



Genome Technology Access Center (GTAC)

By Richard Head

Features

1. GTAC
1. Director's Message
4. National CTSA Update
4. 2012 KL2 Scholars
5. 2012 Pre-doctoral Students

Grant Citation

Investigators using ICTS cores and services to support their research should acknowledge the CTSA Grant **UL1TR000448**. ICTS scholars and trainees should acknowledge the CTSA linked grant **KL2 TR000450** or **TL1TR000449**.

ICTS Items

6. HRPO SWAT!
6. Did You Know?
6. Upcoming Events
6. Research Navigator

The Genome Technology Access Center (GTAC) is an ICTS associated core facility that offers state-of-the-art services in Next Generation Sequencing (NGS), Microarrays (DNA & RNA), PCR, and Bioinformatics. The GTAC was established in 2010 through the WU Department of Genetics to provide access to a wide range of genomic services for WU investigators, as well as external collaborators. The center became affiliated with the ICTS in 2011 under the ICTS Genomic Medicine Program (GMP) that specifically supports one of the three ICTS renewal cross-cutting themes: to translate the findings of genetic/genomic research into clinical research and practice. The GMP offers a portal to WU cores providing services related to genomic analysis.

The new technologies offered by GTAC facilitate the discovery of biomarkers and disease signatures and enable the highly accurate sequencing of genomes and gene subsets. Core services are customized and tailored to investigators' projects, and GTAC staff members work closely with investigators to design testing that is specific to their project goals and specimen types. These services are unique in that they are not available via other campus cores or commercial companies. The core can provide CLIA-quality performance for research prices.

A significant number of changes have occurred for GTAC within the last year. In October of 2011, Richard Head, Research Associate Professor of Genetics, was named the GTAC Director and Mike Heinz the Assistant Director. In November, the Microarray and PCR labs moved to their new location in the Cortex building and the bioinformatics group relocated to Cortex in the spring of 2012. In July, the Siteman Cancer Center's MGA core, already housed within Cortex, became part of GTAC, thus providing access for Siteman members to all GTAC services. Finally, a number of new technologies and protocols were put in place to broaden the services available to the research community.

Continued: Page 2

Message from the Director: Bradley A. Evanoff, MD, MPH

ICTS NIH Award Successfully Renewed: The Next 5 Years

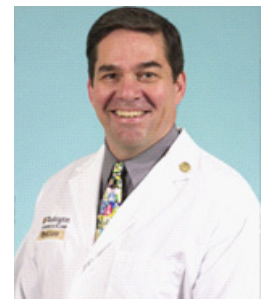
As most of you know, our ICTS/CTSA competing renewal application was successful, and we were funded as of June 2012, through 2017. I would like to extend my sincere thanks to the many people who played important roles in the renewal application, including the core directors, the Executive Committee, and many other faculty and staff who were essential to our successful renewal. In particular, I would like to thank Becky Evans, Jae Allen, and Jaimee Stagner, whose hard work, creativity, and attention to detail were essential to the renewal.

The transition of the national CTSA consortium program from NCRR to the newly created NIH Institute, NCATS (National Center for Advancing Translational Science), is now complete. While it is clear that the CTSA programs will evolve under NCATS, most notably through stronger emphases on the development of new therapeutics and on supporting multi-institutional studies initiated by other NIH Institutes and Centers, NCATS leaders continue to express strong support for the full range of translational research from bench to community implementation.

Renewal Aims

In the next 5 years, the ICTS will continue its 3 major aims: 1) provide access to research support infrastructure and other research resources to support multidisciplinary clinical and translational research, 2) expand and enhance clinical and translational research education programs, and 3) promote and facilitate increased communication, interaction, and collaboration within WU and with regional and national partners. In our first 5 years, we pursued these 3 aims with a broad goal: "to provide outstanding environments and resources for investigators engaged in clinical and translational research."

