

INSIDE THIS ISSUE:
Research Design and
Analysis Program

<i>From the Director</i>	1
<i>RDAP: Connecting Investigators and Methodologists to Improve Health Research</i>	2
<i>Meet the RDAP Co-Directors</i>	5
<i>CTSI Seminar Series</i>	6
<i>Employment</i>	6

FROM THE DIRECTOR

The CTSI Newsletter has returned from a brief hiatus after recovering from the holidays and the excitement of yet another NCAA Championship. This month's edition has two features of importance for all CTS investigators. The first is a description of a key institute program: The Research Design and Analysis Program (RDAP) headed by Keith Muller and Jon Shuster from the Division of Biostatistics in the Department of Epidemiology and Health Policy Research. Drs. Muller and Shuster and their colleagues have generated an outstanding resource for assisting faculty members and trainees in the early stages of the design of clinical or translational research studies, particularly as it relates to various alternatives in study designs (such as, for clinical trials) and biostatistical considerations, data management and data analysis. Use the RDAP resource early in the process of crafting your research protocol and maximize your chance of developing a mature research plan that rigorously addresses proper power analysis, randomization, blinding, etc. Don't let yourself be your most confounding variable!

The second section of this Newsletter summarizes an important new means of communicating additional CTSI resources to the Institute's community, researchers and trainees. Chris Batich, Chief Operating Officer of the Institute, has spearheaded the development of a lecture series designed to provide knowledge about cutting-edge scientific and educational resources here and globally through four major CTSI programs: Translational Technologies and Resources (directed by Jesse Gregory); Training and Professional Development (directed by Marian Limacher); Community Engagement and Research (directed by Betsy Shenkman) and Biomedical Informatics (directed by Mike Conlon). I'll be kicking off this series on February 18 with an overview of the CTSI, its goals and programs. Subsequently, we anticipate having a weekly lecture on alternate topics provided by outstanding UF and outside speakers. We actively encourage your input in suggesting speakers and topics for the lecture series, so please contact Dr. Batich with your ideas.

Finally, don't forget that next month we will reissue the RFA for internal funding of Pilot and Collaborative Projects. As always, our emphasis will be on stimulating new multi-disciplinary and inter-disciplinary research, so start thinking creatively and collaboratively. Good luck!



Peter W. Stacpoole, PhD, MD
 Director, General Clinical Research Center
 Director Clinical and Translational Science Institute
 Associate Dean Clinical Research and Training

Despite the complexity of putting its vision into action, the idea behind the CTSI is simple: The synergy generated by bringing together researchers from different fields, colleges, departments, and institutes campuswide creates a host of new possibilities that were previously unforeseen for curing disease and providing better care to patients, and bringing those advances to fruition more quickly.

CTSI “will be a point of contact and conduit to creating interdisciplinary teams to reach everything on the NIH roadmap,” said Keith Muller, Ph.D. Muller serves as director of the CTSI Research Design and Analysis Program (RDAP), which will be instrumental in fulfilling the institute’s mission.

Single point of reference

The Program has several goals, according to Muller and co-director Jonathan Shuster, Ph.D. First and foremost, the program functions as a single point of contact and support for investigators throughout UF using both quantitative and qualitative research methods. RDAP brings together for the first time methodologists from different disciplines, areas of expertise, and colleges in order to provide coordinated and integrated services that can assist researchers improve their CTS research studies. In the past, despite significant expertise universitywide, coordination was often lacking. This created barriers to scientists seeking methodological expertise and prevented experts from interacting as a team to develop the best strategies for designing studies and analyzing data – gaps the Program will eliminate.

Describing RDAP as “inclusive, eclectic, and ecumenical,” Muller calls it “a statistical yente – a matchmak-

er,” that brings together multi- and interdisciplinary researchers and methodologists in order to better address the complexities of CTS. This includes biostatisticians; epidemiologists; and experts in health services research, quality of life studies, focus groups, and other methodologies who provide intellectual diversity and a strong foundation for the Program.

