BREATHING NEW LIFE INTO TRANSPLANT LUNGS

ALSO: SAVING A YOUNG LIFE  A CENTURY OF RADIOLOGY
Dru Hendricks hugs her mother, Heather, as they stand in front of C.S. Mott Children’s Hospital.
16 Bringing Lungs to Bloom
Robert Bartlett, M.D., professor emeritus of surgery, and his colleagues invented Extracorporeal Membrane Oxygenation (ECMO) decades ago. Now, the U-M Health System is home to one of a handful of trials using technology descended from ECMO to evaluate possible transplant lungs outside the body. The trial’s success could mean the difference between life and death for thousands of transplant patients, and would be a fitting legacy for Bartlett. BY SALLY POBOJEWSKI

22 100 Years of Radiology at Michigan
One hundred years ago, the U-M Board of Regents appointed the university’s first junior professor of roentgenology, a discipline that came to be known as radiology. Today, the Department of Radiology’s experts touch the entire Health System and are remaking the profession — from new uses of ultrasound to designing noninvasive surgical techniques. BY JAMES TOBIN

28 Saving Dru
Dru Hendricks was just a few months old when doctors in Utah diagnosed her with a particularly deadly form of brain cancer. Now, seven years later, she has survived brain surgery, a bone marrow transplant and a lung transplant. Each step of the way has been guided by physicians with close ties to the U-M. BY DAN SHINE

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Exclusively on the Web

• “Grand Roundhog Day” — The Galens Smoker
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AS A MEDICAL STUDENT IN THE 1970S, I WAS WORKING ON A
neurology rotation in Minnesota when CT scans first arrived in the Twin Cities. It
seemed like a miraculous advance: the ability to see the brain without performing
highly invasive procedures. That technology changed everything in neurology, and
it’s an example of the ongoing, dramatic changes in medicine.

Achieving change on any scale, however, takes leadership, and that reality is
reflected in the stories in this issue of Medicine at Michigan. That change
might come in the form of technological innovation, as led by Bob
Bartlett, M.D. Dr. Bartlett’s work has helped save thousands of lives while
creating an atmosphere of innovation that will improve the health of
generations to come, as we show in “Bringing Lungs to Bloom.”

The long history of radiology detailed in “100 Years of Radiology at
Michigan” reveals another instance of leadership. What began with a
simple X-ray has expanded to include acoustic scalpels and new uses of
ultrasound. These advances and innovations only happen with visionary
leadership.

“Saving Dru” tells the story of Dru Hendricks and how physicians across the
country with close Michigan ties intervened to care for her, literally saving her
life. This young girl’s journey reminds us of so much: of the interconnectedness
of medicine; of the clinicians around the world who began their careers in our
classrooms and expanded their skills through our training programs; and, critically,
of the importance of our work.

“Leaders and best” — in the lab and the clinic, and beyond our halls — is our
legacy and our future, and we have every intention of keeping it so.

Sincerely,

JAMES O. WOOLLISCOFT, M.D. (Residency 1980)
Dean, U-M Medical School
Lyle C. Roll Professor of Medicine
CANCER CENTER MEMORIES

I immensely enjoyed Sally Pobojewski’s “Joining Forces” article.

The flood of memories came to me as I remembered my time working in the trailer — the early days of the Cancer Center. My job was to coordinate the Cancer Center Grand Rounds. I helped recruit physicians from all over the United States to come and speak about the latest and greatest breakthroughs in cancer research and science.

The biggest challenge was making sure that the doctors had a blast while in Ann Arbor, and my favorite part was arranging dinners for them while they were in town. I loved every minute of that job.

Thanks for the walk down memory lane!

Renee Baude

Letters to the editor may be sent to pcliff@umich.edu or to 1000 Oakbrook Dr., Suite 100, Ann Arbor, MI 48104, and may be edited for clarity or length.

JULIANA’S STORY

Just a note to let you know how very much my wife, Ruth, and I enjoyed and appreciated the excellent article about palliative care in the last issue of Medicine at Michigan. And, of course, we were just thrilled to see the “Juliana’s Story” sidebar.

For us, to have a story about Juliana’s final weeks in your publication, six years after she passed away, is deeply rewarding.

There’s been a lot of serenity and healing for us in our having been able to stay engaged with Mott’s Palliative Care Suite, and the talks we’d been invited to give, and other ways that the memory of our kids, Sam and Juliana, has been kept alive. We really feel fortunate and grateful about that.

Thank you.
Bill Zirinsky
Ruth Schekter

PRAISING PALLIATIVE CARE

I did my internal medicine residency and my hematology fellowship at the U-M. I was on the U-M Medical School faculty until July 1978, when I joined the faculty of Quillen College of Medicine in Johnson City, Tennessee.

Since my career involved cancer patients I often dealt with hospice and end-of-life issues. I was very pleased to see in the winter 2014 issue of Medicine at Michigan the article on palliative care. It has long been needed and I am glad that it is now offered as a specialty. Keep up the good work.

May L. Votaw (M.D. 1956), Retired

EDITOR’S NOTE:

Over the last year, Medicine at Michigan has won a number of awards, both for overall quality and for writing. The magazine won an Award of Excellence for External Publications from the Association of American Medical Colleges’ Group on Institutional Advancement. This award, given earlier this year, is the first major award the magazine has won from the group. Additionally, the magazine received the Council for Advancement and Support of Education’s Region V bronze medal for specialized or unit-level magazines.

Ian Demsky’s cover story for the spring/summer 2013 issue, “Our Unstable Genome,” won a Robert G. Fenley Writing Award of Excellence in Basic Science Writing. This is one of the most prestigious awards in the country for medical science writing. Additionally, Demsky and Jeff Mortimer each won an honorable mention for stories they authored.

These awards are a reminder of the past success and the future promise of this magazine. It is an honor to edit this magazine and to follow in the steps of Rick Krupinksi, the magazine’s longtime editor.

Finally, UMHS and the Medical School have begun our new fundraising campaign Victors for Michigan: Medicine Needs Victors. To reflect that, the magazine’s philanthropy section is now called, “Victors for Michigan.”

Patrick Cliff

To opt-out of a print subscription to Medicine at Michigan and instead receive email notification when a new issue appears online, send an email with your name and address to medicineatmichigan@umich.edu with “opt-out of print” in the subject line.
Potential Options for Triple-negative Breast Cancer
Study sheds light on link between cancer stem cells and inflammation

NEW RESEARCH FROM COLLABORATING scientists at the U-M Comprehensive Cancer Center and Georgia Regents University Cancer Center finds that a protein that fuels an inflammatory pathway doesn’t turn off in breast cancer, resulting in an increase in cancer stem cells. The finding provides a potential target for treating triple-negative breast cancer, the most aggressive form of the disease.

The researchers identified SOCS3, a protein highly expressed in normal cells but undetectable in triple-negative breast cancer. They showed that this protein is degraded in cancers, blocking the cellular off-switch of a feedback loop involving the inflammatory protein interleukin 6, or IL-6. When the switch doesn’t get turned off, it enables cancer stem cells to grow.

“We’ve known for a long time that there are important links between inflammation and cancer, including similar pathways that regulate normal and cancer stem cells,” says study author Max S. Wicha, M.D., Distinguished Professor of Oncology and director of the Comprehensive Cancer Center. The study appears in the journal Oncogene.

“This work helps explain why these pathways shut off in normal tissues after injury but remain active in cancers, resulting in an increase in cancer stem cells. Furthermore, they suggest that blocking these inflammatory loops may be a means of targeting cancer stem cells, improving patient outcome,” Wicha says.

Currently, there are no molecularly targeted therapies aimed at triple-negative breast cancer, which is a type of cancer negative for estrogen receptor, progesterone receptor and the HER2 protein — all key targets for current therapies. Patients with this form of disease tend to have worse outcomes.

The researchers tested a drug, bortezomib, in mouse models of triple-negative breast cancer and found that it stops the protein degradation, resulting in the inflammatory loop shutting off. This reduces the cancer stem cells, thereby blocking metastasis. Bortezomib is currently approved for treatment of the blood cancer multiple myeloma.

The research team previously showed that IL-6 can stimulate breast cancer stem cells in HER2-positive breast cancers, and they’re designing a clinical trial which uses an IL-6 blocker. The new research suggests that adding bortezomib to the IL-6 inhibitor may be a way to target stem cells in triple-negative breast cancer.

Understanding how inflammation is regulated in triple-negative breast cancer should facilitate translation into clinical care, since drugs used to block these chemical messengers are already approved for the treatment of rheumatoid arthritis and other inflammation-related diseases. More laboratory testing is needed before a clinical trial can begin. The researchers further suspect that this pathway may apply to other cancers as well and also are investigating that potential.

According to the American Cancer Society, 235,030 Americans will be diagnosed with breast cancer this year and 40,430 will die from the disease. —NF
Decoding Dengue and West Nile

DENGUE FEVER AND WEST NILE FEVER ARE MOSQUITO-BORNE DISEASES that affect hundreds of millions of people worldwide each year, but there is no vaccine against either of the related viruses. A team of scientists at the U-M, along with colleagues at Purdue University, has discovered a protein key to the viruses’ replication in the cells of their host and manipulation of the immune system as they spread. The findings supply a target for a potential vaccine or treatment of the viral diseases.

“Seeing the design of this key protein provides a target for a potential vaccine or even a therapeutic drug,” says Janet L. Smith, Ph.D., the Margaret J. Hunter Collegiate Professor of Life Sciences in the Medical School’s Department of Biological Chemistry and a faculty member in the U-M Life Sciences Institute, who led the team whose paper was published online in Science.

