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IN TRANSLATION

Message from the Director

As we progress in all aspects of translational science with a true benchside-to-bedside approach, the Connecticut Institute for Clinical and Translational Science (CICATS) continues to find ways to advance research and improve healthcare. In this issue of *In Translation,* we highlight our 2013 pilot grant awardees; acquaint you with the dynamic efforts of Dr. Minakshi Tikoo, Director of Evaluation for the Biomedical Informatics Center at CICATS; and reveal the benefits of the clinical research tools available to investigators at the University of Connecticut Health Center. Enjoy!
- Cato T. Laurencin, M.D., Ph.D. ♦

2013 Pilot Grant Awardees

The CICATS Pilot Grant Program is a highly-competitive funding opportunity for innovative and collaborative research projects that have a basic or clinical research focus (up to phase 2A) and are translational in nature. Investigators are encouraged to develop their ideas and generate preliminary data that will improve human health through innovative science. CICATS intent for the pilot program is to bring together the most talented investigators to identify and address health issues; help obtain future extramural funding opportunities and future investment through public/private partnerships; and partake in the bench-to-bedside process where research results are directly used to develop new pathways for patient treatments.

CICATS' Scientific Advisory Committee (SAC) has awarded 8 outstanding scientists in the field of clinical and translational scientific research. For this year's grants selection, a detailed peer review was completed by CICATS' SAC, which is comprised of noteworthy scientists and a panel of leading research experts. The committee reviewed over 50 applications received from investigators at the UConn Health Center, UCONN, Hartford Hospital, Connecticut Children's Medical Center, Saint Francis Hospital and Medical Center, and The Jackson Laboratory.

The review criteria included significance of the project; feasibility; potential value to clinical and translation research; innovation; collaborative research; and overall scientific merit. Each awardee received $50,000 to fund their proposed projects.

CICATS congratulates the 2013 pilot grant awardees listed below and looks forward to the outstanding results of their research endeavors.

Biree Andemariam, M.D.
UConn Health Center
Identification of patient-specific vascular adhesion profiles and therapeutic signatures in sickle cell disease
This study will identify new treatments for blood-flow blockages that cause severe, debilitating pain in people with sickle cell disease.

Collaborators: Leonardo Aguila, Ph.D., UConn Health Center; George Lykotrafitis, Ph.D., UCONN; and William Zempsky, M.D., Connecticut Children's Medical Center.

Christopher D. Heinen, Ph.D.
UConn Health Center
Determining pathogenic significance of germline mismatch repair gene variants
This research takes a closer look at inherited

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mutations in DNA repair genes that may increase the risk of cancer in patients and will aid in proper diagnosing and counseling of suspected hereditary cancer patients.

Collaborators: Robin Schwartz, M.S., C.G.C. and Jennifer Stroop, M.S., C.G.C., both from UConn Health Center.

Dmitry M. Korzhnev, Ph.D.
UConn Health Center
Translesion Synthesis DNA Polymerases as Targets for Anti-Cancer Drug Design
The proposed research utilizes high-throughput screening to identify small-molecule enzyme inhibitors as a new class of cancer therapeutics. These compounds will sensitize cancers to first-line chemotherapy and help avoid resistance to chemotherapy treatment.

Dr. Korzhnev's co-investigator is Matthew K. Hadden, Ph.D., UCONN.

Xiuling Lu, Ph.D.
UCONN
Radionuclide Therapy of Metastatic Ovarian Cancer with Mesoporous Nanoparticles: Translation of Results in Animal Models to Humans
The investigation will translate research findings for treatment of metastatic ovarian cancer from animal models to humans.

Collaborators: Molly A. Brewer, D.V.M., M.D., M.S., UConn Health Center; Andrew Salner, M.D. and Joel Sorosky, M.D., FACOG, both from Hartford Hospital.

Renee Manworren, Ph.D., APRN, PCNS-BC
Connecticut Children's Medical Center
Pilot Study to Advance Personalized Medicine in Pediatrics: Identification of Children and Adolescents at Risk for Post-Operative Pain and Adverse Analgesic Effects
This proposed research will link genetic findings to help determine personalized strategies for post-operative pain management and minimizing side effects.

Collaborators: Gualberto Ruaño, M.D., Ph.D. and Richard Seip, Ph.D., both from Hartford Hospital.