Faculty experts with RDAP provide a variety of research design guidance, including framing of hypotheses, sample size selection and randomization, variable specification and measurement, and implementation of appropriate statistical methodologies for analyzing data. RDAP also collaborates with other CTSI programs, including the Community Engagement and Research Program and the Biomedical Informatics Program to carry out a host of tasks. These include maintaining recruitment and tracking databases; monitoring participant accrual and retention; setting up systems for ongoing safety analysis; ensuring appropriate database designs, and developing standardized forms, web-based interfaces, and other data capture tools; monitoring data collection and quality; and disseminating information about potential collaborators.

Methodological cooperation and development

RDAP will focus on helping investigators develop strong research teams. This will be accomplished by linking investigators to potential methodology collaborators who are best suited to meet the demands of their studies in terms of design and analysis and who share an interest in the principal investigator’s content area.

Research Design and Analysis Program:

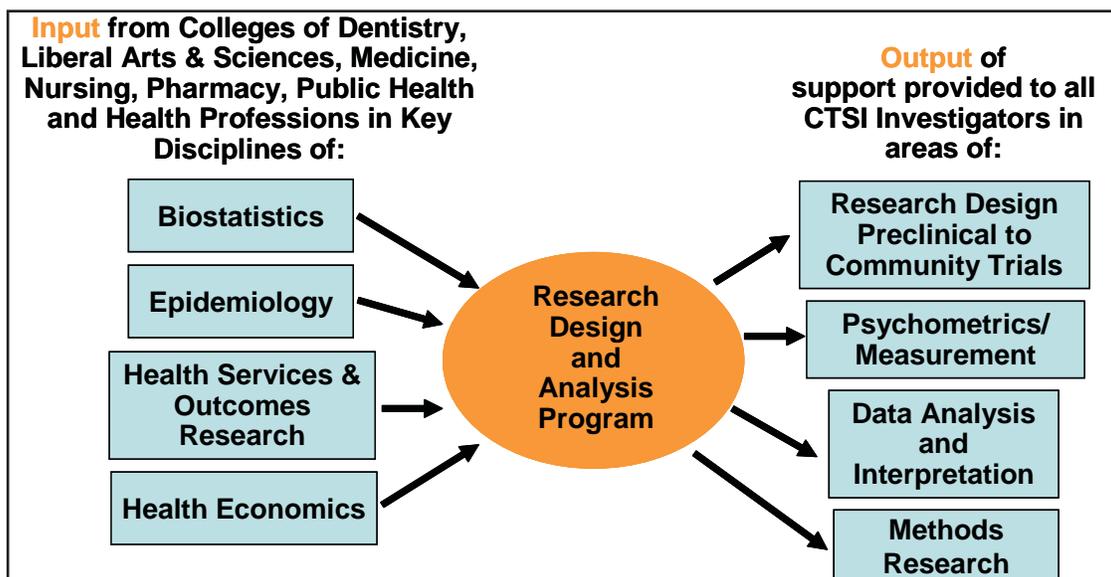
CONNECTING INVESTIGATORS AND METHODOLOGISTS TO IMPROVE HEALTH RESEARCH

The collaborations developed through the Program will not only improve individual studies, but they also can promote the development of new methodologies through the discovery that comes from people working together, Muller said. Key advances will arise by developing adaptive designs, which allow the features of a study to be changed in a planned way while still following a set of rules. This work stresses defining adaptive methods that will be accurate in small samples, a constant statistical challenge and which many RDAP experts' work has emphasized.

The Program's diverse functions will be self-sustaining, supported primarily by fees, and portions of research funding it receives when investigators write RDAP services into their grants. Experts provide grant-writing help at no cost to investigators who request in their proposals funding to cover the Program's services.