The protein, NS1, is produced inside infected cells, where it plays a key role in replication of the virus. NS1 is also released into the bloodstream, where it may help disguise the infection from the patient’s immune system.

Smith and her colleagues created images of the protein using X-ray crystallography, a technique that uses X-ray beams to map the positions of atoms in a crystal.

“We’re now collaborating with the Purdue virologists to understand exactly how NS1 helps the virus survive and thrive in patients,” she said. “These studies are the next steps toward a vaccine or an antiviral drug.”

Dengue and West Nile viruses are members of the flavivirus family, which includes yellow fever and several encephalitis viruses. —KG/LW

MORE ON THE WEB ➤

Quieting Tinnitus’ Ring

FOR 50 MILLION AMERICANS there’s no such thing as the sound of silence. Even in a quiet room, they hear a constant ringing, buzzing, hissing or humming in their ears. Called tinnitus and caused by hearing damage often associated with excessive noise, the condition can be debilitating and life-altering.

Recent findings published online in The Journal of Neuroscience confirm that a process called stimulus-timing dependent multisensory plasticity is altered in animals with tinnitus — and that this plasticity is “exquisitely sensitive” to the timing of signals coming in to a key area of the brain.

Susan Shore, Ph.D., a senior author of the paper and a researcher at the U-M Kresge Hearing Research Institute, explains that in tinnitus, some of the input to the brain from the ear’s cochlea is reduced, while signals from the somatosensory nerves of the face and neck, related to touch, are excessively amplified.

Shore — a professor of otolaryngology, of molecular and integrative physiology and of biomedical engineering — and colleagues are working on a device to normalize neural activity in the auditory pathway.

“If we get the timing right, we believe we can decrease the firing rates of neurons at the tinnitus frequency, and target those with hyperactivity,” says Shore. —KG

MORE ON THE WEB ➤
In the School

Helping the Uninsured
Find Low-cost Care
Students create vital community resource

FINDCARE.ORG — A WEBSITE

conceived and created by U-M medical students — went live in mid-April, connecting uninsured Americans with the free and sliding-scale clinics that exist to serve them.

Students Michael Gao, Elizabeth Haworth-Hoeppner and Sarah Akkina began to develop FindCare.org in 2012, when Gao and four of his classmates were in the midst of founding the Medical School’s Student Run Free Clinic in Pinckney, Michigan. While researching the need for free clinics and additional health care for people without health insurance, Gao noticed something surprising.

“It took five very Google-savvy medical students two weeks to find all the existing resources in Washtenaw County,” he recalls. People who are sick — or harried emergency room physicians and overworked social workers — don’t have that kind of time. Gao, Akkina and Haworth-Hoeppner decided to do something about it.

The team was awarded a competitive and coveted Medical Student Service Leadership grant from Alpha Omega Alpha, the national medical honor society. Since then, FindCare.org has grown to involve 30 students and advisory faculty from the U-M schools of Public Health, Information, Social Work and Business, and colleges of Engineering and Pharmacy.

Currently, the site lists 500 clinics in Michigan and another 1,500 in surrounding states. Patients — or referring physicians or social workers — type in their location and a map and list appear showing nearby clinics with contact information, address, hours of operation and services offered. The database of clinics is kept up-to-date through an innovative combination of Wikipedia-like contributions and automated web page monitoring.

The goal is to expand nationwide, constantly updating information, while remaining a not-for-profit entity.

Cyril Grum, M.D. (Residency 1983), sponsored the group’s AOA grant application and has watched the project grow from an idea to powerful fruition.

“It’s a terrific example of the type of innovation and leadership we see in our students,” says Grum, a professor of internal medicine. “We think this is going to be huge — not just for patients locally, but nationally.”

The students conducted a survey to determine such a site’s potential and found that 63 percent of Americans earning less than $11,500 annually are willing to use the Internet for health care purposes.

Now that the site is live, the students are reaching out to clinics, emergency departments, homeless shelters, public libraries and food banks — organizations often on the front lines of aiding and educating people who have no health insurance. They’re hoping FindCare.org becomes an indispensable part of these organizations’ interaction with the public.

“It’s always been a goal of mine to work for the uninsured and under-represented,” says Haworth-Hoeppner. “I’m grateful to the Medical School for the opportunity to help develop this program.”

What will happen to FindCare.org when its creators graduate and move on to the rigors of residency? Second-year students Michael Huarng and Sanjana Malviya are already in place and prepared to take the site to the next level and beyond. —WHITLEY HILL
AMA-UM Conference
Spotlights Medical Education

ANN ARBOR BECAME THE epicenter for innovation in medical education in April, when dozens of leaders from top medical schools around the country, and from the American Medical Association, joined the U-M’s own medical education leaders for a unique conference.

Topics ranged from massively open online courses (MOOCs) to teaching students about health policy and patient safety. Inter-professional education — an approach that brings medical students, nursing students and other health professions students together in the same types of teams they will work in as professionals — featured prominently.

Jointly sponsored by the AMA and the Medical School, the meeting brought together representatives from the 11 schools that have won $1 million grants under the AMA’s Accelerating Change in Medical Education challenge. The schools were selected based on their proposals to change medical education through real-world practice and assessments of medical student competency.

The U-M is using its grant to help formulate and implement a new curriculum. Details of the work are online at: curriculum.med.umich.edu. Incoming medical students will begin their education with two years of integrated scientific and clinical experiences, then branch off into their own individualized professional development tracks to cultivate advanced skills in a clinical setting at their own pace. This may allow some students to graduate from medical school sooner. All will receive dedicated leadership training in order to graduate with the capabilities to lead change in health and health care.

“We are committed to paving the way for a new and better health care system in our country by changing the way we educate our medical students,” says Joseph Kolars, M.D. (Fellowship 1989), senior associate dean for medical education and global initiatives and Josiah Macy, Jr., Professor of Health Professions Education. —KG

Two Medical School Faculty Elected to Institute of Medicine

MEDICAL SCHOOL DEAN JAMES O.

Woolliscroft, M.D. (Residency 1980), and cancer genetics expert Eric R. Fearon, M.D., Ph.D., have been elected to the prestigious Institute of Medicine (IOM) of the National Academies, one of the highest honors in the health and medical fields.

Woolliscroft, the Lyle C. Roll Professor of Medicine, is an internist and internationally recognized medical education leader who has devoted his career to improving physician education, and as dean has emphasized education at all levels. A pioneer of rigorous medical education programs in outpatient health care settings, he has published many influential papers about medical student and resident assessment and skills development.

Fearon, the Emanuel N. Maisel Professor of Oncology and professor of internal medicine, of human genetics and of pathology, focuses his reasearch on how cancer gene defects contribute to the development and progression of colorectal and other cancers. Fearon is deputy director and associate director for basic science research at the U-M Comprehensive Cancer Center.

With Woolliscroft and Fearon, the U-M claims 53 past and present IOM members. —KG

WWW.MEDICINEATMICHIGAN.ORG/MAGAZINE
In the Clinic

A New View

A U-M doctor has developed a way to distinguish between tumors and healthy cells

When neurosurgeons operate on malignant brain tumors, the last thing they want is to leave cancer cells behind. Yet to the naked eye, tumor tissue can resemble healthy tissue, and the boundary between them is nebulous. With each millimeter of healthy brain potentially crucial for speech, movement and thought, the stakes couldn’t be higher.

A new tool may soon solve the dilemma. Stimulated Raman scattering (SRS) microscopy provides the neurosurgeon with a clear view of the microarchitecture of brain tissue, displaying a stark contrast between tumor and healthy brain. It’s harmless, works in real time and doesn’t require slides, stains, dyes or MRI.

Daniel Orringer, M.D., (Residency 2011), a clinical lecturer in neurological surgery, introduced human cancer cells into the brains of experimental mice. His team used glioblastoma, a deadly form of brain cancer known for its ragged borders. Using SRS microscopy on mice, they obtained vivid images of individual cells along the tumor margin, making it clear where tumor ended and healthy brain began. They published their results in Science Translational Medicine.

SRS microscopy may represent a sea change for neurosurgery, says Oren Sagher, M.D., professor of neurological surgery, Orringer’s former mentor, and co-author of the paper. “The potential here is for something that will totally change how we look at our patients in the OR and how we treat them,” Sagher says.

SRS microscopes direct laser light at the tissue, which it absorbs in a unique way, depending on its chemical makeup. Proteins and lipids absorb energy at slightly different wavelengths. With tightly packed cells containing relatively large nuclei, cancerous regions are rich in protein, while healthy brain tissue is relatively lipid-rich. Color-coding these spectral differences results in stunning images.

Without magnification to reveal the telltale traits of tumor cells, surgeons have traditionally had to rely on fuzzy visual cues like texture and vascularity to decide where to cut. “To your eye, to my eye, everything looks like tan bits of tissue,” Orringer says. “I really felt uncomfortable with the lack of precision.”

Using MRI to map the tumor revolutionized neurosurgery in the 1990s. Still, that map loses accuracy as surgery proceeds and brain tissue shifts. Another method is to dye the tissue, but that, too, can be problematic.

So, Orringer looked for a better way. In 2009, he accompanied Martin Philbert, dean of the U-M School of Public Health, to a conference in Stockholm. Orringer was then experimenting with nanoparticles to delineate tumor borders. As luck would have it, his poster stood beside that of Harvard physicist Christian Freudiger, who had recently refined SRS microscopy and was on the lookout for “killer apps.” The two got to talking and soon agreed to collaborate. For Orringer, looking at the first SRS images of a tumor margin was a “Eureka!” moment.

