

2011

## Outlook Magazine, Autumn 2011

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# Outlook

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AUTUMN 2011



Washington  
University in St. Louis

SCHOOL OF MEDICINE

## Simulated medicine

Building better teams,  
improving patient care







## Happy faces, going places

Washington University School of Medicine awarded degrees to graduates in all its programs at Commencement ceremonies held in May. To view more, please visit: [outlook.wustl.edu/2011/jun/commencement](http://outlook.wustl.edu/2011/jun/commencement)

### OUTLOOK • AUTUMN 2011

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# Outlook

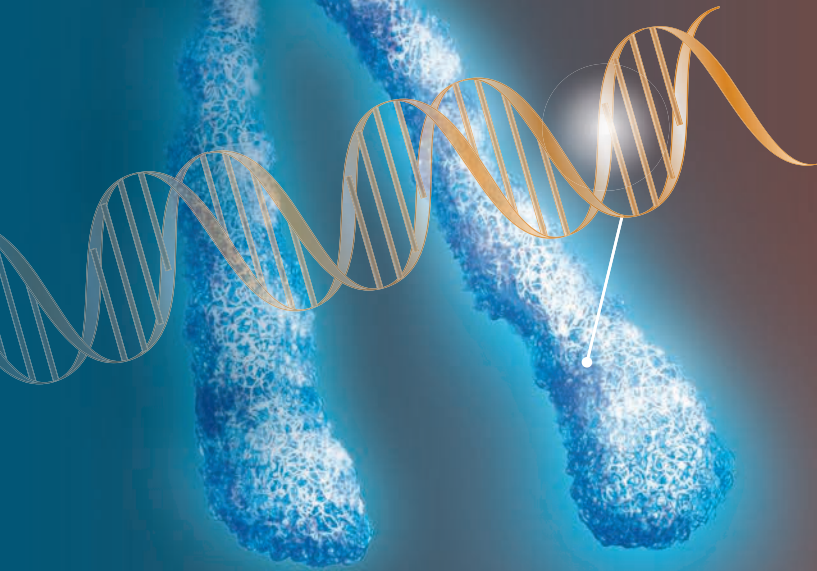
Washington University School of Medicine

OUTLOOK.WUSTL.EDU AUTUMN 2011



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16 Unraveling a boy's rare genetic disorder



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## Boy Struggle

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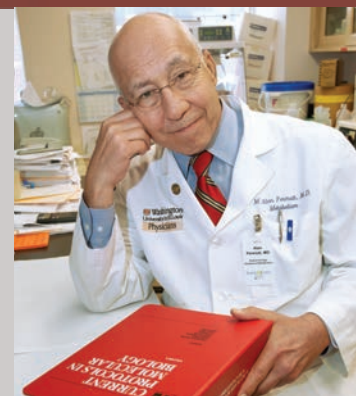
## Simulated Realities

21 Using simulated emergencies to cross-train physicians, nurses and other health professionals may save lives.

**COVER** David J. Murray, MD, the Carol B. and Jerome T. Loeb Professor of Anesthesiology and director of the Howard and Joyce Wood Clinical Simulation Center, leads a multidisciplinary educational effort for medical professionals at Washington University School of Medicine and affiliated institutions on the medical center campus. To learn more, please turn to page 21.

PHOTO BY ROBERT BOSTON

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# Breaking the code

## Complex genomes of 50 breast cancer patients deciphered

**I**n the single largest cancer genomics investigation reported to date, Washington University scientists have sequenced the whole genomes of tumor cells and healthy cells from 50 breast cancer patients. Their work reveals the incredible complexity of cancer genomics and provides an important glimpse into new routes for personalized medicine.

The researchers studied DNA samples from patients with estrogen-receptor-positive breast cancer. To identify cancer cell mutations, they compared tumor cell DNA to DNA of the same patients' healthy cells. Repeating the sequencing about 30 times to ensure accurate data, they analyzed a massive 10 trillion base pairs of DNA.

In all, the tumors had more than 1,700 mutations, most of which were unique to the individual, says Matthew J. Ellis, MD, PhD, an oncologist at the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine and a lead investigator on the project.

"Cancer genomes are extraordinarily complicated," Ellis says. "This explains our difficulty in predicting outcomes and finding new treatments."

Confirming previous work, Ellis and colleagues at Washington University's Genome Institute found two tumor mutations that

### Research reveals complexity of cancer genomics, hints toward personalized medicine

were relatively common. They also found a third, MAP3K1, that controls programmed cell death and is disabled in about 10 percent of these breast cancers. Only two other genes harbored mutations that recurred at a similar frequency.

In addition, they found 21 genes that were also significantly mutated, but at low rates — never appearing in more than two or three patients. Despite the rarity of these mutations, Ellis stresses their importance.

"Breast cancer is so common that mutations that recur at a 5 percent

Circos plots, above, are a visual representation of genomic disruptions in the breast cancers studied.

frequency level still involve many thousands of women," he says.

Ellis points out that some rare mutations in breast cancer may be common in other cancers and already have drugs to treat them.

But such treatment is only possible when the cancer's genetics are known in advance. Ideally, Ellis says, the goal is to design treatments by sequencing the tumor genome when the cancer is first diagnosed.

Although many mutations are rare or unique to one patient, Ellis says some can be classified based on common effects and could be considered together for a particular therapeutic approach.

Ellis looks to future work to help make sense of breast cancer's complexity. But these highly detailed genome maps are an important first step.

"At least we're reaching the limits of the complexity of the problem," he says. "It's not like looking into a telescope and wondering how far the universe goes. Ultimately, the universe of breast cancer is restricted by the size of the human genome."

Ellis presented the work earlier this year at the annual meeting of the American Association for Cancer Research.

# Project aims to reduce breast cancer deaths in North St. Louis

## WUSM teams with community partners

Health-care specialists at the Alvin J. Siteman Cancer Center at Washington University School of Medicine and Barnes-Jewish Hospital are working to improve breast cancer care for African-American women living in North St. Louis City, an area in which death rates from breast cancer are disproportionately high.

“Although African-American women are less likely than white women to get breast cancer, they are 37 percent more likely to die from it,” says Sarah J. Gehlert, PhD, the E. Desmond Lee Professor of Racial and Ethnic Diversity at Washington University. “And in St. Louis, that disparity is even greater.”

With support from Susan G. Komen for the Cure, researchers at Washington University’s Program for the Elimination of Cancer Disparities (PECaD) seek to identify

reasons behind the breast cancer disparity and to help close gaps in care that leave African-American women in North St. Louis particularly vulnerable.

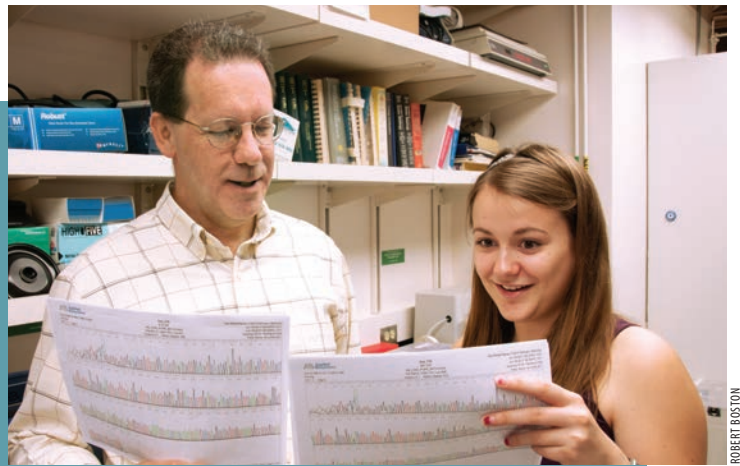
“We’ll be looking for barriers that some women experience as they navigate their cancer care,” says Graham A. Colditz, MD, PhD, the Niess-Gain Professor and a co-principal investigator

on the project with Gehlert. “African-American women in North St. Louis are more likely to get a diagnosis of late-stage breast cancer. And if they get a diagnosis, they are more likely to drop out of treatment. From a community perspective, we are working to map out the complex web of reasons why people might not follow through, or be able to follow through, on treatment.”

Washington University investigators will collaborate with four community partners in the region, including Christian Hospital, Betty Jean Kerr People’s Health Centers, Committed Caring Faith Communities, and the Women’s Wellness Program, part of the St. Louis Effort for AIDS.

With their help, the researchers will hold town hall meetings and one-on-one interviews with breast cancer patients to try to understand the barriers women encounter and help the institutions adapt their practices.

“We’ll follow women who never went to treatment, women who began treatment but for some reason did not complete it, and women who finished treatment,” Gehlert says. “To reduce these disparities, you can’t just develop better chemotherapy. You have to go into the community.”



ROBERT EDSTON

**Bright STARS** Steven R. Mumm, PhD, research associate professor of medicine, works in his laboratory with Adela Cajic, a senior at Affton High School and a participant in the Students and Teachers as Research Scientists (STARS) program. STARS pairs academically talented high school juniors and seniors in the St. Louis area with scientists at local research institutions for six-week laboratory apprenticeships. Cajic, whose family fled war-torn Bosnia in 1992 and moved to the United States in 1997, is working to find unique mutations in the *PHEX* gene for patients with X-linked hypophosphatemic rickets. She hopes to attend Washington University and study to be a biomedical engineer.

## New division to focus on public health

Preventing disease and improving public health are the goals of a new division created at the School of Medicine.

“Through our research and education efforts, we hope to translate research discoveries into policies that keep people healthier through prevention and improve quality and access to health care,” says Graham A. Colditz, MD, PhD, division chief, deputy director of the Institute for Public Health and the Niess-Gain Professor of Surgery.

The Division of Public Health Sciences, created as part of the medical school’s population health initiative, builds on relationships with the Alvin J. Siteman Cancer Center at Barnes-Jewish Hospital and Washington University School of Medicine and the university’s Institute for Public Health.

The division, within the Department of Surgery, comprises 17 investigators who collaborate to study factors that affect medical treatment and outcomes. Researchers are examining the impact of behaviors, communication, health screenings, treatments and the environment.

The division also will provide a home for the Master of Population Health Sciences, a degree program designed for clinicians and researchers with a medical or doctoral degree who seek training in population-based research methods.

### Key public health issues

- cancer recurrence
- weight control
- mammogram access
- doctor-patient communication



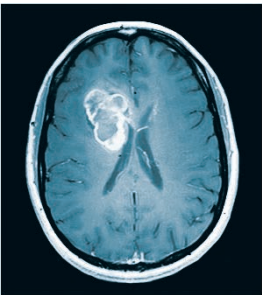


ROBERT BOSTON

**Sustainability in action** To kick off a new Styrofoam recycling program at the School of Medicine, members of about 15 labs in the Department of Molecular Microbiology recently recycled one year's worth of Styrofoam. Jerome S. Pinkner, research lab manager in the Department of Molecular Microbiology and head of the lab committee of the school's Sustainability Action Team (SAT), led the effort. Midwest Recycling & Shredding, Inc. removed the Styrofoam at no cost and has set up Styrofoam recycling containers at four locations around the medical campus.

## Cancer images now available online

The National Cancer Institute (NCI) has chosen Washington University School of Medicine to create an innovative, Internet-accessible database of millions of cancer images. The Cancer Imaging Archive (TCIA) will make millions of images accessible to both researchers and the general public.



For the first time, TCIA will connect the genetic information from the genome atlas project to X-rays and MRI, CT and PET scans used to diagnose patients' cancers. The links will make possible new studies of tumors that may improve diagnosis and treatment, says Fred W. Prior, PhD, research associate professor of radiology and director of TCIA at the university's Mallinckrodt Institute of Radiology.

One of the first projects to be included will be The Cancer Genome Atlas, a collaboration to catalog the genetic errors in more than 20 different types of cancers. The university's

**more information**  
[cancerimagingarchive.net](http://cancerimagingarchive.net)

Genome Institute has played a leading role in that effort.

"TCIA will support a wide variety of cancer research initiatives by providing scientists with easy access to the enormous amounts of data in the archive," says Prior, who also directs the university's Electronic Radiology Laboratory. "This data also will be available to the general public with links to Web pages that help them understand the images."

Although organizers are making the data publicly accessible for educational and informational purposes, patients' names and identifying information will not be published.

## Heuser, Hultgren elected to National Academy of Sciences

### Achievements in research honored

Two Washington University scientists have been elected to the National Academy of Sciences in recognition of their distinguished and continuing achievements in original research.

John E. Heuser, MD, professor of cell biology and physiology, and Scott J. Hultgren, PhD, the Helen L. Stoeber Professor of Molecular Microbiology and director of the Center for Women's Infectious Disease Research, are among the 72 new members and 18 foreign associates elected to the academy this year.

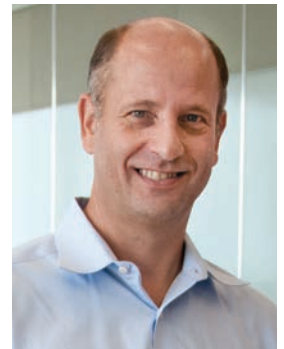
Heuser was recognized for his discovery of the recycling of synaptic vesicles in nerve terminals. This led to a general realization in cell biology that membrane recycling occurs in all cells, not just in nerves, and is an important component of all cells' ability to take up materials from their environment and to secrete material outward.



John E. Heuser, MD

In addition to overseeing the electron microscopy facility he created at Washington University, Heuser recently has become the director of a new microscopy center at Kyoto University in Japan in its Institute for Cell and Material Sciences, a new government-mandated institute designed to foster international scientific collaboration in nanomolecular therapeutics and regenerative medicine.

Hultgren was recognized for his work in microbial/host interactions, the basis of all infectious disease. His research has shed light on the basic mechanisms that determine how bacteria interact with the many different surfaces in the body and how they get out of control and exert adverse effects in a variety of debilitating infectious diseases. His research is reshaping technologies involved in the design of vaccines and other procedures that are used to diagnose, treat and prevent urinary tract infections.



Scott J. Hultgren, PhD

The Center for Women's Infectious Disease Research, which Hultgren directs, focuses on issues including the causes of urinary tract infections, infections that lead to premature delivery and vaginitis, and, in general, the important roles that microorganisms play in all the life-threatening conditions, such as cancer and heart disease.



