



DEAN'S MESSAGE: What's On My Mind

What's on my mind this month are two important issues before the U.S. Congress that directly affect the School of Medicine: passing the 21st Century Cures bill, and amending the Higher Education Act of 1965.

The American research enterprise, long the world's gold standard for scientific progress, is at risk of slipping behind. For many years, the NIH and other science agencies have operated under a continuing resolution, which has created tremendous uncertainty. The federal government has pulled back financial support for biomedical research, but by targeting research spending, this country risks a discovery deficit.

Academic institutions like ours need consistency in federal funding so that we can align the size of our training programs to fit our future research workforce. The University of Maryland School of Medicine has made immense contributions to science, including the discovery of restriction enzymes, which gave birth to genetic engineering; the identification of the three types of polio virus; the discovery of a new class of drugs to treat breast cancer; and the development of vaccines for pandemic influenza and the most recent Ebola outbreak. Without NIH-funded basic research, none of these advances would have reached a single patient.

The 21st Century Cures bill demonstrates a resurgence of interest in Congress in the health of our biomedical research ecosystem. The bill would give the NIH an extra \$8.75 billion over five years through a new, so-called innovation fund. Specific projects, such as research into personalized medicine, would receive support from a pot of \$500 million per year.

Most importantly, the remaining money would support young scientists and higher-risk projects with the potential for incredible rewards. Falling behind in research support translates into people turning away from careers in science, and an increasing inability to encourage new investigators to enter academic professions. Because we have siphoned off federal research funding, we have triggered a shortfall in academically-trained physicians, physician-scientists and scientists. In essence, we have thwarted efforts to increase young people's interest in STEM (science, technology, engineering and mathematics) careers by constricting salary support and stimulating a surplus of competition for grants and jobs in many of these fields.

The Foreign Medical School Accountability Fairness Act would protect all medical students, and save U.S. taxpayer dollars, by closing a loophole that gives special treatment to a small number of medical schools in the Caribbean. The loophole allows for-profit medical schools in the Caribbean to enroll large percentages of American students without meeting the same standards or the basic requirements of U.S. and foreign medical schools. In 2012, those schools took in more than \$450 million in U.S. Department of Education Title IV funding.

The Act's simple fix would apply the following two requirements to all medical schools outside of the United States and Canada: at least 60 percent of the enrollment must be non-U.S. citizens or permanent residents, and students must have at least a 75 percent pass rate on the U.S. Medical Licensing Exam. These are the same requirements of students at the School of Medicine, which help to ensure students' progress and success in their education, up through residency matching.

For example, the average attrition rate at U.S. medical schools is 3 percent, while rates at for-profit foreign medical schools can be up to 26 percent or higher. Even if students do graduate, they do so with much more debt and often have difficulty finding a residency position. In 2015, foreign-trained, American graduates had a residency match rate of 53 percent, compared to 94 percent of graduates of U.S. medical schools.

Medical science is entering a powerful new era of discovery. Our institutions need sufficient resources and a level playing field in order to seize these massive opportunities and continue advancing knowledge to improve human health. Unfortunately, medical schools are scrambling to recruit and retain gifted scientists and to provide them the state-of-the-art tools they need.

This month's issue of SOMnews highlights some of the core services provided by the Center for Innovative Biomedical Resources (CIBR) here at the School of Medicine. CIBR itself was made possible through funds secured from the American Recovery and Reinvestment Act, a much-needed, one-time injection of federal dollars into the NIH budget. Although the School of Medicine took full advantage of the Stimulus funds, we need to have more consistent support to sustain our research ecosystem.

Preserving America's leadership in medical education and global biomedical research will require bold, decisive actions and strategic planning for the long term. Although we await decisions on the 21st Century Cures Act and the Foreign Medical School Accountability Fairness Act, we welcome the renewed attention and urge policymakers to move forward to implement these crucial changes. While we cannot recoup the financial losses of the past few years, these legislative changes will help us regain our footing, and allow us to truly invest in the next big breakthroughs.