Funded by the Michigan Translational Research and Commercialization Program, Orringer’s group is working with Freudiger’s startup company, Invenio Imaging, Inc., to miniaturize SRS microscopy. The team envisions a pen-sized device that a surgeon can touch to brain tissue; its images will appear in real time on an operating-room screen.

The promise of SRS microscopy goes beyond illuminating malignant brain tumors. It should also help demarcate head and neck, gynecologic and other cancers where precision is crucial, as well as guiding local chemotherapy or radiation. In a fiber-optic version, it may make biopsies more precise. And it should allow for more robust research into the poorly understood tumor margin.

The team expects to test a prototype in the U-M’s operating rooms by the end of 2014. In the meantime, word is getting around. “The enthusiasm for this technology is palpable,” Orringer says. “There’s not a surgeon who I’ve spoken to who says that they wouldn’t want something like this.” —JENNY BLAIR
Finding a Michigan Physician — Anywhere

SOMETIMES, YOU DON’T JUST WANT A DOCTOR; YOU WANT A U-M doctor, someone who earned a medical degree or trained here in a specialty. Sharing a common experience — like the U-M — can be especially important when it comes to matters of health.

Until recently, Michigan alumni had no reliable way to search for a Michigan-trained physician near them. But in 2012, Medical Center Alumni Society president Stephen Papadopoulos, M.D. (Residency 1988), changed that with the help of a physician-networking website known as Doximity.

“Doximity is like LinkedIn, but just for physicians,” explains Papadopoulos, chief medical officer and executive vice president at the Barrow Neurological Institute in Phoenix, Arizona. “The site has spent a lot of effort aggregating physician profiles from public information. It occurred to me that they had the best database of American physicians anywhere.”

With the cooperation of the Alumni Association of the University of Michigan, Papadopoulos approached Doximity about developing a way for U-M alumni — about 500,000 strong — to search for Michigan physicians near them. Today, a link on the Alumni Association website allows members to find basic background and contact information for Michigan doctors in all specialties who practice in their geographic area.

Papadopoulos says his idea sprang from a reality many physicians share: friends and family members calling him for referrals in their area. Whenever possible, he skews Blue. “You meet a new doctor and you immediately have something in common,” he says, “and that’s Michigan.”

—WH

MORE ON THE WEB
In the Clinic

Device Helps Essential Tremor Patients

FOR PEOPLE WHOSE HANDS SHAKE UNCONTROLLABLY DUE TO A MEDICAL condition, just eating can be a frustrating and embarrassing ordeal — enough to keep them from sharing a meal with others.

But a new study conducted at the U-M suggests that a new handheld electronic device can help such patients overcome the hand shaking caused by essential tremor, the most common movement disorder. In a clinical trial involving 15 adults with moderate essential tremor, the device improved patients' ability to hold a spoon still enough to eat with it.

The results are published online in the journal Movement Disorders by a research team that includes U-M neurologist and essential tremor specialist Kelvin Chou (M.D. 1998) who is the Thomas H. and Susan C. Brown Early Career Professor of Neurology, as well as three scientist-engineers from the small startup company Lift Labs, which makes the device. The company’s CEO, Anupam Pathak, Ph.D., received his doctorate from the U-M College of Engineering.

The concept behind the technology is called ACT, or active cancellation of tremor. It relies on tiny electronic devices that work together to sense movement in different directions in real time, and then make a quick and precise counter-motion.

The trial, Chou says, showed that the amplitude of movement due to the tremor decreased measurably. “Compared with other devices designed to limit tremor by weighting or constraining limbs, this approach allows movement and is easier to use.” —KG

Smaller, Smarter Cardiac Monitoring

THE U-M SAMUEL AND JEAN FRANKEL CARDIOVASCULAR CENTER IS ONE OF THE first hospitals to use the Medtronic Reveal LINQ Insertable Cardiac Monitor (ICM) System, the smallest implantable cardiac monitoring device available. The wireless device provides long-term remote monitoring to help diagnose and monitor irregular heartbeats.

Conventional monitors attach to the outside of the body for between 24 hours and 30 days, have visible wires and are often associated with skin irritation and rashes — limiting compliance. Smaller than a key, the new Reveal LINQ ICM is inserted just beneath the skin in the upper chest area, and continuously records heart rhythms over long periods of time.

“The amount of data generated by the device allows us to more accurately correlate what a patient describes they are feeling with their specific rhythm,” says Eric Good, D.O., assistant professor of internal medicine and electrophysiology specialist at the U-M. “As a result, it improves our ability to tailor a treatment plan to address their unique heart issue.”

Second Baby Saved by 3-D-printed Device

IN HIS 18 MONTHS OF LIFE, Garrett Peterson has never gone home, spending his days in hospital beds tethered to ventilators that even at the highest settings couldn’t prevent his breathing from periodically stopping. His condition, known as tetralogy of Fallot with absent pulmonary valve, was so tenuous that often his parents could not hold him for fear of compromising his breathing.

But after surgeons at the University of Michigan’s C.S. Mott Children’s Hospital implanted 3-D printed devices to open Garrett’s airways, his parents are now planning to take their son home to their house in Utah for the very first time.

Garrett is just the second person whose life was saved with a new, biore absorbable device developed at the University of Michigan by Glenn Green (M.D. 1991), associate professor of pediatric otolaryngology and Scott Hollister, Ph.D., professor of biomedical engineering and mechanical engineering and associate professor of surgery at U-M. —MM
Neurodegenerative Diseases: A Shared Problem With Proteins

U-M researchers are broadening the search for more effective treatments and cures of neurodegenerative diseases. Central to that search is the U-M Protein Folding Diseases Initiative and its more than 50 investigators. Proteins fold properly into three-dimensional structures to function correctly. Yet in many diseases, proteins become abnormally shaped and clump together. Henry L. Paulson, M.D., Ph.D., the Lucile Groff Professor of Neurology for Alzheimer’s Disease and Related Disorders, spoke with the magazine about the initiative. Also the director of the Michigan Alzheimer’s Disease Center and an A. Alfred Taubman Medical Research Institute Scholar, Paulson partnered with Andrew P. Lieberman, M.D., Ph.D., the Abrams Collegiate Professor of Pathology, to lead the effort.
Q: Why is it important for researchers working on protein malfunctions across the Medical School to collaborate?

A: We think of protein misfolding and accumulation as being a common problem in degenerative brain diseases such as Alzheimer’s, Parkinson’s and Huntington’s, but problems in the handling of proteins contribute to well over 100 disorders, including diabetes, heart disease and cancer.

Q: What will the initiative accomplish, and how will Alzheimer’s disease benefit?

A: We have created four research hubs that bring together U-M scientists with different backgrounds and perspectives to address common problems in these diseases. Our goal is to reduce the barriers to discovery across departments. Many of the conditions these faculty study are untreatable and fatal, and we need new insights to come up with new or better therapies. Alzheimer’s and related brain diseases may be the largest group of diseases studied in this initiative, but the medical problem is much bigger than brain diseases alone.

Q: The Protein Folding Diseases Initiative was one of the first projects funded by the Medical School’s Fast Forward Initiative. What impact did that support have?

A: The initiative only exists because of Fast Forward. Fast Forward has provided the resources and the infrastructure to make it go and the funding that allows us to test new ideas. We are tremendously grateful that we have been given this opportunity.

Q: How significant are Michigan’s contributions to the field?

A: The Protein Folding Diseases Initiative is the first of its kind in the country. We are in a privileged position. When outside investigators reviewed our proposal for the initiative, they were wowed by the strengths at the University of Michigan. We are fortunate to have investigators in many different departments who are at the top of their fields looking at protein misfolding, protein aggregation and routes to therapy. I have been at the University of Michigan now for six years, and it still amazes me what a tremendous place it is.

Q: What advances are we seeing in Alzheimer’s disease research across the board?

A: In past decades, a lot of excitement centered on the small protein known as beta-amyloid, which accumulates in plaques outside of brain cells. We now recognize that many other proteins and pathways contribute to Alzheimer’s in all phases. While the attention has not turned away from beta-amyloid, we are also now looking carefully at other targets, including a protein called tau, which accumulates in tangles inside brain cells in Alzheimer’s.

Another exciting development is that brain imaging has led to new, easily measured biomarkers of the disease. Having the ability to see what the future might hold is extremely powerful when we think about preventive therapies. And we now know that specific genes and genetically regulated pathways are affected in people who have Alzheimer’s. We don’t have therapies yet from these new clues, but there is a lot of excitement because we are moving in that direction. At the U-M, we are also interested in making new connections between Alzheimer’s disease and vascular changes, diabetes, metabolic changes and inflammation.

Q: Tell us about those connections.

NOW WE ARE MOVING TO THAT NEXT IMPORTANT PHASE — TESTING PREVENTIVE THERAPIES. I’M HOPEFUL THAT IN THE NEAR FUTURE THE ALZHEIMER’S FIELD WILL IDENTIFY DRUGS THAT CAN MODULATE THE COURSE OF THE DISEASE.
A: Our brain is subjected to all kinds of insult as we age. One common insult is diabetes, and we believe that diabetes intersects with the age-related disease processes in Alzheimer’s, Parkinson’s and other diseases of the nervous system. At U-M, we have powerful teams of neurodegenerative disease scientists, and scientists and clinicians who are experts in diabetes and metabolic disorders. Those investigators are now teaming up to address how diabetes affects brain function as we age.

Q: What is happening in the area of prevention?
A: So many important things have been learned about the genes and the biological pathways underlying Alzheimer’s in the past 10 years. Now we are moving to that next, important phase — testing preventive therapies. I’m hopeful that in the near future the Alzheimer’s field will identify drugs that can modulate the course of disease.

