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Outlook

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SPRING 2013



Washington
University in St. Louis
SCHOOL OF MEDICINE



Seeking to understand
the full impact of

DIABETES



Snow day!

Sheila A. Stewart, PhD, associate professor of cell biology and physiology and of medicine, makes her way across the Ellen S. Clark Hope Plaza into work with son Konner, 6, and daughter Kyra, 2, in tow. While the kids watched movies, Stewart met with laboratory colleagues and an invited speaker. This late February snowfall that shut down schools was eclipsed just one month later by a spring snowstorm that left a record-breaking one-day snow total of 12.4 inches in St. Louis.

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Outlook Spring 2013

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Outlook

Washington University School of Medicine

OUTLOOK.WUSTL.EDU SPRING 2013



22 Teamwork

10 Advancing collaboration

Match Day!

8 Graduating medical students learned which residency programs they will enter at the annual Match Day ceremony in March.

Seeds of Discovery

10 The Institute of Clinical and Translational Sciences (ICTS) supports medical research that will benefit patients quickly.

Diabetes Complications

16 Multidisciplinary researchers study the body-wide complications of diabetes at the Diabetes Research Center.

Now We're Talking

22 Students from across the medical center come together to learn teamwork skills that will serve them well in their careers.

COVER Jean E. Schaffer, MD, directs the Washington University Diabetes Research Center (DRC). As the DRC celebrates its 36th year of National Institutes of Health (NIH) funding, its researchers are focusing on the myriad complications of diabetes. To learn more, please turn to page 16.

PHOTO BY ROBERT BOSTON

2 Pulse

24 Viewpoint

26 Alumni & Development

26 Understanding the Brain

34 Class Notes



28 Barbara and Andrew Taylor



ERIC YOUNG

Mapping a living relic

Ancient sea lamprey offers insight into origin of vertebrates

What can we learn about human evolution from an eel-like creature with a sucker-shaped mouth? Apparently, quite a lot.

A large team of scientists has decoded the genome of a sea lamprey — one of the few ancient, jawless species of vertebrates that has survived through the modern era.

The findings were detailed Feb. 24 in *Nature Genetics*.

Lampreys diverged from our own lineage about 500 million years ago, during the Cambrian period. The new research sheds light on how the species — long considered an invasive predator — adapted and thrived over the ages. Analyzing its genome will provide scientists with insights into the evolution of organisms as diverse as frogs, chickens and humans, all of which have backbones.

"The lamprey genome is unique in that it has characteristics of vertebrates but it

also carries evidence of earlier lineages," says study co-author Wesley C. Warren, PhD, research associate professor of genetics at the The Genome Institute at Washington University. "Decoding this genome is providing us with unique insight into the origin and evolution of all vertebrates."

Based on fossil records, the Cambrian period is noted as a time when living organisms exploded from single-celled structures to complex, multicelled life forms. During this era, many species developed jaws and a skeletal frame that protected the brain,

Decoding the lamprey genome is providing scientists with unique insight into the origin and evolution of all vertebrates.

spine and nervous system. Some, in fact, even developed brains that share some of the same basic structures and functions as the brains of modern humans.

For example, Warren and his colleagues at the University of Kentucky and Michigan State were surprised to discover genes in the lamprey genome that direct the production of myelin, the fatty sheath that insulates nerve fibers and is needed for nerve signals to move from the brain down the spinal cord and into the extremities.

By mapping the sea lamprey genome, scientists hope to uncover more details about how and when humans evolved. Future studies also could pinpoint when people evolved jaws, arms and legs and an adaptive immune system.

Understanding the sea lamprey's genetic makeup also may lead to ways to limit their destruction of aquatic life. The invasive species feeds by attaching its sucker-shaped mouth to the skin of other fish, including salmon and trout, and burrowing its sharp tongue and teeth into its prey. One sea lamprey can kill more than 40 pounds of fish in its lifetime, and the U.S. and Canadian governments spend \$10 million to \$15 million annually to control them in the Great Lakes.

Pediatric brain injury program saves lives, reduces disabilities

Collaborative team improves outcomes

Children with traumatic brain injuries are more likely to survive and avoid long-term disabilities when treated aggressively as part of a designated neurocritical care program that brings together neurologists, neurosurgeons, trauma and other critical care specialists, according to a new study at Washington University School of Medicine.

The investigators tracked the results of such a program at St. Louis Children's Hospital. They studied the outcome of 123 cases before and after the hospital launched a pediatric neurocritical care program (PNCP) in September 2005.

"We were amazed by the results," says Jose A. Pineda, MD, assistant professor of pediatrics and neurology, and director of the program at St. Louis Children's. "We analyzed the data rigorously, and we found that our new program of care resulted in a striking improvement in outcome for children with severe traumatic brain injury. Mortality for these children was dramatically reduced, and we also noted a meaningful improvement in outcomes for survivors. We know that children who suffer traumatic brain injuries have long lives ahead and must reintegrate into society and be independent. That's where we set the bar."

The findings are available online in the journal *The Lancet Neurology*. The study was led by Pineda, neurosurgeon

Jeffrey R. Leonard, MD, and pediatric intensivist Allan Doctor, MD, chief of pediatric critical care at St. Louis Children's.

The program's aggressive approach to treating head injuries suffered in car, bicycle, sports-related and other such accidents targets secondary damage, especially damage provoked by dan-

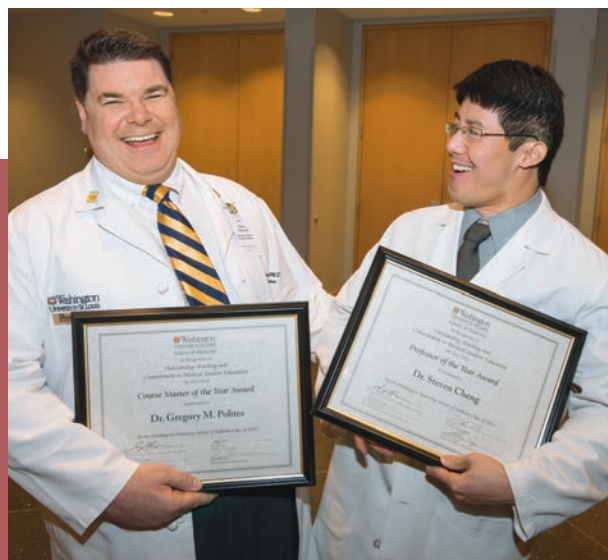
gerous increases in intracranial pressure.

Now that there is proof that PNCPs do make a significant difference, Pineda and his fellow researchers have two key goals: to sustain the outcomes they've seen since the program was created at St. Louis Children's, and to spur other institutions to implement their own such programs.

Pineda credits the success of the program in large part to a close relationship with colleagues in neurosurgery, neurology, trauma surgery and radiology and other team members.

"We developed this collaborative, highly choreographed clinical pathway after first forging a partnership in caring for individual cases together," says Pineda. "It's incredibly rewarding to see synergy emerge after bringing our teams together to form the PNCP."

The study is the first to show the benefits of a pediatric neurocritical care program and an aggressive approach to treating brain injuries in children.



Student favorites Gregory M. Polites, MD, and Steven C. Cheng, MD, share the spotlight at the annual Distinguished Service Teaching Awards ceremony. Polites, associate professor of emergency medicine, was presented with the Course Master of the Year Award by the Class of 2015; Cheng, assistant professor of medicine, was given the Professor of the Year Award by the Class of 2014. For a full list of awardees at the event, please visit news.wustl.edu.

Rao receives prize for vision proposal

A Washington University retina specialist is one of 10 U.S. scientists selected by the National Eye Institute (NEI), part of the National Institutes of Health (NIH), for innovative projects to improve or restore vision.

The winning proposal from Rajesh C. Rao, MD, a vitreo-retinal surgery fellow in the Department of Ophthalmology and Visual Sciences, was chosen from nearly 500 entries. Rao was one of two retina clinicians to receive the award and the youngest winner in the national competition.

His proposal involves restoring vision in patients whose retinas have deteriorated from diseases like age-related macular degeneration, the leading cause of vision loss in adults.

Rao wants to reprogram skin and blood cells from patients because they can be easy to isolate and are compatible with the immune system. Once reprogrammed, those cells could be transplanted into the retina, the structure at the back of the eye that converts light into vision.

"We want to use gene therapy and other techniques to repair the damage that occurs in degenerative retinal diseases," says Rao. "By identifying the small molecules that directly convert a mature cell into a retinal cell, we hope to reprogram cells that already exist in the body to make them useful in preserving or restoring vision."



Rajesh C. Rao, MD



JENNIFER HUNTER

Caregivers unite Brittany Perez, a graduating student in the Program in Occupational Therapy, explains the proper way to move a patient who has a Foley catheter in place. At a recent interdisciplinary learning event, Washington University occupational therapy students and nursing students from the Goldfarb School of Nursing at Barnes-Jewish College shared their knowledge. The two groups practiced the proper use of hospital equipment and skills — including patient transfers — vital to caring for patients.

Siteman south county location open

Physicians from the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine began seeing patients in January at Siteman's newest outpatient location in south St. Louis County.

Located at Interstate 55 and Butler Hill Road, Siteman Cancer Center–South County offers access to the same advanced treatments and technology available at Siteman's main location at Washington University Medical Center.

"Treatment at a top 10 U.S. cancer center just got easier for hundreds of thousands of area residents," says Timothy J. Eberlein, MD, Siteman's director.

"Along with convenience, patients at the new location will benefit from the world-class cancer care and outstanding research of our Washington University physicians."

Multidisciplinary care provided by radiation oncologists, medical oncologists and surgeons will allow

patients to see as many as three physicians in one trip. This team approach also means a patient's treatment plan can be determined in one visit.

Bruce J. Roth, MD, professor of medicine, is director of medical oncology at the new location, and Parag J. Parikh, MD, assistant professor of radiation oncology, is director of radiation oncology.

Siteman's two other satellite locations are in Creve Coeur at Barnes-Jewish West County Hospital and in St. Charles County at Barnes-Jewish St. Peters Hospital. Appointments for any of the sites may be made by calling 314-747-7222 or toll-free 800-600-3606 from 8 am to 4:30 pm CDT weekdays.

World-class cancer care at a top 10 U.S. cancer center "just got easier" for hundreds of thousands of St. Louis area residents.

Human Connectome Project releases brain connectivity data

WUSM co-leads international consortium

The Human Connectome Project, a five-year endeavor to link brain connectivity to human behavior, has released a set of high-quality imaging and behavioral data to the scientific community. The project has two major goals: to collect vast amounts of data using advanced brain imaging methods on a large population of healthy adults, and to make the data freely available so that scientists worldwide can make further discoveries about brain circuitry.

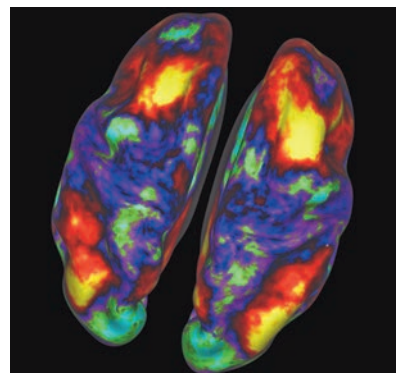
The initial data release includes brain imaging scans plus behavioral information — individual differences in personality, cognitive capabilities, emotional characteristics and perceptual function — obtained from 68 healthy adult volunteers. Over the next several years, the number of subjects studied will increase steadily to a final target of 1,200. The initial release is an important milestone because the new data have much higher resolution in space and time than data obtained by conventional brain scans.

