

# Clinical and Translational Science Institute / CTSI

at the University of California, San Francisco



## OpenSocial + Linked Data in Research Networking: UCSF Profiles

Eric Meeks, Anirvan Chatterjee, Brian Tuner,  
Leslie Yuan



Clinical and Translational Science Institute / CTSI  
Accelerating Research to Improve Health

UCSF

“ it’s basically like



for biomedical  
researchers ”




# UCSF Profiles

- Contains deep researcher data
- Based on Profiles open source code from Harvard, bravely launched by UCSF in 2009
- IIS/.NET + MS SQL Server + Tomcat/Java
- UCSF adds OpenSocial (via Shindig) to an “unofficial” copy of the source
- OpenSocial version adopted by Wake Forest and Baylor



# OpenSocial in UCSF Profiles

**Kirsten Bibbins-Domingo, MD, PhD**



Title Associate Professor in Residence  
School UCSF School of Medicine  
Department Medicine  
Address SFGH Bldg 10, WD 13  
Phone 415-206-4464

**Awards and Honors**

- 2012 Lee Goldman, MD Endowed Chair in Medicine
- 2010 American Society for Clinical Investigation

**Overview**

Kirsten Bibbins-Domingo, PhD, MD, MAS is the Lee Goldman, MD Endowed Chair in Medicine and an Associate Professor of Medicine and of Epidemiology and Biostatistics. She is the Director of the UCSF Center for Vulnerable Populations at San Francisco General Hospital and the Director of the CTSI K Scholars Program. She is also the PI of the Center for Health And Risk in Minority youth and adults (CHARM), an NIH/NIMHD P60 Center of Excellence in Minority Health and Health Disparities and the Joint PI of DIADS – an NIH/NINDS U54 research center addressing stroke disparities in collaboration with Kaiser Permanente Northern California. A general internist at San Francisco General Hospital and faculty member in the Division of General Internal Medicine, Dr. Bibbins-Domingo is a cardiovascular epidemiologist with expertise in the development of cardiovascular disease, chronic kidney disease, and diabetes risk in young adults. Her work focuses on racial, ethnic and income differences in m... [Show more](#)


**Interests**

Cardiovascular disease, Health disparities, Health of young adults, Chronic disease prevention, Kidney disease

**Websites**

- UCSF Center for Vulnerable Populations at San Francisco General Hospital
- UCSF CTSI K Scholars Program

**Featured Videos**



**In The News**

- Reducing Sodium in American Diet Would Save Hundreds of Thousands of Lives (February 11, 2013)
- Undergraduates Get Hands-On Experience with Clinical Research (September 4, 2012)

**Kirsten's Networks**

Click the "See All" links for more information and interactive visualizations!

**Related Concepts**

Derived automatically from this person's publications.

- Coronary Disease
- African Continental Ancestry Group
- Heart Failure
- Cardiovascular Diseases
- European Continental Ancestry Group

» See all (336) concept(s)

**Co-Authors**

People in Profiles who have published with this person.

- Peralta, Carmen
- Wittinghoff, Eric
- Whooley, Mary
- Shlipak, Michael
- Pletcher, Mark

» See at (38) people

**Related Authors**

People who share similar concepts with this person.

- Powe, Neil
- Massie, Barry
- Whooley, Mary
- Shlipak, Michael
- Dracup, Kenneth

» See all (3) people

**San Francisco Department**

- Greenfield, Edward
- Grossman, William
- Karliner, Joel
- McQuaid, Kenneth
- Ryan, Charles

» Search Department

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UCTV and other  
Public YouTube Videos

**UCSF** About Patient Care Research Education News Center

Home > Reducing Sodium in American Diet Would Save Hundreds of Thousands of Lives

## Reducing Sodium in American Diet Would Save Hundreds of Thousands of Lives

UCSF Study Looks at Impact of Salty Foods on Heart Attack and Stroke Rates Over 10 Years

February 11, 2013

Hundreds of thousands of lives could be saved over 10 years if Americans reduced their sodium consumption to the levels recommended in federal guidelines, according to a new study by researchers at UC San Francisco (UCSF), Harvard Medical School and Simon Fraser University in Canada.


Described this week in the journal *Hypertension*, the study emerged from a workshop convened last year by the U.S. Centers for Disease Control and Prevention (CDC), which sought to quantify the health benefits of population-wide sodium reduction.

The CDC brought together groups of scientists from the three universities, who each used completely different computer models to estimate how lowering sodium would save lives – largely by reducing the number of heart attacks and strokes. All three models found consistent, substantial benefits of reducing U.S. sodium consumption from the current level of intake to a level close to the upper limit of the federal guidelines of 2,300 mg/day in the following ways:


- Immediately reducing sodium intake to the current upper limit of the guidelines would save 500,000 to 650,000 lives over the next 10 years.
- Gradually reducing sodium intake through processed or restaurant-prepared foods by 4 percent per year over 10 years would still yield substantial health benefits, saving 250,000 to 500,000 lives over a decade.

"No matter how we look at it, the story is the same – there will be huge benefits in reducing sodium," said Frank Coxson, PhD, a UCSF mathematician and the lead author on the paper who performed one of the three analyses. Coxson is based at the UCSF Center for Vulnerable Populations, located at the San Francisco General Hospital and Trauma Center (SFGH).