At our center, we have a strong interest in identifying the risks underlying Alzheimer’s disease and disclosing those risks to people who have a family history. Scott Roberts, Ph.D., who heads the outreach, recruitment and education core activities in our center, is particularly interested in understanding how people respond to learning information about their risk of disease.

But I would remind everyone — whether they have a family history of Alzheimer’s or not — that it’s important to exercise, sleep enough, eat right and engage your brain in stimulating activities. These are simple measures to help make sure your brain and body age gracefully. They are probably as important as any medication.

Q: What wellness programs are in place for patients and families?
A: Several programs on campus seek to promote wellness, including the Geriatrics Center, the Program for Positive Aging, and our own center. For example, the Silver Club programs at the Geriatrics Center allow people who have signs of Alzheimer’s and related conditions to come together and discuss topics of interest to them. And our own Wellness Initiative supports the Catching Your Breath program at Matthaei Botanical Gardens, where caregivers can discuss how they are coping with the issues they may face. Caring for people who have Alzheimer’s disease comes with its own types of stress and difficulties.

Q: Do we collaborate with other Alzheimer’s disease programs?
A: We just submitted a grant proposal that, if funded, will bring into the fold both Wayne State University and Michigan State University, making our center a truly regional center that will benefit residents across Michigan. We also collaborate with eight Alzheimer’s disease centers spanning the country. That kind of collaboration is critically important for a disease as common and complex as Alzheimer’s. We need to work together if we are serious about tackling this tough disease.

Interview by MargaretAnn Cross

Neurons from a mouse model of dementia caused by protein misfolding.
ONE DAY IN 1909, A 38-YEAR-OLD woman, who thought she was on her last chance, climbed off the train in the little mountain town of Fraser, Colorado. Susan Anderson had a medical degree from Michigan, but she was yet to find a place where a woman doctor was wanted. Anderson had tuberculosis, and she thought the Rocky Mountain air might help her get better. But she also thought she might be about to die.

Growing up in Indiana, she had not wanted to become a doctor. But her father, a divorced veterinarian and farmer who had raised Susan and her brother by himself, decided his bright daughter ought to go to medical school. He sent her to Ann Arbor, which was producing a small but steady stream of women M.D.s.

She found herself enjoying the study of medicine, though, as she recalled later, “the beginning of dissection almost made me change my mind.” She work hardest in pathology, to be sure she could survive classroom inquisitions by the formidable chairman, Aldred Warthin. When she made arsine gas in chemistry, “my tiny flame delighted me.”

Her years at Michigan were good ones, mostly. “Without my instruction at U of M it would have been impossible for me to do my bit in serving my fellow beings,” she wrote later. “The uplifting and broadening influence [was] greater than would be possible in other schools for women.”

Late in her time at Michigan, she contracted TB, a blow that turned her life down a strange new path. Her father and her beloved brother, John, had chased the news of gold strikes to Cripple Creek, Colorado. Susan joined them, pursuing not gold but mountain air for her lungs.

With 55 male doctors already treating a boom-town population of 10,000 in Cripple Creek, she had trouble attracting patients. But she made a name for herself when a boy came to her with grave injuries from a dynamite blast. She cleaned the wounds and urged patience, though a surgeon wanted to amputate. She insisted on watchful waiting, and the boy recovered with all limbs intact.

Then came two more blows.

She had become engaged, but her father — in an exchange Susan never learned much about and never forgave — somehow turned her fiancé against her, and the engagement was broken. Then, her brother died of pneumonia. “Life seems so useless and in vain,” she wrote. “No one now cares much whether I live or die. John was my best friend on earth & now my best friend is in heaven.”

She fled to the farm town of Greeley, in northeast Colorado, where she was only able to find work as a nurse. Doctors and nurses alike resented her fine training and extensive knowledge. After six years, with her TB worsening, she left for Denver, and then traveled over the Continental Divide to Fraser, where she had friends. There, she figured, she would either die or, through rest and exercise, regain her strength.

Now in her late 30s, she began to improve, though only slowly. At first,
she worked in a general store. She lived in a wood shack, where, after a while, she hung a red cross on the door.

At first only women knocked, some with their children. Then, more slowly, their husbands came, most of them Swedes who worked in the nearby lumber camps and mills. They began to call her "Doc Susie."

The environment shaped her practice. In and around Fraser, the people were poor and many couldn’t pay. So she often took her compensation in firewood or by dropping in at patients’ homes when they were sitting down to supper. No one had a telephone, so she didn’t, either; if people needed her, they would find her. Back in Greeley, she had seen narcotics stolen by addicts, so she refused to stock morphine for anesthesia. She administered only ether during surgery.

Anderson treated every sort of malady in every sort of patient. She treated children with infected mosquito bites. She turned breech babies. She cared for lumberjacks with bodies broken by “widowmakers”—the giant limbs that break free while a tree is being cut down.

When a case was too serious for her to handle alone, she packed her patient and headed over the mountain to the hospital in Denver, where she gained a reputation as a good physician. If occasionally she pulled the wrong tooth from a patient’s jaw, she could hardly be blamed, since the patient could seldom tell her exactly which tooth felt like it was on fire, and she had no X-ray machine.

Though Doc Susie’s professional life was busy, her personal life remained largely solitary. She never married. She read the Bible but never went to church.

In 1926 she became the part-time coroner of Grand County. Her fee of a few dollars per corpse substantially supplemented her income, especially when the railroad dug the famous Moffat Tunnel six miles through the neighboring mountain. The project gave Denver direct rail access to points west, but it killed 19 workers in four years, with Doc Susie on hand in her post-mortem role as coroner.

During World War II, the great actress Ethel Barrymore heard about the mountain doctor and offered to buy the rights to play Anderson’s life story on the screen. Anderson said no, she wasn’t interested.

She practiced well into the postwar era. Once the principal of Fraser’s school asked her how she had handled patients before antibiotics. She said: “I’ll tell you what, Professor — they died.”

When Anderson died at the age of 90, she was carried back to Cripple Creek and buried near her brother. The gravestone bears a simple inscription:

SUSAN ANDERSON M.D.
JAN. 31, 1870 - APR. 16, 1960
DOCTOR OF GRAND COUNTY
1909-1956

Sources include Virginia Cornell, Doc Susie: The True Story of a Country Physician in the Colorado Rockies (1992) and the papers of the University of Michigan Alumni Association, Bentley Historical Library.
Fifty years ago, U-M surgeon Robert Bartlett helped invent a life-saving procedure called Extracorporeal Membrane Oxygenation (ECMO). Now researchers are using the next-generation of ECMO to give lungs a new life.

BY SALLY POBOJEWSKI
ILLUSTRATION BY ANN CUTTING
In the sub-basement of a building on the U-M’s medical campus, 20 people in blue scrubs and white coats crowd into a surgical suite in the U-M’s Extracorporeal Life Support Research Laboratory. They are learning how to evaluate lungs for potential transplantation outside the body during a process called ex vivo lung perfusion.

These surgeons and technicians are preparing for a groundbreaking clinical trial at the U-M Health System. Today they are training with animal lungs, but once the study begins, they will be working with human lungs. Called the Novel Lung Trial, it could mean the difference between life and death to thousands of people who need a lung transplant.

The trial is sponsored by XVIVO Perfusion, the Swedish-based manufacturer of a machine called an XVIVO Perfusion System (XPS) and the perfusion solution called STEEN Solution, both used in the study. After surgeons remove lungs and attach them to the machine, the XPS flushes them with STEEN Solution and warms them to normal body temperature, inflates the lungs to their normal size and then tests them to determine if the lungs are healthy enough to transplant. The environment inside the system can allow some damaged lungs to heal themselves, or recondition. The machine’s function, though, is to allow physicians to evaluate a lung for transplant.

Ex vivo lung perfusion is a direct descendant of a life-saving procedure called extracorporeal membrane oxygenation (ECMO), which was developed by U-M surgeon Robert Bartlett (M.D. 1963) and his colleagues during the 1960s and 1970s to treat children dying from acute respiratory failure. The device, invented by a small group of young surgeons to heal sick lungs inside the body, has evolved into a machine that can give damaged lungs a chance to heal outside the body.

It’s the latest in a long line of research advances taking place in the U-M’s Extracorporeal Life Support (ECLS) Research Laboratory. Bartlett, now a professor emeritus of surgery, brought the lab to U-M in 1980 when he joined the Medical School’s faculty. Part of the Department of Surgery, the lab has an international reputation for pushing the boundaries of knowledge about artificial organs and organ transplants.

“This laboratory has always been focused on the big clinical problems and what we can do to solve them quickly,” says Bartlett, who has an enviable record of 40 consecutive years of NIH research funding. “We can’t always do it within five years, but that is always our goal.”

Advances in ECLS technology are bringing us closer to what Bartlett says is the field’s ultimate goal. It’s called organ banking or organ conditioning. The objective is to keep human organs viable and healthy outside the body for several days — much longer than the current limit of a few hours. Once researchers figure out how to do this, Bartlett says ECLS will revolutionize the practice of medicine.

“Not only could we have many more organs available for transplantation, we could have organs that do things — livers that make albumin and clotting factors, bone marrow...
that makes red blood cells,” says Bartlett. “We could take out a liver that’s full of cancer, treat it and then return it to the patient. We think all those things could be possible.”

Advanced ECLS technology is already being used clinically in Canada and Europe either as a temporary bridge to lung transplant, or to evaluate health of lungs awaiting transplant. Researchers are developing technology to support other organs like hearts, livers and kidneys outside the body, but this work is still in the animal research stage.

Bartlett is not the only U-M physician who is enthusiastic about what ECLS research could mean to thousands of patients on the waiting list for a donor organ and to the doctors who care for them.