WU/MC REDEVELOPMENT CORPORATION



**Murals in the Grove** Students from the Herbert Hoover Boys & Girls Club Adams Park Unit paint a colorful mural promoting the Tour de Grove professional bike race in the Grove neighborhood bordering the Washington University Medical Center. The Washington University Medical Center Redevelopment Corp. received a grant from the St. Cronan Housing Corp. to fund four murals throughout the neighborhood designed by the students in cooperation with local artist Grace McCammond. To view more of this exciting local artwork, visit [outlook.wustl.edu](http://outlook.wustl.edu).

## NEUROLOGY

# Busy brains and Alzheimer's

**H**igher levels of cell chatter boost amyloid beta in the brain regions that Alzheimer's hits first, School of Medicine researchers report. Amyloid beta is the main ingredient of the plaque lesions that are a hallmark of Alzheimer's.

These brain regions belong to a network that is more active when the brain is at rest. The discovery that cells in these regions communicate with each other more often than cells in other parts of the brain may help explain why these areas are frequently among the first to develop plaques.

Working with mice genetically engineered to develop Alzheimer's-type brain changes, scientists reduced the size and number of plaques by decreasing brain cell activity in certain regions.

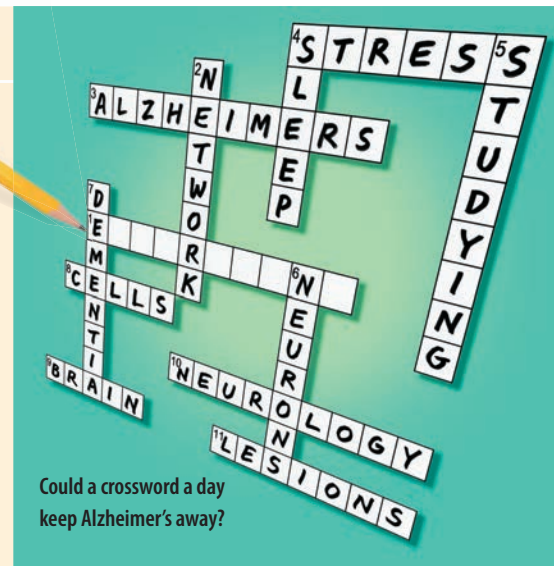
The results, which appeared in the May 1, 2011 issue of *Nature Neuroscience*, are the latest to hint at a resolution to lines of evidence that have suggested busier brain cells can both contribute to and prevent Alzheimer's. According to a new theory,

just which brain cells are kept busy may make all the difference.

"Engaging the brain in tasks like reading, socializing or studying may be helpful because they reduce activity in susceptible regions and increase activity in regions that seem to be less vulnerable to Alzheimer's plaque deposition," says David M. Holtzman, MD, the Andrew B. and Gretchen P. Jones Professor and head of the Department of Neurology. "I suspect that sleep deprivation and increased stress, which may affect Alzheimer's risk, may also increase activity levels in these vulnerable regions."

The susceptible regions of the brain highlighted in the new study belong to the "default mode network," a group of brain regions that become more active when the brain is not engaged in a cognitively demanding task.

Study co-author Marcus E. Raichle, MD, professor of neurology, of radiology and of neurobiology, was among the first to describe the default mode network. In a



Could a crossword a day keep Alzheimer's away?

2005 paper, Washington University researchers showed that regions in the default mode network are often among the first to develop Alzheimer's plaques.

According to Holtzman, the new study's results demonstrate the direct connection between amyloid plaque formation and growth and changes in brain cell activity levels in various parts of the brain. He plans further investigations of the mechanisms that regulate default brain activity, their connections to phenomena such as sleep, and their potential effects on Alzheimer's disease.





**Outlook online!** An enhanced version of the School of Medicine's premier magazine now publishes online six times each year. The revamped *Outlook* website includes multimedia presentations of feature articles, along with news about school events and the activities of its students, faculty, alumni and staff. Please visit [outlook.wustl.edu](http://outlook.wustl.edu) to learn more.

## New center for heart, vascular care

For the first time in School of Medicine history, the Divisions of Cardiology and Cardiothoracic Surgery and the vascular surgery service of the Department of Surgery have joined together to form the new Washington University and Barnes-Jewish Heart & Vascular Center.

Nine floors are now dedicated to treating heart and vascular patients, in addition to the cardiac procedure center and the cardiac diagnostic lab. Seven of these floors are located in Queeny Tower and the adjacent Rand Johnson building. The Queeny Tower lobby has been renovated and is the new Heart & Vascular Center lobby.

"Having a single point of entry makes access much easier for our heart and vascular patients," says Douglas L. Mann, MD, the Tobias and Hortense Lewin Professor of Medicine and chief of the Cardiovascular Division at the School of Medicine and chief of cardiology at Barnes-Jewish Hospital. "Patients receive their care from an integrated team of physicians and nurses who are national leaders in the treatment of heart and vascular disease."



KATHY HOLLEMAN

New signage marks the entrance to the Heart & Vascular Center.

## Sophisticated DNA technology now accessible to area scientists

### New center puts technology within reach

St. Louis-area scientists now have easy local access to sophisticated technology to decode and analyze the genomes of patients and organisms in research studies.

The Department of Genetics at Washington University School of Medicine has established the Genome Technology Access Center (GTAC) to offer high-speed genome sequencing and other advanced genetic technologies to scientists both within and beyond the university.

In recent years, genomics has revolutionized the field of biology, but the technology has remained out of reach for many laboratories. That's because DNA sequencing machines cost hundreds of thousands of dollars, making them unaffordable for individual labs. Moreover, many scientists don't have the expertise to analyze the terabytes of genomic data produced by sequencing.

"DNA sequencing has become the go-to technology in many fields," says Jeffrey Milbrandt, MD, PhD, the James S. McDonnell Professor of Genetics and head of the genetics department. "But not every scientist has the specialized training to prepare DNA samples, analyze the data and interpret the results. We saw a real need to fill these gaps and to expand access to the technology."

Robi D. Mitra, PhD, associate professor of genetics, has been a driving force behind the new center, which is staffed by nearly 20 scientists, including geneticists, molecular biologists and informatics specialists, who have the expertise to prepare DNA samples for sequencing and to analyze and interpret the data.

The new center can handle both small and large projects; its services are offered to scientists on a fee-for-service basis. Scientists also can choose to prepare their own DNA samples or analyze the raw genomic data if they prefer.

"We have the full range of technologies needed to perform genetic analyses," says Seth D. Crosby, MD, center director and research assistant professor of genetics. "Scientists don't have to know the details of a particular technology. We can walk them through the various options and help them select the best one based on the research questions they want to answer."



ROBERT BOSTON

Robi D. Mitra, PhD, left, and Seth D. Crosby, MD, are key players in the Genome Technology Access Center.

**more information**  
(314) 286-1256



# LABWORK

*places of discovery*

A PHOTO ESSAY

BY ROBERT BOSTON



# LAB WORK

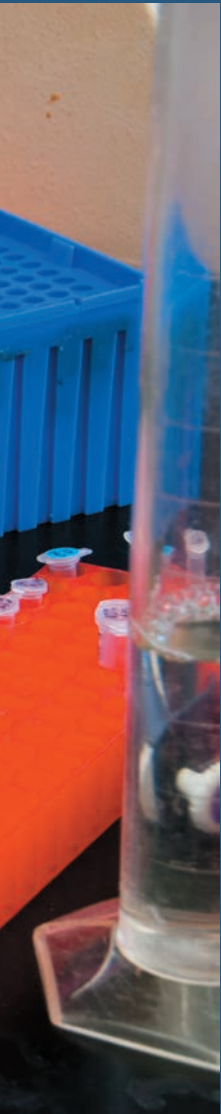


White coats, wet benches, wondrous apparatus — traditional labs remain citadels of basic science. Today, however, there's far more to the picture of where research happens. Some technologies of clinical studies resemble sci-fi movie sets. Voracious computer networks crunch countless data, the raw material of empirical reasoning. Robots power through repetitive physical tasks, freeing people for higher functions. Gathering spaces foster collaboration, build teamwork and nurture a spirit of discovery. The contemporary lab, like the thirst for knowledge, exceeds all boundaries.



The scientific worldview

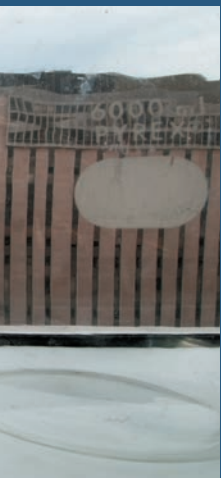




Flexible connections, flexible spaces



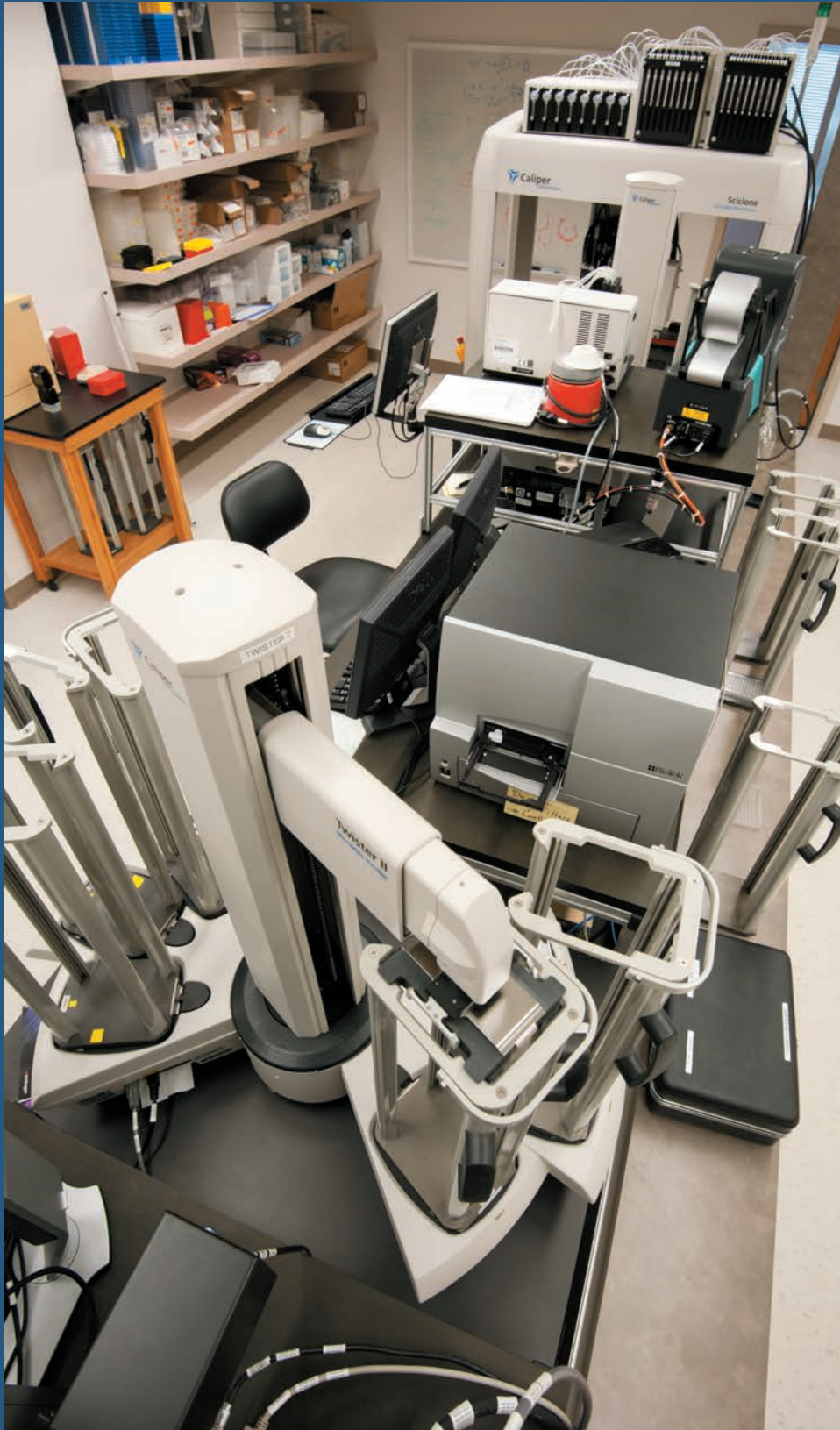
Open collaboration



Data-driven



# LABWORK



Ready robots





Signs, symbols



See more labs online:  
[outlook.wustl.edu](http://outlook.wustl.edu)



Portrait studio



# MatchMAKERS

*Improving clinical research study recruitment*



BY HOLLY EDMISTON

Researchers at Washington University in St. Louis undertake more than 1,000 new clinical research studies each year. Recruiting enough volunteers to participate in those studies can be daunting. Fortunately, investigators don't have to face this task alone: The Recruitment Enhancement Core (REC) — a group funded by the School of Medicine's Center for Clinical Studies (CCS) — works closely with investigators from across the university to match potential participants with appropriate clinical studies.

“One of our main goals is to make sure that people are aware of the clinical studies going on at Washington University and are given the opportunity to connect to those studies,” says Charles P. Rathmann, director of the REC. “Another is to assist our investigators in any way we can with recruitment for their clinical research.”

“Recruitment for clinical research should be treated in a data-driven, results-oriented manner,” says Rathmann. “It's important to know who your audience is and then get your message out to as many people as possible.”

Toward that end, REC staff are available to meet with any principal investigator (PI) and his or her team to provide as much help as needed to effectively recruit participants for planned clinical research studies.

For some research teams, just pointing them to the proper university resources to connect with local media or to have posters and flyers designed is enough. In other cases, the REC may be asked to handle every aspect of the recruitment process. Usually, the need falls somewhere between those two extremes, but the key to conducting a successful recruitment effort — no matter the scope of a trial — is to develop and implement a strategy.

“Recruitment is an intricate part of the process and can no longer be taken for granted,” says Rathmann, noting that the old model for clinical study recruitment was for researchers to find participants among their own patient populations. “That approach just doesn't work anymore. If the REC staff can help a research team by handling the recruitment aspect of a study, it frees the researcher and his clinical and administrative staff to focus on what they do best.”

