmental.cfm

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Clinical and Translational Sciences Core (CTSC)

Amneris Luque, MD
James McMahon, PhD
Co-Directors

CTSC Mission

To provide key services to UR investigators to promote collaborative clinical and translational research in areas that impact upon the spread, treatment and control of HIV/AIDS

CTSC
Philosophy/Approach

- The Clinical and Translational Sciences Core provides infrastructure support for investigators conducting basic, clinical and socio-behavioral science research related to HIV prevention and treatment
- Fosters synergy and improve coordination of research to support emerging collaborations among different disciplines
- Reaches out to prospective new investigators

CTSC Core
Transition from D-CFAR to CFAR

- D-CFAR provided services to support the growth of clinical, translational and population-based research to develop a collaborative network

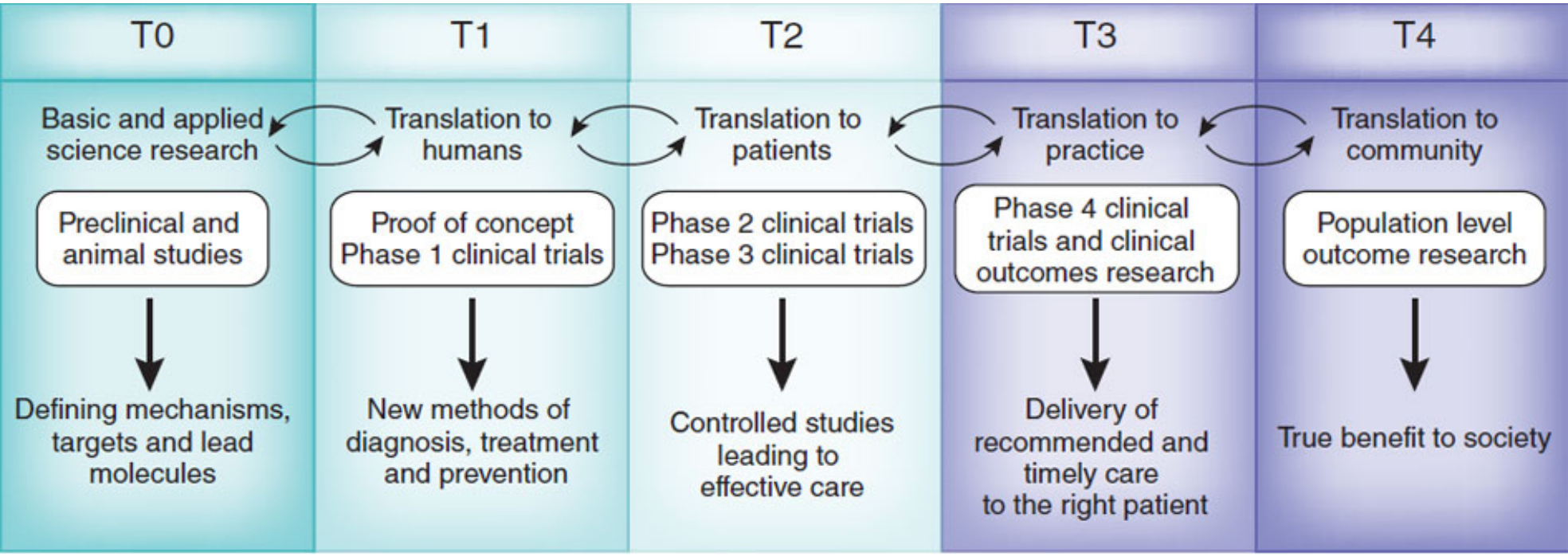
- CFAR emphasizes better integration of Social Behavioral Science and Clinical Science and stronger community engagement

Why CTSC is an Integrated Clinical and Behavioral Core

Rationale for not having a separate social/behavioral core:

- Separation would go against recent trends (treatment-as-prevention, PrEP, cascade, etc., gaining higher priority). Integration of clinical and behavioral sciences is critical
- Current CTSC successfully facilitates collaborations involving combined clinical and behavioral research ideas and projects, e.g.:
    - Senn/Kobie
    - Keefer/Alio
    - McMahon/Shah

Clinical and Translational Research Model



Blumberg et al. *Nature Medicine* 18:35-41; 2012

Prioritization of Core Services

- HIV/AIDS-related, NIH funded projects
- Pilot studies being performed in order to develop competitive HIV/AIDS grant applications to NIH
- Non-NIH funded, peer reviewed and non-peer reviewed AIDS-related projects consistent with the goals of the CFAR
- Projects that are AIDS-related and non-funded, but deemed to advance the goals of the CFAR
- High-quality HIV/AIDS research conducted by faculty outside the UR CFAR (e.g., at other CFARs)

CTSC Core Services

Regulatory Support

- Preparation of clinical protocols, consent forms, procedures, data safety and monitoring plans
- Guidance and support available for protocol planning and implementation:
  - Reporting of adverse events
  - Preparation of annual IRB reports
  - Study close-out procedures

Study Coordination and Operational Services

- Hands-on assistance in setting up and maintaining best practices
  - Preparation of manuals and training procedures
  - Tailored to needs of an investigator

CTSC Core Services

Customized Access to Patients/Samples

- Access to HIV-infected patients or persons at high risk for HIV
- Biological specimens with pre-specified clinical characteristics
- Specimens from HIV-negative volunteers, to serve as study controls

Facilitate Recruitment and Outreach – Custom Cohorts

Identify and establish collaborations with:

- Patient advocacy groups
- Community advisory boards
- Other organizations that could aid in implementation of clinical research

CTSC Core Services

Integration with Other Institutional Resources

Identify, leverage, and integrate institutional resources that encourage/enhance clinical and translational research:

- Integrate resources from other CFAR Cores
- Identify and integrate resources from within URMC
- Identify and facilitate expert consultations or collaborations
- Facilitate access to national CFAR resources

NEW…

- More structured assistance with international research
- CFAR review of grants for external funding

CTSC Core Services Survey Question

Q18: This Core provides consultative services, access to human specimens and/or human subjects data, and training and education on human subjects research. Which of the following Core Services have you used? If yes to any, please indicate how the service(s) can be improved.

23 answered and 4 skipped this question.