The Human Connectome Project (HCP) consortium is led by David C. Van Essen, PhD, Alumni Endowed Professor, and Kamil Ugurbil, PhD, Director of the Center for Magnetic Resonance Research and the McKnight Presidential Endowed Chair Professor at the University of Minnesota.

"By making this unique data set available now, and continuing with regular data releases every quarter, the Human Connectome Project is enabling the scientific community to immediately begin exploring relationships between brain circuits and individual behavior," says Van Essen. "The HCP will have a major impact on our understanding of the healthy adult human brain, and it will set the stage for future projects that examine changes in brain circuits underlying the wide variety of brain disorders afflicting humankind."

The consortium includes more than 100 investigators and technical staff at 10 institutions in the United States and Europe. It is funded by 16 components of the National Institutes of Health via the Blueprint for Neuroscience Research (neuroscienceblueprint.nih.gov).

The imaging data set released by the HCP takes up about two terabytes (2 trillion bytes) of computer memory.



M.F. GLASSER AND S.M. SMITH

▶ humanconnectome.org



ROBERT BOSTON

New digs Patients of Shriners Hospital for Children and representatives from Shriners and Washington University Medical Center (including medical school Dean Larry J. Shapiro, MD, sixth from right) broke ground March 20 on a \$50 million hospital on the medical center campus.

The planned facility, located at the corner of Clayton and Newstead avenues, will replace the 50-year-old Shriners Hospital in Frontenac. Inset: Shriner Ambassador Freddie J. Hanewinkel holds the cast he wore as a baby during treatment at Shriners Hospital for Children.



MEDICINE

Targeting stem cells to build immunity

In research that could one day improve the success of stem cell transplants and chemotherapy, scientists have found that distinct niches exist in bone marrow to nurture different types of blood stem cells.

Stem cells in the blood are the precursors to infection-fighting white blood cells and oxygen-carrying red blood cells.

The research, by a team at the School of Medicine, was reported Feb. 24 in the advance online edition of *Nature*.

The new findings, in mice, suggest that it may be possible to therapeutically target support cells in a particular niche.

On the one hand, a drug that nourishes support cells could encourage blood stem cells to establish themselves in the bone marrow, enabling patients who have had stem cell transplants to more quickly rebuild their immune systems.

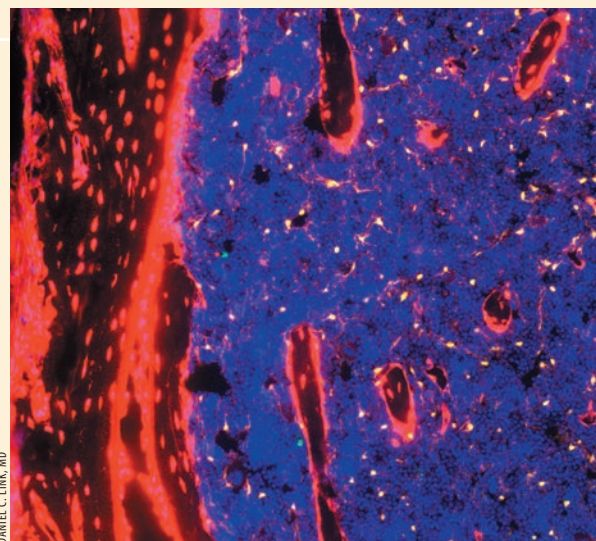
On the other, tumor cells are known to hide in the bone marrow, and a drug that disrupts the niche environment may drive cancer cells into the bloodstream, where they are more vulnerable to the damaging

effects of chemotherapy.

"Our results offer hope for targeting these niches to treat specific cancers or to improve the success of stem cell transplants," says senior author Daniel C. Link, MD, the Alan A. and Edith L. Wolff Professor of Medicine. "Already, we and others are leading clinical trials to evaluate whether it is possible to disrupt these niches in patients with leukemia or multiple myeloma."

In a phase II pilot study led by medical oncologist Geoffrey L. Uy, MD, assistant professor of medicine, Link is evaluating whether the drug G-CSF can alter the stem cell niche in patients with acute lymphoblastic leukemia whose cancer has recurred or is resistant to treatment.

While it's too early to know whether the treatment approach will be successful, Link's new research in mice is bolstered by a companion paper in the same issue of *Nature*. In that research, Sean J. Morrison, PhD, director of the Children's Medical Center Research Institute at the University of Texas Southwestern Medical Center in



DANIEL C. LINK, MD

Distinct niches exist in bone marrow to nurture different types of blood stem cells. In mice bone marrow, blood stem cells, highlighted in blue, are nurtured by support cells shown in red and yellow.

Dallas, used similar molecular methods to also discover distinct niches in the bone marrow for blood stem cells.

"There's a lot of interest right now in trying to understand these niches," Link adds. "Both of these studies add new information that will be important as we move forward."



Photo ops Vivian Elgin, shown here with the photo and poster she created as part of Photovoice, a project in which participants document the people, places and things that make up their daily lives. Supported by the National Institutes of Health (NIH), the project is meant to serve as a conversation starter about the importance of cancer screening. Elgin's work was part of a recent exhibition hosted by the Alvin J. Siteman Cancer Center's Program for the Elimination of Cancer Disparities.

ROBERT BOSTON

Mecham serves as interim head

Robert P. Mecham, PhD, has been named interim head of the Department of Cell Biology and Physiology.

Mecham, the Alumni-Endowed Professor of Cell Biology and Physiology, replaces Helen Piwnica-Worms, PhD, the Gerty T. Cori Professor, who has been named vice provost, science, at the University of Texas MD Anderson Cancer Center.



Robert P. Mecham, PhD

"Bob won the School of Medicine's distinguished Carl and Gerty Cori Faculty Achievement Award last year for his pioneering research into the structures that join cells into tissues and organs," says Larry J. Shapiro, MD, executive vice chancellor for medical affairs and dean of the School of Medicine. "He has been a valued member of the faculty since 1977, and I have every confidence in his ability to lead the department through this transition."

Mecham focuses most of his research on the extracellular matrix, or the structures between cells that join them together to form tissues and organs.

He was vice chairman of the Executive Committee of the Faculty Council from 2002–03 and served as chairperson of the Curriculum Evaluation Committee. He also is a member of several university-wide committees.

A three-time winner of the university's Distinguished Teacher Award, Mecham has been extensively involved in medical and graduate school instruction. In 2012, he received the Carl and Gerty Cori Faculty Achievement Award.

Four medical school faculty honored as AAAS fellows

Distinguished efforts advance science

Four School of Medicine faculty members have been named fellows of the American Association for the Advancement of Science (AAAS), the world's largest general scientific society.

The newest fellows are Alison Goate, PhD, Jeanne M. Nerbonne, PhD, D.C. Rao, PhD, and Barry Sleckman, MD, PhD. Members are given the rank of fellow, the highest honor awarded by AAAS, by their peers in recognition of scientifically or socially distinguished efforts to advance science or its applications.

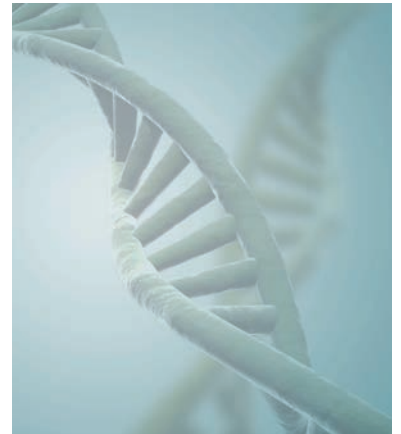
Goate, the Samuel and Mae S. Ludwig Professor of Genetics in Psychiatry and director of the Hope Center for Neurological Disorders at the School of Medicine, was praised by colleagues for her work in the genetics of neuropsychiatric disease, particularly Alzheimer's disease. She also studies genetic risk for substance dependence.

Nerbonne, the Alumni-Endowed Professor of Molecular Biology and Pharmacology, was lauded by colleagues for her contributions to research and training in the molecular and cell biology of ion channels that control excitability in the cardiovascular and nervous systems. Nerbonne also leads the Translational Cardiovascular Biobank and Repository (TCBR), funded in part by the Children's Discovery Institute and Washington University's Institute of Clinical and Translational Sciences (ICTS), a resource for investigators interested in studying heart and vascular conditions in adults and children.

Rao, director of the Division of Biostatistics, was honored by colleagues for his contributions in the area of genetic epidemiology and human genetics, and for his work in training the next generation of statisticians and epidemiologists.

Sleckman, the Conan Professor of Pathology and Immunology, was lauded by peers for his work in the field of immunology and biochemistry, particularly for his pioneering research into how cells repair breaks in their DNA and how problems in these repair processes can contribute to cancer.

These School of Medicine faculty members were among 702 new fellows acknowledged in the Nov. 30 issue of *Science* magazine.



Shining a light

Do tanning facilities communicate the risks to preteens?

A survey of tanning salon operators in Missouri shows that 65 percent would allow children as young as 10 to 12 years old to use tanning beds. That's despite evidence that any tanning bed use increases the risk of all skin cancers, including melanoma, the deadliest form of skin cancer, later in life.

The survey, part of a study led by dermatologists at the School of Medicine, also found that many tanning salon employees across the state said indoor tanning had no associated risks or would prevent future sunburns — both false claims, according to the study's authors.

Missouri is one of 17 states that has no minimum age restrictions on tanning bed use and does not require parental consent.

"This should serve as a wake-up call for parents in Missouri and other states that don't regulate tanning beds," says study co-author Lynn A. Cornelius, MD, chief of the Division of Dermatology and the Winfred A. and Emma R. Showman Professor in Dermatology. "With the absence of logical age restrictions, we are failing to protect our children, who are at an increased risk of developing skin cancer when exposed to the high-intensity levels of ultraviolet light that can be received in a tanning bed."

The findings appeared online Feb. 25 in *Pediatrics*.

Exposure to ultraviolet light from tanning beds makes users 75 percent more likely to develop melanoma than nonusers, and some studies have reported an increased risk of up to three times, Cornelius says. They're also up to 2.5 times

more likely to develop more common nonmelanoma skin cancers, such as basal cell and squamous cell cancers.

Of the states that regulate tanning bed use, some ban minors until they reach a certain age; others require parental permission. Last year, California became the first state to prohibit the use of indoor tanning beds by anyone younger than 18.

Cornelius says she and her colleagues at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine routinely see young, typically female, melanoma patients who report previous tanning bed use.

Ultraviolet rays from the sun and artificial tanning devices are carcinogenic to humans, equivalent to tobacco. — International Agency for Research on Cancer

"Indoor tanning may seem innocuous at first," she says. "Due to what is called 'tumor lag time,' or the time between an exposure to a carcinogen such as ultraviolet and the development of a cancer, it may take a decade or longer for someone who

has been exposed to artificial ultraviolet radiation to develop a skin cancer."

For the study, the researchers identified 831 indoor tanning facilities across Missouri and randomly selected and called 375 of them, posing as prospective clients. For consistency, the researchers made attempts to survey each salon twice.

"Minimizing exposure to ultraviolet rays, no matter the source, lowers one's risk of skin cancer," says Graham A. Colditz, MD, PhD, a cancer prevention expert at Washington University and the Siteman Cancer Center who wasn't involved in the study. "The problem with indoor tanning is that users start very young and, unlike the sun, tanning beds are a completely avoidable cancer risk."