That focus — conducting studies and analyzing data — is what may one day lead to improved medical care for future patients.



**LISTENING AND STRATEGIZING** Asthma researcher Mario Castro, MD, MPH, left, discusses clinical research study recruitment with, from left, Recruitment Enhancement Core director Charles P. Rathmann, research patient coordinator PeChaz L. Clark, and clinical research nurse coordinator Teresa L. Radake, RN.



“The Recruitment Enhancement Core provides unique recruitment consults and services, leveraging computerized databases, research data repositories and electronic medical records to assist investigators in conducting leading-edge clinical and translational research,” says Yi Zhang, JD, RN, assistant dean for clinical studies and the administrative director of the CCS. “As a result, it has developed a proactive methodology to help investigators establish and meet study recruitment targets, while at the same time promoting regulatory compliance and the highest ethical standards.”

The university’s local, web-based Research Participant Registry (RPR) — building upon the successful Volunteer for Health program and database developed in 1996 by Janet B. McGill, MD, professor of medicine — has Institutional Review Board (IRB) approval to be used for recruitment purposes using query-based approaches. The RPR houses approximately 15,000 locally registered and available potential research participants, and its users are encouraged to join the national Clinical and Translational Science Awards Consortium participant registry, ResearchMatch.org, which allows access to potential participants nationwide.

Access to this wide range of potential volunteers is a major benefit for university researchers. Another is that REC staff are available for group and individualized recruitment training sessions. For more complex studies, REC staff can be assigned to spend a percentage of time working on a particular study to directly develop and implement recruitment strategies.

In today’s research environment in which both private sponsors and government funding bodies such as the National Institutes of Health (NIH) now require monthly “deliverables,” it is imperative that recruitment for clinical trials be approached strategically.

“As an institution, we owe it to the sponsors of research conducted here to optimize recruitment and enrollment,” says Rathmann. “Not only does that focus allow us to continue to move this medical community forward, it allows our researchers to ask and answer the difficult, cutting-edge questions that are the foundation of clinical research.”

According to Zhang, execution of clinical research studies is frequently hampered by inadequate participant recruitment. “National data shows that approximately 85 percent of

studies do not meet recruitment goals,” she says, “while 30 percent fail to recruit even a single participant.”

Zhang and the REC staff don’t want that to be the case at Washington University. They hope to motivate investigators and study coordinators to do more to ensure that they recruit the best possible volunteers for their studies.

Researcher Mario Castro, MD, MPH, professor of medicine and of pediatrics, has worked successfully with the REC on a variety of asthma studies.

“The Recruitment Enhancement Core staff has been extremely helpful in ensuring successful recruitment for our clinical studies for asthma patients,” says Castro. “We appreciate that the REC helps us enroll diverse participants so that new treatments we develop will apply to all populations.”

In cases where help beyond what the REC can provide is needed, researchers are referred to other university resources. The CCS, for instance, can provide assistance with the coordination and implementation of clinical research studies, study budget development and negotiation, and regulatory services.

The REC is also part of the Institute of Clinical and Translational Sciences (ICTS), the university’s intellectual and physical home for the implementation of clinical and translational research as mandated by the NIH. The ICTS provides services ranging from biostatistics/research design to genetic/genomic analyses to dissemination of research results. The REC also works in close collaboration with ICTS cores such

as the Center for Biomedical Informatics and the Center for Community-Engaged Research.

“We’re part of an emerging national movement to enhance recruitment for clinical research studies,” says Zhang, noting that Washington University got started down this path earlier than other institutions through its Volunteer for Health Program. “Recruitment support is an effort we hope will help to accelerate the performance of clinical research studies and, in turn, advance the state of science and improve the health of the nation.” □

#### Services offered by the REC

- Pre-screening
- Protocol review
- Contact and referral generation
- Targeted partner collaborations
- Enrollment tracking
- Analysis of results

#### RECRUITMENT snapshot: 2010

- Assisted 91 PIs on 140 trials
- Generated 27,000 referrals
- Facilitated 3,200 enrollments

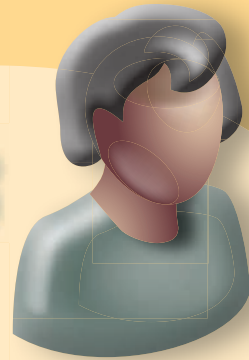
#### What is a clinical research study?

See graphic, next two pages.





# HOPEFUL commitments



Your vital contribution helps others

## The value of volunteering for clinical studies

Getting well, and staying healthy, requires improved diagnoses, therapies and disease prevention. These advancements may come more quickly when people participate in controlled research called clinical studies.

### Proposed Clinical Study

UNANSWERED QUESTION



#### PRINCIPAL INVESTIGATOR

Researcher/clinician leads study team



#### STUDY COORDINATOR

Manages enrollment, conducts activities and collects data

#### Research protocol

- People needed
- Proposed tests, procedures, drugs or other interventions
- Outcomes to measure
- Necessary precautions

#### INSTITUTIONAL REVIEW BOARD

Approves ethical standards, protects participant rights and helps ensure the safety of human studies

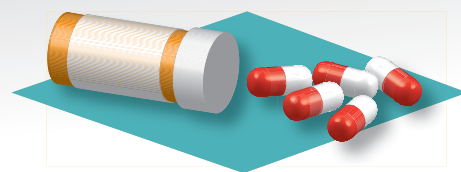
#### RECRUITMENT SPECIALIST

Develops and implements strategic plan to recruit participants

### Types of clinical studies

- **Treatment studies** evaluate new therapies and drug combinations
- **Disease prevention studies** find ways to maintain optimal health
- **Diagnostic studies** improve tests and procedures
- **Screening studies** explore how to best detect diseases and conditions
- **Quality of life studies** explore ways to improve comfort and well-being

### VOLUNTEERS NEEDED Clinical Studies



What is the purpose of the study?

Who is needed?

What is involved if I participate?

Who is the principal investigator?

Where will the study occur?

What are the risks?

# register

The first step to becoming a participant is to visit the Research Participant Registry online. By registering, you join a database of prospective volunteers. There is no obligation, you may remove or modify your information at any time, and all information is treated confidentially.

# enroll

Your profile must match study criteria such as age, gender, details of your disease, previous treatment history, and so on. If you do match, a study coordinator will contact you. A consent form explains the study, the risks involved, and what may happen to you if you participate, although you may choose not to at any time.

# participate

What happens during a study depends on the type of clinical study being conducted. You will meet members of the research team, including doctors and nurses, social workers and other health care professionals. These people assess your health beforehand, monitor your condition during the study, and follow up with you afterward.

## Why volunteer?

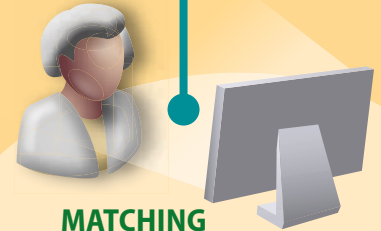
- Become actively involved in your own health care
- Access potential new treatments
- Receive expert medical care
- Advance medical knowledge
- Help others

## Before you enroll ...

- Learn all you can about the study and its goals
- Discuss it with family, friends and your personal physician
- Meet the investigator who will conduct the study
- Understand and carefully weigh the risks vs. the benefits

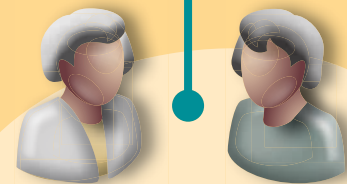


**rpr.wustl.edu**  
15-minute online registration



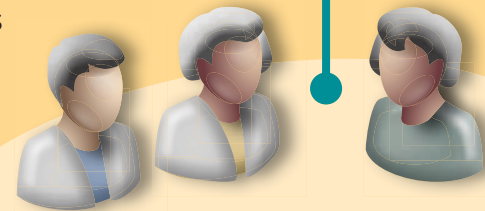
## MATCHING

*Confidential profiles are compared to available studies*



## ENROLLMENT

*If you qualify, you decide whether to join the study*



## IN THE STUDY

*Research team cares for you and monitors your health*



## MAKING A DIFFERENCE

*Your participation holds the promise of improving the lives of other people*



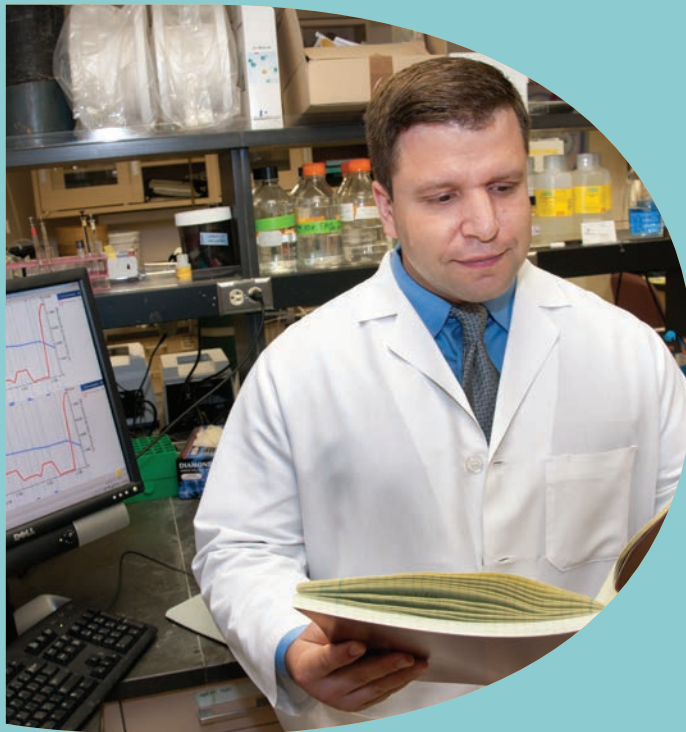


CLINIC

W. Todd Cade, PT, PhD

BARTH SYNDROME

*Boy*



LAB

Michael A. Kiebish, PhD

## Rare, little-known disease saps the vigor of boyhood

BY BETH MILLER

**E**ASY-GOING, WITTY AND BRIGHT, Kevin Baffa is unruffled when describing how he coped with his first cardiac arrest at age 11 and two more over the next eight years.

The 22-year-old has Barth syndrome, a rare genetic disorder of fat metabolism that occurs only in males. It's so rare — diagnosed in fewer than 200 boys and young men worldwide — that many physicians are unfamiliar with it. The syndrome, caused by a gene defect, results in impaired heart function, muscle weakness and exercise intolerance.

Although Barth syndrome occurs only in males, it is passed down from the mother. In addition to its effects on the heart, it causes neutropenia, or very low numbers of white blood cells, which help to stave off infection. There is no specific treatment for Barth syndrome, though some

# STRUGGLE

heart drugs and dietary supplements have been used with some success. Many patients have intracardiac defibrillators implanted to

sense their cardiac rhythms and sometimes pace the heart. Severe infections and heart failure are common causes of death.

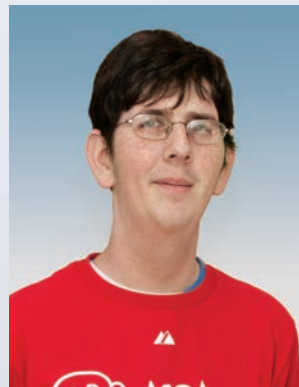
Although this is a rare disease, Washington University School of Medicine has two researchers who are devoted to finding a cause and effective treatments.

W. Todd Cade, PT, PhD, assistant professor of physical therapy and of medicine, is studying the impact of exercise on heart function and exercise tolerance in patients with Barth syndrome. He already has completed a pilot study looking at nutrient metabolism in these patients and is now seeking federal funding to continue the study.

Michael A. Kiebish, PhD, a postdoctoral research associate in the Department of Medicine's Division of Bioorganic Chemistry and Molecular Pharmacology, is one of only a handful of researchers worldwide working with an animal model of Barth syndrome.

The Barth Syndrome Foundation has funded all three projects.

CONTINUED ON PAGE 20



Living with a challenging condition: Kevin Baffa, above, takes a stress test, opposite page.



# Energy CRISIS

## How Barth syndrome devitalizes boys' lives

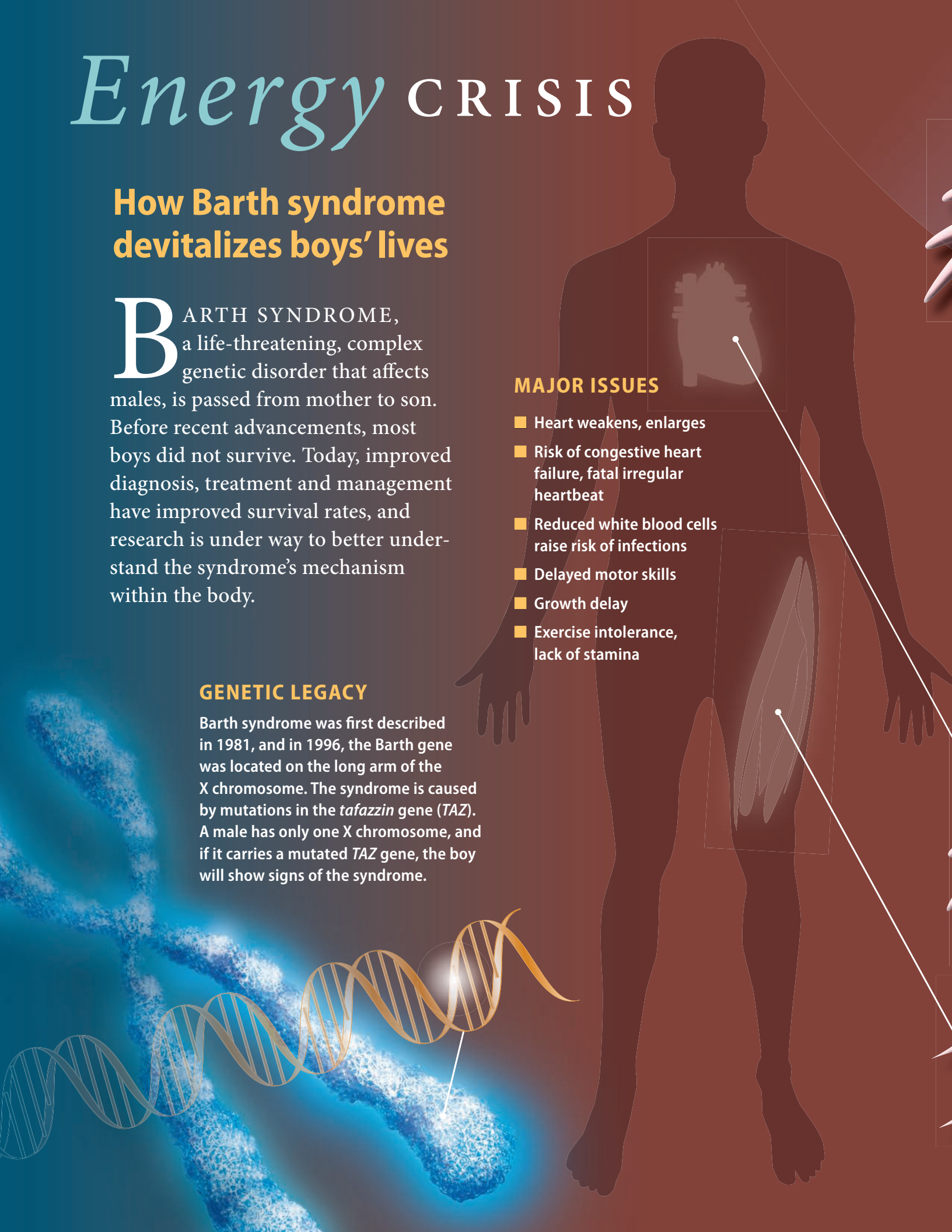
**B**ARTH SYNDROME, a life-threatening, complex genetic disorder that affects males, is passed from mother to son. Before recent advancements, most boys did not survive. Today, improved diagnosis, treatment and management have improved survival rates, and research is under way to better understand the syndrome's mechanism within the body.

