Welcome to the Researchers Luncheon Meeting & DOM Faculty Meeting

http://www.bumc.bu.edu/evanscenteribr/
Affinity Research Collaboratives (ARCs): the Center’s building blocks

- Novel Research Pursuits via interdisciplinary Collaboration: ARCs
- Enhanced Faculty Recruitment
- More Efficient Resource Use
- Wider Institutional Recognition
- Improved Training
- Expanded Funding opportunity
- Methodologic Advances

Improved Training → Expanded Funding opportunity → More Efficient Resource Use → Methodologic Advances → Wider Institutional Recognition → Enhanced Faculty Recruitment → Novel Research Pursuits via interdisciplinary Collaboration: ARCs → Improved Training
The Evans Center Today: Highlights of 2013 and Plans for 2014

• New pre-ARCs and ARCs
• Evans Center Fellow Awards
• New Research Discovery by ARCs
• Activities (Retreat, ample of min-symposia and workshops)
• Publications and Grant Support

• Plans for 2014
Plans for 2014: Highlights

• Submit the Final Plan for a Master Program in Interdisciplinary Biological Technology
• Increase Collaboration-Interaction with Pharmaceutical Companies (new seminar series)
• Continue the development of new & current ARCs
• Increase collaboration among ARCs and continue consolidation of some ARCs
• Continue developing initiatives to better integrate and develop Clinician Scientists within our research
• Evans Center Reaching out the the Community- a New Evans Center-Museum of Science Lecture series to the Public
The Evans Center Today: Highlights of 2013

- **ARCS**
- **ARC mini-Symposia/Seminars/Workshops**
- **New pre-ARCs/ARC Programs**
- **Cross Campus Training program in Nanomedicine**
- **Inter-ARC Collaborations**
- **Thematic Seminars (e.g. Phil Sharp)**
- **New Evans Center Fellow Awards**
- **Collaborative Papers and Grants**
Ongoing ARCs

• Computational Genomic Models of Environmental & Chemical Carcinogenicity, Co-Directors: Stefano Monti, David Sherr

• Metabolic Disease and Adipose Tissue: Studies in Patients Undergoing Bariatric Surgery, Co-Directors: Neil Ruderman, Caroline Apovian, Kostya Kandror

• Nanotheranostics, Co-Directors: Victoria Herrera, Joyce Wong, Mark Grinstaff, Karl Karlson
Graduated ARCs: ARC Programs and a new Center

• **Mitochondria ARC** / Co-Directors: Orian Shirihai, Andrea Havasi

• **Protein Trafficking & Neurodegenerative Disease ARC** / Director: Lindsay Farrer

• **Sex differences in adipose tissue and obesity-related disease ARC** / Co-Directors: Susan Fried, Paul Pilch

• **Molecular, Biomechanical and Genetic Mechanisms of Arterial Stiffness** / Director: Richard Cohen Co-Director: Kathleen Morgan

• **From Crem+ARC to a CreM Center: Regenerative Medicine ARC** / Directors: Darrell Kotton, Gustavo Mostoslavsky and George Murphy
New ARCs

• ARC

• **Etiology and Pathogenesis of Oral Cancer (EPOC)**
  Co-Directors: Dr. Maria Kukuruzinska ([mkukuruz@bu.edu](mailto:mkukuruz@bu.edu)), Dr. Avrum Spira ([aspira@bu.edu](mailto:aspira@bu.edu)) and Dr. Maria Trojanowska ([trojanme@bu.edu](mailto:trojanme@bu.edu))

• ARC-Phase I (to be explored in context of a new center)

• **Comparative Effectiveness: A focus on Processes of Care Among Critically Ill Patients**
  Co-Directors: Dr. Allan Walkey, Department of Medicine ([awalkey@bu.edu](mailto:awalkey@bu.edu)) and
Pre-ARCs

- **Thrombosis and Hemostasis in Health and Disease**
  Co-Directors: Dr. Vipul Chitalia (vichital@bu.edu), Dr. Elaine Hylek (ehylek@bu.edu) and Dr. Katya Ravid (kravid@bu.edu)

- **Stromal Biology and Cancer**
  Co-Directors: Dr. Douglas Faller, Department of Medicine and Department of Biochemistry (dfaller@bu.edu), Dr. Tien Hsu,

- **Type I Diabetes**
- Co-Directors: Dr. Hans Dooms, Department of Microbiology and (hdooms@bu.edu), Dr. Barbara Corkey and Dr. Barbara Nikolajczyk
Congratulations and Best Wishes to 2013 Evans Center Fellows

- Dr. Cesar Sommer (Postdoctoral Associate) / BU iPS Bank ARC
- Dr. Tamar Aprahamian (Assistant Professor) / Sex Differences in Adipose Tissue Biology and Related Metabolic Disease ARC
Congratulations to 2014 Evans Center Fellows

• Dr. Marc Liesa (Postdoctoral Associate) / Mitochondria in Health and Disease ARC
• Dr. Gyungah Jun (Assistant Professor) / Protein Trafficking & Neurodegenerative Disease ARC
• Dr. Francesca Seta (Assistant Professor) / CVI and Vascular Biology)
Framingham Heart Study/ MRI on Brain (hippocampus) + cataract. Correlatively (2 phenotypes from common set of genes). CTNND2 = Delta Catenin (binds presenilin).

Not all AD might be predicted by cataract. The gene is involved in the APP pathway. The mutation is in the Presenilin binding site.
Calcium Homeostasis in Health and Disease ARC:
Directors: Drs. Victoria Bolotina & Mike Kirber

Ca^{2+} ARC resulted in:
- 8 new grants:
  - 2 funded,
  - 4 pending
  - 2 planned for 2014 submission.
- 10 new papers:
  - 3 published,
  - 1 submitted,
  - 6 in preparation, with abstracts published, posters presented.

Parkinson’s Disease
ARC – Sex differences in adipose tissue and obesity-related disease

The question:
Obese females are protected from metabolic disease and have higher levels of ‘good adipokines’ such as adiponectin. Mechanisms?

The Pilch lab discovered a novel ER resident peroxiredoxin/thioredoxin that may be involved in regulating protein disulfide bond formation. They named it adiporedoxin (Adrx). KD in mouse or cultured human adipocytes profoundly affects secretion of numerous adipokines.

Adrx was downregulated by obesity only in Male mice

RAPID TRANSLATION: - - -
- Higher ADRX is associated with higher adiponectin expression (top right).
- Human obesity and associated with low adiponectin in men and women (bottom right)
- low Adrx when higher adipose inflammation (not shown).

Net output:
1 RO1 on basic mechanisms (PI: Pilch)
1 R21 on clinical/translational aspects (PI: Fried, Co-I Pilch, Istdfan, Corkey) (outstanding score – goes to council soon).
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<thead>
<tr>
<th>ARC Title Directors</th>
<th># Publications</th>
<th># Grants</th>
<th># Presentation s at Meetings</th>
<th># Core Participants</th>
<th># Trainees</th>
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<td>4 ARCs did not list theirs</td>
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