John A. Taylor, M.D., M.S.
UConn Health Center
L-Selection as a Marker of Metastatic Potential in Invasive Bladder Cancer
The study will investigate the role of L-Selectin as a potential marker of metastatic bladder cancer given its role in trafficking cells to lymph nodes. This would enable physicians to better predict the potential for tumor growth and alter patient care by preventing needless surgeries and/or treating early tumors more aggressively to prevent spreading.

Collaborators: James F. Rusling, Ph.D., UCONN; and Dharamainder Choudhary, Ph.D. and Poornima Hedge, M.D., both from the UConn Health Center.

Tulio A. Valdez, M.D.
Connecticut Children's Medical Center
Multi-Wavelength Video-Otoscopy for the Diagnosis of Otitis Media
The aim of this proposal is to develop an otoscope, which uses different colors of light to enhance some features of the internal membrane and middle ear, and to improve diagnostic accuracy for ear infections.

Collaborators: Donald Peterson, Ph.D., UConn Health Center/UCONN and Jinbo Bi, Ph.D., M.Sc., UCONN.

Andrew Winokur, M.D., Ph.D.
UConn Health Center
Development and Assessment of a Sublingual Tablet Preparation of Thyrotropin Releasing Hormone (TRH) to Enable New Therapeutic Applications
This study proposes the development of an oral tablet form of TRH for use in cancer patients suffering with fatigue symptoms.

Collaborators: Jayesh Kamath, M.D., Ph.D., UConn Health Center; and Robin H. Bogner, Ph.D. and Brian J. Aneskievich, Ph.D., both from UCONN.

Please visit the Pilot and Collaborative Translational and Clinical Studies Core page for information about the CICATS pilot program. ♦

Minakshi Tikoo, M.B.I., Ph.D.

Dr. Minakshi Tikoo, Director of Evaluation for the Biomedical Informatics (BMI) Center at CICATS, has been a leader in biomedical informatics for the last 15 years. She is also an assistant professor in the Department of Community Medicine and Health Care, where she mentors students in UCONN's Master of Public Health program. Using her extensive community experience in outreach and consensus building, Dr. Tikoo provides leadership and enhances cooperation between CICATS and external agencies to promote health benefits, program efficiency, and improved quality of care. Dr. Tikoo maintains a roster of successful initiatives and state-run programs due to long-term, effective relationships with key stakeholders from various state and community-based agencies.

Currently, Dr. Tikoo is working on a number of projects that will shape how medical information is exchanged and evaluated. In her role as the Health Information Technology (HIT) Coordinator for the State of Connecticut, she spearheads two initiatives for the Electronic Health Record (EHR) and Health Information Exchange (HIE) projects. She conducts extensive outreach efforts by interfacing with small and large physician practices, hospitals, and federally qualified health centers. According to Jewel Mullen, Commissioner for the Connecticut Department of Public Health (DPH), "Dr. Tikoo's leadership will help foster the growth of the HIE among stakeholders across the health care system. She will help move Connecticut towards our goal of a functional and sustainable HIE, with a focus on improving health care delivery systems that are effective and efficient." See Commissioner Mullen's full remarks and announcement here.

Dr. Tikoo is the principal investigator of two Department of Social Services (DSS) programs funded by the Center for Medicare and Medicaid Services (CMS). The first program is a $3.5M grant to create an HIE for DSS, and the second, a $322K grant to perform outreach and education services to the CMS Electronic Health Record Incentive Program. The HIE initiative addresses care coordination and the establishment of a secure email messaging mechanism that uses a direct protocol to ensure that personal health information is securely transmitted. The first year will entail setting up the infrastructure; in the second year, the infrastructure's success will be measured.

Dr. Tikoo states, "CICATS' BMI has been successful in the automation of performance measurements and knowing which metrics we should be reviewing, as well as the computation of those metrics. Furthermore, we have a great partnership with DSS and the DPH - so success feels quite plausible." Acquiring this information and its corresponding feedback will help determine what Connecticut is doing well and what additional work can be done to strengthen the secure exchange of personal health information.

The CICATS' BMI core offers strategic guidance, tools, consulting services, education and research expertise by implementing and supporting processes that promote and track collaboration among CICATS investigators. In addition to these services, a robust educational program has been offered to faculty entitled the "Grow Your Own" training program. For CICATS members who are faculty at the University of Connecticut (or at any of our partner institutions), this program provided educational support and medical/clinical informatics training opportunities. This support included reimbursement for tuition, books, and fees, as well as paid time off to pursue the program studies.