Continued: Page 3



GTAC; from page 1

Current GTAC Services

- **Next Generation Sequencing:** GTAC offers DNA (Targeted, Whole Exome, Whole Genome) and RNA (Poly A Selection, Ribosomal Depletion, Low Input RNA) library preparation and sequencing. GTAC can prepare libraries or can sequence libraries made by investigators.
- **PCR:** Gene expression, Digital PCR, SNP genotyping, and Amplicon Generation services are all available. The ABI-7900 and Bio-Rad CFX 96 platforms provide access to traditional PCR services while the new Fluidigm Biomark HD system provides high throughput and multiplexed capabilities for larger studies in a cost effective manner.
- **Microarrays:** Illumina, Agilent, and Affymetrix platforms for DNA and gene expression work are all offered. For investigators new to these platforms, GTAC can provide information to assist in making a decision about which platform is optimal for the proposed study.
- **Bioinformatics:** Tier1 bioinformatic services, through the generation of the variant call file (VCF), are provided as part of the delivery of sequencing data at no extra charge. Custom bioinformatics support for sequencing and microarray data is also available on a fee-for-service basis.
- **CAP/CLIA Clinical Sequencing, Microarrays, and PCR:** GTAC provides a number of CAP certified CLIA assays in these areas, however, these services are only available through Genomics and Pathology Services (GPS) at Wash U (<http://gps.wustl.edu/>).

Coming Soon to GTAC

- **New Web Site:** Coming online October 1st, a redesigned GTAC web site (<http://gtac.wustl.edu>) will provide information on all of the major technologies offered and investigators will be able to see how long the sample submission queues are for each of our research platforms.
- **Online Sample Submission:** In fall 2012, we will convert to an online sample submission form allowing the user to upload the sample information electronically and simply attach a copy when delivering samples. This will eventually be tied in with the billing system and with a system to track publications and acknowledgements for investigators who used GTAC services.
- **C1 Single Cell Gene Expression:** GTAC recently purchased a C1 Single-Cell Auto Prep System from Fluidigm. This system simplifies isolation of individual cells for gene expression analysis. The system is expected to be online in October of 2012.
- **Illumina HiSeq 2500 Upgrades:** In late 2012, the Illumina HiSeq 2000s will be upgraded to 2500s. The new 2500 systems will enable one day sequencing for formats such as 2x101 that previously required 11-12 days.

The GTAC labs are currently located in the Cortex and 4444 Forest Park buildings. The core staff welcomes inquiries from all interested investigators. Please contact Mike Heinz at 314-286-1276. Alternatively, investigators are encouraged to visit the new GTAC website (<http://gtac.wustl.edu>).



Single Cell Gene Expression System – The Fluidigm C1 and BioMark systems provide an integrated platform for doing single cell gene expression. The C1 can capture and harvest RNA from up to 250 individual cells. The C1 product can then be assayed (RT-PCR) on the BioMark HD.

Director's Message; from page 1

Translation Focus

In the next 5 years, our overall goal will become more focused on the translation of scientific discoveries into improvements in human health. ICTS funding and resources will be increasingly directed to projects whose results may lead to improvements in prevention, diagnosis, or treatment. To this end, we have identified 3 cross-cutting scientific themes that will promote interdisciplinary interactions across multiple ICTS cores, programs, and research groups where the resources of the ICTS, WU, and ICTS partner institutions are most likely to result in high-impact clinical research and its subsequent translation into clinical practice. While our ICTS will continue to support and advance clinical and translational science across diverse research areas, these new translational science themes address areas of national scientific importance, and take advantage of new and existing strengths in clinical and basic science at our institutions.

Theme 1: Translate the findings of genetic/genomic research into clinical research and practice. WU has tremendous strengths in genetic and genomic research, which in several instances has been successfully applied to patient care. An important goal of our ICTS is to translate this wealth of discovery into clinically useful tools for prevention, diagnosis, and treatment of human diseases. Our plans are consistent with the newly released strategic plan for the NHGRI “Charting a course for genomic medicine from base pairs to bedside” [1], which describes a progression from understanding the structure and biology of the genome to understanding the biology of disease, advancing the science of medicine, and ultimately improving the effectiveness of health care.