Which Core Services have you used?

Answer Options (Select all that apply)	Response Count	Response Percent
Consultation on Design, Analysis, Implementation or Conduct of Studies Involving Human Subjects (including biological samples or existing data)	6	26.1%
Study Coordinator/Enrollment/Regulatory Support	6	26.1%
Study Recruitment and/or Community Outreach and Education	5	21.7%
Grant Application Planning or Preparation	5	21.7%
Access to Hard-to-Reach Populations	3	13.0%
Other Types of Services Not Listed	2	8.7%
Access to Patient Data or Samples	1	4.3%
Support with International Studies or Collaborations	0	0.0%
None of the above (I do not use this Core)	12	52.2%
If yes to any, please indicate how the service(s) can be improved?	5	21.7%

Human Subjects Questions Summarized

- Of the 26 responses, 21 (80.77%) do use human subjects in their research.
- Of those remaining 5 who indicated they do not use human subjects, all 5 did not want to use human subjects

Survey questions 13 and 14 summarized above
Q 13: 26 responded, one skipped
Q 14: follow-up question - 5 answered and 22 skipped

RSRB Questions Summarized

(Questions 15-17)

- 22 (84.6%) out of 26 who answered question 15 have written an RSRB protocol before.

(Q 16) Are you planning to write RSRB Protocol in the near future? (26 answered, 1 skipped question)	Response Count	Response Percent
Yes (and I have never written an RSRB protocol before)	2	7.7%
Yes (and I have previously written an RSRB protocol)	16	61.5%
No	8	30.8%

(Q 17) If you are planning to write RSRB Protocol in the near future, would you like assistance? (22 answered, 5 skipped question)	Response Count	Response Percent
Yes (and I have never written an RSRB protocol before)	0	0.0%
Yes (and I have previously written an RSRB protocol)	4	18.2%
No	18	81.8%

Which Core Services have you used?

CFAR changes to address comments include:

- Update web site (passive): (1) add contact information for Cathy Bunce on website; (2) add RSRB page where CFAR members can learn more about RSRB and human subjects training; (3) add info on available services
- Outreach (active): Human Subject Research Networking Event (9/14) with 28 participating faculty; "Farmers market" for all CFAR cores at annual WAD event
- Once CFAR funds are awarded, a face-to-face meeting with the pilot/supplement PI, Cathy Bunce, and Laura Enders (and others as appropriate) will occur to assist PI in obtaining samples and/or discuss RSRB questions

CTSC International

Dr. LaRon Nelson was appointed CFAR Associate Director for International Research to co-ordinate support to UR investigators whose research involves international studies; this support includes regulatory guidance and best practices, as well as assistance with necessary paperwork/grants management requirements. Dr. Nelson is member of the Inter-CFAR Sub-Saharan African Working Group and leads the CFAR collaboration on UR-CTSI's Global & Territorial Health Research Network Coordinating Center (Tim Dye, PI)

CFAR Supported Projects:

Vincent Silenzio – China
Gretchen Birbeck – Malawi
Amina Alio – South Africa
LaRon Nelson – Ghana

Collaborative Team Building:

Omar Ndoye – Fulbright Scholar (Senegal)
Phillip El-Duah – Training Award (Ghana)
Frances Mulolo – Training Award (Malawi)

CTSC Core Funding

CTSC Funding Opportunities…

- National CFAR supplement grants (internally and externally competitive)
- Internal UR-CFAR pilot RFAs (internally competitive)
- CFAR Mini-grants (administrative review)

All are designed to facilitate subsequent NIH grant preparation and funding

CTSC Core
Selected 2014-2015 Activities

CTSC Networking Event – Sept 2014…

- Brief presentations by new and experienced CFAR members
- Lunch provided with time for networking and small-group discussions focused on increasing collaborations, innovation, funding opportunities, and mentoring
- 28 CFAR members conducting research involving human subjects attended
- Resulted in 8 new collaborations (e.g., Drs. Senn and Kobie, formed new collaboration and received CFAR funding to study the impact of trauma on mucosal immunity)

CFAR Pilot Award in Trauma and HIV

- Special RFA went out in October 2014, call for research in Trauma and HIV, with emphasis on interdisciplinary collaboration
- Pilot awarded to Dr. Senn (social scientist) and Dr. Kobie (biological scientist)

CTSC Core
Future Plans (Selected)

CTSC "Mixer" – Planned for Sept 2015

- Late afternoon/early evening event with keynote speaker
- Followed by "mixer" with cocktails and hors d'oeuvres
- Designed to encourage social interaction, discussion and spark innovative collaborations

New Pilot Funding for CTSC Members: Joint School of Nursing (SON)/School of Medicine and Dentistry (SMD) Program of Excellence HIV/AIDS Pilot Grants

- Beginning early Fall 2015
- Annual $50,000 contribution each from SON and SMD
- Must be dual SON/SMD PIs
- Intended to facilitate multidisciplinary translational HIV/AIDS research (e.g., nursing, medicine, clinical, behavioral)

CTSC Core

Key Administration:

Amneris Luque, Co-Director
James McMahon, Co-Director
Mike Keefer, Oversight Committee Chair
LaRon Nelson, Assoc Dir International Research
Laura Enders, Program Administrator
Catherine Bunce, Study Coordinator/Nurse
Emily Cosimano, Study Coordinator/Nurse

Website
http://www.urmc.rochester.edu/center-for-aids-research/services-cores/clinical-sciences.aspx

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Basic Science Core

Sanjay Maggirwar, Director
James Kobie, Associate Director (new)

Basic Science Core
Mission

- Enhancing basic and laboratory-based HIV/AIDS research by broadening research capabilities and promoting collaboration

  - ✓ Access to cutting-edge instrumentation & technologies
  - ✓ Support, education and training to enable efficient use of resources
  - ✓ Foster new developments in HIV/AIDS and HIV-related research

Basic Science Core
Philosophy/Approach

- To provide CFAR investigators with the earliest possible access to cutting edge scientific technologies and instruments.
- To leverage (or drive) institutional investments in these technologies and instruments and to then transition them to institutional support.