In the relentless pursuit of excellence, I am

Sincerely yours,

E. Albert Reece, MD, PhD, MBA
Vice President for Medical Affairs, University of Maryland
John Z. and Akiko K. Bowers Distinguished Professor and Dean, University of Maryland School of Medicine

Point of Pride

NIH Director Francis Collins was among the VIPs who attended the official **ribbon-cutting ceremony** that formally opened our **Center for Innovative Biomedical Resources (CIBR)**.



This makes us proud!



Here's to you, Dr. Robinson

Gregory Robinson, DMin, MDiv, MA, longtime University of Maryland School of Medicine administrator, educator, advisor and clergyman, retired on July 1 after 41 years of service to the School of Medicine.

"We owe a deep debt of gratitude for everything Dr. Robinson has done for the School of Medicine over the past four decades," said E. Albert Reece, MD, PhD, MBA, Vice President for Medical Affairs, University of Maryland, and the John Z. and Akiko Bowers Distinguished Professor and Dean, University of Maryland School of Medicine. "Indeed, one only has to look around the SOM and UMB campus to see Dr. Robinson's mark on virtually every research building that we have constructed, including the newest one, HSF III. In addition, Dr. Robinson's mark is seen in his involvement on committees, advisory boards, in major policy discussions, and in his leadership and management. He has been an instrumental part of the School's

tremendous growth and success, and we wish him all the best in his greater mission of ministry and service."

Dr. Robinson's career at the SOM has uniquely covered an unprecedented range of critical administrative responsibilities, including academic and research administration, fiscal management, space and facilities planning, construction and management, human resource management, and parking and public safety. At various points during his tenure, he managed some or all of these functional areas at the same time.

He also managed to find time to dedicate himself tirelessly to service. From the start of his career, serving the needs of the faculty, staff, students and SOM guests has been his priority. Whether in the SOM, on the UMB campus, in the community, or in the field of academic medicine, his career was marked by unparalleled service

[continued on back page]

CIBR: What is it and what can it do for you?

Mission To provide specialized expertise, cutting-edge technologies and sophisticated scientific resources supporting a robust basic, clinical and translational biomedical research environment

In November, 2013, the University of Maryland School of Medicine (UMSOM) launched the Center for Innovative Biomedical Resources (CIBR), the organizational framework for the UMSOM biomedical core resources. CIBR serves as a center of excellence for state-of-the-art technologies, high-tech instrumentation, and expertise that supports biomedical research, clinical practice and health care. Here is a sampling of what CIBR has to offer. More CIBR resources will be spotlighted in later issues of *SOMnews*.

To see the full list of the CIBR cores and services, please visit <http://medschool.umaryland.edu/CIBR/>.

Selected CIBR Cores:

Structural Biology Cores



BIOSENSOR CORE FACILITY

Room 611, Health Sciences Facility II
410-706-3020 or 410-706-2036
<http://biosensorcore.com>

Core Services

Biacore® instruments utilize the optical method of “surface plasmon resonance” (SPR), small changes in the interaction of monochromatic light with a metallic surface that occur when a protein or other molecule binds to that surface. Using the T200 or 3000, the core and its staff can provide accurate determinations of “on” and “off” rates for binding reactions, as well as determine affinity constants for binding. As it uses SPR, many different kinds of binding reactions can be studied, often robotically, and a wide range of biological molecules can be examined, including proteins, nucleic acids, carbohydrates and lipids, as well as small molecules.

Typical studies can:

- Determine if pairs of molecules bind to each other.
- Determine kinetic constants, binding constants, and specificity of binding.
- Determine if several molecules can bind simultaneously to the same ligand or if they compete for binding.



Core Instrumentation

- Biacore 3000
- Biacore T200

NUCLEAR MAGNETIC RESONANCE CENTER

Basement, Health Sciences Facility II
410-706-7004
<http://medschool.umaryland.edu/nmr/>

Core Services

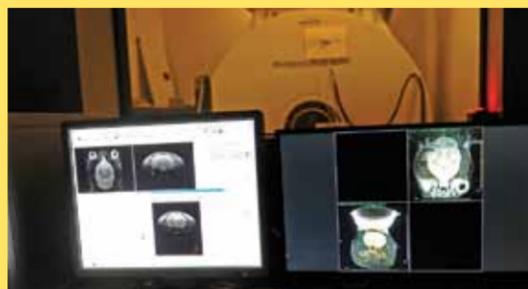
We offer assistance and training for:

- Collecting NMR data
- Processing NMR data
- Analysis of NMR data
- Linux and Apple workstation access for data processing and analysis
- Lab space for sample handling
- Assistance with NMR-related computer software including Bruker Topspin, NMRView, nmrPipe, nmrDraw, xplor-NIH, and several others

Core Instrumentation

- 600 MHz Bruker Avance III NMR Spectrometer with TCI cryoprobe
- 800 MHz Bruker Avance Spectrometer with TXI cryoprobe and BACS 60 automatic sample changer
- 950 MHz Bruker Avance Spectrometer with TCI cryoprobe

Imaging Technologies



CENTER FOR FLUORESCENCE SPECTROSCOPY

Room N-241, Institute of Human Virology
410-706-7500

Fax: 410-706-8408

<http://medschool.umaryland.edu/cfs/>

Core Services

The CFS makes available state-of-the-art spectroscopic instrumentation and techniques for fluorometric bioassay development and cellular imaging:

- Fluorescence energy transfer (FRET)
- Fluorescence polarization (FP)
- Fluorescence correlation spectroscopy (FCS)
- Single molecule detection (SMD)
- Time-resolved spectroscopy
- Fluorescence lifetime imaging microscopy (FLIM)
- Facility also provides technical expertise on all aspects of fluorescence techniques used in basic science and biological/ medical applications.
- Cell imaging and studies of biomolecule interactions of assemble molecules and on single molecule basis are available with fluorescence microscopies.

Core Instrumentation

- Fluorescence Lifetime Imaging Microscope
- Single Molecule Fluorescence Microscope
- Time-Resolved Fluorescence Spectrometer
- Atomic Force Microscope and NSOM WITec alpha300S

CORE FOR TRANSLATIONAL RESEARCH IN IMAGING (CTRIM)

Room 645, John Eager Howard Hall
410-328-6443

Fax: 410-328-5937

<http://medschool.umaryland.edu/CTRIM/>

Core Services:

- Anatomical Imaging, brain and whole body
- Cardiac imaging, cardiac flow analysis
- Musculoskeletal imaging
- Muscle Spectroscopy
- Brain Neurochemistry
- Tumor Kinetics
- Tumor Metabolism
- Vascular studies
- Cancer Imaging
- Microscopy

Vision

- Provide the broadest array of core services to support a successful biomedical research environment
- Facilitate access to state-of-the-art technologies necessary to catalyze high-impact science and support new research grants
- Provide a centralized management structure to optimize quality control, efficiencies and cost effectiveness, marketing, customer support and financial management
- Operate core laboratories with directors and staff who are experts in these disciplines
- Foster a collaborative, interdisciplinary research environment

Leadership

Nicholas Ambulos, PhD ~ Director
 Thomas McHugh ~ Program Administrator
 Carol McKissick, MBA ~ Program Administrator, Business Development

- Diffusion Tensor Imaging
- Arterial Spin Labeling
- Magnetization Transfer Imaging
- Multi-nuclear Spectroscopy including C-13, Na-23, P-31, and F-19
- Bone Imaging

Core Instrumentation

- Bruker BiospecAvance III 7 Tesla Small Animal MRI Scanner
- Siemens Inveon Small Animal PET- CT Imaging System
- Xenogen IVIS -200 Optical in vivo Imaging System

CONFOCAL MICROSCOPY CORE FACILITY

Room 610, Health Sciences Facility I
 410-706-3925

<http://medschool.umaryland.edu/research/confocal.asp>

Core Services

The facility provides individual instruction on an array of confocal microscopes. An image analysis workstation equipped with software packages is available to users. The Core also has a culture room with an incubator, culture hood and a wide-field fluorescence microscope for use in preparation of cultured and live samples.

