



Encore

Volume 1: Issue 2 Oct-Dec 2012

The University of Texas at San Antonio™
Research Centers in Minority Institutions



13th RCMI International Symposium on Health Disparities...

- ◇ **30 UTSA staff/faculty will attend** the 13th RCMI International Symposium in Puerto Rico.
- ◇ **38 poster presentations** from UTSA will be featured
- ◇ **Inauguration of booth representing the RCMI at UTSA** to be launched at Symposium!
- ◇ **14th RCMI International Symposium** to be hosted by San Antonio (RCMI at UTSA)!

UTSA RCMI Nanotechnology image makes the front cover of *Integrative Biology*!



Congratulations:
UTSA at RCMI program
awarded Supplemental Grant
from NIMHD/NIH!



Important Dates to Remember

December 10-13 — RCMI International Symposium

December 17-20 — 2012 NIMHD Summit

HIGHLIGHTS — Administrative Core

- ▶ NIMHD/NIH awarded UTSA a \$171,363 Supplemental Grant to fund the purchase of additional equipment for the Protein Biomarker Core and Biomarker Discovery in Glucocorticoid Resistance in EAE (Project 2) of the UTSA at RCMI program.

HIGHLIGHTS — Biophotonics Core

- ▶ Installation and test flights have been completed on the Zeiss 710 Live. While retaining its full functionality as a conventional confocal microscope, the new system is also equipped with the Chameleon Ultra II pulsed emission two photon laser, permitting deep imaging into viable intact tissues.

HIGHLIGHTS — Nanotechnology and Human Health Core

- ▶ An image from Dr. José-Yacamán's paper "Imaging interactions of metal oxide nanoparticles with macrophage cells by ultra-high resolution scanning electron microscopy techniques" made the front cover of Integrative Biology (Issue 11, 2012).
- ▶ Director of the Microanalytical Chemistry Lab, Dr. Garcia's research project made the front cover of Electrophoresis (Vol. 33 No. 17, September 2012).



HIGHLIGHTS — Computational Systems Biology Core

- ▶ Dr. Wang has been awarded an NIH grant entitled "Systems Biology of *Plasmodium falciparum*: Building and Exploring Network Models" (PI).
- ▶ Dr. Santamaria has been awarded an NSF grant entitled "US-German Collaboration: The effects of chloride dynamics in cerebellar computation" (PI).
- ▶ Dr. Ruan has been awarded an NSF grant entitled "Topology-based approaches to integrated analysis of transcriptomic, protein interactomic and phenotypic data" (PI).
- ▶ A multidisciplinary team consisting of UTSA and UTHSCSA researchers, including multiple CSBC key personnel (Dr. Robbins, Dr. Wang, Dr. Ruan, and Mr. Wang) has been awarded a joint NIH P20 grant entitled "The Cancer Bioinformatics Initiative: A UTSA/UTHSCSA Partnership" (Dr. Robbins is the UTSA PI).
- ▶ Dr. Ruan's student, Chengwei Lei, received a travel award to attend IEEE BIBM 2012.
- ▶ Dr. Ruan received the 2013 UTSA Tenure-Track Research Award for a project titled "Computational Systems Biology Approaches to the Prediction of Breast Cancer Metastasis."
- ▶ Dr. Wang has published three manuscripts.
- ▶ Dr. Ruan has published four manuscripts and submitted three papers for peer review.
- ▶ The CSBC sponsored a workshop on Bioinformatics Solutions for Next Generation Sequencing, featuring training sessions of two leading -omics analysis software: CLC Genomics Workbench and the Geneious bioinformatics software suite.