- Implications:
  - ✓ CFAR services/technologies are very diverse
  - ✓ CFAR services/technologies are often transitional

Basic Science Core
Transition from D-CFAR to CFAR

- **Re-assessed researcher needs for core equipment and other experimental resources.** This led to the introduction of several new resources for CFAR members (detailed on following slides).
- **Focused on new tools for catalyzing interdisciplinary collaborations.** e.g. CFAR investment in *Nanosight* brought together 4 other players - Lung Biology Program, Biomedical Eng., Dept. of Medicine and Pathology.
- **Committed to provide long term access to custom recombinant proteins.** CFAR protein production service provides quality-controlled HIV-1 Tat & Env proteins. *This is the only long-term CFAR core service and operates as a cost center, with charge-backs.*

Basic Science Core
Current Services

Customized Protein Production

- Produces, purifies and characterizes biologically active macromolecules (e.g. HIV-1 Env oligomers)

Structural Biology Facility

- Access to biophysical instrumentation (e.g. BIAcore T100, AXS X8 Prospector X-ray source and Mosquito robot)
- Access to FPLC resource (AKTA Pure Chromatography System) for purification of proteins, peptides and nucleic acids

Advanced Flow Cytometry

- Amnis ImageStreamX – hybrid fluorescent microscope/flow cytometer
- CyTOF – hybrid atomic mass spectroscopy/flowcytometer

Illumina HiSeq2500 & MiSeq Sequencers

Basic Science Core
Planned Services (2015-16)

- **NanoSight instrument:** Measures microparticles (platelets), nanoparticles
- **High Throughput Screening Capacity:** Low cost access to: (i) Envision high throughput plate reader, a Janus dual-arm liquid handling robot, and a Flexdrop plate filler; (ii) Genome-wide siRNA library and knockdown service
- **Thermo Scientific Qexactive Plus:** Newly acquired mass spectrometer, 2014; permits analysis of protein post-translational modification
- **Bio-Rad Profinia Protein Purification System**: Production of HIV-1 Tat (for CNS/Aging SWG)

Basic Science Core
Planned Services (2015-16)

- **Gnotobiotic Mouse Facility:** Enable microbiome studies using germ-free mice

- **CRISPR/Cas9 Cell Line Service:** Produce custom genetically-modified cell lines

Basic Science Core
Education and Support

Training

- Seminars
- Posters and formal training sessions
- Visits by technical experts to individual faculty labs and supported Scientific Working Groups

Voucher Program

CFAR offers funding vouchers for direct application to instrumentation that best suits research needs. Vouchers are competitively awarded and can provide up to $4,000 in user fees.

Basic Science Core
Selected 2014-2015 Activities

- **New Associate Core Director – James Kobie**

- **Technical lecture/demonstration – Nanosight**
  This session motivated members of 6 individual laboratories for its application.

- **Several new services launched** (high throughput screening/siRNA knockdown; Qexactive for protein analysis; Profinia system for protein production). *Rationale: provide access to cutting edge instrumentation; drive institutional change.*

Basic Science Core Services Survey Question

Q20: This Core provides access to cutting-edge tools and instrumentation, as well as training resources. Which of the following Basic Science Core Services have you used? If yes to any, please indicate how the service(s) can be improved.

23 answered and 4 skipped this question.

Which Core Services have you used?

Answer Options	Response Count	Response Percent
Kintek RQF-3 Rapid Quench-Flow Instrument	1	4.3%
Illumina Hi-Seq 2500 or Mi-Seq Services	4	17.4%
Structural Biology Supported Assistance and Access to: BIAcore T100, Bruker AXS X8 Prospector X-ray source, Mosquito Robot	4	17.4%
Imaging and Mass Spectrometry: CyTOF or Amnis ImageStream GenX	5	21.7%
Customized Protein Production	1	4.3%
AKTA Pure Chromatography System	2	8.7%
High Throughput Screening Core	2	8.7%
Voucher Program	2	8.7%
Education or Training	2	8.7%
None of the above (I do not use this Core)	12	52.2%
If yes to any, please indicate how the service(s) can be improved.	5	21.7%

Which Core Services have you used? - CFAR Response

- We encourage the members to visit our website for additional information regarding Basic Science services which is recently posted.
- We will conduct additional symposia for services like HTS and AKTA that have strong potential in attracting more users
- Basic Science core will work closely with the Biostatistics, Bioinformatics and Computational Biology Core to provide services through voucher program specifically targeted to the junior investigators

Basic Science Core Services Survey Question

Q21: Which of the following future Basic Science Core Resources would you potentially use?

22 answered and 5 skipped this question.

Which Core Services would you potentially use?

Answer Options	Response Count	Response Percent
Customized CRISPR/Cas9 Cell Line Service for genome engineering. This service will generate customized cell lines with genetic mutations or deletions of interest, using CRISPR/Cas9 technology. The service will design and construct specific plasmids necessary to generate targeted mutations of interest in cells of choice, and will then screen the resultant clones for the desired mutations, and provide them to the investigator.	5	22.7%
NanoSight NS300 Instrument. This instrument provides high resolution characterization of extracellular nanoparticles of size 10-2000nm; it can also analyze protein aggregation, viscosity and zeta potential, while a fluorescence mode provides detection of labeled particles.	6	27.3%
Gnotobiotic Mouse Core Facility. This provides experimental isolators and a specialized facility for breeding colonies of germ-free mice that can be colonized with bacterial flora of interest, for microbiome-related studies.	2	9.1%
None of the above	14	63.6%

Which Core Services would you potentially use? – CFAR Response

- We are highly encouraged by the enthusiastic response by our members for the proposed CRISPR/Cas9 cell line service and NanoSight NS300 instrumentation service. We strongly believe that these two services will gain momentum soon after they will be launched.
- Considering the specialized nature of Gnotobiotic Mouse core services, number of expected users during first year may not exceed 4. Although, we believe that this facility will greatly enhance the fundability of microbiome-related research at UR. Importantly, launching this service played a critical role in successful recruitment of Felix Yarovinsky.

