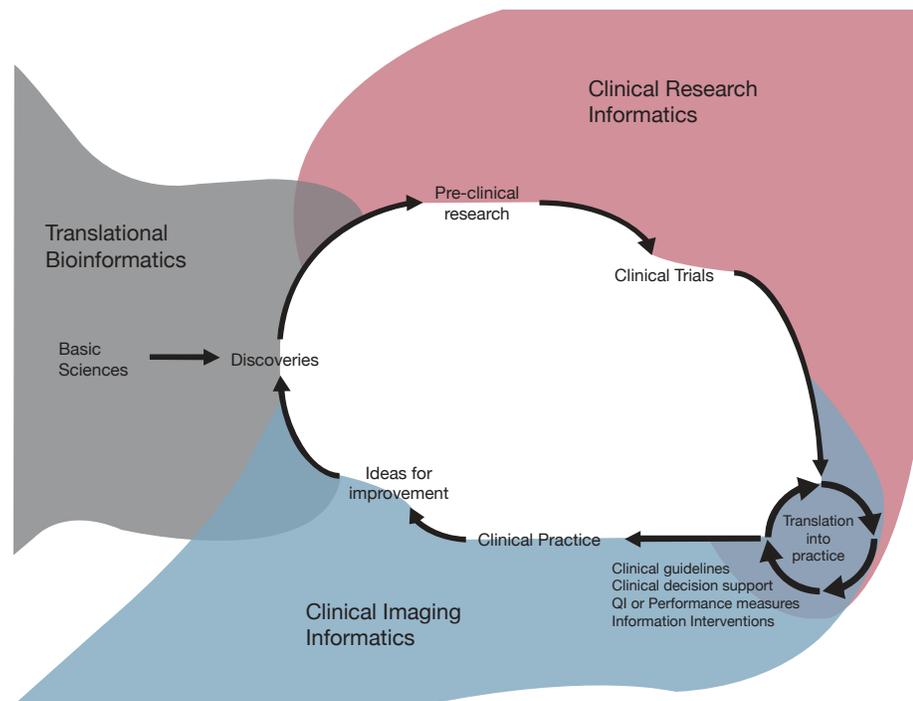


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UAMS' Data Sluice Machine TRI, DBMI Helping Researchers Find 'Gold'



Biomedical informatics initiatives at UAMS cover the spectrum in the clinical and translational cycle for improving human health.

If new biomedical discoveries are like gold, to borrow the metaphor used by Meredith Zozus, Ph.D., the prospecting days are fast coming to an end. A new associate professor in the rapidly expanding Department of Biomedical Informatics (DBMI), Zozus was explaining UAMS' recent and

forthcoming biomedical informatics strategies to benefit clinicians, biomedical researchers and graduate students.

The need for managing enormous amounts of data and meeting the NIH's new, higher expectations for rigor and study reproducibility are helping drive

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“As an institution we are increasingly providing **COLLABORATION, INFORMATICS EXPERTISE** and **DATA INFRASTRUCTURE** to biomedical researchers at all scales, from the smallest to the largest of studies, so our investigators don't have to build their own data processes. In essence we are building a **DATA SLUICE** operation.”

- Meredith Zozus, Ph.D..

Message from Dr. James



Dear Colleagues,
This issue of the newsletter addresses transformative educational opportunities that are in development through the Department of Biomedical Informatics (DBMI) and

will enhance our local environment for clinical and translational research. UAMS leadership recognizes that biomedical informatics is playing an increasingly crucial role in all phases of research. Chancellor Dan Rahn, M.D., and College of Medicine Dean Pope Moseley, M.D., are providing unprecedented support, and it is exciting to see UAMS become a national leader in this field.

TRI is also supporting biomedical informatics research initiatives, such as our recently announced 2017 Pilot Awards request for applications. We are seeking proposals for translational biomedical informatics approaches examining rural health and health care issues. You can learn more on our website – TRI.uams.edu.

Another important opportunity for our research community is the continued development of the enterprise data warehouse, a TRI-supported initiative recently renamed the Arkansas Clinical Data Repository (AR-CDR). Earlier this month, Ahmad Baghal, M.D., M.P.H., joined the College of Medicine DBMI faculty and will serve as director of the AR-CDR. TRI welcomes Dr. Baghal and looks forward to working closely with him as we optimize the AR-CDR for investigator-initiated research in the future.

Sincerely,

Laura James, M.D.
TRI Director
UAMS Associate Vice Chancellor for
Clinical and Translational Research

UAMS' Data Sluice Machine (Continued from page 1)



Meredith Zozus, Ph.D.

UAMS' efforts for more robust data management systems. Another factor is the increasing difficulty compared to 20 years ago for a clinical researcher to make a single discovery that improves health outcomes, Zozus said.

"Back then, finding those gold nuggets was a lot easier. You could do a large study and learn something new that changed clinical practice and improved outcomes," she said.

"But those gold nuggets have become harder to find. So, like real-life prospectors, we're moving from panning for gold to computationally sifting through tons of data to find the nuggets."

Zozus also noted that the NIH, through its Big Data to Knowledge (BD2K) initiative, is targeting a growing shortage in biomedical research of individuals with computational expertise, informatics and statistics, with enough understanding of the underlying biology, biochemistry or physiology to really collaborate with a biomedical scientist.