### GENETIC LEGACY

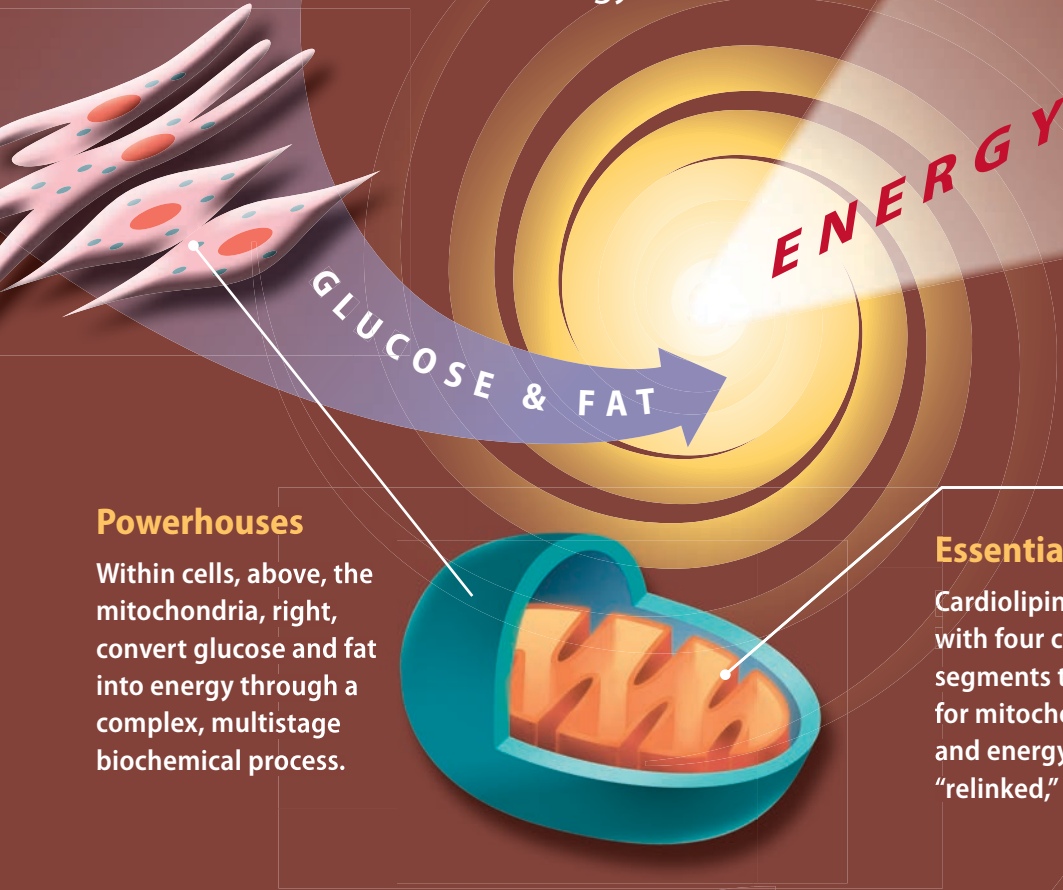
Barth syndrome was first described in 1981, and in 1996, the Barth gene was located on the long arm of the X chromosome. The syndrome is caused by mutations in the *tafazzin* gene (*TAZ*). A male has only one X chromosome, and if it carries a mutated *TAZ* gene, the boy will show signs of the syndrome.

### MAJOR ISSUES

- Heart weakens, enlarges
- Risk of congestive heart failure, fatal irregular heartbeat
- Reduced white blood cells raise risk of infections
- Delayed motor skills
- Growth delay
- Exercise intolerance, lack of stamina



## HEALTHY BODY *Energy to burn*



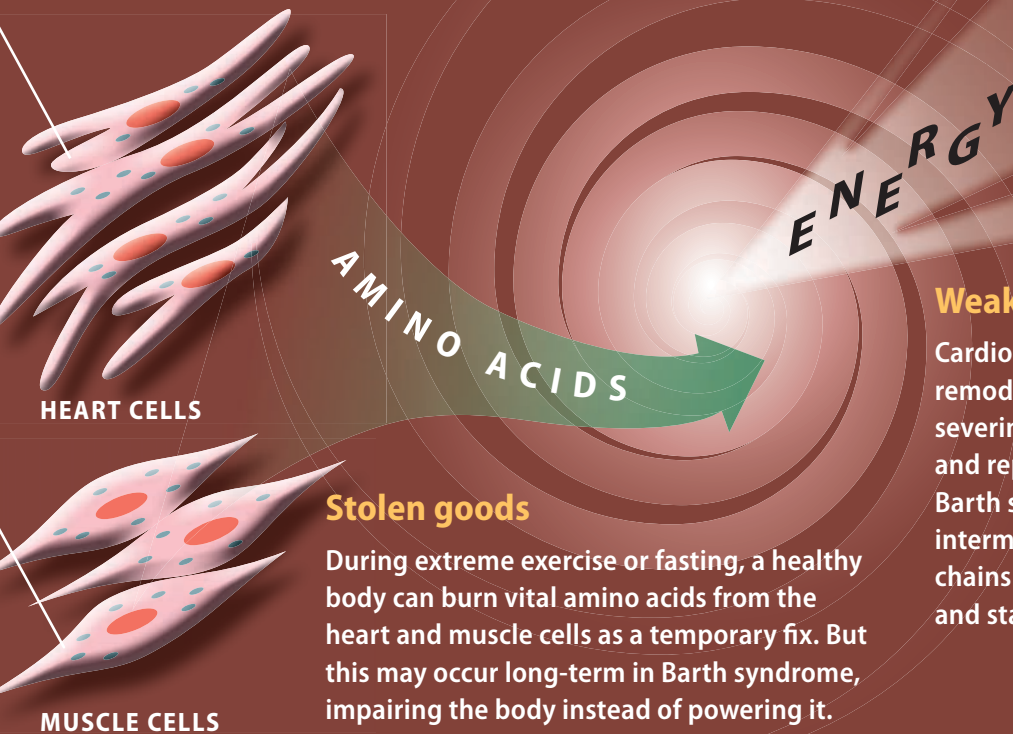
### Powerhouses

Within cells, above, the mitochondria, right, convert glucose and fat into energy through a complex, multistage biochemical process.

### Essential link

Cardiolipin, a molecule with four chain-like segments that is essential for mitochondrial structure and energy, gets constantly "relinked," or renewed.

## BARTH SYNDROME *Power shortage*



### Stolen goods

During extreme exercise or fasting, a healthy body can burn vital amino acids from the heart and muscle cells as a temporary fix. But this may occur long-term in Barth syndrome, impairing the body instead of powering it.

### Weakest link?

Cardiolipin's normal remodeling involves severing a segment and replacing it. But in Barth syndrome, the intermediate three-part chains go unrepaired and start to accumulate.



**“We want these kids to get better and lead long, healthy lives.”**

Kiebish and Cade confer in the lab.



**Baffa’s journey began** when he had congestive heart failure at 10 weeks old and was put on life support. As he got older, he had other health and development issues. Seven years passed before the Baffa family found a neurologist who diagnosed Barth syndrome. Still, there was little information available about the disorder.

Baffa’s mother, Rosemary, eventually connected with another family struggling to understand the disorder. That contact was the beginning of what is now the Barth Syndrome Foundation, a community of families, physicians, scientists, donors and volunteers that works to find the cause and treatment for this mysterious metabolic disorder.

Cade’s research with Barth syndrome patients began after a serendipitous 2006 meeting with Barry J. Byrne, MD, PhD, a pediatric cardiologist at the University of Florida. Byrne learned of Cade’s research related to exercise and metabolism in patients with HIV and invited him to the International Barth Syndrome Conference to collaborate on an exercise study.

“Before then, I had never heard of Barth syndrome,” Cade says. “Because it is a relatively newly diagnosed disease, there is still much to learn regarding its pathophysiology and relation to impaired skeletal muscle and heart function.”

After getting to know the patients and their families at the conference, Cade expanded his research to include Barth syndrome. Parents of boys with Barth syndrome often keep their sons from exercising due to their impaired hearts, increased risk for abnormal heart rhythms, fatigue and muscle weakness. But Cade says this lack of aerobic exercise may be having an even more negative effect on the body.

To test his theory, Cade launched a pilot study in July 2010 at the Barth Syndrome Foundation’s biennial international conference. Five young men with the syndrome, including Baffa, took a stress test on a stationary bicycle to measure peak oxygen consumption (VO<sub>2</sub>), a test of heart function, and a test of the ability of leg muscles to extract and use oxygen during exercise.

Cade then designed exercise programs for the study participants, who completed a progressive aerobic workout on a stationary bike three times a week at a hospital-based physical therapy or cardiac rehabilitation clinic in their hometowns. The clinics reported each patient’s data to Cade, who also kept in touch with the study participants.

As the study period ends, Cade is retesting each patient at the School of Medicine looking for improvements in heart function, VO<sub>2</sub>, exercise tolerance, leg muscle oxygen extraction and quality of life. His assessment team includes

Washington University cardiologists, EKG technicians and physical therapists, and Sara Seyhan, a clinical specialist from CAS Medical Systems Inc., who performs the leg-oxygen-extraction measurements. CAS is donating Seyhan’s service and equipment to the project.

Baffa came to Washington University Medical Center in March for his end-of-study testing. Before joining Cade’s study, he wasn’t exercising at all, so initially it was tough.

“Once I started exercising more frequently, I did get stronger,” he says. “I went from five minutes on the bike in my first session to 45 minutes straight in my last session.”

Baffa’s results were promising: His exercise time increased by 13 percent; peak oxygen consumption by 11 percent.

**Still, the exact cause** of Barth syndrome remains elusive.

Cade and Kiebish have discovered that nutrient metabolism abnormalities may play a role. Metabolism involves a complex process in the mitochondria of cells known as the TCA (tricarboxylic acid) cycle, which breaks down carbohydrates, proteins and fats into energy. But in boys with Barth syndrome, something is going wrong.

“Results from our clinical study show that amino acid metabolism is dysregulated in this group; we think this is because mitochondria in the boys’ cells can’t effectively use fatty acids at rest,” Cade says. “Instead, we believe the mitochondria take amino acids from the muscle and heart for energy.”

Kiebish adds that boys with Barth syndrome do not metabolize amino acids, fatty acids and glucose correctly because mutations in the *tafazzin* (*TAFZ*) gene decrease the remodeling of cardiolipin, a lipid that regulates energy metabolism in mitochondria.

“The heart usually burns fatty acids for energy, but in Barth syndrome it can’t, because the TCA cycle is out of sync and is going after amino acids instead,” he says. So the heart doesn’t develop properly because it is deprived of energy.”

Kiebish studies cardiolipin and the TCA cycle in the Barth syndrome mouse model. By administering doxycycline, a common antibiotic that stops production of the *TAFZ* gene, he is able to replicate the defective metabolic processes that occur in Barth syndrome.

“I’m able to take my findings from the lab and tell Todd what is probably happening in the boys and what we should be looking for,” Kiebish says.

Although both researchers have only been involved with these patients for a few years, their dedication is evident.

“We put Barth syndrome up front because it’s worth it,” says Kiebish. “Every inch forward makes miles of difference.”



# Simulated

Technology enhances life-like scenarios that teach teamwork

# REALITIES

BY JIM DRYDEN







## FROM A DARKENED CONTROL ROOM,

a surgeon, nurse and physical therapist peer through a one-way mirror as members of a Barnes-Jewish Hospital acute care team talk to a mannequin. Acute care teams are called in when formerly stable patients develop serious complications. “Are you allergic to any medicines?” “Can you hear me?”

“How long has it hurt this much?”

The mannequin answers, or at least one of the evaluators does. Speaking into a microphone located in the control room, her voice is transmitted through a speaker near the mannequin’s mouth.

“It’s hurt much worse the last few minutes. I’m really scared!”

The team — made up of residents, nurses and a respiratory therapist — orders imaging tests, starts an IV, prescribes medication and even intubates and protects the mannequin’s airway. A few minutes later, they retire to a nearby room for a debriefing and evaluation with one of the specialists who observed from the control room.

In the aircraft industry, simulators re-create the experience of flying. In modern health care, the idea has been to create the same kind of believable and accurate experience that makes it possible for students at every level to hone their physical, communications and teamwork skills without encountering actual patients. Following simulator training, these teams should be able to take their new skills back to the hospital and help real patients.