Basic Science Core
Future Plans (Selected)

- Farmer's market for HIV/AIDS researchers – *display core services, applications, and success stories during World AIDS Day event*
- Assist HIV/AIDS researchers to promote team science at UR – *Birds of a feather flock together*
- Coordinate with Administrative Core to foster inter-CFAR collaborations to enrich our services – *e.g. supplementing efforts in providing education and training*

Basic Science Core

Key Contacts:

Sanjay Maggirwar, Core Director
James Kobie, Associate Core Director
Laura Enders, Program Administrator

Website
http://www.urmc.rochester.edu/center-for-aids-research/services-cores/basic-sciences.aspx

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Biostatistics, Bioinformatics and Computational Biology Core

Hulin Wu, PhD, Director
Dean's Professor of Biostatistics and Computational Biology

Hongyu Miao, PhD, Associate Director

BBCB Core Mission

- To provide standard and novel statistical, bioinformatics and computational biology support to HIV/AIDS investigators
- Support and collaborate with Investigators
  - Grant proposal
  - Study design
  - Manuscript/abstract preparation
- Provide training
  - Seminars
  - Hands-on lab specific training and consultation

BBCB Core
Philosophy/Approach

- Be flexible and active to meet existing, emerging and potential needs in computation and analysis
- Promote the development and use of cutting-edge quantitative methods for new scientific findings
- Train young multi-disciplinary investigators and encourage in-depth collaboration

BBCB Core
Transition from D-CFAR to CFAR

- Restructure the core to better meet the emerging needs in HIV/AIDS studies
- Redefine the scope and focus of statistical & bioinformatic services
- Promote deep collaborations that can result in both scientific findings and external research fund

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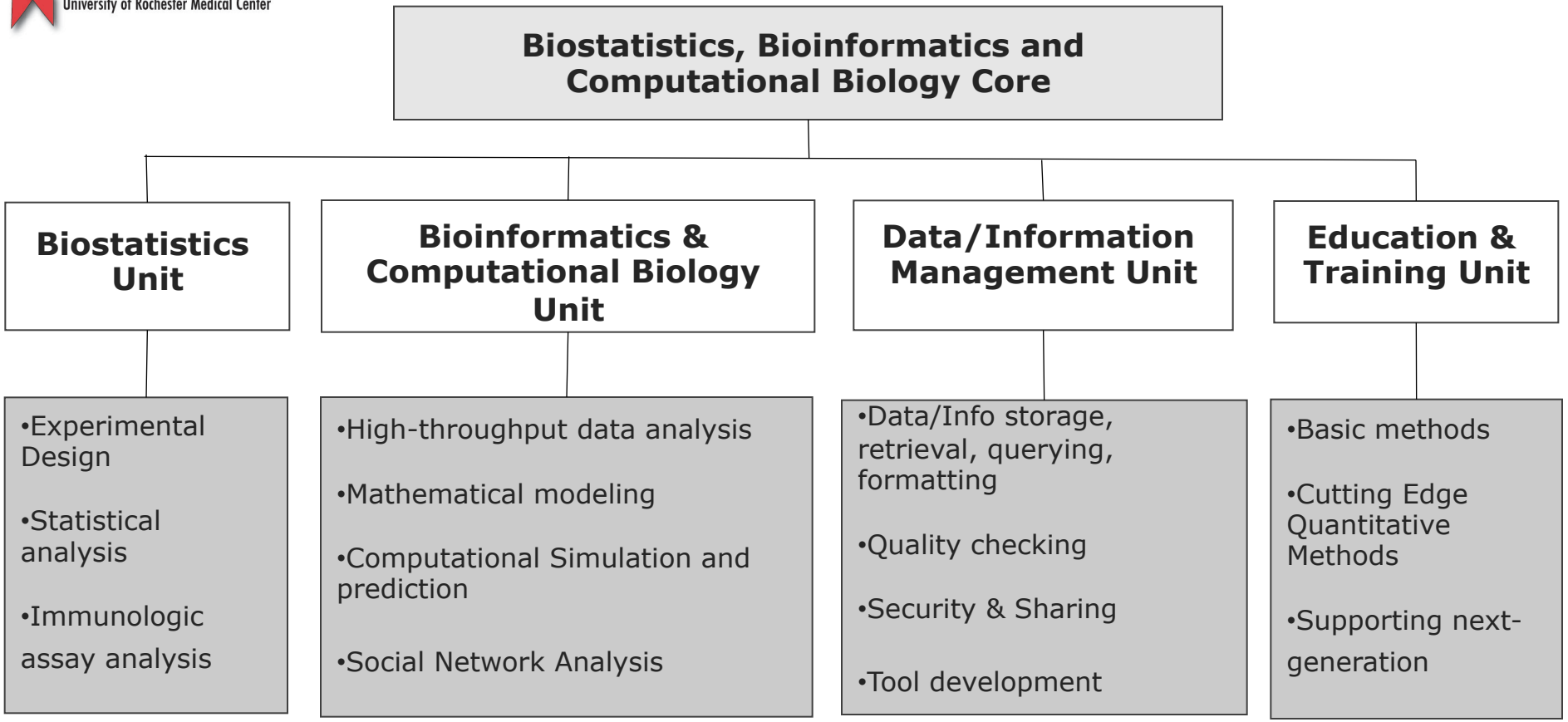
BBCB Core Model



BBCB Services

- Grant proposal preparation
- Study design
- Data analysis for publications
- Bioinformatic analysis of high-throughput data
- Mathematical modeling
- Lab, clinical and translational data management support
- Data sharing and dissemination to meet NIH requirements
- Molecular dynamics modeling
- Pathway Modeling
- Epidemic modeling

BBCB
Education & Training

- Promote Core services and efficient use of BBCB Core resources
- Provide basic training in biostatistics, bioinformatics, and computational biology to biomedical investigators
- Lab visits to do hands-on lab-specific training and promotion

BBCB Core Service Policy

- Provide free services for HIV/AIDS related grant preparation
- Provide free services for CFAR pilot awards
- Provide 10 hours of free services for preliminary data analyses and other services for HIV/AIDS grant preparation
- Provide fee-for-services for other requirements
- Charge-back mechanism: $180/hr and % effort support for grant proposals

BBCB Core
Selected 2014-2015 Activities

Collaborative research work and methodology research

- IFI44 Suppresses HIV-1 LTR Promoter Activity and Facilitates Its Latency, by Zhu and Miao et al. (2015)
- Hearing study with Dr. Luque: 2 papers
- 5 methodology papers

Grant Application

- R21-33 AI116180-01 (PI: Zhu, 2014-2019), Targeting BRD4 and TAT-associated Inhibitory Proteins to Reactivate Latent HIV
- R01 HL123346-01A1 (PI: Schifitto, 09/01/14 – 05/31/19), cART Accelerates Vascular Aging in HIV Infected Subjects.