Theme 2: Accelerate the development and evaluation of new therapeutics and diagnostics. Basic science discoveries improve health through translation of research findings into new diagnostic, preventive, or therapeutic options, and the successful development and appropriate dissemination of new therapeutics is among the highest impact activities in translational science. Crossing the “translational divide” separating new discoveries from their rational use as new therapeutics and diagnostics is our second cross-cutting scientific theme. This theme is consistent with the mission statement of NCATS: “To catalyze the development of innovative methods and technologies that will enhance the development, testing, and implementation of diagnostics and therapeutics across a wide range of human diseases and conditions.”

Theme 3: Conduct comparative effectiveness and dissemination and implementation research to improve the transfer of clinical research discoveries into practice. An important goal of our ICTS is to advance later-stage translational research that evaluates the effectiveness of new laboratory tests, diagnostics, imaging modalities, devices, and treatments in real-world settings and speeds the adoption of evidence-based best practices into clinical practice in community settings. There is a significant need to perform comparative effectiveness research (CER) to better determine what diagnostic methods, treatments, and devices work best in actual practice settings. After demonstration of effectiveness in real-world settings, another translational gap looms, as evidence-based practices are most often disseminated passively, usually with little uptake. Implementation research comprises studies of processes and strategies that move, or integrate, evidence-based effective treatments into routine use in usual care settings. Without better understanding and infrastructure to promote dissemination and implementation, “the application of proven solutions in health practice will continue to occur slowly and rarely.” [2]

The first 5 years of the ICTS can be seen as a “disruptive innovation” - an innovation that changes social practices and is characterized by new products and services offering greater accessibility, appeal to new groups, and improvements in performance along novel dimensions (Yes, I've been reading some management texts). We now have another 5 years to work together on advancing clinical and translational research. Personally, I look forward to working with ICTS members and institutions to sustain what we've built.

1. Green ED, Guyer MS. Charting a course for genomic medicine from base pairs to bedside. *Nature*. 2011 Feb 10;470(7333):204-13. PMID: 21307933
2. Kreuter MW, Bernhardt JM. Reframing the dissemination challenge: a marketing and distribution perspective. *Am J Public Health*. 2009 99(12):2123-7. PMID: 19833993

ICTS has new grant numbers, remember to cite the NIH CTSA Grant # UL1 TR000448 when your research was supported by ICTS/CTSA funds or services.




Institute of Clinical and Translational Sciences

UL1 TR000448 KL2 TR000450 TL1 TR000449

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 Washington University in St. Louis

National CTSA Update

New NCATS Director Named

Christopher P. Austin, MD, was named director of NCATS, effective September 23, 2012. Dr. Austin's new NCATS role was announced by NIH Director Francis S. Collins, M.D., Ph.D., at the inaugural meetings of the [NCATS Advisory Council](#) and [Cures Acceleration Network \(CAN\) Review Board](#). See the [NIH Press Release](#).

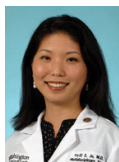
Discovering New Therapeutic Uses for Existing Molecules Pilot Program

NCATS recently launched the [Discovering New Therapeutic Uses for Existing Molecules](#) pilot program which will match scientists with industry-provided molecular compounds. Five new industry partners have joined Pfizer, AstraZeneca and Eli Lilly in the initiative. See the [NIH Press Release](#).

Find research resources and keep up with national CTSA news at: <https://www.ctsacentral.org/>

New KL2 Career Development Scholars

The ICTS welcomes 6 new clinical research scholars to the ICTS Center for Clinical Research Training KL2 2012 cohort. The KL2 Career Development Awards are aimed at fellows, post-doctoral scholars, and junior faculty who are committed to multidisciplinary careers in clinical and translational research.