The overall average sodium consumption in the United States has been estimated at 3,400 mg/day, well above the



Kirsten Bibbins, PhD



Kirsten Bibbins, PhD

**Most Read News**

- Summit Activates Future of Precision Medicine
- Aspirin May Fight Cancer by Slowing DNA Damage
- Supreme Court Rules That Human Genes Can't Be Patented
- Revamped Curriculum to Reflect Changing Health Practice

**Related News**

- Addiction Release Might Be Triggered By Turning Off Brain Trigger (June 13, 2013)
- UCSF Group Advocates for Science Research on Capitol Hill (June 12, 2013)
- Urban Folk Musician Jen Chapin to Perform at UCSF (June 20, 2013)
- High Blood Pressure Among Blacks and Young Adults Is Focus of \$1M Stroke Prevention Project (June 20, 2013)
- Early-life Air Pollution Linked with Childhood Asthma (June 19, 2013)

Links to ucsf.edu &  
other public news stories



# OpenSocial Challenges for Profiles and Research Networking

- OpenSocial data model not a good match for researchers (both a PR and technical challenge)
- With only two installations, we already experienced divergent extensions! (Wake Forest and UCSF have different methods for accessing researcher keywords)
- How does the OpenSocial standard compare/compete with the Linked Data standard?



# Research Networking and Linked Data

- Linked Open Data (LOD) standard supported by many publicly funded institutions
- VIVO, a “competitive” product based on RDF and LOD is awarded a large grant
- LOD and VIVO Ontology (extension of FOAF) becomes a recommended standard for research networking
- Profiles adopts LOD, UCSF adds OpenSocial to the VIVO product



# Methods for Integrating Linked Data into OpenSocial

- Needed to express semantic data in JSON
  - MIT Simile
  - Epimorphics
  - JSON-LD
- Extended OSAPI in Shindig 2.0.2
  - `osapi.rdf.getViewer(...)`
  - `osapi.rdf.getOwner(...)`
  - `osapi.rdf.getRDF(...)`



# Advantages of Linked Data and JSON-LD

- Decouples data model from the OpenSocial API
  - Current integration is ontology agnostic
- Same API works for people/friends/co-authors/circles/publications/etc.
- Metadata is included with the data
- JSON supported by every programming language in the known universe\*
- Because every object has a URI, easy to deserialize into a rich object graph





# Next Steps

- OpenSocial + Linked Data now an official part of Profiles with 2.0 release (in QA)  
 <https://github.com/ProfilesRNS>
- Working with Research Networking community to adopt JSON-LD as a supported serialization format for Linked Data
- Add JSON-LD to the VIVO Research Networking product: <http://vivoweb.org/>
- Express OpenSocial “appdata” as Linked Data



# Questions? Let us know!

## [eric.meeks@ucsf.edu](mailto:eric.meeks@ucsf.edu)

The screenshot shows the UCSF Profiles website for Eric Meeks. The header includes the UCSF logo, navigation links (About UCSF, Search UCSF, UCSF Medical Center), and a search bar. The main content area features a profile for Eric Meeks, including a photo, contact information, and a bio. The bio states that he is the Technical Architect for the UCSF Virtual Home team and is driving the effort to bring the OpenSocial standard into research networking tools. He has worked extensively with Harvard Profiles and the OpenSocial foundation. In industry, he has worked in Silicon Valley with numerous entrepreneurial efforts supporting first generation products and services, including Ning. He is co-inventor for two patents resulting from his work with early web transaction systems. He earned an undergraduate degree in engineering from Duke University and studied computational fluid dynamics at Princeton prior to embarking on a career in software development.

**Eric Meeks**  
Title: Technical Lead, CTSI  
School: UCSF School of Medicine  
Department: Clinical & Translational Science Institute  
Address: 185 Berry Street  
San Francisco CA 94143  
Phone: 415-514-8081

**Overview**  
Eric Meeks is the Technical Architect for the UCSF Virtual Home team at UCSF. He is driving the effort to bring the OpenSocial standard into research networking tools and has worked extensively with Harvard Profiles and the OpenSocial foundation to achieve this end.

**Interests**  
Research Networking

**Websites**  
OpenSocial Article  
Profile on LinkedIn  
Work on GitHub

**Featured Presentations**  
Slides by ericmeeks  
Clinical and Translational Science Institute / CTSI  
at the University of California, San Francisco  
ORNG Presentation, AMIA 2012  
Meeks ama 2012 cri poster fi  
AMA 2012 Joint Summit  
An Ontology Driven Approach  
2011 AMIA OpenSocial Prese  
VIVO 2011 OpenSocial and R  
2011 AMIA Profiles OpenSoc  
2009 CTSI Profiles OpenSoc  
2010 CTSI Profiles OpenSoc  
Open Research Networking Gadgets (ORNG)  
www.org.info

**Eric's Networks**  
Click the "See AF" links for more information and interactive visualizations!

**Related Concepts**  
Derived automatically from this person's publications.  
Computer Communication Networks  
Information Storage and Retrieval  
Research Personnel  
Cooperative Behavior  
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**Co-Authors**  
People in Profiles who have published with this person.  
Kahlon, Mini  
See all (1) people

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People who share similar concepts with this person.  
Amin, David  
Hauser, Stephen  
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Reeves, Scott  
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