Problem-solving partnerships

RDAP represents an advance not only with respect to bringing together previously disparate methodologies and researchers, it also provides a greater opportunity to anticipate and manage potential issues before they become unsolvable problems. In a worst-case scenario, such problems could lead to data that is unusable or cannot be analyzed. The technological innovations of the past decades have significantly increased that likelihood, according to Shuster. These innovations have made once impossible data collection not only possible, but relatively easy. However, the ability to analyze the data once it is collected has lagged. Complicating matters further is that it is not uncommon to go through the time, effort, and expense to collect and analyze data, but not to be able to separate the effects of scientifically interesting variables from other variables known as confounders, making it impossible to tease out the real cause of an outcome.



Research Design and Analysis Program:

CONNECTING INVESTIGATORS AND METHODOLOGISTS TO IMPROVE HEALTH RESEARCH

One simple example of this occurred when an investigator wanted to show that pain scores improved four months after an experimental intervention. The answer was yes, but because the intervention involved an acute condition, these data could not be used to infer that it was the intervention, and not the natural healing process or a combination of the two, that was responsible for the patients' longer-term improvement.

Another instance occurred when an investigator got results close to significance after completing a trial with an initial set of participants and asked for an extension to accrue more patients. However, the investigators had already spent their entire nickel and had no more to extend the study. Had the investigators planned the study differently, undertaking interim looks at reviews of its efficacy at preplanned timing points, the study's monies could have been spent at varying time points. It was too late to do this after the fact.

These examples highlight the importance in getting guidance from an appropriate methodology expert early on so any potential issues can be worked out before these problems arise, Shuster said. If a study is planned well up front, it can be accomplished, Muller said. "Small changes can make a big difference."

CTS-specific training

The Program also provides training courses specifically designed for researchers across the CTS continuum from preclinical studies to community engagement. Several excellent programs exist for training UF graduate students pursuing careers in statistics, biostatistics, epidemiology, and health services research. However, methods courses available to CTS investigators are limited. As a result, a series of six-

week modules were developed for CTS researchers on topics including research design, data acquisition and management, and analysis concepts and techniques.

Muller and Shuster say they are excited about the ability of the CTSI and RDAP to establish connections between scientists in previously disparate research areas because of the significant advances in research that will result. More important are the improvements in health care and people's health these interactions can generate.

"I really think we're at the beginning of a revolution," Muller said.

Meet the RDAP Co-Directors

Keith Muller, Ph.D. and Jonathan Shuster, Ph.D., will co-direct RDAP.



Keith Muller, Ph.D., is a professor and director of the Division of Biostatistics in the College of Medicine's Department of Epidemiology and Health Policy Research. He came to UF after 28 years in Biostatistics at the University of North Carolina, where he is an Emeritus Professor. Muller also provides design and analysis review as part of the internal preparation process for research grants at the Malcom Randall Veterans Administration Medical Center. In addition to serving as RDAP director, he functions as its primary mentor for faculty teaching the applied biostatistics and selected methods courses, and chairs its Laboratory and Translational Science Subcommittee, which conducts initial review of all laboratory-based, preclinical and Phase 1 clinical trial proposals.

Muller's research centers on developing more efficient designs and methods for selecting sample size in study planning, especially for medical imaging research, and he has been working to develop novel methodologies in this area. Muller's work has emphasized developing methods accurate in small samples, and he has been a leading contributor to the theory and practice of adaptive designs, with internal pilot designs as a special case. He has co-authored three textbooks on linear models, the most widely used statistical methods. The latest text provides the first fully integrated treatment of the univariate, multivariate and mixed linear models, an approach that provides access to many small sample properties for special mixed model classes that would not be available otherwise, including better estimation, inference, and sample size selection. Contact: Keith.Muller@biostat.ufl.edu



Jonathan Shuster, Ph.D., is a research professor in the Department of Epidemiology and Health Policy Research, and the biostatistician for UF's General Clinical Research Center (GCRC). A member of the UF faculty since 1969, Shuster is internationally recognized for his work in clinical trials and translational science, has nearly 300 peer reviewed publications, and has been awarded more than \$30 million in grants from the NIH and other federal agencies as a principal investigator or co-PI. In October 2008, he completed a four-year term as a member of the Cardiovascular and Sleep Epidemiology Study Section for the NIH, his fifth term on an Institute study section. He also is a member of the Editorial Board of the journal *Sequential Analysis*. In addition to serving as RDAP's co-director, Shuster chairs its Clinical Research Subcommittee, which conducts initial review of all mechanism-based, patient-oriented research and Phase 2 and 3 proposals.