What Missouri tanning facilities said in a recent survey

65% would accept pre-teens

80% say it prevents sunburns

43% claim there are no risks

Health recommendations regarding indoor tanning*

No one under the age of 18 should do indoor tanning

Tanning facilities should post warnings about health risks

Seek medical advice and get a skin assessment before tanning

* Guidelines endorsed by the World Health Organization and the U.S. Food and Drug Administration

Moving forward

MATCH DAY WAS HELD MARCH 15, 2013, and 120 graduating medical students learned their match results from the National Resident Matching Program. During the annual ceremony, senior medical students in the United States learn which residency programs they will enter.

School of Medicine graduates are highly successful in obtaining competitive training programs. In 2013, 34 percent of the graduating class selected a primary care field and 24 percent matched into highly competitive specialties, including dermatology, ophthalmology, surgery, urology, orthopaedic surgery and otolaryngology.

ALABAMA

Birmingham

University of Alabama Medical Center

INTERNAL MEDICINE
Jori Ellen May

CALIFORNIA

Los Angeles

Harbor-UCLA Medical Center

DIAGNOSTIC RADIOLOGY
Gregory Randal Bryant

Oakland

Kaiser Permanente Medical Group

INTERNAL MEDICINE
Somalee Banerjee

San Diego

Navy Medical Center

PEDIATRICS
Tammy Sue Shirley

University of California-San Diego Medical Center

INTERNAL MEDICINE
Adam M. Greenbaum
OBSTETRICS AND GYNCOLOGY
Sarah Campbell Proehl
Amanda Michelle Stewart
OPHTHALMOLOGY
Courtney Lynne Ondeck
PEDIATRICS
YunZu Michele Wang

San Francisco

California Pacific Medical Center

INTERNAL MEDICINE
Laura Alycia Battle

University of California-San Francisco

DIAGNOSTIC RADIOLOGY
Jason W. Curtis

FAMILY MEDICINE
Ignacio Becerra-Licha
INTERNAL MEDICINE
Brian David Muegge

Stanford

Stanford University Program

INTERNAL MEDICINE
Jeffrey Scott Ketchersid
OBSTETRICS AND GYNCOLOGY
Sanaa Hasan Suharwardy
PSYCHIATRY-RESEARCH
George Mark Freeman Jr.

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Denver

University of Colorado

DERMATOLOGY
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Fort Collins

Fort Collins Family Medical Program

FAMILY MEDICINE
Bethany Amber Davis

CONNECTICUT

Hartford

University of Connecticut School of Medicine

EMERGENCY MEDICINE
Tina H. Chen

New Haven

Yale-New Haven Medical Center

DERMATOLOGY
Matthew David Vesely
INTERNAL MEDICINE
Erica Paige Young
OPHTHALMOLOGY
Alexander Thien An Nguyen

DISTRICT OF COLUMBIA

Washington

Georgetown University Hospital

RADIATION ONCOLOGY
Ima Paydar

FLORIDA

Miami

Jackson Memorial Hospital

INTERNAL MEDICINE
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GEORGIA

Atlanta

Emory University School of Medicine

EMERGENCY MEDICINE
Elizabeth Davlantes

HAWAII

Honolulu

University of Hawaii

ORTHOPAEDIC SURGERY-RESEARCH
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ILLINOIS

Chicago

McGaw Medical Center of Northwestern University

INTERNAL MEDICINE
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PHYSICAL MEDICINE AND REHABILITATION
Abby Ling-Lee Stephens

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INDIANA

Indianapolis

Indiana University School of Medicine

EMERGENCY MEDICINE
Daniel Nathan Seitz

IOWA

Iowa City

University of Iowa Hospitals and Clinics

DERMATOLOGY
Nicholas Michael Bontumasi
EMERGENCY MEDICINE
Luke Michaud Lowry

MASSACHUSETTS

Boston

Beth Israel Deaconess Hospital

DIAGNOSTIC RADIOLOGY
Jeffrey Nelson Dines

Brigham and Women's Hospital

INTERNAL MEDICINE-PRIMARY
Michelle Amanda Jose-Kampfner
PATHOLOGY
Isaac H.S. Solomon

Children's Hospital

PEDIATRICS
Matthew Raymond Vogt
PEDIATRICS-URBAN HEALTH ADVOCACY
Kristen Suzanne Grant

Massachusetts General Hospital

PATHOLOGY
Kwadwo Asare Oduro Jr.

MICHIGAN

Ann Arbor

University of Michigan Hospitals

ANESTHESIOLOGY
Hank Haw Sun
INTERNAL MEDICINE
Jared Daniel Wilkinson

MISSOURI

Kansas City

University of Missouri-Kansas City

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Emily Michelle Beck
William Howard McCoy IV
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Kevin Andrew Neal
Erin Kerr Romberg
EMERGENCY MEDICINE
Christopher William Arvind Lawrence
GENERAL SURGERY
Leisha Carol Elmore
Matthew Robert Schill
Tara Rachelle Skebba
Wen Hui Tan
INTERNAL MEDICINE
Bahaa Ahmad Bedair
Stacy Zhao Dai
Patricia Elizabeth Litkowski
Aaron Joseph Mintz
Nathan Herling Moore
Chelsea Elizabeth Pearson
NEUROLOGICAL SURGERY
Santoshi Shalini Indrakanti



ROBERT BOSTON

It's a match! From left: Leisha Elmore; Kathryn Evans and her father, Douglas; and Michael Lee celebrate 2013 Match Day results.

OBSTETRICS AND GYNECOLOGY

Antonina I. Frolova
Jennifer Lee Troyer
Morgan Bernard Wolfe Jr.

ORTHOPAEDIC SURGERY

Christopher Luke
Stockburger
Robert David Wojahn

OTOLARYNGOLOGY

Tzyy-Nong Tina Liou

PSYCHIATRY

Andrea Marie
Giedinghagen
Tarik Hadzic
Agnieszka Monika
Milczarek
Carrie Laub Morris
Alecia Cristen
Vogel-Hammen

RADIATION ONCOLOGY

Yuan James Rao

St. Louis Children's Hospital

CHILD NEUROLOGY

Amelia Glatha Drace

PEDIATRICS

Jeffery C. Hoover
June Yueheng Hu
Margaret Ashley Young

Saint Louis University
School of Medicine

FAMILY MEDICINE

Betsy Peixi Wan

ORTHOPAEDIC SURGERY

Ugochi C. Okoroafor

NEBRASKA

Omaha

University of Nebraska
Affiliated Hospitals

RADIATION ONCOLOGY

Vivek Verma

NEW HAMPSHIRE

Lebanon

Dartmouth-Hitchcock
Medical Center

DERMATOLOGY

Mackenzie Capshaw Asel

NEW MEXICO

Albuquerque

University of New Mexico

INTERNAL MEDICINE

Tracy Marsh Carlson

NEW YORK

New York

Einstein-Montefiore
Medical Center

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Icahn School of Medicine at
Mt. Sinai

PSYCHIATRY

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New York Presbyterian Hospital-
Columbia

ANESTHESIOLOGY

Kurt Joseph Hoffmeister
Dorothy van Oppen

New York Presbyterian Hospital-
Columbia and Cornell

OTOLARYNGOLOGY

Kenny Fei Lin

New York University
School of Medicine

RADIATION ONCOLOGY

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St. Luke's-Roosevelt Hospital

GENERAL SURGERY

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NORTH CAROLINA

Durham

Duke University

OPHTHALMOLOGY

Andrew Robert Lee

OHIO

Cincinnati

Cincinnati Children's Hospital

PEDIATRICS

Kristen Marie Danley

University Hospital

EMERGENCY MEDICINE

Charles Elwood Kircher
Matthew Kevin Riddle

Cleveland

Case Western Reserve University

OPHTHALMOLOGY

Musa Raed Abdelaziz

Columbus

Ohio State University
Medical Center

ANESTHESIOLOGY

Douglas James Dearth Jr.

OREGON

Portland

Oregon Health & Science
University

EMERGENCY MEDICINE

Ran Ran

PENNSYLVANIA

Philadelphia

Children's Hospital

PEDIATRICS

Jie Tang

Fox Chase Cancer Center

RADIATION ONCOLOGY

Yanqun Dong

Hospital of the University
of Pennsylvania

INTERNAL MEDICINE

Nicole Samantha Maloney

PSYCHIATRY

Puneet Kaur Chawla Sahota

St. Christopher's Hospital
for Children

PEDIATRICS-PRELIMINARY

Colleen Helen Cotton

Thomas Jefferson University
Program

ORTHOPAEDIC SURGERY

Eric Michael Padegimas

Pittsburgh

University of Pittsburgh
Medical Center

DERMATOLOGY

Kristin Page Bibee

ORTHOPAEDIC SURGERY-RESEARCH

Rashmi Agarwal

TENNESSEE

Nashville

Vanderbilt University
Medical Center

INTERNAL MEDICINE

Kathryn Meredith Evans
Catherine N. Le
Mona Mashayekhi

TEXAS

Dallas

University of Texas-
Southwestern Medical School

EMERGENCY MEDICINE

Kavita B. Joshi

PEDIATRICS

Krista Renee Whitney

UROLOGY

Varun Sundaram

Houston

Baylor College of Medicine

PEDIATRICS

Rachel Elizabeth Amthor
Michael Anthony Lee Jr.

PEDIATRICS-GLOBAL HEALTH

Yi Wang

University of Texas Medical School

GENERAL SURGERY

Ronald Chang

UTAH

Salt Lake City

University of Utah
Affiliated Hospitals

CHILD NEUROLOGY

Jennifer Ann Hranilovich

WASHINGTON

Seattle

University of Washington

INTERNAL MEDICINE

Michelle Catherine Sabo

OBSTETRICS AND GYNECOLOGY

Stephen Andrew McCartney

PSYCHIATRY

Nana-Aba Nduom

WISCONSIN

Madison

University of Wisconsin

OPHTHALMOLOGY

Han Kim

CANADA

Toronto

University of Toronto

PLASTIC SURGERY

Maryam Saheb-Al-Zamani

seeds of discovery



2007

DOUGLAS LUKE AND BOBBI CAROTHERS, CENTER FOR PUBLIC HEALTH SYSTEMS SCIENCE, WASHINGTON UNIVERSITY

collaboration

Each dot denotes a faculty member of the ICTS, and each connecting line represents a collaboration between faculty in submitting an NIH grant application. ICTS began in 2007, above, and by 2010, right, there had already been a dramatic increase in the number of collaborations and the density of interconnections among research groups.



funding initiative speeds innovation to improve health

BY JULIA EVANGELOU STRAIT



Whether providing pilot funding to gather initial data or final funding for projects heading toward publication, grants awarded by Washington University's Institute of Clinical and Translational Sciences (ICTS) are ultimately aimed at one goal — supporting medical research that has the highest likelihood of benefiting patients quickly.

“Facilitating new research collaborations across traditional disciplinary boundaries is a major goal of the ICTS,” says director Bradley A. Evanoff, MD, MPH, assistant dean for clinical and translational research. “By doing so, new discoveries can more rapidly be translated into prevention, diagnosis and treatment.”