“I think that the number of lungs available for transplant will be 50 percent greater five to 10 years from now, because of this technology,” says Jeffrey Punch (M.D. 1986, Residency 1992, Fellowship 1994), a U-M professor of surgery and head of the Section of Transplantation at UMHS. “I hope we’ll see renewed interest in doing this for livers and kidneys, as well.”

Bartlett has been caring for sick and damaged lungs since the 1960s, when he and his fellow surgeons at Boston Children’s Hospital invented a modified heart-lung machine and a procedure they called ECMO. After years of testing the procedure on research animals, Bartlett began using ECMO in the 1970s to treat infants and children who were dying from acute respiratory failure.

ECMO’s successful use in human patients would never have been possible without animal research. Large animals, especially sheep and pigs, were vital to Bartlett’s research, because the organs are similar in size and structure to those of a human being. Animal research remains the cornerstone of advances in ECLS technology today. Investigators at the U-M, like those at other federally-funded research institutions, must follow strict regulations for the humane and ethical treatment of all animals used in research.

The first ECMO machines were big, cumbersome devices cobbled together from component parts. The machine worked by taking over temporarily for the patient’s lungs to give them time to rest and recover. A large plastic tube inserted in the patient’s jugular vein diverted blood away from the lungs and into the ECMO machine where it passed through a membrane filter that removed carbon dioxide and added oxygen. Oxygen-rich blood was then pumped from the machine back into the patient’s circulatory system via the carotid artery.

After he moved to the U-M, Bartlett began using ECMO to treat adults, as well as children. After clinical trials proved that ECMO was safe and effective, it became the standard of care for adults with acute heart, lung and kidney failure. As more physicians began using ECMO, equipment manufacturers started developing and marketing more sophisticated machines.

Today, Bartlett says more than 60,000 patients at 350 medical centers around the world have been treated with ECMO. Among them are three U-M students who have recently worked in the ECLS lab and were saved as babies. They have helped advance the technology that saved their lives years ago. Just as the lab’s medical legacy is significant, so too is its impact on medical training. Each year, about 100 people — from undergraduates to post-docs — work in the ECLS lab, pushing the technology further.

ECMO is very good at treating acute lung disorders. But it can’t help patients with chronic progressive lung diseases like COPD, pulmonary fibrosis or cystic fibrosis. Eventually these patients are left with just one option: a lung transplant.

As of May 16, there were 1,648 Americans with severe lung disease on the waiting list for a lung transplant — according to the Organ Procurement and Transplantation Network, the organization that maintains the national transplant registry.

These people have more than a casual interest in extracorporeal life support research. For them, it’s a matter of life and death. They need a transplant to survive, but there aren’t nearly enough donor organs to go around.

The shortage is especially acute for lungs. Yet about 80 percent of lungs from potential donors are thrown away, because surgeons don’t want to risk transplanting even slightly damaged lungs into an already fragile patient.
“Compared to a kidney, the lung doesn’t respond to injury well, and the consequences of a lung not working after a transplant are much greater,” explains Punch. “This is why the criteria for donor lungs are so stringent and why most lung donors are young people who had relatively short illnesses before they died.”

Lungs are fragile and can be damaged in many ways. Fluid can accumulate in the lungs leading to pneumonia. Traumatic injuries and emergency CPR procedures can leave bruises on delicate lung tissue. And lungs are particularly susceptible to immune system rejection after a transplant.

Transplant surgeons agree that many of these so-called marginal lungs could work. The problem is there’s no way to determine in advance which ones are safe to transplant and which ones aren’t.

This is why the Novel Lung Trial is so important. Results from this nationwide clinical trial will help the U.S. Food and Drug Administration determine whether marginal human lungs can be evaluated within the XVIVO Perfusion System and made safe for transplant.

“With this device, we can take lungs for a test drive before transplanting them into a patient,” says William R. Lynch (M.D. 1994, Residency 2003), an associate professor of surgery who was recruited to the Medical School to lead the clinical trial and direct a new U-M research program on ex vivo lung perfusion. Lynch trained with Shaf Keshavjee, M.D., the University of Toronto surgeon who pioneered the development of ex vivo lung perfusion and was the first in North America to perform a clinical ex vivo lung transplant.

The $250,000 XPS system to be used in the study was purchased by Gift of Life Michigan — the state’s organ procurement organization. Access to the machine will make it possible for Michigan’s three organ transplant centers — U-M Health System in Ann Arbor, Henry Ford Health System in Detroit and Spectrum Health in Grand Rapids — to join the XVIVO trial, which is currently underway at six academic medical centers across the United States.

When the trial is complete, the FDA will compare outcomes of patients who received a conventional lung transplant to outcomes of patients who received lungs on which doctors used the XVIVO system. The study’s results will determine whether less-than-perfect human donor lungs are approved for transplant in the United States, as they are currently in Canada and Europe. Lynch is enthusiastic about the trial’s potential to increase the pool of donor lungs, so more people who need a lung can get one.

“We do about 1,800 lung transplants in the United States...
per year,” says Lynch. “There are a lot more than 1,800 people dying in our emergency rooms. If we could recondition just half the lungs from deceased people in our ERs, we could triple the number of lung transplants.”

As principal investigator for the upcoming clinical trial at UMHS, Lynch is responsible for making it all work. It’s his job to ensure that surgeons and technical staff from three different institutions maintain their skills and learn to work together as a team, so they’ll be ready when it’s time for Michigan’s first transplant of an ex vivo lung.

The scientific and technical hurdles are daunting enough, but Lynch also worries about cultural and organizational barriers that could make it more difficult for these organs to be accepted here than they are in other countries. In the United States, for example, surgeons can’t recover organs from someone who has died without their advance consent and/or the consent of the family. In Spain, on the other hand, the body of a dead person belongs to the state and consent for organ donation is assumed, unless someone opts out in advance.

Lynch says the transplant community is just beginning to consider important questions, such as: How many institutions will take the risk of transplanting donor organs that have been evaluated out of the body? How should this expanded pool of organs be shared? How will we pay for this new ex vivo technology? It costs $10,000 to $20,000 per perfusion and, as Lynch points out, the lungs don’t have medical insurance.

Resolving these complex cultural and economic issues will not be easy, but it’s time to get started, because one fact is clear: After decades of hard work and millions of research dollars invested in ECLS technology, we are closer than ever to the day when no one needs to die for lack of a donor organ. Making that day a reality, with approaches like ex vivo lung perfusion, would be a fitting legacy to the journey Bartlett and his colleagues began in the 1960s.

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THE FUTURE OF LIFE SUPPORT

Thirty-four years of research in the U-M’s ECLS lab have generated many new applications for ECMO. Industrial partners have collaborated with researchers to develop next-generation ECMO machines that are simpler, safer and easier to use.

Today, researchers are using this advanced ECMO-based technology to support lungs, hearts, livers, kidneys and other organs outside the body for extended periods of time.

Several innovative research projects are currently underway in the ECLS lab:

- Only about 5 percent of people who go into cardiac arrest in an emergency room or hospital survive without major brain damage. Studies have shown that adding ECMO to CPR can increase survival rates to 40 percent. Emergency medicine physicians at U-M are developing an ECMO/CPR protocol and training materials for physicians and nurses to use in an emergency. The goal is to get cardiac arrest patients on ECMO immediately so more patients can survive and recover.

- UMHS has extensive experience in using ECMO to maintain the abdominal organs of brain-dead patients after life support is withdrawn. This use of ECMO allows physicians to preserve the patient’s kidneys, liver, pancreas and lungs for several hours after all heart and brain activity has stopped. This gives the family and transplant team more time to make arrangements for organ donation and may improve the outcome of organs that are donated under these circumstances.

- Bartlett and Mark Meyerhoff, Ph.D., the Philip J. Elving Collegiate Professor of Chemistry, have discovered a molecule that prevents blood platelets from sticking to the surface of plastic devices. This discovery could solve one of ECMO’s biggest problems — the fact that blood will clot when it touches an artificial surface, like the plastic tubing used to connect patients to an ECMO machine. Patients on ECMO take anticoagulant drugs to prevent clot formation, but these drugs increase the risk of uncontrolled bleeding. Bartlett hopes that polymers seeded with the new molecule will be available for clinical applications within two or three years.

- The artificial placenta is a new application of ECMO-based technology that’s still in the animal research stage. The device could one day help premature infants who are born before their lungs develop. Today, these tiny preemies must be intubated to force oxygen into their immature lungs, which can cause severe side effects. The artificial placenta reproduces normal fetal blood circulation by bypassing undeveloped lungs completely — pumping oxygenated blood directly to the heart.

- Finding the right donor heart for transplant is hard enough with an adult patient, but finding the right pediatric-sized heart in time to save a sick child’s life is even more difficult. U-M pediatric cardiologists hope to use ex vivo technology to extend the time hearts can be maintained outside the body giving them more time to locate the best match for a heart transplant.
THE DEPARTMENT OF RADIOLOGY CELEBRATES ITS CENTENNIAL AS A COLLABORATOR ACROSS THE SPAN OF MEDICAL CARE AND RESEARCH

By James Tobin
n April 26, 1896, two University of Michigan professors stood at the bedside of a man who had been shot in the foot. Their question was this: Could they pinpoint the location of the bullet before the man went under the surgeon’s knife?

The two professors were Henry Carhart, a physicist, and William Herdman, a professor of electrotherapeutics in the medical department. They had learned of an extraordinary discovery made just a few months earlier by Wilhelm Roentgen, a Bavarian physicist experimenting with electromagnetic rays. Roentgen had stumbled on what he called “a new kind of ray” — he gave it the letter “X” for “unknown” — one that could reveal opaque objects within soft flesh. Since then Professor Carhart had been experimenting with a Roentgen-esque camera of his own.