**The simulators are located** in Barnes-Jewish Hospital, St. Louis Children’s Hospital, the Goldfarb School of Nursing and the Farrell Learning and Teaching Center. Washington University School of Medicine uses simulation training for all levels of students in many settings, but group training of seasoned medical teams has become another key component of their use.

By teaching health care professionals — physicians, nurses, therapists and students — to work together and combine their expertise, simulator training is designed to make it more likely that they will quickly be able to diagnose and correctly treat problems.

Trainees come from pediatrics, anesthesiology, emergency medicine, obstetrics, neurology and other specialties

and work through scenarios that test their abilities to recognize and diagnose medical problems. Sometimes scenarios are straightforward, such as a difficult labor, breathing problems due to a collapsed lung, or chest pain from a heart attack. But sometimes the scenarios are more complicated, as in a recent simulation that involved a trauma team of surgical and emergency medicine residents.

“In one scenario, the patient has chest injuries following a car accident,” says David J. Murray, MD, the director of the Howard and Joyce Wood Simulation Center located in the Farrell Learning and Teaching Center.

Sitting in the darkened control room observing the training session, Murray says, “This one’s more complicated than just a bruised sternum or broken ribs. The patient had a heart attack while driving. That’s what led to the accident and subsequent injuries.”

Murray, the Carol B. and Jerome T. Loeb Professor of Anesthesiology, chief of pediatric anesthesiology and anesthesiologist-in-chief at St. Louis Children’s Hospital, says this type of training, called heuristics, helps individuals learn to solve complex problems through trial and error. At the various simulation centers located throughout the medical center, heuristics training forces teams of medical professionals to confirm and continue to reconfirm their diagnosis, especially when the obvious answers turn out to be wrong.

“We want to help them move through the diagnostic process to step two or step three, to keep up the detective work

**A dramatic learning experience: residents working with a simulator.**  
From left: Sean P. Stickles, MD, internal medicine, emergency medicine; Anson M. Lee, MD, surgery; and Tanying Mao, MD, anesthesiology.  
Above: Mary E. Klingensmith, MD, demonstrates an intubation procedure.



“The scenarios seem simple, but you start feeling as if they are real. You have your peers around you, and you want to make good decisions.”

— Malcolm P. MacConmara, MD

“We need trainees to develop good judgment and diagnostic skills so that they can be ready to solve complex problems.”

— David J. Murray, MD



For more information on Washington University's simulation centers, visit [www.simulation.wustl.edu](http://www.simulation.wustl.edu)

that will help them determine what the problems are,” he explains. “If they do something that should make the patient better, but it doesn’t, then what?”

Murray works closely with co-principal investigators Mary E. Klingensmith, MD, the general surgery residency program director and Mary Culver Distinguished Professor of Surgery, and Bradley D. Freeman, MD, professor of trauma surgery. One of the three often can be found with simulation center administrator Julie A. Woodhouse, RN, in the control room observing, providing a voice for the simulated patient, and evaluating how the medical teams are adapting to various training scenarios.

“These can be very difficult cases,” says Klingensmith, assistant director of the Wood Simulation Center. “In the actual practice of medicine, things don’t always go ‘by the book.’ The same thing goes for these simulated cases.”

In the case of the accident victim, the team eventually did order a blood test that detected the presence of a likely heart attack. That patient was saved, but the simulation center mannequins aren’t always so lucky.

Neither are the real patients. The Institute of Medicine estimates that medical errors are the eighth leading cause of death in the United States. Washington University is one of several centers around the country using simulators to train health professionals to communicate more effectively to improve patient care.

With funding from the federal Agency for Healthcare Research and Quality of the Department of Health and Human Services, Murray, Klingensmith and colleagues believe they are improving patient safety by training medical teams not only to be better at diagnosis, but also faster and more skilled under pressure.

“The scenarios seem simple, but you start feeling as if they are real,” says Malcolm P. MacConmara, MD, a fourth-year general surgery resident. “You have your peers around you, and you want to make good decisions.”

In another scenario, an acute care team is monitoring a patient’s breathing as the mannequin labors for breath. They order X-rays and discuss protecting the patient’s airway with intubation. Finally, one team member suggests it might be an allergic reaction to medication. It’s the right diagnosis, but unfortunately, the mannequin gets too large a dose of Benadryl®, and further complications ensue.

“We aren’t trying to drill them over and over to properly treat specific problems,” Murray explains. “We don’t want to show them how to fix one condition. We need trainees to develop good judgment and diagnostic skills so that they can be ready to solve complex problems.”



A realistic heartbeat, breathing and eye movements aid diagnosticians.

**The simulation centers** are a cooperative venture of the School of Medicine and its Departments of Anesthesiology, Pediatrics and Surgery, and BJC HealthCare, which operates Barnes-Jewish Hospital, St. Louis Children’s Hospital and the Goldfarb School of Nursing at Barnes-Jewish College.

“Surgeons in training benefit from the opportunity to rehearse complex skill sets before they ever enter an operating room,” says Klingensmith. “In the surgical skills

lab, they do hands-on exercises to teach a variety of surgical skills, from suturing to knot tying. We offer simulators where they can practice laparoscopic and endoscopic techniques.”

Community physicians and others who want to learn new skills or refresh their decision-making skills also can visit the center for training.

“It’s all about education, for medical students and the health care professionals working on the floors of our hospitals,” says Murray. “Education is more than just training. It involves teaching people to think on their feet. We want to reinforce the importance of being situationally aware, then have them take these skills back to the hospital so that when real patients are involved, they can use the skills acquired in these scenarios to prevent complications and save lives.” □



## Onward!

**M**ATCH DAY WAS HELD MARCH 17, 2011, and 116 graduating medical students took part in 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 2011, 36 percent of the graduating class selected a primary care field and 27 percent matched into highly competitive specialties, including dermatology, plastic surgery, ophthalmology, neurosurgery, general surgery, urology, orthopaedic surgery and otolaryngology.



Newly minted MDs: Yevgeniy Gitelman, Jill J. Savla, Hanny T. Al-Samkari and Kevin R. Patel.

### CALIFORNIA

#### Los Angeles

UCLA Medical Center

##### EMERGENCY MEDICINE

Jada Lane Roe

##### OPHTHALMOLOGY

Melinda Youeen-Wu Chang  
Philip James Sanchez

##### OTOLARYNGOLOGY

Isabelle Yisha Liu  
Travis Layne Shiba

#### Redwood City

Stanford University

##### DERMATOLOGY

Oloruntoyin Omoyeni  
Falola

#### San Diego

University of California-San Diego

##### OBSTETRICS AND GYNECOLOGY

Katherine Cecilia Kurnit

#### San Francisco

University of California-San Francisco

##### ANESTHESIOLOGY

William Alexander Edwards

##### ANESTHESIOLOGY-RESEARCH

Elizabeth Louisa Whitlock

##### GENERAL SURGERY

Isabelle Tchougen  
Chumfong

##### PEDIATRICS

Matthew Scott Zinter

### COLORADO

#### Colorado Springs

Penrose Hospital

##### PATHOLOGY

Elizabeth Diane Nunemaker

#### Denver

University of Colorado

##### GENERAL SURGERY

Logan Reed McKenna

### CONNECTICUT

#### New Haven

Yale-New Haven Hospital

##### INTERNAL MEDICINE

James Charles  
Higham-Kessler

### FLORIDA

#### Miami

Jackson Memorial Hospital

##### ANESTHESIOLOGY

Julio Benitez

##### NEUROLOGY

Hilary Paulen Glazer

### ILLINOIS

#### Chicago

Cook County-

John H. Stroger Hospital

##### EMERGENCY MEDICINE

Randy Grant Colvin II

Loyola University Medical Center

##### DIAGNOSTIC RADIOLOGY

Kathryn Elizabeth  
Niemeyer

Northwestern University-McGaw Medical Center

##### INTERNAL MEDICINE

Kai Sun

University of Illinois

##### DERMATOLOGY

Sonoa Ho Yee Au

##### OBSTETRICS AND GYNECOLOGY

Robin Patrice Kindred

### IOWA

#### Iowa City

University of Iowa

##### ORTHOPAEDIC SURGERY

Jesse Ernest Otero

### LOUISIANA

#### New Orleans

Tulane University

##### DERMATOLOGY

Amy Theresa Metzger

### MARYLAND

#### Baltimore

Johns Hopkins Hospital

##### EMERGENCY MEDICINE

Marrissa Leigh Baker

### MASSACHUSETTS

#### Boston

Beth Israel Deaconess Medical Center

##### DIAGNOSTIC RADIOLOGY

Jonathan Youngsuk Kim

##### EMERGENCY MEDICINE

Margaret Jane Lin  
Andrew Walter Rinne  
Czarina Elizabeth Sanchez

##### INTERNAL MEDICINE

Shannon Marie McGinty

Children's Hospital

##### PEDIATRICS

Katharine Anne Belmont  
Elizabeth Andrea Moulton

Massachusetts General Hospital

##### INTERNAL MEDICINE

Xingxing Shelley Cheng  
Grace Kao Mahowald

##### INTERNAL MEDICINE-PRIMARY

Atheendar Sivabala  
Venkataramani

##### PATHOLOGY

Jennifer Kathryn Sehn

##### PSYCHIATRY

Vinod Rao

### Worcester

University of Massachusetts

##### FAMILY MEDICINE

Tassy Nicole Hayden

##### INTERNAL MEDICINE

Suzanne Michelle Gilman



Jonathan Byrd, MD 11, celebrates with his wife, Kate. Byrd, the 2011 class president, matched at Barnes-Jewish Hospital in internal medicine.

## MICHIGAN

### Ann Arbor

University of Michigan Hospitals

#### PEDIATRICS

Roua Azmeh

## MINNESOTA

### Minneapolis

Hennepin County Medical Center

#### EMERGENCY MEDICINE

Travis Nelsen Keeling

### Rochester

Mayo School of Graduate Medical Education

#### GENERAL SURGERY

Christin Anne Harless

#### PEDIATRICS

Alexander Li Cohen

## MISSOURI

### St. Louis

Barnes-Jewish Hospital

#### DERMATOLOGY

Kyle J. Eash

#### DIAGNOSTIC RADIOLOGY

Hilary Ann Brazeal

#### INTERNAL MEDICINE

Jonathan Byrd

Phillip Ruben Glover

Chisholm

Youngjee Choi

Anthony Todd Fojo

Eric Jonas Gapud

Gorav Lakhmichand Kalra

Farhan Katchi

Qi Liu

Jose Bernardo Saenz

Noah Corey Schoenberg

#### NEUROLOGICAL SURGERY

Kathleen Elizabeth McCoy

#### NEUROLOGY

Nathan Hsiang-En Kung

Blake Joseph Newman

Kevin Ramesh Patel

#### OBSTETRICS AND GYNECOLOGY

Janine Erin Spain

Kathryn Christine Squires

Jourdan Elizabeth Stuart

#### ORTHOPAEDIC SURGERY

Robert Bruce Canham

#### OTOLARYNGOLOGY

Evan Michael Graboyes

#### PATHOLOGY

Katherine Elizabeth

Schwetye

St. Louis Children's Hospital

#### PEDIATRICS

Young Min Kim

Chung Albert Lee

Christopher Grant

Markham

Carli Laura McGee

Kimberly Lauren Norris

Jane Alyce Ratner

Washington University School of Medicine

#### OPHTHALMOLOGY

Smith Ann Meile

Chisholm

#### UROLOGY

Adam Joseph Rensing

## NEW YORK

### Brooklyn

New York Methodist Hospital

#### EMERGENCY MEDICINE

Dubenion Joseph Moss

### New York

Einstein-Beth Israel Medical Center

#### INTERNAL MEDICINE- PRELIMINARY

Ethan Charles Levin

Hospital for Special Surgery

#### ORTHOPAEDIC SURGERY

Stephen James Warner

New York Presbyterian Hospital-Columbia

#### PSYCHIATRY

Bradley Ress Miller

New York Presbyterian Hospital-Columbia and Cornell

#### EMERGENCY MEDICINE

Jason Eric Hill

New York Presbyterian Hospital-Weill Cornell Medical Center

#### INTERNAL MEDICINE

Sheng Feng Cai

New York University School of Medicine

#### PSYCHIATRY

Mary Katherine Conlon

### Rochester

University of Rochester-Flaum Eye Institute

#### OPHTHALMOLOGY

Anushree Sharma

University of Rochester-Strong Memorial Hospital

#### ORTHOPAEDIC SURGERY

Colin Douglas Canham



Christopher G. Markham, MD 11, gets the seal of approval from his wife, Katie, after learning about his match.