Core Instrumentation

- Zeiss 710 NLO
- Zeiss 7MP
- Zeiss 5Live
- Zeiss 510
- Olympus LCV Incubated Microscope

ELECTRON MICROSCOPY CORE IMAGING FACILITY

Room 696, John Eager Howard Hall
 410-706-7992

Coreimaging@umaryland.edu

<http://www.dental.umaryland.edu/Coreimaging/>

Core Services

- Conventional TEM sample preparation
- Conventional SEM sample preparation
- Cryo-sample preparation for both TEM and SEM
- Immuno electron microscopy using pre-embedding, post embedding or Takuyasu methods
- Negative staining of purified macromolecular complexes, bacteria, viruses, liposomes, nanoparticles, or viral like particles (VLP)
- Advanced microscopy techniques, such as cryoEM, correlative LM/EM (CLEM) and 3D EM
- Electron microscopes imaging for trained or novice users
- Advanced consultation and training of electron microscopy related techniques and equipment usage
- Annual Current Electron Microscopy Techniques workshop
- Annual Ultramicrotomy Minicourse
- Instrument demonstration

Core Instrumentation

- Transmission Electron Microscope (FEI tecnai T12)
- Scanning Electron Microscope (FEI Quanta 200)
- Cryo Sample Preparation Instruments:
 - High Pressure Freezer
 - Automated Freeze Substitution
 - Plunge Freezer
 - Cryoultramicrotome
 - Gatan TEM Cryotransfer Holder
 - Gatan SEM Alto Cryo Chamber

Cytometric & Bioassay Facilities



CYTOKINE CORE LABORATORY

Room 7-010, Bressler Research Building
 410-706-1508

www.cytokines.com

Core Services

The CCL offers an extensive list of human, mouse, and rat cytokine, chemokine and growth factor assays. We offer two assay platforms, ELISAs and Multiplex. The CCL is here for every investigator from beginning to end. We are happy to help with experimental design all the way through to data interpretation. Our turnaround time is approximately 10 business days and data is emailed to the investigator in a user-friendly Excel format.

Core Instrumentation

- Luminex™ 100 Multi-analyte System
- Molecular Dynamics Precision Microplate Reader
- BioTek ELx50 Plate Washer

μQUANT CORE FACILITY (INSTITUTE OF HUMAN VIROLOGY)

Lab: S-632/633, Office: N-562

Institute of Human Virology

410-706-4648

Fax 410-706-4694

<http://ihv.org/research/facility.html>

Core Services

- ELISAs
- PBMCs
- Immunoassay setup & protocol establishment
- Luminex assays
- Mycoplasma & endotoxin testing
- Monoclonal antibody and recombinant protein screening, production, purification, & labeling
- HIV, SIV, & SHIV culture
- TCID50 and neutralization assays
- quantitative PCR

Core Instrumentation

- SpectraMax M2 6-96 Well Plate Reader
- Wallac Victor 2 Multi-Analyte Plate Reader
- Veritas Microplate Luminometer
- Bio-Plex 200 System
- BioRad IQ 5 Real-time PCR machines

Bioinformatics & Statistics Resource Facilities

CLINICAL & TRANSLATIONAL RESEARCH INFORMATICS CENTER (DEPARTMENT OF EPIDEMIOLOGY & PUBLIC HEALTH)

Room 257, Medical Student Teaching Facility
 410-706-3461

Fax: 410-706-3142

research.support@epi.umaryland.edu

<http://medschool.umaryland.edu/CTRIC/>

Core Services

- Data capture
- Data management
- Custom database creation and data storage
- Access to data in the University of Maryland Medical Center Clinical Data Repository

[continued on back page]



- Quality assurance/control
- Data analysis
- Research design

Resource Support Services



BIOMEDICAL RESEARCH SUPPLY CORE (BIORESCO)

Room 166, Medical Student Teaching Facility
Monday thru Friday 8:00 am–5:00 pm
410-706-0322
freezerprogram.org
<http://cf.umaryland.edu/freezer>

Core Services

All products purchased through BIORESCO are at the lowest possible prices and the researchers pay no shipping or handling charges. The BIORESCO website hosts catalogs from over 45 vendors. Customers can search and order from over 1.5 million discounted products. In addition, we offer:

- Two large annual vendor shows that bring over 50 vendors and 1200 members from the research community together
- Collaboration with UMB Environmental Health and Safety to minimize the volume and variety of dangerous chemicals on campus by maintaining years of searchable campus purchasing data
- Calibration for pipettors and balances
- Peptide and Oligonucleotide Synthesis
- Emergency Freezer Storage (-20C,-80C)
- Free packing and shipping materials for all temperatures
- Dry ice for sale

Here's to you, Dr. Robinson

 [continued from front page]

and commitment. Over the years, he has served on more than 50 UMB committees, advisory boards and sub-committees, 34 SOM committees and sub-committees and 24 SOM/UMB search committees. "I have been fortunate to have had the opportunity to spend the past 41 years here at the SOM," Robinson said. "I never would have dreamed my career would happen this way, but the School kept growing, and I kept taking on new roles and here we are. The continuous challenges have made it exciting to come to work every day!"

Mr. Robinson began his career at the SOM in 1973 as Administrative Assistant to Dean John M. Dennis, MD. Five years after starting his full time position, Dr. Robinson earned a Master's Degree in Urban Planning & Policy Analysis in 1978 from Morgan State University's School of Urban Affairs and Human Development. He then moved into managing facilities planning and construction, where he would play an integral role in the planning and construction of many important projects, including MSTF, the Allied Health Building, Howard Hall, 108 North Greene St., HSF I, HSF II and now HSF III.

Mr. Robinson later earned Master of Divinity and Doctor of Ministry degrees, both from the Howard University School of Divinity. Sixteen years ago he became an ordained minister in the United Church of Jesus Christ (Apostolic). He says that because of his academic credentials, he has been given opportunities to serve in ministry to the broader society and across church denominational lines. "Education is always the key that opens doors," he said.

In addition to his contribution to the growth and maintenance of our physical facilities, as Associate Dean for Academic Administration and Resource Management, Dr. Robinson also provided leadership and management in the areas of faculty affairs and human resource management. Specifically, he provided counsel, direction and advice to countless department chairs, administrators, faculty

and staff on appointment and performance-related matters; he helped develop policies and operational programs to assist in improving faculty and staff performance; he provided support to the institution's top leadership by initiating and facilitating pro-active measures pertaining to faculty and staff; and he provided leadership

in the intervention and resolution of critical faculty and staff issues. His participation on the Dean's Office Faculty Recruitment Committee is another example of Dr. Robinson's enduring impact on the SOM mission.

Over the past 19 years, Dr. Robinson has been pursuing both his professional career and his ministerial calling. In spite of the demands and challenges of his full-time professional career, he managed to devote time to a number of ministerial opportunities and responsibilities. He has ministered throughout the US and Canada but concentrates most of his ministerial and pastoral care work in Baltimore, in Lanham, Md., and on the Eastern Shore, where he resides. With his retirement from his professional career at the SOM, Dr. Robinson will transition to the next chapter of his life. He now looks forward to responding to the next challenge and the rewards that come as a result of continued service.

"I guess, in the end, you could say that my career has been about saying 'yes' to whatever challenges came along," he said. "I wasn't sure where it would lead me, but when I think about it, I am exactly where I should be!"



Dean Reece and Dean Emeritus Donald Wilson, MD, MCAP present Robinson with gifts at his retirement reception.

somnews

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AUGUST 2015 VOL.16 NO.12

SOMnews is produced by the University of Maryland School of Medicine, Office of Public Affairs
▲ E. Albert Reece, MD, PhD, MBA, Vice President for Medical Affairs, University of Maryland, and Dean, University of Maryland School of Medicine ▲ Chris Hardwick, Executive Editor ▲ Caelie Haines, Managing Editor
▲ Tom Jemski and Mark Teske, Head Shot Photos ▲ Brushwood Graphics Design Group, Design
▲ Submitting information to SOMnews: Please email your submission six weeks prior to the month you wish to see your submission included to Caelie Haines, Public Affairs Manager, at chaines@som.umaryland.edu.
▲ Printed using environmentally-responsible low VOC inks.



Find the University of Maryland School of Medicine on Facebook, <http://www.facebook.com/Maryland.Medicine> or follow us on Twitter @UMmedschool.



www.medschool.umaryland.edu