Now he and Herdman pointed the device at the foot of the unfortunate gunshot victim and produced a remarkable image — not just of the foot itself, but of the bullet inside the foot. Since then Professor Carhart had been experimenting with a Roentgen-esque camera of his own.

Now he and Herdman pointed the device at the foot of the unfortunate gunshot victim and produced a remarkable image — not just of the foot itself, but of the bullet inside the foot. That was the moment when Michigan’s work in medical imaging began. It would be years before the university recognized this work as an independent discipline. Indeed, it’s fitting that even at the start, it was a joint venture, for radiology as a discipline and a department has been deeply collaborative, bridging boundaries to serve the broad span of medicine as a whole.

The Department of Radiology at Michigan now ranks among the best programs in the nation. That reputation rests on the shoulders of successive generations of forward-looking physicians, scientists and staff.

“I think the department is in very good shape right now,” says N. Reed Dunnick, M.D., the Fred Jenner Hodges Professor of Radiology and, since 1992, chair of the department. “Where we are now is due in part to the people who preceded us. We’ve had some great leaders in our history.”

Professor Carhart and Herdman — the ones who located the bullet — continued their experiments, and in 1903 the Regents allotted $1,000 for X-ray equipment. But the first major figure in radiology’s history at the U-M was a bright and determined young medical student with special aptitude in anatomy.

He was James Gerrit Van Zwaluwenburg, the descendent of Dutch pioneers who carved farms in the forests of western Michigan. When Van Zwaluwenburg earned his B.S. at Michigan in 1898, even the eminent U-M chemist Moses Gomberg remarked on his brilliance. His family couldn’t afford to send him through medical school, so he worked for five years as a chemist and metallurgist to save up for his fees.

When he finally enrolled, he supplemented his savings as a dissectionist. The knowledge he gained from his cadavers would serve him well. When he completed his training in 1907, he was brought on as an instructor in internal medicine.

Van Zwaluwenburg began to use the new imaging techniques to study the chambers of the heart. He X-rayed 187 subjects in all, and his work was so promising that he was put in charge of U-M’s small roentgenology laboratory.

This turned out to be a marvelous combination of investigator, subject and method.

“During the period of this X-ray work he showed himself thoroughly familiar with the anatomy of every portion of the human body,” a colleague would write, “a knowledge appearing almost uncanny to less favored mortals. While his memory for technical names was marvelous…his visual memory was even more perfect. He had accurate pictures of what lay beneath the surface and could utilize his knowledge at will.”

By 1910, the U-M was doing 600 X-rays per year — enough that a schedule of fees was established: $1.50 for an 8-inch by 10-inch plate; $2.30 for a 16-inch by 20-inch plate. But Van Zwaluwenburg was demonstrating that X-rays were not merely one more tool in the doctor’s kit. They were opening a whole new vista of scientific inquiry.

So in 1913, the Regents recognized the new field as a full-fledged academic enterprise by naming Van Zwaluwenburg Michigan’s first junior professor of clinical roentgenology. Medical students soon were scribbling notes on his weekly lectures.

He turned out to be not only a first-rate teacher and scientist — he used X-rays to explore the abdominal organs, the skull, the spine, the arteries and the sinuses — but a gifted executive. Under his leadership, the department was soon self-supporting. By the early 1920s, it was doing 10,000 X-ray exams annually.

But Van Zwaluwenburg was driving himself too hard, and in 1922 he died of pneumonia at the age of only 48.

Colleagues wrote: “His boundless energy, his whole-hearted devotion to clinical roentgenology, his great human kindness, [and] his important contributions to the examination of the heart, of the great vessels, and of the organs of the abdomen by roentgen methods…led American roentgenologists to regard him as one of this country’s outstanding pioneers in his field.”
From the beginning, medical imaging was a tool of such extraordinary power that specialists from many fields sought to use it, refine it, claim it, even fight over it.

The first experiments were done mostly by physicists such as U-M’s Carhart. Van Zwaluwenburg had been trained in internal medicine and his early work was overseen by Charles de Nancrede, M.D., a U-M professor of surgery. Photographers took up the work, and for a time pharmacists were involved. A French neurosurgeon was the first to shoot an arteriogram. Urologists pioneered intravenous pyelography, now known as excretory urography. Cardiologists soon fought for priority in imaging of the heart.

The same pattern was seen at Michigan. “Radiology has suffered turf incursions forever,” Dunnick says. “If you look back historically, I think we’ve gained more than we’ve lost.”

Indeed, skirmishes, negotiations and peace parleys over the proper boundaries between radiology and other departments went on all through the chairmanships that followed the department’s founding era.

Under Preston Manasseh Hickey, M.D. (chair, 1922-1930), who moved the department into expansive quarters in the new University Hospital, parts of radiology were added or subtracted from electrotherapy, physical therapy and hydrotherapy.

Then, under the long tenure of Fred Jenner Hodges, M.D. (chair, 1931-1965), responsibilities were shuffled with the dentists, the urologists, the medical illustrators and the physical therapists. There was also broad cooperation with, among other units, internal medicine on research in pulmonary disease and physics on the Michigan-Memorial Phoenix Project, launched to develop a postwar nuclear reactor for peacetime uses. (In 1953, while Hodges was chair, the department’s name was changed from roentgenology to radiology.)

The cooperative endeavors of pediatric radiology, angiocardiology and neuroradiology all came into their own under Hodges and Walter Whitehouse, M.D. (chair, 1965-1979), who saw the department take responsibility for nearly all invasive neuroradiologic procedures as well as for sonography.

One of the great disputes came in the early 1980s, when the department went head-to-head with nuclear medicine, then part of internal medicine, over control of the emerging technology of magnetic resonance imaging (MRI), first known — problematically, from radiology’s point of view — as nuclear magnetic resonance imaging. William Martel, M.D. (chair, 1982-1992), won that battle, and in 2000, nuclear medicine itself joined the Department of Radiology.
The department’s turf battles now seem to be over. In the modern era, collaboration is the radiologist’s watchword, and many professors appointed recently hold joint appointments in radiology and other departments.

Valerie Castle, M.D. (Fellowship 1990), the chair of the Department of Pediatrics and Communicable Diseases at the U-M, offered an example.

Several years ago, Castle recalls, the U-M’s congenital heart experts introduced the idea that very young patients born with heart malformations needed MRI scans designed specifically for children. She consulted with Dunnick, who suggested that MRI specialists in radiology could help.

Castle and Dunnick came to believe that these children should be treated by someone who not only was deeply versed in their specific anatomical problems, but who also had been trained in MRI.

Both doctors realized it would take a long time to develop such expertise in-house. So, they looked outside the U-M for just the right physician.

The result was the joint recruitment of Adam L. Dorfman (M.D. 1998), a native Michigander who had trained further at Boston Children’s Hospital and Harvard Medical School. He had precisely what the U-M was looking for — world-class expertise in both pediatric cardiology and cardiac imaging. Appointed in 2007, he has led the development of pioneering protocols in MRI studies of the heart in children. The collaboration between Dunnick and Castle also helped launch advanced training in cardiac imaging to develop still more in-house expertise.

“I think that’s a perfect example of the kind of collaboration that we’ve had to meet the needs of our patients and our programs, and to place Michigan always at the leading edge,” says Castle, the Ravitz Foundation Endowed Professor of Pediatrics and Communicable Diseases.

Radiology is now interwoven with treatment and research all through the health system.

In the care of cancer patients, for example, Dunnick says, “Radiology extends perhaps more broadly than any other field — diagnosis, staging, surveillance, and sometimes therapy.” Indeed, he adds, “I think we have greater depth in our involvement across the entire spectrum of medical care than any other department.”

Take a child, for instance, being treated for cancer. A typical patient coming to the U-M Health System is attended by a pediatric tumor board made up of multiple specialists. Each plays his or her role, but the radiologist’s imaging studies provide the foundation of treatment.

In medical research, too, radiologists have played a fundamental role, and only more so in recent decades. Neurology, for example, has been all but revolutionized by advances in imaging over the last 40 years. Radiologists have long been essential to the study of the entire nervous system, and teamwork among radiologists and neurologists is now routine.

“We can look at functional imaging of the brain and neurotransmitters that we couldn’t ever do before,” says David J. Fink, M.D., Robert W. Brear Professor and chair of the
Department of Neurology. “That’s one of the most exciting aspects of advances in neuroscience, and they’re our partners in that.”

Examples in neurology abound. One of the best known is Kirk A. Frey (M.D. and Ph.D. 1984, Residency 1988, Fellowship 1989), who conducts research on molecular-neuro imaging. In his work, Frey, the David E. Kuhl Collegiate Professor of Radiology and a professor of neurology, aims at the long-term goal of precisely measuring the effects of disease and drug therapies in the brain, where the boundaries between radiology, nuclear medicine and neurology are all but invisible.

In recent years the field has been criticized for high doses and high costs. But “Image Gently” campaigns have taken hold and, as for costs, Dunnick cautions against being penny-wise and pound-foolish.

“If you eliminated all medical imaging, the costs would go up,” Dunnick says. “In the old days, surgeons would do an exploratory laparotomy. They aren’t done any more because we do CT scans. The surgeons won’t operate without an imaging study. We get to the diagnosis faster, which means treatment can start earlier, which means it’s easier to cure the patient or to control the disease process. So I think imaging actually contributes to lower health care costs, even though we’re in the news as one of the high-expense items.”

In U-M laboratories, the future of radiology can be glimpsed across extraordinary vistas.