### Syracuse

SUNY Upstate Medical University

#### ORTHOPAEDIC SURGERY

Michael Cheuk Ming Yip

## NORTH CAROLINA

### Durham

Duke University Medical Center

#### DIAGNOSTIC RADIOLOGY

Kal Lowrey Clark

#### INTERNAL MEDICINE

Brian Christopher Miller

#### OTOLARYNGOLOGY

Aniruddha Uday Patki

## OHIO

### Cincinnati

Cincinnati Children's Hospital

#### PEDIATRICS

Kristin Elizabeth Habel

### Cleveland

Cleveland Clinic Foundation

#### INTERNAL MEDICINE

Shijing Jia

#### RADIATION ONCOLOGY

Jeffrey Alan Kittel

## PENNSYLVANIA

### Philadelphia

Children's Hospital of Philadelphia

#### PEDIATRICS

Jill Jadavji Savla

Hospital of the University of Pennsylvania

#### ANESTHESIOLOGY

Elizabeth Yaxi Zhou

#### EMERGENCY MEDICINE

Na Rae Ju

#### INTERNAL MEDICINE

Hanny Toban Al-Samkari

Yevgeniy Gitelman

David Xu Jin

### Pittsburgh

University of Pittsburgh Medical Center

#### DIAGNOSTIC RADIOLOGY

Sue Si Chen

Joseph Gary Livingston

## TEXAS

### Dallas

University of Texas-Southwestern Medical School

#### OPHTHALMOLOGY

Vinay Neil Dewan

Erwin Calvo Puenta

#### PLASTIC SURGERY

Huay-Zong Law

### Houston

University of Texas Medical School

#### GENERAL SURGERY

Lee Russell Hafen

### San Antonio

University of Texas Health Science Center

#### DIAGNOSTIC RADIOLOGY

Fang Yu

## VERMONT

### Burlington

University of Vermont

#### INTERNAL MEDICINE

Samuel Andrew Merrill

#### OBSTETRICS AND GYNECOLOGY

Laura Jean Merrill

## VIRGINIA

### Charlottesville

University of Virginia

#### GENERAL SURGERY

Yinin Hu

## WASHINGTON

### Seattle

University of Washington

#### DIAGNOSTIC RADIOLOGY

Jessica Christine Germino

#### GENERAL SURGERY

Lacey Nicole LaGrone

#### INTERNAL MEDICINE

Samuel Aaron Hundert

Feng Su

#### OPHTHALMOLOGY

Yevgeniy V Sychev

#### ORTHOPAEDIC SURGERY

Clifford Chenghwa Hou

#### PEDIATRICS

Gillian Clare Smith

#### PLASTIC SURGERY

Mitchell Andrew Pet

## WISCONSIN

### Madison

University of Wisconsin Hospital and Clinics

#### GENERAL SURGERY

Rebecca Anna Busch

### Milwaukee

Medical College of Wisconsin

#### PEDIATRICS

Danielle Nicole Alfano

## CANADA

### Kingston, Ontario

Queen's University-Kingston General Hospital

#### DIAGNOSTIC RADIOLOGY

Kwesi Frempong Agyem





Jack and J.T. Snow

# Taking the field

## Family teams up against childhood syndrome

Last year, Stephanie Snow Gebel found out that her youngest daughter, 5-year-old Raquel, has an extremely rare genetic disorder that may one day rob her of her sight, her hearing and many years of her life.

“As a mother, my heart aches,” Gebel says. “It’s hard to breathe sometimes when I think of watching my child deteriorate before my eyes.”

Facing Raquel’s illness has been especially hard on Gebel because she lost her parents in recent years. Her mother, Merry Snow, died in 1998 at the age of 54. Her father, Jack Snow, fondly remembered by St. Louis fans as a star wide receiver for the Los Angeles Rams and later as a Rams’ broadcaster, died in 2006. He was 62 years old. Snow died just nine months after his granddaughter Raquel was born.

Raquel, who is known for her sweet disposition, recently discovered soccer and basketball. She also enjoys playing with Barbie dolls.

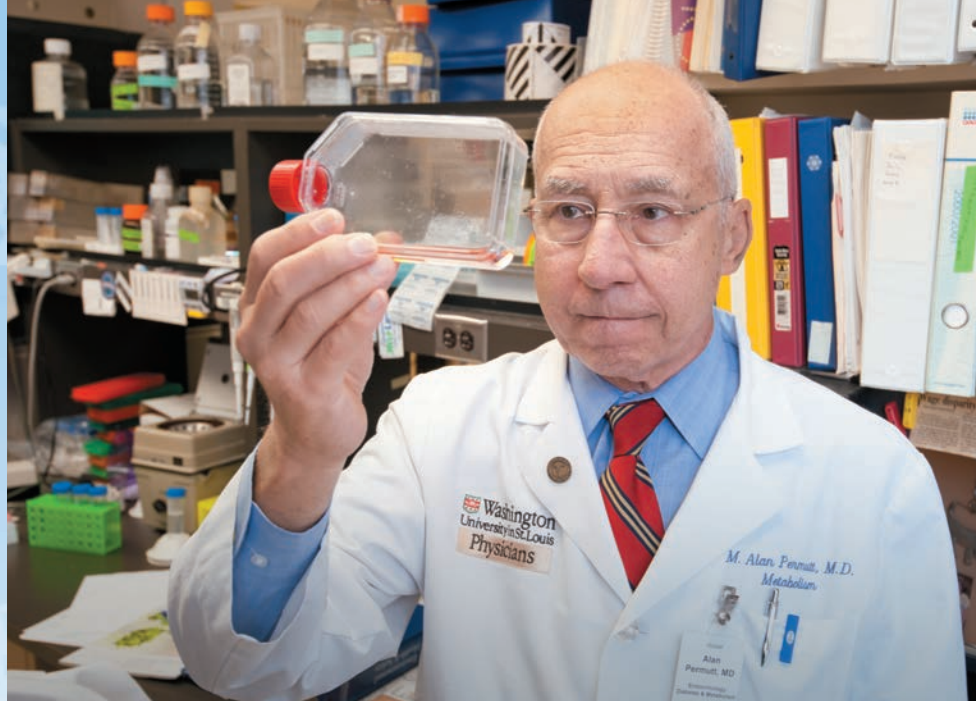
She knows she has Wolfram syndrome and understands that the disease causes her to mix up the colors pink and purple. “We’ve told her to let us know if her eyesight gets worse or if she can’t hear the birds chirping in our backyard,” says Gebel, who also has three other children ranging in age from 3 to 11.



Soccer, basketball, and even football — Raquel Gebel with mom Stephanie Snow Gebel celebrate the family’s sports enthusiasm.



**M. Alan Permutt, MD, at work in his laboratory.**



ROBERT BOSTON

The first sign of Wolfram syndrome is typically juvenile onset diabetes. In addition to causing hearing and vision loss, the disease ultimately affects the brain. Most patients are diagnosed when they are 4 or 5 years old; in a span of five to eight years, degeneration of their hearing, vision and brain begins. Sixty percent of patients affected by Wolfram syndrome die before reaching their 30th birthdays.

Washington University School of Medicine researchers who have studied Wolfram syndrome for the past two decades are determined to improve those odds. In 1998, M. Alan Permutt, MD, professor of medicine, and his colleagues discovered the Wolfram syndrome gene (WFS1). Today, scientists are advancing the understanding of the disease with the goal of identifying potential treatment options.

Last summer, Permutt and his staff hosted the first-ever international multidisciplinary clinic for patients with Wolfram syndrome. Although Permutt has studied the syndrome for years in the lab, because the disease is so rare, clinic participants were the first patients with Wolfram syndrome he had met in person.

Ten patients, ages 7 to 23, traveled with their families to Washington University Medical Center for two days of intensive assessment. Nearly a dozen School of Medicine faculty tested their blood, vision, balance and hearing and performed MRI scans; they also conducted neurological and psychological testing and provided genetic counseling. At the clinic, faculty discovered patients had varying degrees of dysfunction.

“In order to propose clinical trials for treatment options, we need to know more about the disease’s rate of progression,” explains Permutt, who also is professor of cell biology and physiology. “Our goal is to monitor these patients longitudinally.” To meet that objective, Permutt and his team closely follow patients with Wolfram syndrome through an international online registry developed and maintained at the School of Medicine that now includes 50 families.

Securing research funds for Wolfram syndrome has proven difficult. After Raquel was diagnosed, Stephanie Snow Gebel learned that Permutt was having trouble getting support for additional Wolfram clinics. She and her family decided to establish the Jack and J.T. Snow Fund at Washington University School of Medicine to raise money for research and to increase awareness about the disease.

The fund is named in honor of the late Jack Snow and Gebel’s brother, J.T. Snow, a former major league first baseman who now works as a TV and radio commentator and as an on-field instructor for the San Francisco Giants.

“When I heard about Raquel’s diagnosis, my first thoughts were ‘not again,’” says Snow. “We lost our mom and dad and now this. But we asked ourselves, ‘What can we do?’ and then decided to team up and raise money to find a way to help children with this devastating disease.”

Permutt says the money that the Snow family has raised will enable him and his colleagues to conduct additional clinics and further their research on a mouse model of Wolfram syndrome.

“They’ve done an unbelievable job in garnering community support, and the money the Jack and J.T. Snow Fund has raised is critical in continuing research on this syndrome,” says Permutt. “Stephanie also is

beginning to educate other parents of children with Wolfram syndrome in how to raise money to help us find a treatment.”

A second Wolfram syndrome clinic was held this August; five new patients and nine patients who took part in last year’s clinic were scheduled to attend.

“For years, when parents would send me letters and e-mails asking if I could help their child, it was very difficult to tell them there was absolutely nothing I could do,” Permutt says. “Today, I feel very comfortable that we’re on the right track to developing drugs to benefit these patients. My grandest hope is that patients like Raquel can avoid the effects of this illness as they grow into adulthood.” □

**“They’ve done an unbelievable job in garnering community support, and the money the Jack and J.T. Snow Fund has raised is critical in continuing research on this syndrome.”**

— M. Alan Permutt, MD



## Gifts ensure continued opportunities for students

**O**pening Doors to the Future: The Scholarship Initiative for Washington University began just shy of two and a half years ago, and the generosity shown by our donors, faculty, alumni and friends has been outstanding. By accepting the challenge of eliminating financial burden and creating an immediate impact for our students, the donors for the School of Medicine have risen to the top. The effort to create scholarships and pave the way for future medical students has created a level of excitement that has not been witnessed before.

“Our goal is to ensure that each and every deserving student has the opportunity to learn and flourish regardless of his or her financial situation,” says Larry J. Shapiro, MD 71,

### PROGRESS TO DATE

**T**he Scholarship Initiative has increased the number of endowed scholarships from 154 to 188, moving closer to the School of Medicine’s goal of \$25 million. Of these, seven were given by faculty and former employees, giving them an opportunity to leave a lasting impression on students. Every year, more than 122 worthy students enter the doors of Washington University School of Medicine hoping to become world-class physicians and scientists. The need for scholarship support will never cease, and the students rely on the generosity of our alumni and friends. Although The Scholarship Initiative has been successful thus far, we have less than two and one-half years to reach our goal of \$25 million. Your philanthropy and foresight will ensure that we meet and exceed this goal.

be fully funded with an immediate gift, over a number of years, or through estate planning. Each of these gifts will have a lasting and permanent impression on the future of the School of Medicine and our students.



**Angela Brown, MD 92, Mary Parker, MD 53, and Elaine Khoong, Class of 2013. Generations of students have benefited from the Jackson Johnson Scholarship, established in 1930 to aid worthy and desirable students in acquiring and completing their medical education.**

dean of the School of Medicine and executive vice chancellor for medical affairs. With the cost of education rising, this initiative has struck a chord with graduates, faculty and friends alike. In an amazing show of support, the school of medicine has received \$17.1 million toward the goal of \$25 million in annual and endowed scholarships. Donors are able to give the gift of scholarship in two ways, endowed or annual, ensuring that all deserving students are given the opportunity to learn, train and grow in one of the best medical schools in the country.

Many faculty and graduates feel compelled to give students a timeless and enduring gift by establishing an endowed scholarship. These scholarships are a critically important way to support the School of Medicine. An endowed gift exists in perpetuity, forever offering generations of future students an education that will prepare them to be leaders in their fields. Emily L. Smith, MD, emeritus faculty, spent much of her career at Washington University as an assistant professor of radiology. She gave of her time and talent to hundreds of students over the years. Even after retirement, Smith continues to contribute to the education of our students by endowing a scholarship through her estate.

Marie B. Miller graduated from the occupational therapy program in 1940 with her entire future ahead of her. As years passed, she never forgot the impact the school had on her life nor the impression left by one of her favorite faculty members, Ada Wells Ford. Miller set the groundwork some 40 years after graduation to honor Ford by endowing a scholarship in her name. The Ada Wells Ford Scholarship is in permanent existence to give current students the chance to feel what Miller felt all those years ago.

Quite often, alumni are moved to support these scholarships as they reflect upon their time at Washington University School of Medicine during their reunions. When he celebrated his 50th reunion this year, Nicholas T. Kouchoukos, MD, decided to give a special gift in honor of the occasion. He and his wife, Judith B. Kouchoukos, gave an endowed scholarship that will be awarded to a student during the 2012–13 school year, and every year thereafter.

By providing a scholarship, annual or endowed, donors help to lessen a heavy debt burden on many of our students, who will be given the opportunity to choose a profession based on passion and not on potential income. Over the next two and a half years, *Opening Doors to the Future: The Scholarship Initiative for Washington University* will continue creating excitement among our donors and friends while continuing to give our students a bright future.

## Paying it forward: Physician helps today's students



David G. Murray, MD 55

**A**s a student and a recipient of a Jackson Johnson Scholarship, David G. Murray, MD 55, knew he had been given the opportunity of a lifetime to attend Washington University School of Medicine. He had the chance to learn and train among the nation's best as well as lessen his future debt, and for that he remains grateful. As an alumnus he never forgot what was given to him; he used this passion to become an annual scholarship sponsor and a member of the School of Medicine's Scholarship Initiative Committee. As his 55th

reunion approached, Murray wanted to make a gift that would have an immediate impact on today's students in the way he had been helped 55 years ago. He established the Dr. David Murray Matching Challenge for Annual Scholarships, which provides a \$5,000 match for up to 17 new or increased annual scholarships for students at the School of Medicine. To date, seven alumni and friends have accepted the Murray Challenge, adding significantly to the value of their annual scholarships and allowing students to focus on academics and their future careers.

## Saving others' sight is impetus behind generosity



Jeffrey T. Fort

**B**y his own definition, Jeffrey T. Fort is a visual guy. The St. Louis native has made a career in the realm of visual media: television, filmmaking and photojournalism. So when he began to have problems with his eyesight in the 1980s, he sought the advice of ophthalmologists in St. Louis who were connected with Washington University School of Medicine and its Department of Ophthalmology and Visual Sciences.

"Having lived in Miami and Los Angeles, I was aware of several other leading eye institutions, but I wanted to come to a learning-centric location," says Fort, who again resides in St. Louis but continues to travel extensively.

"The physicians of Washington University School of Medicine and Barnes-Jewish Hospital have expertise in solving riddles. It wasn't long before I also recognized how much they care

— how much everybody across the board cares — about their patients."

Grateful for that care and recognizing the opportunity to have an impact with his philanthropy, Fort recently made a gift without restrictions in support of the Department of Ophthalmology and Visual Sciences.

"The chairman (of the department) needs the leeway to identify and address current needs," says Fort in explaining why he placed no limitations on how his gift can be used. "Dr. (Michael) Kass is much more aware of those needs than I am."