Washington University's ICTS is one of 60 such programs across the country. It is funded through institutional resources and through a five-year, \$50 million Clinical and Translational Science Award (CTSA) given by the National Center for Advancing Translational Sciences of the National Institutes of Health (NIH). In its first six years, the ICTS has awarded \$6.9 million to 70 projects and, in June 2012, its CTSA grant was renewed for an additional five years.

The ICTS pursues its mission by supporting new research infrastructure, funding translational research, training young faculty, and facilitating collaborations across disciplines. Its research support cores provide expert consultation and resources in tissue banking, imaging, biostatistics, biomedical informatics, research ethics, experimental design, conducting clinical trials, genomic analysis, regulatory support and community-engaged research. And that's just the short list.

Through all of these activities, the ICTS is a pillar of Washington University's BioMed 21 initiative, an effort dedicated to translating basic science discoveries into solutions for the world's biggest health problems.

“Our researchers work across departmental and divisional specialty lines to a greater extent than ever before,” says Evanoff. “We can't claim credit for all of that, but we've been one of the forces helping people make connections.”

better infant care



Kelle H. Moley, MD

mothers'
tissue samples
illuminate
children's
diseases

One example of the school's connectivity is embodied in the Women and Infants' Health Specimen Consortium, a program led by Kelle H. Moley, MD, co-director of the ICTS and the James P. Crane Professor of Obstetrics and Gynecology.

The consortium was founded in 2007 by Moley and Ann M. Gronowski, PhD, associate professor of pathology and immunology, with the help of an ICTS pilot grant. Investigators from a wide range of specialties are involved, including pediatrics, microbiology, obstetrics and gynecology, pathology, internal medicine and developmental biology.

The purpose of the consortium is to gather tissue samples from women before and during pregnancy, after delivery, and from the newborn. The tissues collected include cord blood, maternal blood, newborn blood, placenta samples and amniotic fluid.

The samples, which are linked to clinical reports of the health of the mother and her baby, are available to investigators interested in a wide array of issues important to women and newborns, from repeated pregnancy loss, pre-term delivery and pre-eclampsia to endometriosis and sexually transmitted diseases. It also may provide insights into the origins of childhood diseases and the communication that goes on between the mother and fetus *in utero*.

"This resource allows investigators to have access to unique samples that they would not normally be able to get on their own," Moley says. "We have about 3,000 patients participating in the program and more than 200 patients that we have followed throughout the process — pre-pregnancy, pregnancy, and after delivery."

Moley co-directs the ICTS in part because her own research sits at the interface of basic research in the laboratory and clinical research that can help patients. An expert in reproductive health, her primary focus has been endocrine disorders in women, such as those related to obesity, diabetes and polycystic ovarian syndrome, and their effects on fertility.

"My work with the ICTS has forced me to think more about how my own research can be applied to improve health care," Moley says. "My job is also to ask other basic scientists to think about ways that their research can affect human health directly and to encourage them to become involved with the ICTS."

PHOTO BY ROBERT BOSTON

into the community



Randall S. Sterkel, MD, and Jane M. Garbutt, MBChB

aiming for
consensus in
private
practice
clinical care

Taking medical research into the community and helping physicians in private practice is another goal of the ICTS. Jane M. Garbutt, MBChB, research associate professor of medicine and pediatrics, has been a pioneer in this effort.

Many times care for common conditions, such as sinus infections or pinkeye, differs greatly from one doctor to the next. To help determine the best solutions for these typical ailments, Garbutt established the ICTS-supported Washington University Pediatric and Adolescent Ambulatory Research Consortium (WUPAARC), a network of local pediatricians in private practice who are interested in improving clinical care.

“We try to make our research relevant and useful to primary care doctors,” Garbutt says. “If you just conduct research studies in academic institutions, the patients may not be representative of the patients going to see their regular doctors. If we recruit patients through primary care practices, we get more diversity in the patient mix.

“And the results will be relevant to other doctors with similar practices. The physician can look at these studies and say, ‘These patients look similar to mine, so the results should apply to them, therefore I will change my practice.’”

Currently, 66 pediatricians and five nurse practitioners from 35 medical practices in the St. Louis area participate in WUPAARC. The pediatricians themselves suggest the questions to be studied by the consortium.

One ongoing trial is looking at whether peer coaching delivered by telephone for mothers of children with asthma will help better control the disease. Asthma coaches help the mother develop a collaborative relationship with the child’s doctor and provide education and support to encourage effective use of asthma medications.

Garbutt’s own research is focused on improving the quality of care in the ambulatory setting. She shares her expertise in these community-based research methods and logistics with other investigators at the university so that they might also begin studying ways to improve health care in the wider community setting, where so many people receive their medical care.

“The success of any research network is dependent on personal relationships,” Garbutt says. “We have to build a network that transcends one study. We have to build the relationships and structure needed for research and then nurture it.”

advanced resources



Matthew J. Ellis, MD, PhD

modeling
deadly cancers
may lead
to new
treatments

Along with its commitment to community-based research, the ICTS also supports work that is done in animal models of disease with a clear pathway to improving human health. One example is a core resource devoted to studying human breast cancer tumors in living organisms.

The Human and Mouse Linked Evaluation of Tumors (HAMLET) Core is led by breast cancer expert Matthew J. Ellis, MD, PhD, director of Breast Oncology at Washington University and co-leader of the Breast Cancer Research Program at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine.

With this resource, researchers can study living tumor cells in a preclinical model. The growing tumors are genetically similar or identical to the original tumor and they provide excellent test subjects for developing new imaging techniques and performing early studies of new drugs and therapeutics.

A major success stemming from this relatively new core resource culminated in a paper published in *Nature* in 2010. The study looked at four DNA samples from a single patient with basal-like breast cancer, an aggressive form of the disease more common in younger women and African-American women. The four samples came from the patient's primary tumor, peripheral blood, a brain metastasis, and a primary tumor sample grown by the HAMLET Core.

The HAMLET Core tumor differed in important ways from the primary tumor and had remarkable similarities to the tumor that had spread to the patient's brain. Such evidence sheds light on the mystery of how cancer metastasizes and suggests that a small number of cells in the main tumor can give rise to secondary tumors that spread throughout the body.

"Basically what's growing in the mouse is another metastasis — the most malignant version of the tumor," Ellis says. "So this resource is helping us model the most deadly types of breast cancer, and that's what we need to focus on. We want to make these models freely available and collaborate widely to solve an extremely complicated biological problem."

Since the *Nature* study, an additional 16 models have been deeply sequenced and those findings were released at the recent American Association of Cancer Research meeting. The findings show that human-in-mouse copies of breast cancer are very clearly excellent genomic and functional mimics of the disease. The approach is so promising that the HAMLET Core plans to expand and include additional tumor types, likely starting with pancreatic cancer.

PHOTOS BY ROBERT BOSTON

bright outlook



Robert C. McKinstry, MD, PhD, and Pamela K. Woodard, MD

high-tech
imaging
bridges
research and
application

Another important goal of the ICTS is to help more investigators take advantage of the university's existing technology. A prime example is the ICTS Human Imaging Unit, housed in the Center for Clinical Imaging Research (CCIR) in the Mallinckrodt Institute of Radiology.

The ICTS Human Imaging Unit is led by Robert C. McKinstry, MD, PhD, professor of radiology and of pediatrics, and provides access to five state-of-the-art imaging scanners. Pamela K. Woodard, MD, professor of radiology and of biomedical engineering, leads the CCIR.

"We want to make sure researchers know that this resource is available to them and that funding opportunities exist to support pilot projects that can then be used to apply for larger grants," Woodard says. "Our equipment is dedicated to research, making it easier to schedule time on the machines."

As important as access to the scanners themselves, the Human Imaging Unit connects researchers with expert radiology staff and faculty, making it possible for investigators to use the equipment regardless of their level of experience with human imaging.

In one example, the Human Imaging Unit helped develop imaging methods to evaluate how well the placenta is functioning in late pregnancy. "The researcher wanted to investigate the health of the placenta and how that is affecting the fetus *in utero*," McKinstry says. "So our staff helped him develop a protocol to measure placental morphology, size and chemical makeup for clues as to whether the placenta is 'running out of gas' and putting the fetus at risk. The investigator knew the question he wanted to answer, but he didn't know how to use imaging to answer it."

The scanning tools also let researchers image a beating heart in near real time; easily distinguish bone, soft tissue and fluid; and create two- and three-dimensional images. The equipment includes two MRI scanners, a CT scanner, a combined PET-CT machine and a PET-MRI system.

Because imaging is often a key bridge between animal studies and human application, the CCIR serves an important role in translating basic science from preclinical areas into clinical research areas. The CCIR is one of only five or six facilities in the United States that has a PET-MRI machine. Cutting-edge instrumentation like the PET-MRI, as well as the presence of multiple high-end imaging systems all in close proximity, make the CCIR a world-class translational imaging research facility, says McKinstry. □

D
COM

SKIN
INFECTIONS

BLINDNESS

NERVE
DAMAGE

FOOT
AMPUTATION



KIDNEY
DISEASE

HEART
FAILURE

FERTILITY
PROBLEMS

FATTY LIVER
DISEASE

DEPRESSION

DIABETES

A growing epidemic.
A spectrum of diseases.

APPLICATIONS

HERITABLE
RISKS

GUM
DISEASE

IF CURRENT TRENDS CONTINUE,

as many as one in three American adults could have diabetes by 2050. This growing problem — U.S. Centers for Disease Control has called it “an emerging epidemic” — is already impacting an alarming number of people nationwide.

Nearly 26 million individuals in the United States are living with diabetes — an estimate that includes roughly 7 million people who remain undiagnosed. Among those age 65 and older, almost one in four have diabetes. The cost of diabetes, now over \$100 billion annually, will likely grow along with the prevalence of the disease.

It's this looming health crisis that drives the School of Medicine's Diabetes Research Center (DRC). Located in the Department of Medicine and now in its 36th year of National Institutes of Health (NIH) funding, the DRC is a hub for multi-disciplinary collaborations, making steady progress in uncovering the mechanisms involved in diabetes and its complications.