Yo-El Ju, MD

Assistant Professor, Department of Neurology, Division of Sleep Medicine
Washington University School of Medicine
"Slow Wave Sleep and Amyloid: Linking Synaptic Activity, Apneas, and Alzheimer's"
Mentors: David Holtzman and Paul Shaw



Cynthia Ortinau, MD

Instructor, Department of Pediatrics, Division of Newborn Medicine
Washington University School of Medicine
"Cerebral Alterations in Infants with Complex Congenital Heart Disease"
Mentors: Terrie Inder and Pirooz Eghtesady



Iskra Pusic, MD

Instructor, Department of Internal Medicine, Division of Medical Oncology
Washington University School of Medicine
"Maintenance Therapy with Decitabine after Allogeneic Stem Cell Transplantation"
Mentors: John DiPersio and Mario Castro



Cynthia Rogers, MD

Assistant Professor, Department of Psychiatry, Child and Adolescent Psychiatry
Washington University School of Medicine
"Assessing Impact of Early Environment on Development of Preterm Infants with MRI"
Mentors: Terri Inder and Joan Luby



Michael Seifert, MD

Assistant Professor, Department of Pediatrics, Division of Pediatric Nephrology
Southern Illinois University School of Medicine
"The Chronic Kidney Disease - Mineral and Bone Disorder in Chronic Allograft Injury"
Mentors: Daniel Brennan and Dwight Towler



Andrea Wang-Gillam, MD, PhD

Assistant Professor, Department of Internal Medicine, Division of Oncology
Washington University School of Medicine
"Evaluation of Lapatinib in Pancreatic Cancer Patients With Activated HER1/2"
Mentors: Lee Ratner and Jason Weber

2012 ICTS Clinical Research Training Center Pre-Doctoral Students

The ICTS Clinical Research Training Center (CRTC) supports multiple pre-doctoral research training programs and we are pleased to recognize the 2012 trainees in the photos below. The TL1 program promotes clinical research training among pre-doctoral students including a short-term summer research program, an intensive one-year research program, and a multi-year standard research training program for individuals working toward a PhD. In addition, the Advanced Summer Program for Investigation and Research Education (ASPIRE), was launched in the summer of 2010 for high school and college students to provide mentored research experiences and didactic training in clinical and translational research. The 2012 summer cohort included 10 high school and 10 college students. The pre-doctoral programs are led by Jay Piccirillo, MD, FACS, CPI.

To learn more about the pre-doctoral programs, visit the [CRTC website](#) or contact Jessica Phelan, Program Coordinator, at (314) 454-8255 or jphelan@dom.wustl.edu.



ASPIRE High School - David Ayeke, Kelley Bell, Ravenna Boodram, Varun Chakravarthy, Amy Cui, Edward (Ted) Grace, Conor Joplin, Megan Kastner, Meera Zassenhaus, and Melissa Zhang

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ASPIRE College - Erica Barnell, Kevin Bock, Morgan Carlile, Christopher Cartmill, Caitlin Moliske, Taylor Real, Allyson Renth, Kristen Shaw, Aravind Somasundaram, and Tanvi Subramanian

TL1 Trainees



New TL1 2012 Intensive and Standard Trainees include: Ryan Bailey, Meg Feely, Jakub Godzik, Brianna Kolody, Stephanie Sandvick, Jeffrey Stepan, Peter Sylvester, and Davor Vasiljevic

First Master of Science in Clinical Research Management Graduates

The Clinical Research Management Graduate Program conferred the first Master of Science degrees to 6 students on May 16, 2012. The graduates are Sally Anderson, Stephanie Belyew, Chad Hampton, Erin Householder, Amy Reeves, and Alexandra Timpson. The Master of Science in Clinical Research Management is designed for experienced professionals working in academic research centers or private industry who seek greater depth and breadth of study in the science and business of clinical research and is awarded by University College, the evening and continuing education division of Washington University Arts & Sciences.