Ultimately, Fort's vision of the future is oriented toward people. "I want to do anything I can to enhance the department's ability to attract and educate talented medical students. If we can inspire even one more individual to be interested in helping people see, then I'll be satisfied."



# Making memories



**Class of 1986 alumni Susan L. Sullivan, MD, and Mitch B. Strominger, MD, enjoy their 25th reunion.**

**ALUMNI FROM ACROSS 39 STATES AND EIGHT DECADES** came to St. Louis to celebrate Medical Reunion 2011. More than 500 alumni, guests, faculty and students took part in an array of activities over the three-day celebration. Attendees enjoyed CME programming, class parties, and touring the Saint Louis Zoo, Saint Louis Art Museum and Missouri History Museum, and they honored fellow alumni at the Reunion Awards Alumni Banquet. Through all of the events, classmates were able to reconnect with one another and reminisce about their time at Washington University School of Medicine. Save the date for 2012!

PHOTOS BY ROBERT BOSTON AND MARK BEAVEN



**Andy S. Josephson, MD 01, left, and Shawyon Shadman, MD 01, celebrate their first reunion at Araka restaurant in Clayton with friends, family and former classmates.**



**2006 Alumni Achievement Award winner Marshall E. Bloom, MD 71, right, with son Seth Bloom, center, and his guest, Akwi Asombang.**



**David L. Diedrichsen, MD 71, Larry J. Shapiro, MD 71, and Jane B. Diedrichsen enjoy the evening reception for the Class of 1971.**



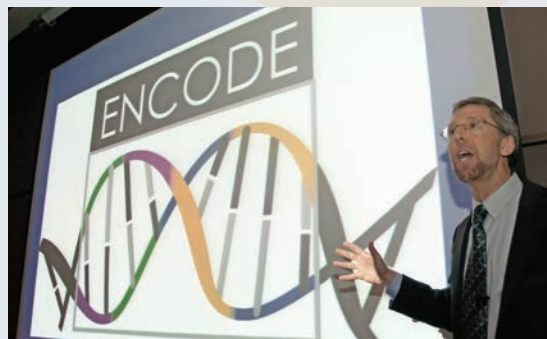
**2011-12 Alumni Association President Laura J. Bierut, MD 87, right, congratulates Mabel L. Purkerson, MD, HS 61, on her Distinguished Service Award.**



**2011 ALUMNI AWARD RECIPIENTS** Back row, left to right: Jeffrey E. Saffitz, PhD, MD, HS 82, Jeffrey I. Gordon, MD, HS 81, William F. Stenson, MD 71, Richard L. Baron, MD 76, HS 80, Bradley A. Evanoff, MD 86, HS 89, Alison J. Whelan, MD 86, HS 89. Seated, left to right: Ira A. Tabas, MD/PhD 81, Kathleen A. Brogan Schwarz, MD 72, Mabel L. Purkerson, MD, HS 61, Michael J. Lenardo, MD 81.



Medical student Eric Milner leads Ron Rosenthal, MD 61, right, Phil King, MD 61, center, and others on a tour of the medical campus, highlighting the changes and new additions.



Eric Green, MD, PhD 87, presented to reunion alumni at the continuing medical education session on Friday morning.

Where you belong! The Classes of ♦ '52 ♦ '57 ♦ '62 ♦ '67 ♦ '72 ♦ '77 ♦ '82 ♦ '87 ♦ '92 ♦ '97 ♦ '02

# REunion

**Save the date!**  
**April 26–29, 2012**

*Enjoy a fun-filled weekend  
with your classmates!*

## Thursday, April 26

- ♦ Welcome reception

## Friday, April 27

- ♦ CME programming
- ♦ Dean's Luncheon
- ♦ Walking tours of the medical campus
- ♦ Class dinners

## Saturday, April 28

- ♦ Various St. Louis activities
- ♦ Alumni Awards Banquet



## 1940s

### Stanley M. Wald, MD 46

Since 2001, Wald has been enjoying retirement, though he still attends grand rounds. He also does volunteer work and enjoys tutoring first-graders, in addition to taking classes at Washington University's Lifelong Learning Institute.

### William W. Tevis, MD 47

Tevis retired from practice in 1997. He now lives part-time in California and part-time on a ranch in Dillon MT where he enjoys fishing and watching white-tail deer that roam on his ranch.

### Ray Lyle, MD 49

Lyle and his wife, Jean, are well and extremely happy. He maintains an active license to practice and had been working two nights per month at a free clinic. Four great children, 10 grandchildren, two of whom are married, and one cute great-granddaughter round out his family.

### Kenneth Sugioka, MD 49

Sugioka retired as emeritus professor and chairman of the Department of Anesthesiology at the University of North Carolina and as emeritus professor of anesthesiology from Duke University School of Medicine. He received a Distinguished Service Award from the University of North Carolina School of Medicine. Since retiring, he has been raising orchids and traveling extensively.

## 1950s

### William R. Cheek, MD 51

Cheek specialized as a pediatric neurosurgeon at Texas Children's Hospital for 35 years. He was chief of neurosurgery, chairman of the Section of Pediatric Neurosurgery of the American Association of Neurological Surgeons, as well as president of the American Society of Pediatric Neurosurgeons. Since retiring, his pastimes include golf officiating, golfing and keeping in touch with family and friends.

### Gerald A. Diettert, MD 54

Diettert, who is retired, lives in Missoula MT. He received the first "Legacy" Award from the Montana Council of the Boy Scouts of America on the 100th anniversary of that organization. He also is a member of the Missoula Exchange Club, for which he is the Freedom Shrine chair, and he tutors third-grade students.

### Gerald M. Hoxworth, MD 54

Hoxworth, now retired, specialized in diagnostic radiology. He currently enjoys farming, gardening and reading. His advice to future medical school graduates is to choose a specialty based on interests, not economics.

### Wolff M. Kirsch, MD 55

Kirsch is professor of neurological surgery and biochemistry and director of the Neurosurgery Center for Research, Training and Education at Loma Linda University in Loma Linda CA. He recently received the Sun Lee Award from the International Society for Experimental Microsurgery.

### Robert C. Meredith, MD 57

Meredith retired from the practice of medicine in July, 2010. He still recalls Gross Anatomy class and medical and surgical rounds on open wards as highlights from his time as a medical student.

## 1960s

### Mordecai (Mordy) Blaustein, MD 61

Blaustein is professor of physiology and medicine and director of the Maryland Center for Heart, Hypertension and Kidney Disease at the University of Maryland School of Medicine. In 2009, he received the American Heart Association High Blood Pressure Council Novartis Award for hypertension research. Along with two colleagues, he also completed revisions for the 2nd edition of the text, *Cellular Physiology and Neurophysiology*, due to be published later this year.

### Bernard Schaff, MD 62

Schaff is still practicing urology in the Imperial Valley of southern California, where he keeps an aerial view of Washington University School of Medicine on his office wall.

### John Bruce Crane, MD 64

Crane continues to practice half-time because he still loves his work. He also enjoys traveling, sailing and writing. Living on a small farm keeps him busy.

### John Simonton Douglas Jr., MD 67

Douglas received the American College of Cardiology's Lifetime Achievement Award at the Georgia chapter's annual meeting.

### C. Garrison Fathman, MD 69

Fathman has been a professor of medicine at Stanford University since 1981, and currently serves as chief of the Division of Immunology and Rheumatology and associate director of the Institute of Immunity, Transplantation and Infection. He founded and was the first president of the Federation of Clinical Immunology Societies (FOCIS).

## 1970s

### Gary A. Okamoto, MD 71

Okamoto works at Rehabilitation Hospital of the Pacific in Honolulu HI as chief medical officer and is an associate clinical professor at the John A. Burns School of Medicine at the University of Hawaii, Honolulu. He and his wife, Judith, a Barnes Hospital graduate in dietetics, enjoy traveling.

### Laura Wexler, MD 71

Wexler is a senior associate dean, student affairs and admissions, and professor of medicine (cardiology) at the University of Cincinnati College of Medicine. She voluntarily recertified in cardiovascular diseases and "hooded" her daughter at the University of Cincinnati graduation ceremony this past May.

### Joseph Marcus, MD 75

Marcus works in community hospital pathology practice and has done some academic writing on BRCA1/2 pathology. He also is active in comet research, having presented some results at Lowell Observatory in Flagstaff AZ.

### Michael Nelken, MD 75

Nelken works full-time in psychiatry and keeps active by running, swimming and biking. He hopes to have his first novel, *Last Year in Marin*, published next year.

**Catherine Henry, MD 76**

Henry lives in Wisconsin and is a family practice physician at St. Joseph's Health Services–Gundersen Lutheran. She enjoys biking, singing, knitting, reading and spending time with her daughter, who has finished pharmacy school.

## 1980s

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**Alice Ann Dachowski, MD 81**

Dachowski is a general surgeon at Holzer Clinic in Ohio and recently began a one-year term as president of the American College of Surgeons' Ohio chapter. When not working, she enjoys being involved with Relay for Life and the American Cancer Society and serving as Governor for the American College of Surgeons.

**Andrew C. Wu, MD 83**

Wu has worked at Wake Radiology Consultants in Raleigh NC since 1991. He has been named a Fellow in the American College of Radiology.

**Alexander P. Auchus, MD 85**

Auchus, professor and McCarty Chair of Neurology at the University of Mississippi Medical Center (UMMC), has been elected to the American Neurological Association. He also is chair of the Department of Neurology and founding co-director of the Comprehensive Stroke Center at UMMC.

**Daniel P. Slawski, MD 86**

Slawski is president of New West Sports Medicine and Orthopaedic Surgery, chairman of the board of directors at Heartland Surgery Center, and medical director of the human performance laboratory and team physician at the University of Nebraska–Kerney. His medical practice has expanded to a newly completed facility and has added new partners. His two oldest sons also graduated from Washington University, in business and chemical engineering.

**Alison J. Whelan, MD 86, HS 89**

Whelan, senior associate dean for education and professor of medicine at Washington University School of Medicine, has been appointed as a Test Committee Representative Member of the National Board of Medical Examiners.

**Steven A. Edmundowicz, MD, HS 88**

Edmundowicz earned his medical degree from Jefferson Medical College and completed his residency and fellowship at Washington University School of Medicine. He is the chief of endoscopy and director of the Interventional Endoscopy Section at Washington University School of Medicine. He is also a councilor of the American Society of Gastrointestinal Endoscopy and senior associate editor of *Gastrointestinal Endoscopy*. He won the *Philadelphia Magazine* "Top Doctors" award in gastroenterology, therapeutic endoscopy and was named one of the 75 best gastroenterologists in America by *Becker's ASC Review*.

**Christine Wietlisbach, LA 88, OT 89**

An occupational therapist at Eisenhower Medical Center in California and faculty member at Loma Linda University, Wietlisbach has more than 20 years of experience in health care and higher education. She is past-president of the Occupational Therapy Association of California, served two terms as governor-appointee to the California Board of Occupational Therapy, and was elected to chair the California Board of Behavioral Sciences in May, 2011.

## 1990s

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**Ann De Weer Aviles, MD 91**

De Weer Aviles lives with her husband, **Vic Aviles, MD 91**, in Massachusetts, where she works part-time in a group pediatrics practice and also at her husband's practice, Hematology Oncology Specialists of Cape Cod, of which he is owner and founder. De Weer Aviles is the health advisor and a member of the school board for her children's Montessori school, while her husband is on the board of trustees for Falmouth Academy.

**David P. Miller, MD 95**

Miller was named in *Minneapolis St. Paul Magazine* as a "Top Doctor" for pediatrics. He is a partner at Southdale Pediatrics and has been practicing in the Twin Cities area since 2001. He and his wife, Karen, live in Eden Prairie MN with their three children.

**Julie A. Miller, MD 96**

Miller and her family live in Australia, where she is a consultant endocrine and general surgeon at Royal Melbourne Hospital, head of Thyroid Cancer Services, and senior lecturer in the Department of Surgery at Melbourne University School of Medicine. She enjoys the time spent with her family and welcomes visitors to Australia.

## 2000s

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**Lara Fuchs, MD 01**

Fuchs is a staff psychiatrist for St. Louis VA Medical Center and BJC Behavioral Health. Her pastimes include spending time with her three- and four-year-old daughters, cooking and baking, and remodeling her century-old home.

**Amy McBee, MD 01**

McBee is a neonatologist at Maine Neonatology Associates. Since graduating 10 years ago, she finished training, had two children and moved several times before returning home to Maine this past January. Her hobbies include reading, traveling and running; she ran her first half-marathon earlier this year.

## IN MEMORY

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**R. Bruce Fickel, DDS 41**

Fickel, 98, died on March 9, 2011. After graduating from Washington University Dental School, he opened his own practice in Berthoud CO. He served in the U.S. Army during World War II. In addition to his work as a dentist, he served as mayor of Berthoud for eight years, worked in construction building a home and an addition to the Berthoud Public Library, and was director of the Longmont National Bank from 1959 to 1987. For his service and commitment to his community, he was named Citizen of the Year three times by the Berthoud Chamber of Commerce.

**Ernest J. Eytinge, MD 42**

Eytinge, 94, passed away March 20, 2011, in Washington. He worked for more than 40 years in internal medicine. While serving as a U.S. Army physician, he took part



in liberating prisoners from the Dachau Concentration Camp at the end of World War II. After retiring from his practice, he continued to work on many cruise lines as a ship doctor. Through these positions, he visited every continent. His interests included boating, flying his plane, scuba diving, skiing, reading and traveling.

**Edwin Fletcher Price Jr., MD 45**

Price, 89, died on April 5, 2011, at his home in Arkansas. He was passionate about his career in psychiatry, which focused on improving the lives of families, particularly those of children. His other interests included stamp collecting, gardening and physical fitness.

**Charles Preble, MD 53**

Preble, 84, died July 26, 2010, at Crestfield Health and Rehabilitation in Manchester CT. He proudly served in the Merchant Marines and later in the U.S. Air Force as a physician. He enjoyed sailing and was a fan of the University of Maine Black Bears.

**John Edward "Jack" Mullins, LA 54, MD 58**

Mullins died on Sept. 15, 2010. He practiced internal medicine for 40 years and coauthored and edited *Current Concepts in Medical Practice*. He was a scientist, sports fan, writer, photographer and avid naturalist. He donated his body to Washington University School of Medicine in the hope of finding a cure for Progressive Supranuclear Palsy (PSP).