Washington University's DRC is one of 16 centers supported by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Its established and comprehensive research bases in diabetes and related areas of endocrinology and metabolism ensure that scientific investigation is evolving to meet this major public health challenge. **CONTINUED ON PAGE 20 »**

BY LEE PHILLION

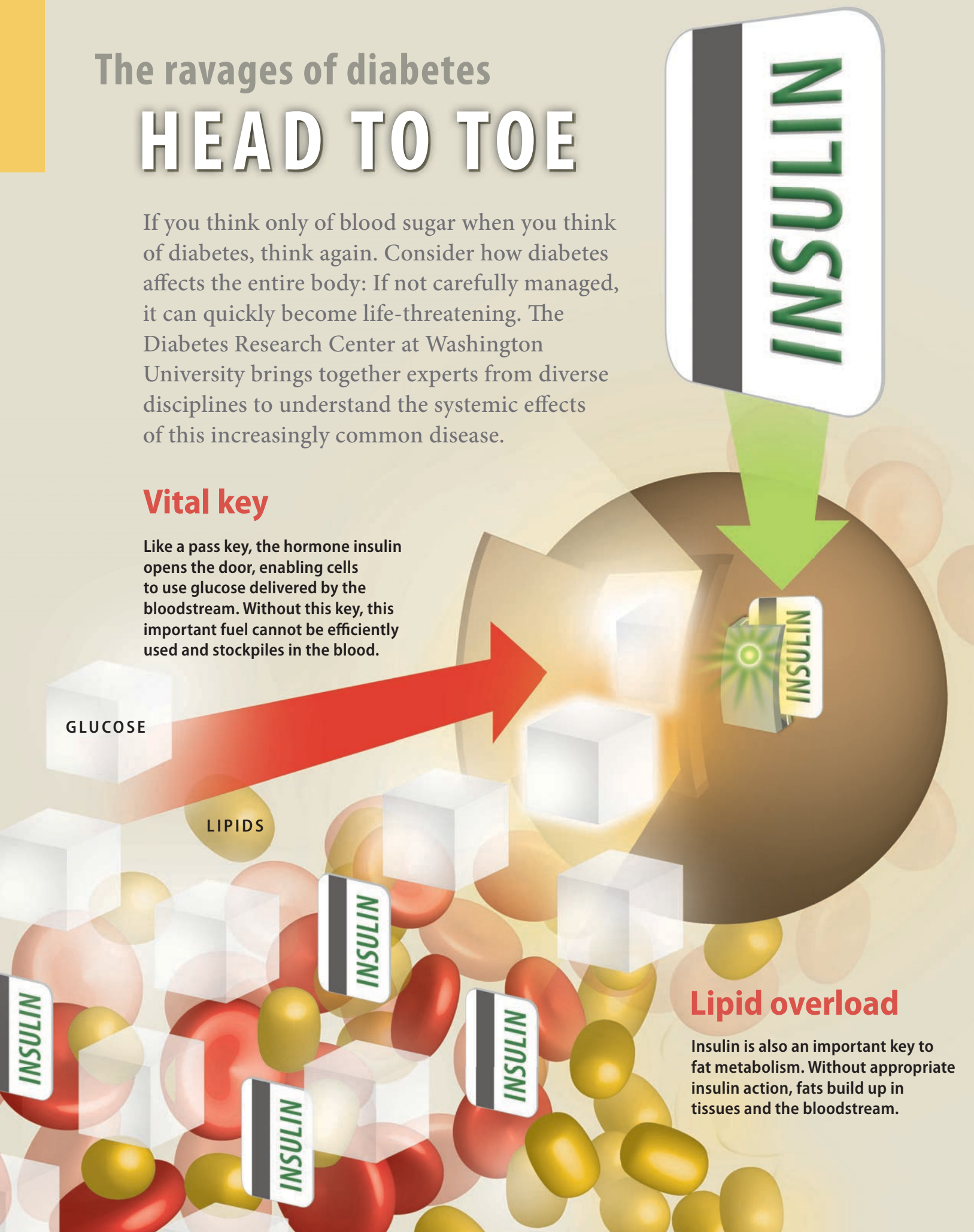
The ravages of diabetes

HEAD TO TOE

If you think only of blood sugar when you think of diabetes, think again. Consider how diabetes affects the entire body: If not carefully managed, it can quickly become life-threatening. The Diabetes Research Center at Washington University brings together experts from diverse disciplines to understand the systemic effects of this increasingly common disease.

Vital key

Like a pass key, the hormone insulin opens the door, enabling cells to use glucose delivered by the bloodstream. Without this key, this important fuel cannot be efficiently used and stockpiles in the blood.



Lipid overload

Insulin is also an important key to fat metabolism. Without appropriate insulin action, fats build up in tissues and the bloodstream.

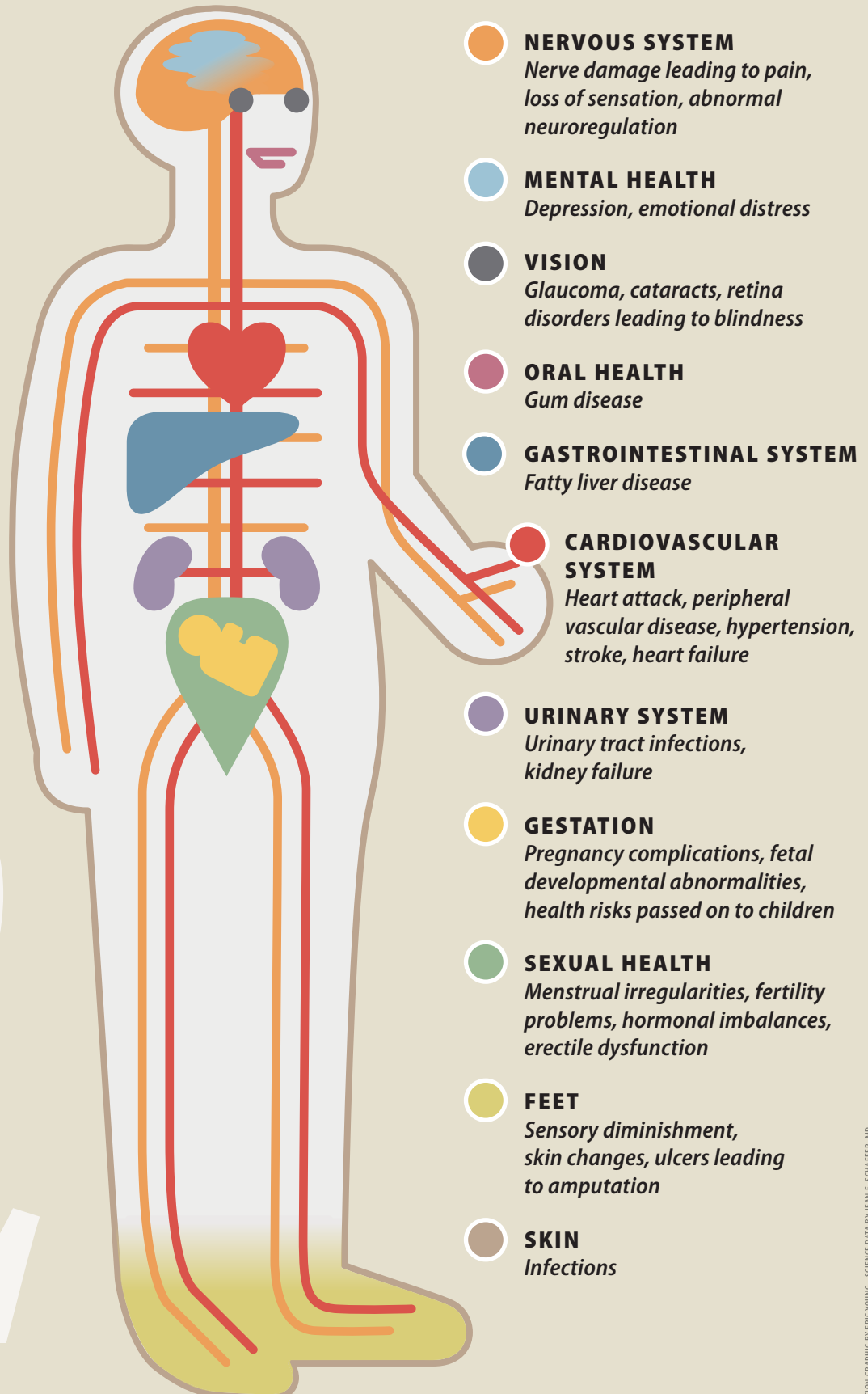
T Y P E

Type 1 diabetes results after an overactive immune system destroys insulin-producing cells in the pancreas and leads to insulin deficiency. An energy crisis ensues: Despite high circulating blood sugar levels, cells in the body cannot effectively use the sugar without insulin injections.

T Y P E

Genetic factors, inactivity, poor diet and weight gain can lead to metabolic imbalances and resistance to insulin action. Initially insulin levels increase to compensate. However, blood sugar levels rise as the pancreas fails to make enough insulin to overcome this resistance.

Body-wide affects



DIABETES COMPLICATIONS



Diabetes complications can include blurred vision caused by damage to the retina and bleeding within the eye fluid. A treatment performed by Rajendra S. Apte, MD, PhD, takes place under subdued red lighting, permitting his precise visualization of a few millimeters of tissue while allowing the surgical team to see within the darkened room.

ROBERT BOSTON

As director of the Diabetes Research Center (DRC),

Jean E. Schaffer, MD, the Virginia Minnich Distinguished Professor of Medicine, has a panoramic view of research underway at Washington University aimed at understanding and finding treatments and ultimately a cure for diabetes. Schaffer spearheaded the recent competitive renewal for NIH funding that will propel the DRC forward for the next five years.

The DRC's 111 members from across the school have joined forces around intersecting areas of interest to understand the basic processes involved in diabetes and its complications and to translate discoveries into better patient care. DRC funding provides support for technical expertise in state-of-the-art core facilities, a robust pilot grant program to jump start the most exciting new ideas in diabetes research, and a vibrant enrichment program of seminars and courses that stimulates the exchange of ideas.

"Multidisciplinary research is the paradigm for the DRC," says Schaffer. "The systemic, chronic and complex nature of diabetes requires a multidimensional approach, and our members are working across the spectrum of immunology, metabolic regulation, and the end-organ complications of diabetes."

A brief tour of major organs affected by complications of diabetes illustrates the scope of investigations connected through the DRC. The tour begins with the most complex organ — the brain. Weighing in at just 2 percent of body mass, the brain accounts for 25 percent of body glucose utilization, and fluctuations in glucose supply to the brain can dramatically affect its function.

Tamara Hershey, PhD, professor of psychiatry, neurology and radiology, uses sophisticated *in vivo* brain imaging coupled with neurobehavioral measurement techniques to determine how exposure to glycemic extremes impacts brain structure and function in children and adults with type 1 diabetes.

Hershey also leads the first long-term group study of brain vulnerability in Wolfram Syndrome, a rare monogenic form of juvenile-onset, insulin-dependent diabetes that is associated with neurological complications including early blindness. This longitudinal study leverages advances in the diagnosis and molecular underpinnings of the syndrome made by the late M. Alan Permutt, MD, the former director of the DRC, and Fumihiko Urano, MD, PhD, the Samuel E. Schechter Professor of Medicine.

This study of Wolfram Syndrome patients will identify biomarkers and support clinical trials of specific treatment agents and serve as proof-of-principle for more genetically and environmentally complex forms of diabetes.

Our next stop is the eye. Diabetic retinopathy, caused by changes in the blood vessels behind the retina, is seen in up to 45 percent of people diagnosed with diabetes and is a leading cause of blindness in adults.

"Eye health is directly correlated to glycemic control in diabetic patients," says Rajendra S. Apte, MD, PhD, the Paul A. Cibis Distinguished Professor of Ophthalmology and Visual Sciences. "Sometimes it is the eye specialist who first diagnoses the disease from its complications in the eye."

Apte has found that immune cells called macrophages regulate the development of damaging blood vessels in not only diabetic retinopathy, but also in age-related macular degeneration and in retinopathy of prematurity (formerly known as retrolental fibroplasia), which affects prematurely-born babies.

Apte's research into the molecular factors that lead to macrophage changes may open new opportunities for cost-effective treatments of all of these conditions.

Cardiovascular disease is the leading cause of death in patients with type 2 diabetes, and the DRC has an impressive depth and breadth in understanding diabetic cardiovascular complications. Carlos Bernal-Mizrachi, MD, assistant professor of medicine and of cell biology and physiology, has demonstrated the importance of vitamin D deficiency in patients with type 2 diabetes.

“Low vitamin D levels nearly double these patient’s relative risk of developing cardiovascular disease,” notes Bernal-Mizrachi. His work has revealed new insights into the mechanisms that link vitamin D signaling in immune cells to cholesterol deposition and atherosclerotic plaque development in diabetes.