Promotion of UR CFAR in National Conferences

- 9 conference presentations by Core members

BBCB Core
Future Plans (Selected)

Targeted Support for Early Stage Investigators

- Dr. Jian Zhu
- Dr. James Kobie
- Dr. Dorota Piekna-Przybylska
- Dr. Krupa Shah

Bridging support for grant renewal

- Statistics data analysis support to fill the gap between the grant end and renewal

New Methodology Development

- Next-generation sequencing data modeling and analysis
- Proteomics data modeling and analysis
- Structural bioinformatics for HIV RNA biology

Education & Training

- Lab visits and training
- Summer school

BBCB Core Survey Question

Q23: This Core provides biostatistics, bioinformatics and computational biology support, as well as data management and informatics services, and education and training services. Which of the following Core Services have you used? If yes to any, please indicate how the service(s) can be improved.

23 answered and 4 skipped this question.

Which Core Services have you used?

Answer Options	Response Count	Response Percent
Biostatistics support for Design and Analysis of HIV/AIDS-related Experiments, Clinical Studies, Prevention/Behavior Studies and Epidemiological and Translational Studies	6	26.1%
Mathematical Modeling Support to further HIV/AIDS-related Research and to Expand Existing Modeling Efforts to Investigate Dynamical Biological Processes	1	4.3%
Bioinformatics, Computational Biology and Biocomputing Tools and Algorithms (e.g., RNAseq/proteomics data processing and analysis, sequence analysis, gene regulatory network, signaling pathway, metabolic network, receptor/ligand binding)	2	8.7%
Translational Data Management and Informatics Services Including Development of Databases and Data Management Tools	1	4.3%
None of the above (I do not use this Core)	15	65.2%
If yes to any, please indicate how the service(s) can be improved.	5	21.7%

BBCB Core Survey Question - CFAR Responses

- 35% user rate: higher than the general biomedical investigators (about 15%) at URMC
- Collect more information about why BBCB Core is not used
- More promotion for the existing services and new services
  - ✓ Website promotion
  - ✓ Education seminars
  - ✓ Lab visits
  - ✓ More interactions with SWGs

BBCB Core

Key Contacts:

Hulin Wu, PhD, Director
Hongyu Miao, PhD, Associate Director

Website
http://www.urmc.rochester.edu/center-for-aids-research/services-cores/biomathematical-modeling-biostatistics-bioinformat.aspx

Strategic Planning
Steve Dewhurst, CFAR PI

CFAR Mission

To provide leadership, services & infrastructure to:

- Establish multidisciplinary collaborations that achieve high-impact discoveries
- Support early career development of young HIV/AIDS investigators
- Establish a distinctive scientific identity, placing the UR at the forefront of HIV/AIDS research

Services organized within four cores: (1) Developmental, (2) Clinical and Translational Sciences, (3) Basic Sciences and (4) Biostatistics, Bioinformatics and Computational Biology Core

Survey results

Survey Results

Survey - We need your input:

- Evaluate current program
- Improve CFAR services
- Plan for future events
- Annual general survey
- Additional surveys on specific topics

Q4: Suggestions for focus of future retreats, symposia or seminars

Responses: No strong theme

- *Clinical Research (2)*
- *Vaccines (2)*
- *Networking events (2)*
- *Seminars for new researchers new to HIV*
- *Discussions on unanswered question in HIV/AIDS research*
- *Biomedical prevention*
- *Behavioral-biologic collaboration strategies*

Q5: Do MORE OF or CONSIDER DOING to better establish a scientific home for the UR HIV/AIDS research community?

Responses:

- Educate members about each other's research interests (4)
  - ✓ Share current research, proposed grant ideas
  - ✓ Build collaborations and funding opportunities
  - ✓ Speed dating, networking events, informal social hour, data blitz, monthly/weekly science chats, HIV/AIDS grand rounds
- *Focus on young MSM of color*
- *International research*
- *Build inter-CFAR collaborations*

Q6: What ideas do you have for improving the CFAR Pilot Award Program?

Responses

1. Increase size of pilot programs ($/award, # awards) (2)
2. Support collaborative research (2)
3. Provide more advance notice of RFA deadlines/topics – esp. for collaborative RFAs (2)
4. Shepherd unfunded proposals towards funding, emphasizing collaboration (2)

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7. How can we more effectively reach out to faculty, to ensure that our pilot award programs attract the largest possible number of high quality applications?

Responses

1. **Advertise more widely and/or with greater lead time** – including having information sessions for applicants prior to the deadline, working closely with departments/centers (6)
2. *Expand eligibility to Research Asst. Professors, Associates, etc*
3. *Allocate pilot awards toward faculty recruitment*
4. *Provide a forum for faculty to exchange research ideas*
5. *Reach out to young faculty to determine their research interests and align RFAs accordingly*
6. *Broaden the pilot RFA to include all faculty*

12. What other things should CFAR do MORE OF or CONSIDER DOING to support the career development of junior faculty?

Responses

1. **Grant review & grant writing training** (6)
2. **Jr. faculty mentoring – incl. peer mentoring** (3).
   Note: we are in the process of launching a new CFAR peer mentoring group for jr. faculty (Kobie/Senn)
3. More early stage (small) grants
4. Help them network

26. Should the CFAR create a new and larger pilot grant mechanism (RFP) requiring the creation of new multidisciplinary scientific teams?

All responses were positive.

- 12/13 specifically said "yes".
- 1 noted the need for prior scientific team building

We plan to develop a larger pilot RFP within the next year, possibly using SMD Dean's funds ($100k?)