The challenge is particularly acute for extremely large datasets, where different methods are needed.

To help ensure UAMS is a leader in biomedical informatics, Fred Prior, Ph.D., who chairs DBMI and leads TRI's Comprehensive Informatics Resource Center, recently announced new – some nationally unique – education initiatives to the TRI Leadership Council. Together the



Fred Prior, Ph.D.

initiatives cover the translational spectrum, from molecules to populations. Pending approval from the Arkansas Department of Higher Education (ADHE), and starting in fall 2017, these four tracks in different areas of biomedical informatics will offer certificates, master's degrees and doctorates:

Translational Bioinformatics. This degree program is for researchers using data in cellular and molecular level studies that have a clinical target, e.g., a study of genes producing a protein that has a role in disease. The field also encompasses work with pre-clinical data as development and testing begins for new targets, compounds or devices.

Imaging Informatics. Training in imaging informatics, offered only a few places nationally, includes coursework in

research imaging to teach the latest modalities and methods of managing and interpreting images used in research. It also includes coursework for imaging professionals, i.e., those who run a hospital's picture, archiving and communication (PAC) system where images such as CT scans, X-rays, and MRIs are stored.

Clinical Informatics. This program is for those interested in generation, management and use of information in health care settings, i.e., clinical decision support or algorithms to predict patients who are likely to respond well to treatment. Clinical informatics is a medical subspecialty approved in 2011 by the American Board of Medical Specialties. DBMI ran its first review course this summer to help physicians sitting for the clinical informatics board exam. The review class will be offered again this summer as a free service to all physicians in Arkansas who want to sit for the exam. Other plans include a fellowship in clinical informatics.

Clinical Research Informatics. If approved by ADHE, UAMS may be the first program to offer graduate degrees in clinical research informatics in the United States.

Clinical research informatics involves data for the design, conduct and reporting of clinical studies. While easily confused with clinical informatics, clinical research informatics is not research on clinical informatics; instead, it is the informatics of research, i.e., how information is used in gauging the feasibility, or in designing, conducting or reporting clinical studies. If approved by ADHE this spring, the clinical research informatics track will include a master's degree and Ph.D. as well as a professional master's option.

All four tracks will have the option of distance learning.

DBMI and TRI will also continue the Research & Application Seminar Series, which is open to the public and offers an hour of CME credit to clinical and informatics professionals across the state for attending seminars on the latest biomedical research tools and practices.

While biomedical informatics is not new to UAMS, it is increasingly approaching the data as a science, considering its fundamental properties and how those should govern its management, Zozus said.

"As an institution we are increasingly providing collaboration, informatics expertise and data infrastructure to biomedical researchers at all scales, from the smallest to the largest of studies, so our investigators don't have to build their own data processes," she said. "In essence, we are building a data sluice operation."

TRIBUTARIES

'The Magic Potion' for Research Informed Consents



Kristie Hadden, Ph.D., recently presented her findings to the UAMS Research Support Information Network (RESIN)

A study led by UAMS health literacy expert Kristie Hadden, Ph.D., has found that the reading level of informed consents for research is too high, potentially hampering UAMS' efforts to recruit research participants.

Her retrospective study, supported by the Translational Research Institute (TRI) and the UAMS Institutional Review Board (IRB) Office, reviewed IRB-approved consents from 2013 through 2015, finding that the mean readability of consents was 10th grade. Only 17 percent fell within or below the recommended grade range.

Hadden, director of the UAMS Center for Health Literacy, said consent forms should be written at a sixth-to-eighth grade reading level or lower.

"For ethical reasons, effective recruitment and engaged participation, it's critical that we get this right," she said. "If a prospective research participant doesn't understand the consent, they may be less willing to participate."

As a potential solution, Hadden, in collaboration with the IRB, developed a plain-language template for researchers and is tracking the results. The aim is to increase researchers' use of the template and determine if it is an effective tool for meeting the literacy goal.

So far, the data show that researchers using the template hit the plain language target 100 percent of the time, with a mean readability of sixth to eighth grade. Those not using the template had a mean readability of 10th grade. Data will be collected through May, but Hadden is excited by the initial results.

"I think we've found the magic potion. It is the template," Hadden told researchers and staff at the November UAMS Research Support Information Network (RESIN) meeting.

The retrospective study combined with an intervention showing UAMS "moving the needle" on the issue appears to be unique nationally.

"We may be the first to demonstrate measurable success at improving readability of research informed consents across an institution," Hadden said.



Pearl McElfish, Ph.D., MBA, Associate Vice Chancellor, UAMS Northwest Regional Campus

"Our research team has made big strides since it was established at the UAMS Northwest Regional Campus in 2013, and TRI has been there for us every step of the way. TRI has been integral in helping us build our community engagement infrastructure to address the profound health disparities of Hispanic and Pacific Islander populations. Its support

has aided our successful applications for nearly \$8 million in external research funding, with more on the horizon. Just as importantly, TRI's efforts are providing new, unique opportunities to provide interprofessional education, cultural competency, and to address health disparities at the same time."

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The following UAMS researchers cited the Translational Research Institute (TRI) in publications after utilizing TRI resources or funding:

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