Bernal-Mizrachi is the principal investigator of two randomized controlled interventional trials to assess the effect of vitamin D supplementation on blood pressure and sub-clinical markers of cardiovascular disease in diabetes.

Cardiologist Sharon Cresci, MD, assistant professor of medicine and genetics, wants to understand why patients with diabetes suffer from a more aggressive form of heart disease. Lever-aging

Systemic, chronic and complex, diabetes requires a multidimensional approach.

her background in cardiovascular disease, metabolism and genetics, Cresci helped design a custom microarray chip that she then used to discover the first genetic variant associated with severity of coronary artery disease in patients with type 2 diabetes. Findings such as these hold promise for more effective clinical management through genotype-based personalized treatments.

These types of clinical investigations are complemented by groundbreaking basic discoveries in the effects of diabetes on blood vessels and heart muscle in the laboratories of investigators including Clay F. Semenkovich, MD, the Herbert S. Gasser Professor and co-director of the DRC.

Moreover, the concentration of research excellence in the area of diabetic heart and vascular complications spurred the formation of the Diabetic Cardiovascular Disease Center (DCDC), one of the school’s BioMed 21 interdisciplinary research centers. Institutional resources for the DCDC, co-led by Schaffer and Daniel S. Ory, MD, professor of medicine and of cell biology and physiology, have proven instrumental for several recent successful NIH funding applications for diabetic complications research at Washington University.

Diabetic nephropathy is another common and devastating complication that can result in end-stage renal disease. DRC member Daniel C. Brennan, MD, professor of medicine, leads one of the most experienced kidney transplant and transplant nephrology programs in the United States.

Nationally, approximately one-third of kidney transplant patients present with diabetes. And of those who do not, up to 20 percent will develop diabetes within a year after transplant. By studying new immunosuppressants and induction agents, Brennan’s team has been able to reduce post-transplant onset of diabetes to just 5 percent within the first year

after surgery and achieve a 10-fold decrease in acute rejection rates, both of which improve long-term outcomes.

“Over the last eight years, our transplant team has also steadily increased the number of kidney-pancreas transplants or pancreas transplants alone for selected patients,” says Brennan. “These provide better diabetes-related and overall quality-of-life improvements.”

Program surgeons perform around 220 kidney transplants and between 15 to 20 combined or sequential kidney-pancreas transplants annually. While the majority of patients who undergo sequential kidney-pancreas transplant have type 1 diabetes, data suggest that the procedure also confers significant benefits for some patients with type 2 diabetes.

The final stop on the complications of diabetes excursion is a visit to the laboratory of Kelle H. Moley, MD, the James P. Crane professor of obstetrics and gynecology, who is an expert in reproductive endocrinology and infertility.

Men with diabetes can suffer testicular dysfunction, impotence and decreased fertility. In women, diabetes and obesity are associated with an increased risk of reproductive complications, including fetal loss and congenital malformations.

Moley’s research has provided key insights into the consequences of early fetal exposure as well as preconception gamete exposure to high concentrations of glucose, insulin and/or fatty acids and the effects of the drug metformin on miscarriages. Her work has improved understanding of pregnancy failure among women with diabetes. Other recent work suggests that systemic insulin insufficiency and resulting decreased hypothalamic-pituitary-testes axis signaling are the key detrimental factors responsible for subfertility among diabetic men. □



Daniel C. Brennan, MD, follows up with patient Padma Jampala, who underwent a successful kidney transplant in 2004.

Now we're talking

Getting different professions
talking — and working —
together, for the greater good

BY HOLLY EDMISTON

Students from diverse training
programs work together to answer
questions posed by faculty during a
recent case study presentation.



TIM PARKER

practice

communication

clinic

Interdisciplinary teamwork in health care isn't just a concept — it's a reality. The constantly evolving nature of the U.S. health care system makes well-coordinated collaborations across medical professions a necessity.

At Washington University School of Medicine, students from multiple programs are actively building bridges among professions even before they begin their careers. The Health Professionals Student Leadership Council (HPSLC) was created by students in 2010 to promote and advance the understanding of collaboration among professions in providing effective patient care.

"HPSLC has three main goals," explains group president Michele Ionno, a second-year student in the school's Program in Physical Therapy. "The first is to improve communication among students from various disciplines. The second is to improve knowledge of what each discipline offers in the clinic. Third, and most importantly, we want to show students how working together improves patient care."

The group includes Washington University students from the medical, occupational therapy, physical therapy, audiology and communication

sciences, and Division of Biology and Biomedical Sciences programs, and students from the St. Louis College of Pharmacy and the Goldfarb School of Nursing at Barnes-Jewish College.

Although HPSLC's members are located on or near the Washington University Medical Center campus, opportunities for students to interact has been limited.

HPSLC is determined to change that. The group regularly brings members from all of the professions together at various academic and community outreach events. These include featured lunch talks, an activities fair, case study reviews, and an annual Community Service Day.

care

“Each profession
has its own
language and
frame of reference.”

—SARAH CHEATHAM OBERLE, OTD '13

interaction

health

team

During case study reviews, faculty pose questions to interprofessional groups of students.

“Each round of questions represents a different setting for the patient as he or she moves through the health care system,” explains Gloria Grice, associate professor of pharmacy practice and associate director of experiential programs at the St. Louis College of Pharmacy (STLCOP). “It’s fun for the students because they are all very competitive and enjoy being challenged, but it’s not ‘high stakes’ like their actual coursework.”

Third-year medical student and former HPSLC president Elaine Khoong agrees. “All the students really enjoy the experience. Not only is it informative and instructive, it’s also synergistic with the formal curriculum in that it helps us become better prepared to apply what we have learned in the classroom to what we will eventually do in clinical practice.”

Community Service Day, held early in the academic year, is geared toward first-year students. It promotes collaboration among students in the different programs as well as community-building in the city of St. Louis.

“It’s really important for students to know how to interact as professionals,” says Lauren Lewis, a second-year student in the school’s Program in Audiology and Communication Sciences (PACS) and secretary of HPSLC, “but also on a more personal level to get to know one another. And it’s great to be welcomed into the community not only as clinicians, but as people who can give back to the city in which they live.”

In 2012, more than 120 students in teams of 10 worked with established community organizations at a variety of sites — from participating in a neighborhood cleanup with members of St. Louis Arc, a group that supports people with developmental disabilities, to painting and assisting with childcare at Lydia House, which provides transitional housing for abused women and children.

“For incoming students, Community Service Day is a great way to get to know St. Louis and the wonderful organizations that are established here,” says Casey Krauss, who is

working on her master’s degree in deaf education. “I moved here from Michigan and have found that many students tend to stick to their own programs for socializing. But I feel that I met people who have become some of my greatest friends at Community Service Day.”

Script Your Future, a national campaign HPSLC recently participated in, gave students from all of the professions opportunities to meet with community members at more than 24 locations to address concerns about medication adherence and its importance in maintaining good health.

“Each profession has its own language and frame of reference,” says HPSLC vice president Sarah Cheatham Oberle, a second-year student in the school’s Program in Occupational Therapy. “We want our students to work with other practitioners to learn the language they speak and what they bring to patient care. We need to work together as a team to provide continuity of care for our patients, and we really believe that mindset needs to start in graduate school.”

Cheatham Oberle has been active in developing HPSLC’s shadowing program, which provides an opportunity for students to meet and observe practitioners from professions other than their own. While the list of participants is relatively small, the group is actively recruiting

for additional mentors. Expanding the shadowing program and continuing to build on other successful initiatives are top priorities for HPSLC.

“Collaborative learning leads to teamwork in the real-world health care setting and, most importantly, improves patient care by increasing coordination of services,” says Alison J. Whelan, MD, senior associate dean for education. “Collaboration also has implications for the bottom line, in that more efficient care maximizes prevention, which may then decrease the burden on acute care facilities.

“Washington University School of Medicine students and their peers in HPSLC are prepared to meet the need for enhanced collaboration, and by embracing the need for teamwork across multiple professions, they are actively preparing to meet the health care challenges of the future.” □



viewpoint

ClassCLOWN

Seriously, folks!
Clown arts enhance
the healing arts.

BY JUDY MARTIN FINCH



Call Keland Scher a clown and he'll consider it a compliment. Accuse him of clowning around in the classroom and you'll be technically accurate. Scher, a master's degree candidate in occupational therapy set to graduate this May, wholeheartedly embraces the art of play.

Scher's educational background and life experience are a bit different compared to the majority of students in the School of Medicine's Program in Occupational Therapy. Before coming to Washington University, he earned a diploma from Ringling Bros. and Barnum & Bailey Clown College in Florida and, after graduation, "rode the rails" for a year performing. He also worked for five years with the Big Apple Circus Clown Care unit in hospitals, nursing homes and camps for children with life-threatening illnesses.

In addition to his clowning credentials, Scher also holds a bachelors of fine arts in theatre from Miami of Ohio University and a masters of fine arts and a teaching of movement for actors' diploma from York University in Toronto.

He had planned a career as an actor and teacher. But while teaching a movement for performance class to students at Roosevelt University in Chicago, Scher realized he cared more about the classes that were physically benefiting students than how they could integrate those movements into the characters they portrayed.

"I knew I wanted to find a therapeutic container for all the work I was doing," says Scher. "That's when I came upon an article in the *Australian Occupational Therapy Journal* and realized that occupational therapy would fit the bill."

He applied to several schools, but quickly chose the Program in Occupational Therapy at Washington University due to its science-based nature and high ranking.

Once in St. Louis, Scher knew he'd made the right decision. "The faculty has been supportive by allowing me to take my skill as a teacher and circus artist into research," he says.

Scher recently completed a study involving participants from Central Institute for the Deaf (CID), with Meredith Gronski, OTD, OTR/L, serving as his mentor. "Dr. Gronski opened up her research lab to circus arts," Scher says. "It takes a trusting soul in a medical school to allow this."

According to Scher, previous research has shown that children who are deaf or hard of hearing have difficulty with basic communication skills such as collaboration or social participation. Scher developed a 10-week course to determine how using circus arts as an intervention could help these children to improve their social skills, tapping into their motivation and encouraging self-efficacy.

Working mainly with eight- to 12-year-olds, Scher set about teaching the children how to juggle, spin plates, walk and balance on a giant ball, and work together to build a pyramid. The study culminated with a 40-minute performance for the participants' parents and teachers.



Keland Scher performs at a recent coffehouse event held at the School of Medicine's Farrell Learning and Teaching Center.

"Keland came to the Program in Occupational Therapy with a passion for circus arts," says Gronski. "He knew from his experiences that they have tremendous therapeutic value — he just needed an avenue to prove it. When he approached me with this idea, I was admittedly hesitant. It was 'outside the box' of the intervention I currently provide at CID. However, the collaboration could not have had better results."

Scher presented his research findings at the program's annual scholarship day and at the American Occupational Therapy Association's annual meeting held in April.

Among the qualitative results were teachers' comments, which suggest that the children who participated grew in confidence. One teacher noted "...[the children] were very proud of themselves ... and they learned that dropping a ball

"I enjoy empowering others through physical and vocal expression, helping them to grow, change and transform. Occupational therapy in tandem with circus arts has the potential to be a powerful combination." — Keland Scher, MSOT '13

meant another opportunity to try again, not failure."

Scher considers himself fortunate to be able to bring his experience in teaching and his passion for circus arts together while at Washington University, while Gronski considers the program fortunate for Scher's innovative thinking.