27. Are there specific scientific areas in which the CFAR should proactively build such new teams?

Responses:

1. **HIV and Trauma** (6)
2. **Microbiome and HIV** (5)
3. Optics and imaging (2)

28. How else can the CFAR help to create new scientific teams? Scientific Mixers? Focused Symposia?

Results:

- Both Mixers (6) & Focused Symposia (4) felt to be useful
- Enthusiasm for learning about science others are doing (i.e., combining mixer with some scientific presentations)

Other Comments:

- Should link to new CFAR RFPs, & hold well in advance of same (3).

We plan to hold a scientific mixer (with presentations) in the early Fall, in advance of the new pilot RFP

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Scientific Identity & Planning for Future SWGs

Scientific Identity: Future SWGs?

Suggested selection criteria for new SWGs:

- At least 3 NIH funded PIs with R01 or equivalent funding
- At least 10 total faculty (so we have critical mass)
- Clearly defined opportunities for expanding funding by at least 50-100% over 3-5 years, and also doing exciting/impactful science

Scientific Identity: Future SWGs?

Survey Results (three SWG topics suggested by CFAR ranked in order): **All essentially tied**

1 - **End Stage Complications including vascular and metabolic diseases** (= 1.83)

2 - **Trauma and HIV** (= 1.96)

3 - **Optics and Imaging** (= 2.09)

(Q8. Please rank the importance of the following suggestions for new SWG's with 1 being the most important and 3 being the least.)

8. Please also suggest ideas for possible NEW Scientific Working Groups.

Responses

1. **HIV Cure / Latency and Reactivation** (3)
2. **Data Sciences and HIV** (2)
3. *Vaccines*
4. *Therapeutics*
5. *Microbiome and HIV*
6. *Young MSM of color*
7. *Noncommunicable comorbidities*
8. *Population health*

Trauma & HIV WG: Progress

- **Interdisciplinary Sexual Health and HIV Research Group (INSHHR):** 13 faculty (mostly at SON); co-led by Drs. McMahon, Nelson and Senn
- **2014 Pilot Award:** Award made to Teri Senn, James Kobie ("The Impact of Trauma on Mucosal Immunity")
- **2015 Pilot RFA on HIV & Trauma:** Awards made to Vince Silenzio (Psychiatry) & Mitchell Wharton/Ed Brockenbrough (SON/Warner School of Education)
- **Broad topic:** Trauma impacts multiple physiologic systems, incl. neurologic and immunologic systems; potential for collaboration
- ***Question**: Is it a concern that NIH R01 funding is limited?*

Other Potential Future SWGs

Some urgency: will take time to establish (need networking events, pilot RFAs, program building)

- **End Stage Complications including vascular and metabolic diseases:** Broad, inclusive. Would promote collaborations.
- **Imaging & Optics:** Remains attractive, but would require a concerted effort to build collaborations (and an internal champion)
- **HIV Cure & Latency/Reactivation:** Limited # of faculty working in this area – *rises if one includes CNS reservoirs*
- **Data Science & HIV:** Aligns to major institutional investments ($100M for new Institute for Data Science; planned Center for Biomedical Informatics at SMD); Limited # of faculty in this area

Data Sciences SWG?

Builds on UR Strengths and Institutional Goals:

- Data Sciences is a key component of UR strategic plan
- 8 Data Sciences Institute faculty have NIH funding (although only 1 explicitly HIV-related – Wismueller)
- Potential for building on global leadership in new tools for public health (Kautz) and Institute focus on “Predictive Health Analytics”

Precedent for CFAR SWG in Data Sciences:

- Brown University: cost effectiveness research, implementation science, high-D genomics, EMR analysis, etc.

National Role: Question

Thoughts/Recommendations?

- NHP/ESI WG (w. NPRCs)?
- Dissemination & Implementation WG?
- Community Participation/CAB Support WG?
- *Wait and see?*

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CNS Reservoirs of Infection and Aging Scientific Working Group

Harris A Gelbard, MD, PhD - Director
Giovanni Schifitto, MD - Associate Director

Outline

- Aims of the CNS Reservoirs and Aging SWG
- Working Group Members
- Progress on Aims

Neuro SWG Aims

- **Aim 1:** to bring together and support investigators from diverse backgrounds including physics, optics & chemistry plus neurologists and gerontologists… with the goal of developing new indices that measure the impact of HAND on the CNS during activities of daily living (ADLs).
- **Aim 2:** to further support investigators from these disciplines to understand pathogenetic mechanisms of HIV-1 and drugs of abuse that affect neurovascular function and communication with microglia and synaptic elements….with the goal of translating findings from Aim 1 to preclinical models of HAND neuropathogenesis.

Neuro SWG Aims

- **Aim 3:** to support a drug development program for a new chemical entity that effectively inhibits a key neuropathogenetic enzyme, mixed lineage kinase type 3 (MLK3), and has a favorable CNS profile…with the goal of achieving investigational new drug (IND) status & initiating a Phase 1 trial.
- **Aim 4:** Provide mentoring for investigators with preclinical and clinical interests focused on HAND and adjunctive therapeutics.

SWG Members

Handy Gelbard, Center for Neural Dev. & Disease
Giovanni Schifitto, Neurology
Steve Dewhurst, Microbiology & Immunology
Marvin Doyley†, Electrical & Computer Engineering
Michael Elliott, Center for Vaccine Biology & Immunology
Michelle Kiebala, Microbiology & Immunology
Todd Krauss†, Chemistry
Brad Nilsson†, Chemistry (*new 2014/2015*)
Sanjay Maggirwar, Microbiology & Immunology
Qing Ma, University of Buffalo
Krupa Shah, Medicine (Geriatrics)
Gretchen Birbeck, Neurology (*new 2014/2015*)
Michael Potchen, Imaging Sciences (*new 2014/2015*)

Aim 1

- New collaboration with Marvin Doyley in Electrical and Computer Engineering for RO1 on cardiovascular/ cerebrovascular disease from Sanjay Maggirwar and Giovanni Schifitto (*funded*)