HIGHLIGHTS — Protein Biomarkers Core

- ▶ Part of the NIMHD/NIH Supplemental Grant (\$86,000) will be used for a Bruker Image Prep system for MALDI imaging sample preparation and to upgrade the Bruker ESI micro TOF with an APCI II source for LC coupling and Direct Probe for small molecule analysis, and the Compass OpenAccess software for walk-up sample analysis.
- ▶ All projects are expected to benefit from recent investments funded by the RCMI grant and/or the RCMI supplement, including:
 - Perkin Elmer JANUS Automated Sample Workstation: an automated liquid handler for rapid and high-throughput sample processing with 96-well plates
 - Matrix Science Mascot probability-based protein database searching and peak picking algorithms (ver 2.4) were upgraded to the current versions
 - Proteome Software Scaffold assembly algorithm (ver 3.0 Q+S)
 - FreezerWorks sample bar-coding/storage and sample tracking system
 - Collaboration with industry on the next generation of isobaric labeling reagents to increase sample throughput for quantitative M2 proteomics studies
- ▶ Other projects are in development seek to apply M2 proteomics to studies on cancer health disparities, brain injury, nanomedicine, cancer microRNAs etc.
- ▶ Dr. Renthal has one paper in press.
- ▶ Drs. Forsthuber and Haskins have two papers in press demonstrating the clear advantages of the Microwave & Magnetic (M2) Proteomics for quantifying (low abundance) proteins in relatively large numbers of specimens
- ▶ The PBC is currently leveraging its development of M2 proteomics for rapid sample preparation and (low abundance) protein quantification with numerous projects, including the following NIH grant proposals and small grant awards:
 - Protein Biomarkers of Chlamydia trachomatis (Small Grant Award, PI: Dr. Arulanandam, UTSA Biology)
 - Dissecting the Aberrant Epigenome in Glioblastoma Multiforme (GBM) by Proteomic Analysis (Small Grant Award -pending, PI: Dr. Lin, UTSA Biology)
 - Detection and Functional Evaluation of UTF1 In Mouse Spermatogonial Stem Cells (Small Grant Award -pending, PI: Dr. Herman, UTSA Biology)
 - Predictive Protein Biomarkers of Experimental Autoimmune Encephalomyelitis & Multiple Sclerosis (NIH R21 -pending, PI: Dr. Forsthuber, UTSA Biology)



HIGHLIGHTS — Research Project 1

- ▶ Dr. Brancaleon's Lab has two publications.
- ▶ Dr. Brancaleon presented "Use of Globular Proteins as Vehicles to Increase the Solubility of Dyes for Photoreactive Fuel Cells" at the 2012 SACNAS National Conference in Seattle.

RCMI Center for Interdisciplinary Health Research (CIHR)

The University of Texas at San Antonio, One UTSA Circle, San Antonio, TX 78249
Phone: (210) 458-7741 **Fax:** (210) 458-5765 **Website:** www.utsa.edu/crts/rcmi

Administrative Core	<u>Principal Investigators</u> George Perry, PhD Andrew Tsin, PhD	<u>Scientific Associate Program Director</u> Thomas Forsthuber, MD, PhD	<u>Administrative Manager</u> Christella Robledo, BA
Biophotonics Core	<u>Core Leader</u> Colleen Witt, PhD	<u>Core Director</u> Colleen Witt, PhD	
Nanotechnology and Human Health Core	<u>Core Leader</u> Miguel Jose-Yacamán, PhD	<u>Core Director</u> Arturo Ponce-Pedraza, PhD	
Computational Systems Biology Core	<u>Core Leader</u> Yufeng Wang, PhD	<u>Core Director</u> Zhiwei Wang, MCS	
Protein Biomarkers Core	<u>Core Leader</u> Stephan Bach, PhD	<u>Core Director</u> William Haskins, PhD	
Research Project 1	Photo-Induced Unfolding of Cancer-Specific Membrane Receptors Principal Investigator: Lorenzo Brancalion, PhD		
Research Project 2	Biomarker Discovery in Glucocorticoid Resistance in EAE Principal Investigator: Thomas Forsthuber, MD, PhD		
Research Project 3	Advanced Data Processing for Capillary LC/MS Data Principal Investigator: Jianqiu Michelle Zhang, PhD		

Seminars in Translational Research (STRECH)

Most recent seminar: November 14, 2012
 “Immunobiology of WNV-Induced Neuroinflammation” by Dr. Vivek R. Nerurkar from the University of Hawaii at Manoa.

The Seminars in Translational Research (STRECH) series is a collaborative project among UTSA RCMI, UTHSCSA IIMS and CTRC, and the UTSA-UTHSCSA Joint Graduate Program in Biomedical Engineering.

The seminars bring together basic and clinical researchers from UTSA and UTHSCSA to promote new multidisciplinary collaborations that foster the development of innovative theories, approaches, and technologies in clinical and translational research.

Seminars are normally held on the third Wednesday of the month, alternating between the UTSA and UTHSCSA campuses.

More details can be found on the STRECH website:
<http://translationalseminars.utsa.edu>



Christella’s Corner



Visitors from the Ponce School of Medicine and Health Sciences, Dr. Torres-Ruiz and Dr. Matta, will be presenting a seminar — “Interested in grant support for cancer or translational research?”
 (December 4, 2012 at 1:00 - 2:00 pm in BSE 1.110)

Need financial support for scientific research? Go to <http://utsa.edu/crts/rcmi/> to learn about the RCMI at UTSA Small Grant Program.
 Applications are now being accepted.

Cores have been aligned! — The Protein Biomarkers Core is part of Chemistry; the Computational Systems Biology Core is part of Computer Science; and the Nanotechnology and Human Health Core and the Biophotonics Core are both a part of Physics & Astronomy.