"Children who are deaf and hard of hearing often transition into public educational arenas with hearing peers," says Scher. "The more opportunities they have for social interactions that foster trust, mutual respect and positive risk-taking, the better equipped they will be to succeed."

Gronski agrees. "Not only did Keland foster these skills in the children at CID, but he really is pushing the field of occupational therapy forward. And accommodating his project exemplifies the Program in Occupational Therapy's commitment to innovative practice." □





UNDERSTANDING THE BRAIN

BY STEPHANIE STEMMLER

The timing is right to advance the field of neurosciences.

The number of people affected by degenerative brain diseases is growing as the population ages, while mental illness affects 1 in 4 adults and 1 in 5 children in the United States. In multiple ways, we see the physical, emotional, and financial toll of brain disorders and diseases upon society.

Our researchers have developed a highly accurate diagnostic tool for autism and are homing in on the disease's genetic triggers. We are leading worldwide clinical trials to test new drugs that may prevent or halt the progression of Alzheimer's disease and dementia. Investigators at Washington University are leading a coalition of scientists who are undertaking the effort to map the human brain.

At the School of Medicine, there is a confluence of research expertise and a rich legacy of pioneering advances in neurosciences that goes back more than 50 years. Diverse collaborations are underway in fields such as neurosurgery and neurology, psychiatry, neuroimaging, molecular biology, and pathology — all trying to unravel the enigma that is the human mind and brain.

The field of neurosciences is poised to make significant medical advances over the next two decades. With your support, we can lead the way in this important area of research and clinical care.

We invite you to be a part of this historic endeavor.

Janice W. Brunstrom-Hernandez, MD, director of the Pediatric Neurology Cerebral Palsy Center, with young patient Bryn Adams and her dad, Keith.



Barbara and Andrew Taylor support ongoing research into the diagnosis, treatment, and prevention of mental illness.

A MENTAL HEALTH FOCUS

Realizing that the stigma needs to be lifted from the diagnosis of mental illness, Andrew and Barbara Taylor and the Crawford Taylor Foundation recently committed \$20 million to the Department of Psychiatry at Washington University School of Medicine to advance research into the diagnosis and treatment of mental illness.

“Our own families have been touched by these illnesses over several generations,” says Andrew C. Taylor, chief executive officer and chairman of Enterprise Holdings. “In the news, we hear of so many tragedies involving mental illness. We, as a country, need to become better informed and support the research going on that can better treat or prevent these diseases.”

The generous gift will support the establishment of the Taylor Family Institute for Innovative Psychiatric Research.

“Our department has played a leading role in advancing criteria-based psychiatric diagnoses, and we’re now focused on finding new treatments as well as trying to better understand the mechanisms that trigger these disorders in the brain,” says Charles F.

Zorumski, MD, the Samuel B. Guzé Professor and head of the Department of Psychiatry.

“Psychiatry has a huge problem in that current treatments are good, but not good enough for a significant number of people who either don’t respond to current medications or experience serious side effects,” says Zorumski, who also is a professor of neurobiology. “There is an incredible message in the gift from the Taylor family in that they want us to find better treatments to help those with mental illnesses who often have no other voice in society.”

“We put our family name front and center because we thought it could be a beacon, that it might attract interest both in psychiatry and the world of philanthropy,” says Taylor. “It’s going to take more gifts, large and small, to accelerate research into psychiatric disorders, and my hope is that this will yield another class or several classes of medications that can better address these illnesses.”

“Since this gift was announced, I have received notes from people around the country who have been impacted by mental illness. What they tell me is that they now have a sense of hope — someone is paying attention. I want many people to pay attention because I think awareness promotes momentum.”

“We put our family name front and center because we thought it could be a beacon, that it might attract interest both in psychiatry and philanthropy.”

— ANDREW TAYLOR



David M. Holtzman, MD, with patient Lynn Burlingame in the Charles F. and Joanne Knight Alzheimer's Disease Research Center.

DEFEATING ALZHEIMER'S

The first worldwide human testing of three investigational drugs to determine if they can prevent Alzheimer's disease dementia is being led by researchers at Washington University.

The trial involves 240 people, all from families with rare inherited genetic mutations. Those who inherit the mutation are certain to develop Alzheimer's. The academic medical centers

involved with the trial are connected through an international research study, the Dominantly Inherited Alzheimer Network (DIAN), led by John C. Morris, MD, the Harvey A. and Dorismae Hacker Friedman Professor of Neurology and director of the Charles F. and Joanne Knight Alzheimer's Disease Research Center.

"As more and more baby boomers move into this age of 65 and older, we'll see an explosion of people with Alzheimer's disease and dementia," says Morris, calling it a public health disorder of epidemic proportions.

"We want to prevent damage and loss of brain cells by intervening early in the disease process — even before outward symptoms are evident," says Randall J. Bateman, MD, the Charles F. and Joanne Knight Distinguished Professor of

Neurology and principal investigator of the grant and director of DIAN.

Washington University has been leading the field of Alzheimer's disease research for more than 20 years. It is here that scientists discovered that degenerative changes in the brain begin 15 years before signs of dementia become apparent.

"There are an estimated 5.5 million people with dementia due to Alzheimer's right now," says David M. Holtzman, MD, the Andrew B. and Gretchen P. Jones Professor and chair of the Department of Neurology, "and that number is expected to triple by 2055."

Basic research has shown that the build-up of two proteins in the brain, one somehow triggering the accumulation of the other, occurs in patients with Alzheimer's. Holtzman's lab and others are working to find ways to decrease the build-up of both of the proteins. An added hope is that a fast, reliable measure, such as a blood test, will allow diagnosis of Alzheimer's disease early enough so that new medications can stop the accumulation of proteins and thus prevent brain degeneration.

"We hope these new drugs not only hit the target protein but also slow the process of degeneration," Holtzman says. "Because of research now underway, there is definite hope that at some point we will be able to prevent this disease."

"We want to prevent damage and loss of brain cells by intervening early in the disease process — even before outward symptoms are evident."
— RANDALL J. BATEMAN, MD



John N. Constantino, MD, far right, with the Al-joundi family, from left: Jumana, Mohamad, Bassam, and Nizar.

SUCCESS WITH AUTISM

With non-identical twin teen boys, both diagnosed with autism, Bassam and Jumana Al-joundi have tried for years to find care, ongoing treatment, and hope.

“Having two children with autism is a huge responsibility to myself, God, my husband, and my boys,” says Jumana Al-joundi. “It is very challenging, but I could never imagine myself or

my life without them.” Her husband, Bassam N. Al-joundi, MD, agrees. “As parents, we try anything we can to help our children,” he says. “It’s been a long struggle.”

The Al-joundis’ situation mirrors studies that show some 15 percent of families who have a child with autism have a second child with the same disorder, sparking investigation into autism’s genetic risk factors.

In groundbreaking research, Washington University psychiatrists identified subtle social deficits, language impairments, and repetitive

behaviors in many unaffected siblings of children with autism. This provides important clues about how autism is transmitted in families.

“What’s equally surprising is how these traits ‘travel together’ in children without autism; they

are as tightly correlated in siblings and in the general population as in the autistic syndrome itself,” says John N. Constantino, MD, the Blanche F. Ittleson Professor of Child Psychiatry and co-director of the Intellectual and Developmental Disabilities Research Center.

“The strong connection between these seemingly different aspects of behavior was our first clue that what goes awry in autism is an extreme version of what results in normal variation in social development,” says Constantino. “The science of autism, then, is really the study of human social behavior, where autism represents the extreme of a developmental continuum.”

Constantino and his colleagues are trying to determine why more boys than girls develop autism and how autism risk is transmitted in families, often through unaffected parents. Other Washington University researchers are conducting brain-imaging studies on infants at risk for developing autism to see if early signs of the disease can be pinpointed.

“This city needs a comprehensive autism center and coordinated resources to help families like ours over the long term,” says Bassam Al-joundi. “Research is important, but the added emphasis that Washington University will put on treatments and care for autistic children is vital.”

“Having two children with autism is a huge responsibility. It is very challenging, but I could never imagine myself or my life without them.”

— JUMANA AL-JOUNDI



Alan Pestronk, MD, director of the Neuromuscular Division, with patient Gretchen Miller in the neurology clinic.

NEUROMUSCULAR STUDY

Diseases of the muscles and nerves

range from the uncommon to the very familiar. Common symptoms include weakness and sensations of numb or tingling hands and feet.

In just the last several years, researchers at Washington University have discovered new genetic forms of neuromuscular diseases — a variant form of amyotrophic lateral sclerosis (ALS), commonly known as Lou Gehrig's disease, and disorders that cause muscle and nerve damage.

These discoveries point to a nationally recognized strength of the School of Medicine's neuromuscular program. "We have the combined strength of one of the busiest clinical programs for the care of patients and a large neuromuscular physician research group," says Alan Pestronk, MD, director of the Neuromuscular Division.

Researchers in the division explore the genetic and autoimmune causes of often devastating diseases that strike nerves or muscles, such as ALS, muscular dystrophy, myositis, and immune and hereditary nerve disorders. Because many of these diseases are uncommon, researchers have created a DNA bank,

a collection for use in ongoing studies that includes genetic information from thousands of patients.

Focused efforts on the genetic causes of ALS point to single mutated genes that produce a toxic protein. "We now are testing a chemical compound that blocks the production of one such toxic protein in human patients," says Pestronk. "The studies are generating hope that we can treat some forms of ALS, which currently have no cure."

Researchers also have identified a serum antibody that may point to the cause of some previously unexplained, painful neuropathies, opening the door to the development of new drug therapies.

More than a decade of research into the autoimmune causes of chronic muscle inflammation and weakness has led to the creation of an exciting and specific muscle biopsy diagnostic process. "Just by looking at muscle through the microscope, we can tell the kinds of myopathies patients are likely to develop and which treatments are likely to be effective," Pestronk says.

More funding would enable the division to accelerate efforts to identify the genetic and immune triggers for neuromuscular diseases. "In many diseases that we treat," says Pestronk, "we are getting better ideas of the molecular mechanisms that cause them, which means effective treatments are closer to reality."

"Just by looking at muscle through the microscope, we can tell the kinds of myopathies patients are likely to develop and which treatments are likely to be effective."

— ALAN PESTRONK, MD



Alison Goate, PhD, left, who studies protein aggregation and neurodegeneration, with postdoctoral student Celeste Karch.

COLLABORATIVE EFFORTS

Brain diseases such as stroke, Parkinson's disease, multiple sclerosis, amyotrophic lateral sclerosis (ALS), and Alzheimer's disease are among our nation's most significant health problems, affecting 50 million Americans. More research is needed if we are to treat these illnesses more effectively and someday even prevent them.

"I would not be here if medical research had not extended my life," says William H. Danforth, MD, vice chairman and chancellor emeritus of Washington University. "I have a personal reason to be grateful. And so do many others."

As science continues to shed new light on old problems, sometimes one disease, such as cerebral palsy, can be seen as part of a family of diseases — in this case, neurodegenerative diseases.

If that group of diseases is then studied by a multidisciplinary group of researchers, the collaborative effort could result in more rapid scientific breakthroughs focused on prevention and treatment.

"It makes sense for more scientists and physicians to come together around common central facilities and databases for a family of diseases rather than a single disease," says Danforth. "They can draw more effectively from diverse fields such as genetics and immunology."