**Stephen Post, MD, HS 61**

Post died on April 6, 2011, at the age of 83. After undergraduate work at Princeton University and medical school at Columbia University, he was a member of the house staff at Washington University. In 1981, he developed a program in advanced psychodynamic psychotherapy at St. Louis Psychoanalytic Institute and directed it for two years. He also helped start the nonprofit Care and Counseling treatment centers, which through donations helped offset the costs of treatment for those who could not afford it.

**Dennis Gale Cuendet, DDS 63, GD 68**

Cuendet, 73, a resident of Baton Rouge LA, died on Dec. 15, 2010. After graduation, he served in the U.S. Army Dental Corps from 1963 to 1966. He returned to Washington University to specialize in orthodontics, after which he started his own practice in Baton Rouge. He had many interests, including snow skiing, autocross racings and working on the racing cars he owned.

## FACULTY

**Gary K. Ackers, PhD**

Ackers, 71, professor emeritus, died on May 20, 2011, in Oro Valley AZ. The former Raymond H. Wittcoff Professor and head of the Department of Biochemistry and Molecular Biophysics, he had lived in Arizona since 2006 with his wife and scientific colleague, Jo M. Holt, PhD. At Washington University, he established the molecular biophysics program and greatly expanded the faculty in the area of biophysics. His research focused on the thermodynamics of macromolecular assemblies, in particular oxygen binding to human hemoglobin and protein-DNA systems. Ackers was known for the rigor of his experimental methods, his passion for training scientists, and his influence on a generation of biophysicists. In 1984, he served as president of the Biophysical Society and, in 1987, he co-founded the Gibbs Conference on Biothermodynamics, which honored him in 2010 with the inaugural Gary K. Ackers Lecture in Biothermodynamics. He is survived by his wife and her son, James Hazzard, and by his first wife, Naomi Caldwell, and their children, Lisa, Sandra and Keith, and two grandchildren.

**Walter F. Ballinger II, MD**

Ballinger, 85, died on April 29, 2011. A graduate of the University of Pennsylvania School of Medicine, he came to Washington University in 1967 as the Bixby Professor and head of the Department of Surgery. He also was surgeon-in-chief at Barnes Hospital. He retired as a surgeon in 1991, but continued to teach in the school's former Health Administration Program. A general

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surgeon, most of his work was in intestinal and vascular surgery, and his research interests were in the effects of surgery on the vagus nerve on the small intestine. In the 1970s, Ballinger and the late Paul E. Lacy, MD, a world leader in the study of the physiopathology of insulin-dependent diabetes, eliminated diabetes in a primate by transplanting insulin-producing cells called islets of Langerhans from a healthy primate pancreas. He also was involved in his community, serving on the boards of Mathews-Dickey Boys' and Girls' Club, the Center for Plant Sciences at the Missouri Botanical Garden, and the John M. Olin Library at Washington University. He is survived by his wife, Mary Randolph Ballinger; three sons, Walter III, Christopher and David; grandchildren; and nieces and nephews.

#### **Jennifer Wray Cole, MD 84**

Cole, 52, an associate professor of anesthesiology, died on July 2, 2011, from injuries sustained in a bicycling accident. She had been a pediatric anesthesiologist at Washington University and St. Louis Children's Hospital since 1991. While still completing medical training, she served as coordinator and was instrumental in organizing the St. Louis Children's Hospital Down Syndrome Clinic. She served as president of the Alumni Executive Council for the School of Medicine and took on numerous professional committee assignments throughout her career. An avid athlete, she completed three Ironman triathlons and many other competitive races and encouraged friends and family to participate in physical activity. She is survived by her husband, Clark; four children, Shannon, Rusty, Frances and Perry; and other family members.

#### **David E. Kennell, PhD**

Kennell, professor emeritus of molecular microbiology, died on April 20, 2011. He was 78 and lived in University City MO. He joined Washington University in 1961, became a professor in 1973, and retired in 1997. He served on the School of Medicine's Faculty Council in the late 1960s. After retirement, he continued to publish articles on his main research interest, the metabolism of nucleic acids

and proteins, as well as on the importance of supporting stem cell research. He was an avid swimmer, cyclist and hiker. He is survived by his wife, Wilma Tanner Kennell, and three children, Charles, Fred and Laura.

#### **Allen P. Klippel, MD**

Klippel, a former associate professor in the Division of Emergency Medicine, died on March 30, 2011. After graduating from Saint Louis University School of Medicine, he served in the U.S. Navy during World War II. Known as a pioneer in the field of emergency medicine, he wrote *The Manual of Emergency Outpatient Techniques* while at Washington University. He served as the president of the St. Louis County Medical Society and a charter member of the Society for Academic Emergency Medicine. He testified before the U.S. Congress in favor of mandatory installation of seat belts in cars and held five patents. He was the director of the Emergency Medical Service for the City of St. Louis and St. Louis County and was a member of the National Disaster Medical Assistance Team. Klippel also was a gourmet cook and enjoyed music, ballroom dancing and the study of religion. He is survived by his wife, Joy, five children and 17 grandchildren.

#### **Paul R. Manske, MD 64**

Manske, professor of orthopaedic surgery, died on April 20, 2011. He was 72. A hand surgeon at Washington University since the late 1960s, Manske was chairman of the Division of Orthopaedic Surgery from 1983 to 1995. In addition, he formerly was orthopaedic surgeon-in-chief at Barnes Hospital and director of hand surgery at Shriners Hospital for Children. A world authority on tendon healing, Manske joined the School of Medicine faculty after completing his medical training and serving in the U.S. Navy. Routinely selected as one of the outstanding teachers of the year by the Department of Orthopaedic Surgery house staff, he also was the longest-standing editor of the *Journal of Hand Surgery*. He is survived by his wife, Sandra; three children, Ethan, Claire and Louisa; and three siblings.

#### **Gustav Schonfeld, LA 56, MD 60**

Schonfeld, the Samuel E. Schechter Professor and former head of the Department of Medicine, died on May 21, 2011. He was 77. Schonfeld led the Division of Atherosclerosis, Nutrition and Lipid Research from 1972 to 2002 and served as the Adolphus Busch Professor and head of the department of Medicine from 1996 to 1999. He also served as physician-in-chief at Barnes-Jewish Hospital. Schonfeld trained at New York University, Bellevue Medical Center and later studied lipid disorders at the Massachusetts Institute of Technology and the U.S. Air Force School of Aerospace Medicine. He joined the School of Medicine in 1972, becoming a full professor in 1977. He was named the Kountz Professor in 1987 and became the Schechter Professor of Medicine in 2001. Internationally known for his research on heart disease prevention and cholesterol and for his expertise on lipid metabolism, he studied apolipoprotein B (apoB), commonly known as "bad" cholesterol. He held posts at numerous professional societies and editorial positions with several journals. He chaired the Washington University Senate Council, and he received an Alumni/Faculty Award from the Washington University Medical Center Alumni Association and a Special Award from the American Heart Association. Schonfeld spent more than a year of his childhood in Nazi concentration camps, an experience he chronicled in a memoir, *Absence of Closure*, published in 2009. He sat on the board of the Hillel Foundation and served as president of St. Louisans for Better Government. He was a great advocate of Jewish studies and a long-standing and active member of Bais Abraham Congregation in St. Louis. He is survived by his wife, Miriam; three children, Joshua, Julia Schonfeld Zeuner and Jeremy; and seven grandchildren.

**If you wish to make a tribute 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., St. Louis MO 63105, (314) 935-9691.



# Opening Doors to the Future



## The Scholarship Initiative for Washington University School of Medicine

**I**n order to remain affordable for our students and to continue to compete with the nation's strongest medical schools, the School of Medicine has placed even greater emphasis on philanthropic support of scholarships. For more than eight decades, alumni and friends have carried on a tradition of scholarship support.

The cost of a medical education results in an unfair debt load for our students, and we are compelled to alleviate this burden. Scholarships are the key to allowing future generations of students to pursue a career path based on passion, not on potential income.

*You may name your scholarship in memory of a loved one, in tribute to a friend, or in honor of yourself, your family, or your company. In the fall, a student will be selected to receive your scholarship and you will be notified with information about the student. You also will receive an invitation to the annual scholarship dinner.*

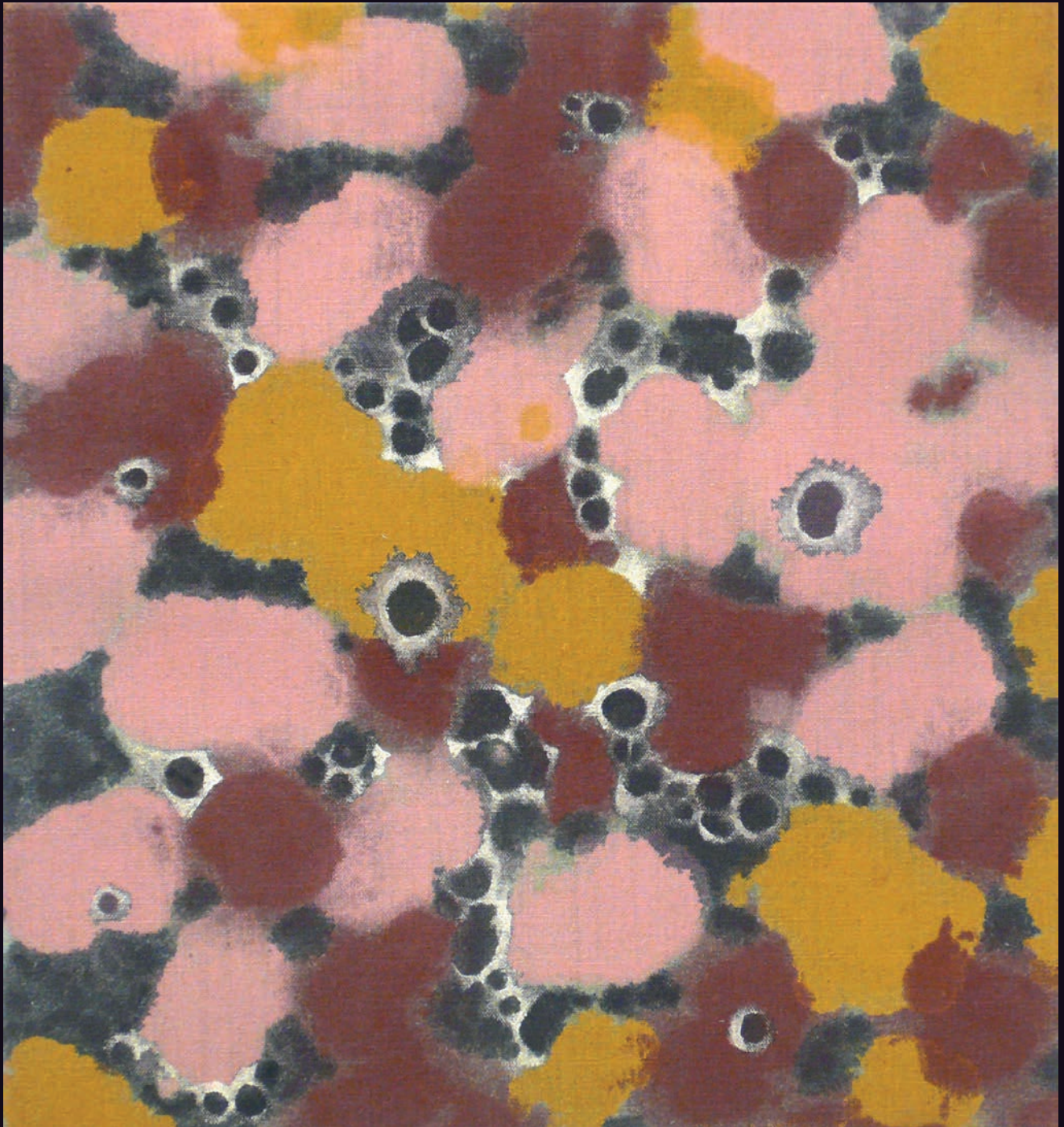
Scholarships ensure that deserving students do not miss the opportunity for a premier education.

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Washington University School of Medicine in St. Louis

# Undifferentiated Borders

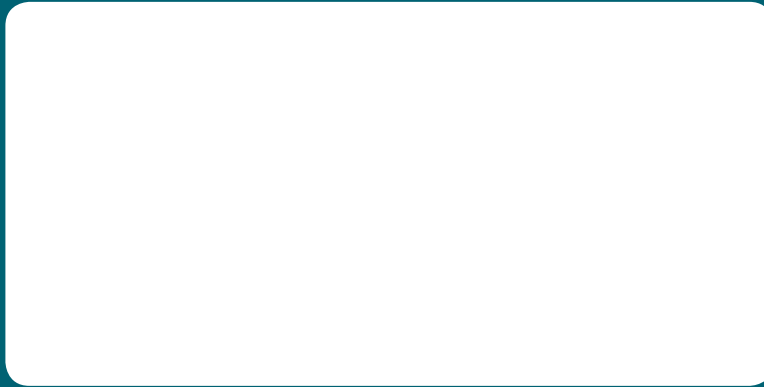


**CELLULAR DIFFERENTIATION**, whereby basic cells specialize and become increasingly complex, is one of life's natural creative processes. By comparison, undifferentiated carcinomas are a primitive destructive force that can result in loss of life. Artist Margaret Adams, who earned her master of fine arts from Washington University's Sam Fox School of Design & Visual Arts, explores the borders of art and science in an exhibit at the Farrell Learning and Teaching Center. Adams experienced firsthand the emotional impact of seeing a loved one's cancer visualized at the Alvin J. Siteman Cancer Center. Today, in addition to her art, Adams volunteers with the Arts + Healthcare program at Barnes-Jewish Hospital.



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**Gone fishing** Kelly R. Monk, PhD, left, assistant professor of developmental biology, and Lilianna Solnica-Krezel, PhD, professor and head of the Department of Developmental Biology, examine the residents of a new zebrafish facility opened earlier this year. The modern space — complete with robotic feeding and cleaning systems — allows researchers to conduct large-scale, collaborative projects.