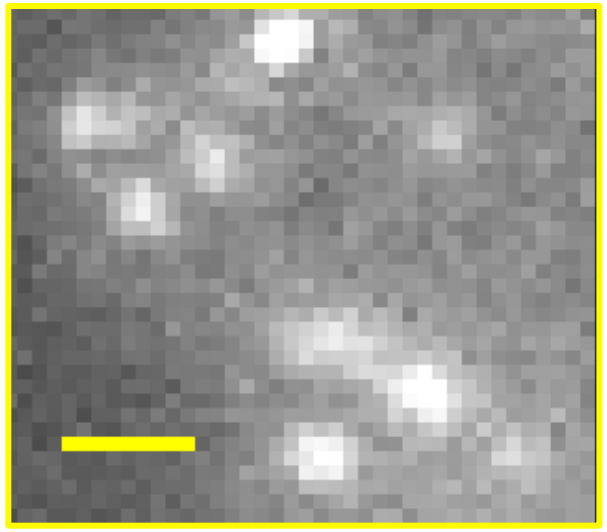
- Collaboration in RO1 with Drs. Axel Wismueller (Imaging Sciences), Lutz Leistriz and Giovanni Schifitto for novel computational analyses of large data sets generated by fMRI in HIV infected individuals

Aim 2

- Collaboration with Todd Krauss and Gelbard labs to develop super-resolution imaging methods (fPALM/ STORM) using synthesized quantum dots for synaptic and endosomal protein changes in HAND (TURA funding, R21/RO1 planned)

- Comparison of genetic methods for switchable XFP expression vs. quantum dot technology for nanoscale imaging of subcellular organelles; 1st manuscript by fall 2015

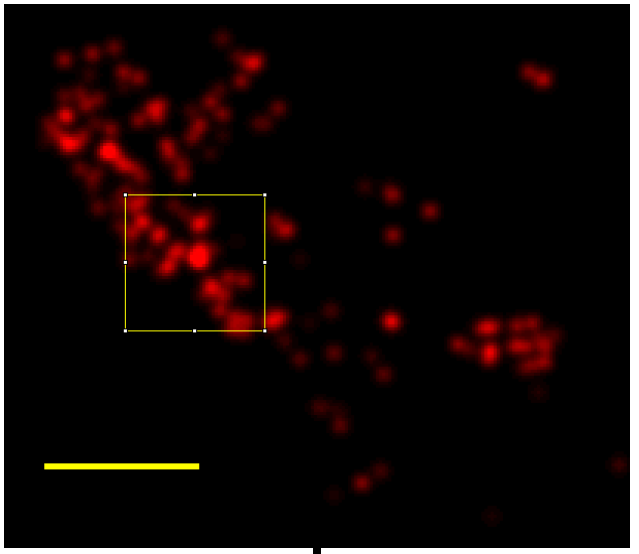
(a)



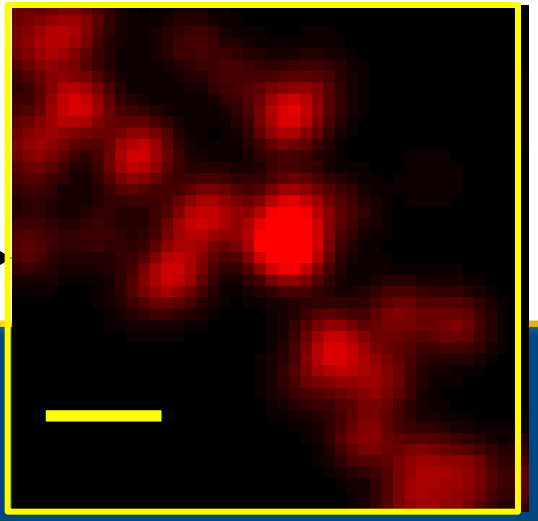
Bradykinin-QDs Bound to RHP Neuronal Processes. (a) Example frame before super-resolution algorithm - scale bar represents 10μm, (b) localized Bradykinin-QDs from 500 image frames - scale bar represents 1μm, (c) boxed region of (b) with 200nm scale bar.

Bradykinin-QDs Localized with Super-Resolution Algorithm.

(b)



(c)



Aim 3

URMC-099 as: (1) novel therapeutic for HAND; (2) adjuvant for nanoformulated cART (eradication):

- Advance URMC-099 through safety and preclinical studies to IND filing for HAND through Wavodyne Therapeutics, Inc (incorporated 02/15; national/ international patents granted 2014, 2015).
- Nanoformulated cART with URMC-099 for eradication (RO1 funded); URMC-099 nanoformulated and undergoing pharmacokinetic/pharmacodynamic evaluation; MTA in planning stage with GSK, UNMC and Wavodyne Therapeutics, Inc.

Wavodyne Therapeutics, Inc

- Jim New, PhD, MBA with 30+ years in pharma and biotech startups assumes CEO role and initiates business plan, 11/2014
- Incorporated in 02/2015
- Exclusive license for URMC molecules granted to company through URVentures, URMC
- Capital raise for IND-enabling studies initiated June 2015
- IND filing with FDA in 2nd quarter, 2016
- Clinical trials for HAND anticipated 2017

Aim 4: Mentoring

- Rusty Elliott (Dewhurst, Gelbard) – Asst. Prof. (CNIHR award on apoptotic cell clearance and inflammation).
- Krupa Shah (Dewhurst) – Asst. Prof. (K23 on frailty & aging; developing R21 on frailty, aging & immune functioning w. Juilee Thakar)
- Michelle Kiebala (Maggirwar) – RAP (R03)
- Jennifer Urban (Nilsson, Kraus and Gelbard) – Predoc (UR TG)
- Jennetta Hammond (Gelbard) – Postdoc (new F32)
- Qing Ma (Morse, Schifitto) – UB, Junior Faculty (K08 award); planned investigation of URMC-099
- Charles Venuto (Morse, Schifitto) – CHET (K23) HIV-HCV interaction and the CNS

Plans for Upcoming Year

- Continue IND-enabling/nanoformulation (i.e. long-acting) studies with URMC-099
- Biomarkers for vascular aging and CNS disease
- Neuroimaging algorithms for screening drugs with CNS activity
- Nanoscale (fPALM/STORM) studies of virus trafficking in CNS cells

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CFAR: HIV RNA Biology Scientific Working Group