One example is the research of Brian Fowlkes, professor of radiology and biomedical engineering, and Charles Cain, professor and founding chair of the Department of Biomedical Engineering. The two, in collaboration with biomedical engineering and urology colleagues, are developing a noninvasive surgical technique called “histotripsy” (meaning tissue breakdown). The procedure uses highly focused ultrasound waves as an “acoustic scalpel,” dissolving lesions without so much as breaking the patient’s skin or damaging surrounding tissue.

That breakthrough, if it reaches the clinics, will come at the cutting edge of high-tech medicine. But change is coming in everyday care as well. With basic ultrasound technology becoming simpler and less expensive, Paul L. Carson, Ph.D., M.S., the BRS Collegiate Professor of Radiology, has speculated that ultrasound machines might fairly soon become as common in home medicine cabinets as thermometers.

And in clinics and hospitals, Carson says, radiology may come to play an even more important role than it does today.

“Now that we see the possibility of imaging diseases at the genetic and other molecular levels, even most diagnosis is going to be done with imaging,” says Carson, also a professor of biomedical engineering. “It’s also going to be possible to treat directly based on those images in most parts of the body. So you can imagine that radiology, or certainly in vivo imaging, could be strongly involved in 40 or 50 percent of medical diagnosis and treatment. Certainly, radiology can be doing a large part of the treatment procedures as well as most of the diagnosis.”

“We’re just learning for the first time how to treat many diseases,” Carson says. “It’s a wonderful time.”

ru Hendricks, now 7, has endured and survived more than many people do in their entire lives. At three months, she was found to have AT/RT brain cancer, a diagnosis that is virulently grim in children so young. Treatment included a bone marrow transplant. At 5, she underwent a lung transplant — one of a very few children her age to do so that year or any year.

HOW THE U-M NETWORK HELPED A YOUNG GIRL THRIVE

BY DAN SHINE
PHOTOGRAPHY BY JEFF GROOTERS
But, here she is, bouncing around Ann Arbor with her family in a video her father, Brad Hendricks, made last year around Christmas. In the video, Dru walks a remote-controlled toy horse across the kitchen floor. She sleds down a snowy hill, giggling the entire way. She and her little brother, Winston, rip through presents on Christmas morning, making their parents laugh the way only children can. She is a buoyant little girl being nothing more than a happy, goofy kid. To arrive at these carefree moments, though, Dru and her parents have spent hundreds of nights in hospitals from Utah to Michigan to Missouri.

It’s the kind of triumph that can spur reflection, and Brad began thinking over the biographies of his daughter’s many doctors and a pattern emerged. Physician after physician, he discovered, had trained at the University of Michigan Medical School or in U-M hospitals. Still others who helped along the way were somehow connected to the university.

Brad has referred to Dru’s story as a “testament to the Michigan network.”

For Dru, that network is the doctor in Utah who treated her cancer; the doctors in Ann Arbor who monitored her remission and who first managed her lung trouble; the pulmonologist in St. Louis, and the business school faculty members at Washington University in St. Louis who helped her family find comfort in their temporary city. The connections reach into the future, too. A U-M Medical School graduate, now a pulmonologist at the University of North Carolina, will monitor Dru’s lung health when the family moves there this summer.

FINDING MICHIGAN, IN UTAH

Like many, Brad Hendricks’ initial connection to the university was as a sports fan. Growing up in Bountiful, Utah, Hendricks’ first hat was a Michigan one. (Brad was so fond of the university that he chose to write about Michigan for a state report project in fourth grade, receiving extra credit for including so many articles about U-M Athletics.) “I wore that hat all of fourth grade,” he says. “Then one day they wouldn’t let us wear hats. It was a traumatic moment in my life.”

Brad and Heather Robbins married in 2003. Dru was born in January 2007, one month after Brad received his master’s degree in accounting from the University of Utah. The family was growing and marching forward.

A bit fussy as a baby, Dru had a hard time eating but otherwise seemed normal. One April evening – “the longest night I’ve ever had,” Hendricks says – Dru was inconsolable. The Hendricks had already been turned back by a physician as “overly worried first-time parents,” when Dru screamed and cried on the way out of another doctor’s visit. The pediatrician, upon hearing the pain in the baby’s screams, referred Dru to Primary Children’s Hospital in Salt Lake City.

A CT scan, given as a final precaution, revealed a brain tumor the size of a plum. The results surprised doctors, Brad says, because Dru had not shown any of the typical symptoms of a brain tumor, such as seizures or vomiting.

“I was shocked, and deeply saddened,” Heather Hendricks says. “My very first initial reaction was that the tumor would take her life. I found myself mourning what her life could have been.”

The day after the brain scan, Friday the 13th, Dru had surgery to remove the tumor. All but a small portion of the tumor that was wrapped around the brain stem was removed.

Carol Bruggers, M.D., was Dru’s oncologist in Utah, and the first of many U-M connections for the young girl. A Michigan State University medical school graduate, Bruggers grew up near Ann Arbor and her parents were both University of Michigan doctors. Brad Hendricks remembers Bruggers saying they could either make Dru comfortable with medication until the cancer overtook her body or pursue treatment.

“She told us that she thought all kids deserved a chance. It meant a lot to have her say that even when we all knew how bad the prognosis really was,” Brad says.

Dru and her parents spent almost 200 nights at the hospital that year. Her treatments included several rounds of high-dose chemotherapy and 30 consecutive days of radiation treatment. She later underwent a bone marrow transplant.

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The Hendricks slept and showered at Primary, knowing their daughter’s prognosis was not good. Dru was weak and had a hard time sitting up. She couldn’t play on the floor or even leave the room because her immune system was suppressed. Other effects of Dru’s therapy included a reduced ability to swallow, so she was given all of her nutrition through a feeding tube. “It was life in a 12-by-12 room,” Brad says. “Hopefully you’re not making her go through all this for nothing.”

By Christmas, the family was able to go home, though Dru had brain scans every three months. Doctors told the
family that, based on statistics, the cancer may return in the first few months. Dru was cancer free at three months, at six and into her second year of life. “You start to wonder if you’ve won the lottery,” Brad says.

Even though scans remained clear, the Hendrickses never completely exhaled. Brad decided to go into academics so he would have the flexibility to help care for Dru, understanding that her health could be an ongoing concern. After applying to several doctoral programs in accounting, Brad chose the U-M. Michigan, Brad says, was the best program that also happened to come with the best insurance — a vital consideration considering Dru’s health. Bruggers assured the family they would be in good hands at the U-M.

“She said she was very cognizant of Michigan’s abilities,” Brad says. “And she told us how a school teacher used to have her class march around singing ‘The Victors.’”

Brad Hendricks with Dru, just before her lung transplant (top); Brad holds Dru after her brain surgery (above).
THE MAGNITUDE
OF IT ALL

The family moved to Ann Arbor in the summer of 2009. The first year was normal, Brad Hendricks says. Dru was healthy and hitting all her milestones, and the Hendrickses decided she could use a sibling around the house.

During Heather’s pregnancy — son Winston was born in February 2011 — Dru’s breathing became increasingly labored. She would ask to be held after running, but Brad and Heather thought she maybe just wanted attention. Considering Dru’s health history, though, they took her to C.S. Mott Children’s Hospital.

“We had been around enough kids to know a lot of them get a secondary cancer,” Brad says. “So we always suspected there would be something. We never imagined it would be of the magnitude it ended up being.”

Pediatric lung specialists at the University of Michigan found that Dru’s lungs showed evidence of injury, most likely a side effect of the life-saving chemotherapy she received. Dru still struggled to swallow, and doctors were concerned that she was inhaling saliva into her lungs. Various interventions helped for a short time, but Dru’s lungs got progressively worse. Over the span of about nine months, Dru went from being an active preschooler to a little girl who lost her breath while walking. Dru was in constant need of supplemental oxygen and needed high doses of strong medicines.

Heather, Winston, Dru and Brad Hendricks in April.
Dru’s lung doctors performed a lung biopsy to better understand what was happening with her lungs. The biopsy confirmed that there was scarring (fibrosis) in the lung.

During recovery after lung surgery, a small tube is often placed into the space between the lungs and ribs — the pleural space. The tube helps remove air that escaped from the lung into the pleural space, helping the lung stay inflated until it heals. But Dru’s lung tissue wouldn’t heal. Even after several interventions — including another surgery — the lung kept leaking air into the pleural space, a condition called pneumothorax. After a brief respite when Dru’s lung could function without a tube, the pneumothorax returned and Dru was back in the hospital needing another chest tube.

“Because of the constant need for suction, she couldn’t leave the hospital,” says Toby Lewis, M.D., a pediatric pulmonologist at Mott and an associate professor of pediatrics. “The only chance at being able to ever leave the hospital was to get new lungs through a transplant.”

Dru’s parents struggled with what to do next, while her doctors worked to repair the lung damage. As doctors counseled the Hendrickses about a possible lung transplant, Dru settled in for another months-long hospital stay.

“It was difficult watching her slowly get worse and worse,” Heather says. “We had suspected that lung transplant was going to be an option, but we hoped that it wouldn’t come to that point. We also became fearful of the future. What would happen if we did or didn’t do the transplant? How can we keep Dru as happy as possible?”

Eventually, this was the family’s choice: a lung transplant for Dru or prepare her for hospice care.

“It was absolutely terrible, probably the worst thing that we have ever been through,” Heather says. “The last thing that we wanted to do was buy Dru more hospital time. But if we did the transplant, there was a chance of a more ‘normal’ life. We went back and forth, and back and forth, and back and forth. There was no right answer. Then Dru’s pediatrician — by far one of the best doctors we have ever dealt with — also told me that there was no wrong answer either.”