For more information on the Clinical Research Management Program (BS, MS, Undergraduate/Graduate Certificate), contact Sally Anderson, Manager of the Clinical Trials Core (CTC) Education Program, (314) 747-4126 or anderson@siteman.wustl.edu.

WU Institute for Public Health Annual Conference

“Rising to the Challenge: Public Health in the 21st Century”

**October 9, 2012
12:30pm - 5:00pm**

**Eric P. Newman Education Center,
WU Medical Center Campus**

Keynote Address - *James S. Marks, MD*
Senior Vice President and Director
Robert Wood Johnson Foundation Health Group

Access the [registration link](#) or see the [IPH website](#) for more information.

HRPO SWAT!

Did you know the WU Human Research Protection Office (HRPO) has 2 programs designed to get you quick answers? Be sure to take advantage of these options available through the HRPO SWAT! (Staff With Answers Today) Program:

HRPO SWAT! On Call:

- Call HRPO at 633-7400 from 8-4 every day and get immediate assistance by asking for the on-call staff member.
- Chat with HRPO staff directly through myIRB. Click the “chat” icon next to your name in the upper right hand corner of my IRB.

HRPO SWAT! Office Hours:

- HRPO reviewers/analysts available in person throughout the week.
- Computers available to work through an application with you on the spot.

Danforth Campus - Monday and Thursday from 1-4 in Psych 202
School of Medicine Campus - Tuesday 1-4 and Friday 8-11 in FLTC Room 602

Research Navigator

Inquiries directed to the ICTS Research Navigator, via e-mail or phone, are currently being monitored by the ICTS Administrative Core staff and triaged to the appropriate expert.

To learn about services, visit the ICTS Cores and Resources website or contact the ICTS at 314-362-9829 or ICTSNavigator@wustl.edu for assistance.

Attention ICTS LINC Members:

The next LINC meeting will take place from 12:00 to 1:00pm in BJCIIH Room 10A/B on October 26. Hope to see you there!

Did You Know?

Do you know what PMCID means? Are you familiar with the NIH Public Access policy? Do you realize that authors will NOT be allowed to list publications on NIH grant applications or progress reports if those publications are not in compliance with this policy?

Simply stated, if your research is funded through NIH, you are legally required to get a PMCID within three months of publication.

Don't know how to get a PMCID? The Becker Medical Library website has excellent resources, both on their website and an expert on staff, namely Cathy Sarli (sarlic@wustl.edu). If you aren't already familiar with and following this policy, ask for help now!

NIH Public Access Policy Brown Bag Presentation
Wednesday, November 14, 2012
12:00pm - 1:00pm
Farrell Learning and Teaching Center, Room 213
[Registration Link](#) or email Cathy Sarli

Upcoming Events**ICTS Brown Bag Seminars**

October 24 (Noon-1:00p.m.)
Center for Administrative Data Research (CADR)
Margie Olsen, PhD

November 27 (Noon-1:00p.m.)
Washington University Patient Safety
Mary Taylor, Director, WU Patient Safety

ICTS Brown Bag 2 Seminars for Behavioral Research
November 14 (Noon-1:00p.m.)
TBD

Holden Auditorium, Farrell Learning & Teaching Center, WU Medical Center Campus. Register via HRMS Self Service, Training & Development. Non-WU staff email ICTS@wustl.edu.

7th Annual Research Symposium and Poster Session

October 31, 2012
12:30pm – 5:00pm
Connor Auditorium, Farrell Learning and Teaching Center
WU Medical Center Campus

Keynote Speaker - *Curtis Lowery, Jr., MD*
Chairman and Professor, Department of Obstetrics and Gynecology; CTSA Director
The University of Arkansas for Medical Sciences

No registration required. For more information contact [Joe Wilson](#), CRTS Media and Events Coordinator