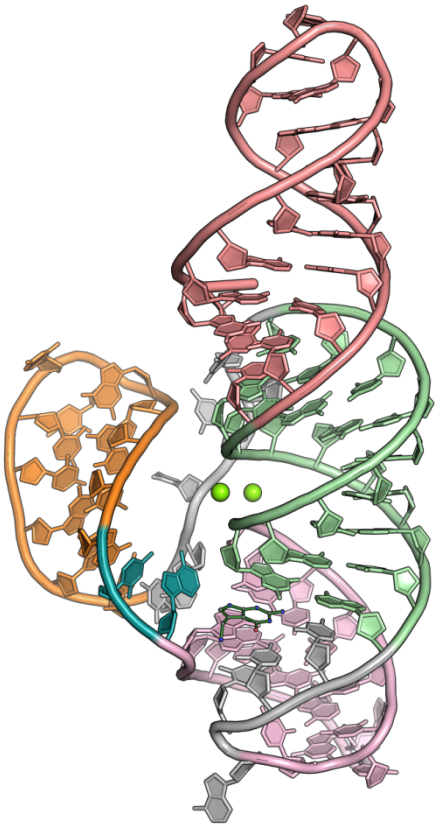
David Mathews, MD, PhD
Ben Miller, PhD
Directors

HIV RNA Biology SWG
Philosophy/Approach

- Encourage investigators in RNA Biology to study HIV.
- Provide scientific direction to those at the interface of HIV and RNA Biology.
- Mentor young investigators and investigators new to HIV.

Center for RNA Biology

Mission: To raise the overall profile of basic research at the University, and to apply cutting-edge basic science discoveries of RNA Biology to clinically-relevant translational research.



Center for RNA Biology

Lynne Maquat, Department of Biochemistry and Biophysics, Director

David Mathews, Department of Biochemistry and Biophysics, Co-Director

Center for RNA Biology Faculty

10 Biochemistry & Biophysics

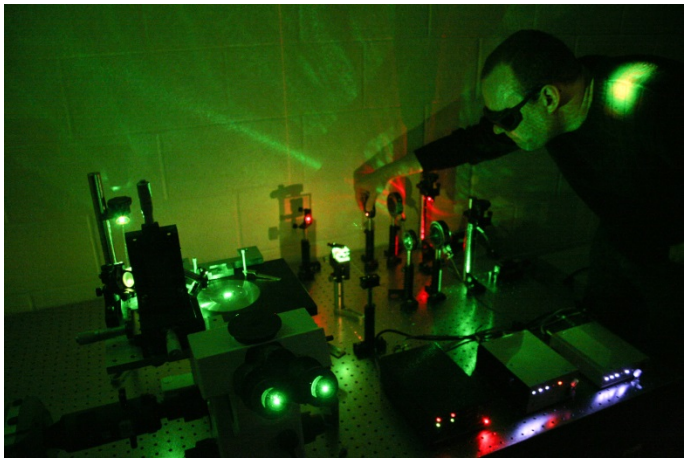
2 Biology

1 Chemistry

1 Electrical & Computer Engineering

5 Microbiology & Immunology

1 Neurology



Total: 20 Faculty:

16 School of Medicine and Dentistry and 4 The College (Arts, Sciences, and Engineering)

HIV RNA Biology SWG
Transition from D-CFAR to CFAR

The scientific working groups are new to the CFAR.

As a CFAR, we have the ability to chart new directions, and working with the Center for RNA Biology is a real synergy at UR because of the size of the community.

RNA SWG Aims

- **Aim 1:** To provide leadership and scientific direction.
  i. directly targeting HIV RNA structures
  ii. preventing HIV-1 recombination (and thus its ability to develop drug resistance)
  iii. reactivating latent viral reservoirs.
- **Aim 2:** To build collaborations in strategic focus areas.
- **Aim 3:** To provide mentoring and support for new investigators
- **Aim 4:** To facilitate programmatic integration. Provide support for pilot projects and access to key services and tools.

SWG Members

David Mathews, Biochemistry & Biophysics
Ben Miller, Dermatology
Bob Bambara, Microbiology & Immunology
Scott Butler, Microbiology & Immunology
Paul Dunman, Microbiology & Immunology
Dimitri Ermolenko, Biochemistry & Biophysics
Clara Kielkopf, Biochemistry & Biophysics
Dorota Piekna, Microbiology & Immunology
Gaurav Sharma†, Electrical & Computer Engineering
Harold Smith, Biochemistry & Biophysics
Doug Turner†, Chemistry
Joseph Wedekind, Biochemistry & Biophysics

Aim 2: Team Building

- Gaurav Sharma is PI of an R01 also involving Bob Bambara and Dave Mathews. Here we are developing new computational tools that can align RNA sequences using structure. (Connects to the Institute for Data Sciences.)
- Ben Miller is PI of an R01 also involving Hongyu Miao and Harold Smith. The goal of this grant is to develop new small-molecule modulators of frameshifting in HIV, and new methods for label-free high-throughput characterization of RNA binding.
- Jian Zhu is a PI of a funded R21/R33 and a submitted R01, both also involving Hongyu Miao. Focus is on gene networks involved in reactivation of HIV latency.

Aim 3: Mentoring

Grant review support provided to:

- Jian Zhu: NIH R21 & NIH R21/R33; AHA grant. Coinvestigator (R21/R33): Hongyu Miao (Biostats Core); Feedback: S. Dewhurst.
- Dorota Piekna: NIH R21 and a NIH R21/R33. Feedback: S. Dewhurst, B. Bambara, B. Miller, and Steering Committee.
- Dmitri Ermolenko: "Creative and Novel Ideas in HIV Research" (CNIHR). Feedback: B. Miller, S. Dewhurst, and Steering Committee.

Aim 4: Facilitate Integration

- First pilot project, 2013, was awarded to Clara Kielkopf for "Host Cofactor Tat-SF1 as a Molecular Adaptor for HIV-1 Replication"
- Second pilot project, 2015, was awarded to Dmitri Ermolenko for "Molecular Mechanism of Ribosomal Frameshifting Utilized by HIV"
- Acquired an FPLC that is located in the structural biology facility.

Plans for Upcoming Year

- A “speed dating event”, August 5th
  - Bring together other members of the Center for RNA Biology and Established HIV Investigators
- Continue to encourage new research interests in HIV with mentoring & pilot funding