Under this program, Dr. Tikoo completed the American Medical Informatics Association (AMIA) 10x10 education training through the certification program at the Oregon Health Sciences University (OHSU). At the commencement of that program, there were ten applications from UCONN faculty. Funds were awarded and made available to eight individuals, of which, Dr. Tikoo received both certification and a master's degree in biomedical informatics in June 2013. "I don't know that I would have completed the MBI without the support of CICATS. They have given me financial and full University support," states Dr. Tikoo.

For her final project in the AMIA program, Dr. Tikoo focused on meta-analysis, which is the identification of patterns of information within multiple study results. As part of this project and with the continued support of CICATS, Dr. Tikoo

answered her project's main question, "Can quality of care be improved by use of the EHR?"

An additional benefit of Dr. Tikoo's recent scholastic achievement is the ability to further foster relationships with colleagues at other universities. This has enabled her to partner with biomedical informatics professors from OHSU to write NIH grants for informatics projects. Her academic credentials also enable the University of Connecticut to be a stronger contender when competing for NIH grants for biomedical informatics studies.

CICATS congratulates Dr. Tikoo on all of her accomplishments and the forthcoming success of her projects. For more information about the Biomedical Informatics Center at CICATS and services offered, click here. ♦

Clinical Research Tools at UConn Health Center

On September 19th, Dr. Khamis Abu-Hasaballah, Assistant Vice President of Research Information Technology and Director of the Research Informatics Core, presented the Clinical Research Tools at UConn Health Center as part of the CICATS Seminar Series. Within this seminar, he presented a robust overview of three distinct programs designed to assist investigators in data capture, secondary use of clinical data, and registering study volunteers.

Dr. Abu-Hasaballah and his team ensure the security of clinical research databases, registries and file transfers; consult on data management and sharing plans; support web survey design and custom applications development; and provide high capacity storage for "big data." Many of these tools are web-based, allowing researchers to exchange data from anywhere in the world, thereby fostering research collaboration.

CICATS uses various means, including technology, to fully support their investigators and collaborations with its partner institutions and affiliates. Therefore these research tools help basic science, clinical and translational investigators with their projects and accomplishing their research goals.

In compliance with federal requirements for human subjects protection, these tools provide a much needed secure platform for data exchange among clinical investigators. Dr. Julian Ford, Professor of Psychiatry and CICATS' Director of the Regulatory Knowledge and Support and Clinical Ethics Core states, "Khamis is leading the implementation of a 21st century information technology strategy, providing the infrastructure and tools to meet the unique requirements of researchers. As a researcher and investigator, I believe what Khamis is doing is absolutely invaluable."

The three distinct tools Dr. Abu-Hasaballah addressed in his presentation are:

1. REDCap, Research Electronic Data Capture, designed to support data capture for research studies, allows users to build and manage online surveys and databases quickly and securely at the Health Center. With REDCap, one can create and design projects using either the online method from a web browser through the Online Designer; or an offline method by constructing a template file in Microsoft Excel, which can be later uploaded into REDCap. To access REDCap here at the UConn Health Center, click here. Within this link you will find training resources and additional information to utilize this system.

2. R2D2, the Research and De-Identified Database, in conjunction with i2b2 (Informatics for Integrating Biology and the Bedside), is another research information system used to permit clinical researchers to search and use existing, Institutional Review Board (IRB) approved de-identified clinical data. The data provided in this system includes lab results, ICD-9 diagnoses, CPT-4 procedures, admission and discharge locations, and patient demographics. Access to the data is facilitated though i2b2's drill-down structure, which allows investigators to search and extract de-identified data necessary to answer their research question(s).

3. Study and recruitment registries are designed to respond to the growing number of clinical trials and the need for research volunteers. The Research Information Technology & Informatics department

at the UConn Health Center developed the UConn Study and Recruitment Registry (UConn STARR), as a "matchmaker" tool to link research volunteers to current clinical trials being conducted by UCONN researchers and provide critical information about study participants.

The Research Informatics Core is offering training on these resources during the month of October. Please contact Harriet Potts at redcap@uchc.edu for more information.

To learn more about these tools and others designed to assist research investigators, please visit our Researchers Tools page. ♦

Stay up-to-date on what is happening in CICATS by visiting our Events & Media page.

*For more information about CICATS sponsored events or if you are interested in being added to our Listserv, please contact Yvonne Barber at ybarber@uchc.edu.

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