Shuster's expertise is in group sequential designs for clinical trials, sample size determination, clinical epidemiology, and meta-analysis. He has written a suite of study design programs that have been made widely available to biostatisticians. He has made important contributions to estimating statistical power for re-randomization tests and exact inference, which is vital in clinical and translational research projects having small to moderate sample sizes. His numerous successes have resulted in him being recognized by peer reviewers as "an active developer of statistical methods to handle unconventional needs or measures." His reviews of externally funded multicenter GCRC studies that have been presented to the UF GCRC Advisory Committee (including major NIH peer-reviewed studies and pharmaceutical trials) have resulted in numerous design changes at the central office for these external studies. One example was a study to prevent maternal transmission of HIV to their babies, a three-arm trial of 3,000 mothers nationwide in which the safety monitoring plan underwent a major change resulting from Shuster's redesign of the study. Contact: jshuster@biostat.ufl.edu

CTSI Seminar Series Begins



Chris Batich, Ph.D.
CTSI Chief Operations Officer

One of the key parts of the CTSA now being reviewed by NIH is the establishment of a regular CTSI seminar to bring in outstanding outside speakers to UF and to use talks by our own excellent speakers to learn about each other's work. With that goal in mind, we have organized a seminar series that will highlight a different one of the four key components of the CTSI once each month. The four groups are: Community Engagement (CE), Translational Technologies (TT), Biomedical Informatics (BMI) and Professional Development or Training (PD). For this semester, we plan to have a talk each week in room LG 110A/B (in the McKnight Brain Institute) from 9-10:30 a.m. (to allow time for discussion).

Our Director, Dr. Peter Stacpoole, will present an overview of the new opportunities and ambitious goals for the CTSI at our first talk set for February 18. This will be followed by a talk by Dr. Hartmut Derendorf on "Modeling and Simulation to Streamline Drug Development" as the first TT talk. The next week, we will have a BMI talk, followed by a PD talk and then a CE talk. This pattern will roughly repeat through the semester (skipping Spring Break), and begin again in the Fall Semester. We plan to video record the talks, and to provide them as an archive on the CTSI web site. Some of the talks will be linked to a distant audience as a webinar. Individual announcements will also be sent before each talk, and they will be announced in the newsletters. We welcome suggestions for potential speakers or topics.

Employment

Did you know that there are multiple venues through which both internal and external jobs are posted?

For Job Seekers

<https://jobs.ufl.edu> - University of Florida jobs postings.

<http://www.union.ufl.edu/jobs/> - Reitz Union student job listings.

<http://www.sfa.ufl.edu/programs/workstudy> - Federal Work-Study Program.

<http://www.sfa.ufl.edu/programs/ops.html> - Other Personnel Services jobs.

<http://www.sfa.ufl.edu/programs/oce.html> - Off-Campus jobs.

<http://www.sfa.ufl.edu/programs/vaworkstudy.html> - Veteran's Affairs Work-Study.

Subscribe to the CTSI Newsletter

Ensure that you receive future editions of this Newsletter by subscribing to the CTSI-ANNOUNCE-L Listserv. It's quick and easy to do and will allow you to also receive other CTSI announcements as they are distributed. To subscribe, simply send an email to listserv@lists.ufl.edu with the message:

SUBSCRIBE CTSI-ANNOUNCE-L your-first-name your-last-name

Or simply [click here](#) to subscribe right now!