Washington University School of Medicine is leading a collaborative effort to prevent, diagnose and treat a wide range of neurodegenerative diseases. The Hope Center for Neurological Disorders was established in 2004. The center brings together more than 500 world-class scientists in a collaborative environment with the goal of rapidly translating basic scientific discoveries into direct patient care.

The School of Medicine needs your help to escalate research into neurological disorders. A generous gift of \$10 million from the Danforth Foundation is leading the way and encouraging others to consider important endowment commitments to support research at the Hope Center.

"The Hope Center puts together the right world-leading scientists, with the right vision, and the right infrastructure, to mount an attack on these crippling diseases," says Danforth. "The challenge for us all is to join the Hope Center in the pursuit of this noble cause."

"We have the right world-leading scientists, with the right vision, and the right infrastructure, to mount an attack on these crippling diseases."

— WILLIAM H. DANFORTH, MD



Understanding the brain is a critical frontier in modern medicine. Please consider funding this or other opportunities to advance human health.

Understanding The Brain

- Research support for specific psychiatric illnesses
- Support for Alzheimer's and dementia research
- Three- to five-year funding for pilot projects for autism
- Genetic research support for neuromuscular diseases
- Endowed gifts to support the Hope Center
- Endowed fellowships to train future neurosurgeons
- Support research in brain development and function in the Department of Anatomy and Neurobiology

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Together,
we can change lives.

1940s

Robert Gibb, MD 48

Gibb has served as president of the Western Pathologists Quality Assurance Association. He has been involved in the establishment of 11 scholarship endowments for schools of medical technology or clinical laboratory scientists at 10 universities and technical institutions.

Roger Fox, MD 49

Fox and his wife are enjoying life about one mile from the Pacific Ocean. They have four children, eight grandchildren, and eight great grandchildren; still enjoy traveling; and have been on all seven continents and to 44 countries so far.

1950s

Robert Hermann, MD 54

Hermann is enjoying retirement, still playing some golf and tennis, and traveling with his wife, Polly.

David Perkins, MD 55

Perkins and his wife, **Marge (Hollan), LA 51**, were honored recently by the Saint Louis Zoo with the individual Zoo Award. They also were featured in a recent *Playbill* at the St. Louis Symphony for their philanthropic support.

Robert C. Meredith, MD 57

Meredith retired from the practice of medicine as a board-certified neurosurgeon in July 2010. He and his wife, **Joanne (Schwam) Meredith, NU 56**, have been married for more than 55 years. The couple enjoys traveling and spending time with their children and grandchildren.

1960s

Donald Stewart Jr., MD 61

Stewart and his wife, Anne, have four children and 10 grandchildren. He still enjoys doing some oil painting.

Carolyn Robinowitz, MD 64

Robinowitz recently completed her tenure as editor-in-chief of *Psychiatric News* and currently serves as special associate

provost for health sciences at George Washington University. She enjoys traveling to San Francisco to visit her son, a pediatric anesthesiologist, and grandchildren.

Seth Eisen, MD 66

Eisen has been serving as national director of the Veterans Administration's Health Services Research and Development program in Washington DC. He and his wife, Marion, love the extensive system of bicycle trails available in the area and the rich American history of the city.

Chuck Robertson, MD 66

Robertson and his wife, **Dianne Robertson, LA 64**, celebrated their 50th anniversary with a Mediterranean cruise. They enjoyed having their children and grandchildren join them on the cruise.

1970s

Mark Edelstein, MD 75, GR 75

Edelstein retired from the Veterans Administration (VA) in 2011 after working at the Detroit VA Medical Center for 27 years.

Linda Hershey, MD 75

Hershey directs a dementia clinic at Oklahoma University Medical Center and tests new therapies for Alzheimer's disease.

David Magarik, MD 76

Magarik is soon to become a "grandpa" to twins and a father-in-law for the third time. He encourages fellow alumni to stay curious and look for "the most interesting case" and welcomes visitors to stop by and visit when in the Shenandoah Valley.

1980s

Bart Mandelbaum, MD 80

Mandelbaum recently served at the London 2012 Olympics as medical officer for IOC FIFA for the fourth time. He was also recently appointed director of research for Major League Baseball.

Steven Perlmutter, MD 80

Perlmutter received his JD *magna cum laude* in 2011. His work concentrates on representing health care professionals in front of their respective licensing boards.

Bob Mittle, MD 85

Mittle is president of Charlotte Radiology, one of the largest private diagnostic radiology groups in the country, and lives in Charlotte with his family. His four children are very accomplished, including one son in his first year of medical school.

1990s

Ron Pearson, MD 90

Pearson is serving as the state survey agency director for the State of Wyoming.

Jennifer Scheer, MD 94

Scheer is working as a family doctor in rural Missouri and is enjoying new responsibilities in an administrative role as a physician leader.

Mark Cohen, EN 94, MD 98, HS

Cohen is associate professor and vice chair of surgery at the University of Kansas Medical Center and also recently founded a biotech company (NanoPheum), which makes safer, more effective chemotherapy drugs. He lives in Kansas City with his wife and two children.

Jolie Holschen, LA 95, MD 99

Holschen has accepted a new position in private practice emergency medicine with Infinity Healthcare in Chicago IL. She serves on the Sports Medicine Board Exam Committee for the American Board of Emergency Medicine.

2000s

Emily Engelland, MD 01

Engelland is practicing occupational medicine and working as the managing physician at U.S. HealthWorks Medical Group in Robbinsdale MN. She is engaged to be married in May 2013.

Jonathan Chung, MD 04

Chung was elected to the editorial board of the *Journal of Thoracic Imaging* and joined the American College of Radiology Appropriateness Criteria Panel: Thoracic.

Kevin Wilson, MD 05

Wilson is an assistant professor of otolaryngology at the University of Utah in Salt Lake City and has four children who keep him and his wife, Emily, busy.

IN MEMORY

Leo Sachar, MD 40

Sachar died on Dec. 9, 2010. He was chief of surgery and president of the medical staff at Jewish Hospital after serving as a U.S. Army surgeon during WWII. He enjoyed teaching medical students and training surgeons. Later he was vice chairman of the board and vice president for medical affairs at St. Elizabeth's Hospital in Belleville IL.

Harry Lichtwardt, MD 43

Lichtwardt died on Nov. 22, 2012, at age 93. During WWII he served as head of the medical corps on Okinawa. He later practiced medicine in Detroit and helped develop a urological practice pioneering many developments in urologic equipment and procedures. He served as president and historian at the North-Central Section of American Urological Associates.

Pauline Stokes, NU 44

Stokes died on Aug. 28, 2012, at age 89. She was a registered nurse at Fayette County Hospital for many years.

Donald W. Bussmann, MD 45

Bussmann died on Jan. 17, 2011. He was 90. After completing medical school, he served as a medical officer in the U.S. Army. Later in his career, he helped to found the Department of Cardiology and served as director of the Cardiac Auscultation Lab and associate professor of internal medicine at Saint Louis University.

Lawrence O'Neal, MD 46

O'Neal died on July 29, 2012, at age 89. After completing his medical degree during an accelerated wartime program, he trained in surgery at Barnes Hospital where he then remained on staff. He contributed to medical literature as author, editor and reviewer and also engaged in clinical research on endocrine subjects. He co-edited a volume on diabetic foot problems in 1973 that has gone into seven editions and been published in several languages. For eight years he was chairman of the Department of Surgery at St. John's Medical Center and also helped develop a program for surgical training between the hospital and Saint Louis University. After retirement,

he was medical director of the Sisters of Mercy Health System. O'Neal received the Alumni Achievement Award in 1991 from Washington University. He enjoyed writing and photography.

Robert J. Glaser, HS 47

Glaser died June 7, 2012, at age 93. Before completing residency at Barnes Hospital, he attended Harvard Medical School. At Washington University, he served as an associate professor, assistant dean and associate dean before moving to serve at the University of Colorado and then Stanford School of Medicine, where he acted as dean and vice president for medical affairs in both posts. He received many awards and honors during his career and was active nationally in medical education.

Janet S. Gilman, MD 49

Gilman died on Jan. 17, 2011 at 86. She practiced at Sharp Chula Vista Hospital for more than 30 years, many as chief of anesthesia and chief of staff. She is remembered as a pioneer of women practicing medicine. She was well respected professionally and liked personally by those with whom she worked. She loved pets and always had dogs or cats. She is survived by her three children and grandchildren.

Melvin Lee Faw, MD 51

Faw died on April 16, 2012. After earning two Purple Hearts and three Bronze Stars during WWII, he completed his undergraduate studies. After receiving his medical degree from Washington University, he completed an internship and residencies in internal medicine and cardiology at Washington University and Kansas University. He practiced internal medicine at Welborn Clinic in Evansville IN from 1955-87, where he was managing partner. He is survived by children, grandchildren and great-grandchildren.

Jeanne McDonald, NU 54

McDonald died on April 19, 2012. During her career she worked at Boone Hospital and University Hospital and for the Department of Health. She was an active member of the Ashland Garden Club and enjoyed singing in the church choir. Survivors include children, grandchildren and great-grandchildren.

FACULTY

Helen E. Nash, MD

Nash, professor emerita (clinical) in pediatrics, died on Oct. 4, 2012. She was 91. In 1949, she was the first African-American physician to join the attending staff at St. Louis Children's Hospital and the first African-American woman to join the faculty of Washington University School of Medicine. She served at both institutions for more than 40 years. At the same time, she maintained a thriving private practice at Grand Boulevard and Cass Avenue in the African-American business district. In 1993, Nash retired from medical practice and soon began serving as the medical school's dean of minority affairs. During her tenure, she was credited with raising the academic achievements of minority students. Earlier in her career, she also served as pediatric supervisor and associate director of pediatrics at Homer G. Phillips Hospital and as president of the St. Louis Children's Hospital attending staff. The medical school recognized her lifetime contributions by creating the Dr. Helen E. Nash Academic Achievement Award. Nash was heralded by physicians throughout St. Louis for her commitment to excellence, tireless advocacy on behalf of children, and endless enthusiasm for the field of medicine.

Alfred I. Sherman, MD 55

Sherman died on Aug. 25, 2012. He was 91. After training in urology and pathology, he followed his mentor, Willard Allen, MD, to Washington University and Barnes Hospital in St. Louis, staying 20 years. He later served on the faculty at Wayne State University School of Medicine and as head of the obstetrics/gynecology department at Sinai Hospital in Detroit MI. After retiring from Sinai in 1975, he went into private practice and continued teaching, lecturing and writing until he "officially" retired at the age of 85.

If you wish to make a tribute gift in honor of any of the above alumni or faculty,

please contact: Pamela Buell, Washington University Medical Alumni and Development, Campus Box 1247, 7425 Forsyth Blvd., Suite 2100, St. Louis MO 63105-2161, (314) 935-9691.



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Integræ Naturæ

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The wonder of it all

This early 17th century book illustration of the cosmos integrated ancient mystical beliefs with contemporary scientific concepts. Its author, Oxford physician Robert Fludd, advocated for alchemy as the basis of new medicine, whereas Johannes Kepler regarded math as the only proper basis for natural science; a publishing battle ensued. A recent exhibit in the Bernard Becker Medical Library, *Occultism and Science in the Early Modern World*, displayed several other examples from this transitional era in the history of science, when natural and supernatural were understood along a continuum. However, observation — and calculation — later became the prime mechanisms of scientific progress.

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