Heather Burrows (M.D. and Ph.D. 2000, Residency 2003), Dru’s pediatrician at Mott, says this case is “very, very rare.” At Mott, physicians care for many children with rare cases, and that care is difficult because so few, if any, cases are at all similar.

“The challenge for Dru from having such a rare condition is that it’s hard to get information on what to expect,” says Burrows, also a clinical assistant professor.

Lung transplants are recommended when someone has severely damaged lungs due to an irreversible condition that won’t recur in the new lungs, Lewis says.

Because such transplants are so uncommon in children, there are only a handful of pediatric lung transplant programs in the country, according to Lewis. Mott is not among the four medical centers in the country that routinely perform lung transplants on patients younger than 6 — and so the Hendricks knew they would have to travel for Dru’s lung transplant.

“It is also true that there are also very few organ donors who are children,” Lewis, the Mott pulmonologist, says. “And children who do need a lung transplant may have to wait for a long time to get matched with donor lungs that are the right size and immunologic match.”

Though they decided to try for a transplant, the Hendrickses worried that Dru wouldn’t receive donor lungs and her last months would be isolated from friends and family “in a strange city.”

**MICHIGAN IN ST. LOUIS**

St. Louis Children’s Hospital has one of the few pediatric lung transplant programs, and it is led by another Michigan graduate, Stuart Sweet (B.S. 1981, Ph.D. 1989, M.D. 1990). In November 2011, Dru was transferred from Mott to St. Louis Children’s on a specially pressurized medical transport plane. While waiting for matched lungs, the Hendrickses lived at the Ronald McDonald House in St. Louis. In early January 2012, they got the call that a set of donor lungs was available.

This is how Brad describes the moment when they knew the transplant would happen: “I don’t know that I’ve ever been physically shaking like I was at that point. Even at that point, when the lungs are being offered and she is so sick that we have to carry her in our arms from room to room, we were unsure if this was the right decision. It was, and still is to us, absolutely terrifying to contemplate the scope of a lung transplant.”
Driving to the hospital that night, the family was incredibly nervous. When Dru heard they would go back to their temporary apartment in a few weeks, and that she’d feel better, she asked, “Can we go back to Michigan?”

“We told her that we could and she didn’t ask any more questions after that. That was enough for her. I think that is enough for all of us,” Brad and Heather wrote on their blog.

According to Sweet, Dru’s lung damage due to cancer treatment also is “one of the themes we see.” He says the biggest challenge for young lung transplant patients is the chronic care needed after surgery.

Fifty percent of patients live five years, and, after a decade, only 20 percent survive. “We’re very up front. They know what they’re getting into,” Sweet says.

Dru was one of eight children younger than 6 to get a lung transplant in the United States in 2012. After her successful transplant, the Hendrickses stayed at the hospital for weeks and in St. Louis for about four months to monitor possible rejection. While there, Brad Hendricks continued his studies.

Brad’s advisor at U-M’s Ross School of Business, Gregory Miller (Ross Ph.D. 1998), connected the Hendricks with two Michigan friends at Washington University in St. Louis. A former Ross faculty member, Rich Frankel, offered room for the Hendrickses to stay at his home and volunteered his
children for babysitting duties. Chad Larson (Ross Ph.D. 2008) found Brad office space at the university and connected him with undergraduate research assistants.

“You know how difficult it is going through the Ph.D. program, then you add on top of that this incredibly difficult situation,” Larson says. “When you see that, anything you can do to help you’ll do.”

Heather says the family’s faith in God, help from family members, the Ronald McDonald House Charities and her husband’s professors at the U-M made it possible for them to endure this all together — as a family.

“I wouldn’t have survived this experience if Brad and I would have been separated,” she says. “I tried to just focus on the daily tasks at hand, instead of worrying about the future. I just did what I had to do, and made it through each day.”

PROTECTING DRU

Y summer 2012 the family was back in Ann Arbor “trying to figure out how to do life again,” Brad says. “You don’t feel stable anymore. You always keep a suitcase packed because you don’t know when you’re going to be back in St. Louis. You live with a level of anxiety now that you never imagined could exist.”

Dru returned to St. Louis for lung checkups, including one in March. Through all of this, Dru has repeatedly impressed her doctors with a buoyant, fighting spirit.

Burrows says that Dru is a fun-loving girl with a great sense of humor. Dru loves Disney princesses, the movie “Frozen,” and anything pink or purple. Her infectious laugh starts high and finishes, joyously, even higher. Although shy around visitors, Dru’s silliness emerges with her parents. During a reporter’s recent visit, Dru fixed her father’s hair with frilly barrettes and happily showed off a new bathing suit.

Each day, Brad and Heather balance the health risks of taking Dru into the wider world against exposing her to outside joys. Dru is homeschooled to help insulate her from the long flu season rushing through school halls. She can’t risk getting sick while her body works to accept her new organ. Dru participates in some activities, including dance and swimming. Grateful for Dru’s care at Mott, the Hendrickses invited Burrows to their daughter’s Christmas dance recital.

“It reminded me why I love what I do,” Burrows says. “I think back barely a year ago. She was on oxygen, not able to do anything. Her health is still something that requires a lot of effort and care, but she’s able to enjoy a lot of wonderful things.”

Brad says they have alienated people to protect Dru from germs. They have had family out visiting who, at the first sneeze, are sent on the next plane home. If the family is in public and hears a cough or sneeze, “We’re up and moving.”

“Our experience with cancer, and remission, was like winning the lottery,” Brad says. “It can be cured, it can go away forever. But with a lung transplant we knew we weren’t playing in that same area. You win, but you win years, you win conditions. But you don’t win a cure.”

TO A NEW TOWN, STILL WITH MICHIGAN

The family moves to North Carolina in August, where Brad will teach and research at UNC’s Kenan-Flagler Business School (and where his dean will be another Michigan graduate).

When Brad and Heather were considering jobs, they focused only on universities with nearby pediatric lung transplant programs. It seems inevitable now, but that decision also led to Dru’s care being handled by another Michigan physician — stretching her connection to the university all the way from Utah to North Carolina. Terry Noah (M.D. 1985), a pediatric pulmonologist at the University of North Carolina and the North Carolina Children’s Hospital, will take over the monitoring of Dru’s lung transplant.

Noah says the succession of Michigan people taking care of Dru and her family is “quite remarkable.” He admits that Dru came to UNC “not because somebody from Michigan is here, but because of the transplant center. But it does speak to the national reach of the University of Michigan Medical School.”

Sweet, Dru’s pulmonologist in St. Louis, says the reach of the U-M network that the family encountered follows his experience over the years from being an undergraduate in Ann Arbor to leading a pediatric lung transplant program.

“Michigan is an extraordinary experience,” he says. “It attracts smart people who go elsewhere and develop their careers. It’s not surprising to me the family has touched Michigan wherever they have gone. The message of their story is that you don’t have to look very far to see Michigan.”

www.medicineatmichigan.org/magazine
A Dramatic Path

As UMHS and the Medical School embark on the Victors for Michigan campaign, fourth-year medical student Jonathan Awori reflects on philanthropy and his unlikely path.

In March 2011, I was one committee meeting away from being granted tenure and a promotion to associate professor of theatre at Murray State University. Five months later, I was a first-year medical student at the University of Michigan Medical School. My story, which probably deserves explanation, reveals the ennobling power of philanthropy.

Leading up to this dramatic shift, I had obtained my M.F.A. in acting, was teaching everything from Shakespeare to postmodern experimental acting, and traveling the country during the summers playing various professional musical theatre roles. I loved what I was doing and yet, almost like a latent virus, a long held interest of mine in science and medicine persisted. This underlying attraction to medicine would occasionally find expression in research directions like “Theatre for Development,” the use of theatre as an intervention in public health campaigns. My wife, with her trademark perceptiveness, first proposed the idea of switching careers to medicine several years before I applied to schools.

It was a wild idea at the time, but I also knew it was a serious one. I had no prerequisites, was working full time in a tenure-track job and was
raising a young family. My wife and I faced several difficult questions, perhaps the most challenging being: How could we afford medical school? With that question still up in the air, I began my prerequisites, sometimes experiencing unusual situations like having a lab partner in organic chemistry who had just been my theatre student in the previous period. I eventually took the MCAT and applied to medical school, six years after taking my first prerequisite.

Even then, another question lingered: Would medical schools’ admissions committees consider my arts background as interesting but peripheral, or would they value how the arts could fundamentally and positively shape my identity as a physician? I was gratified to find that Michigan had the latter response. I did not, however, only receive words of support. I was ultimately awarded the Dean’s Merit Scholarship, humbling support that pays for all four years of Medical School tuition in full. This made all the difference. Now, I did not have to worry about the impact of hefty loans on my family. I wrote my resignation letter to Murray State shortly afterwards and took the leap to the Medical School because I knew I had true support.

Three years into school, this award continues to free me to focus on my studies, my family and other interests. I have worked on creative projects such as a staged reading of the play “Molly Sweeney,” based on a case study by neurologist Oliver Sacks. In this way, I am heeding the counsel I first received in my U-M admission letter: to feed my creative side and keep discovering links between the artistic and the scientific. That is what philanthropy does for me; it does not dictate conformation in exchange for support. Instead, it challenges me to follow Shakespeare’s advice to “above all else, be true to yourself.” Philanthropy pushes me, pushes anyone touched by such generosity, to fulfill potential. This was the vision of Alexander S. Vida, a neuropsychiatrist at Michigan, who firmly believed that medical students should have a background in the liberal arts. A memorial scholarship was established in his name, and I was honored to receive it during my second year at Michigan. (The additional funding came as a complete surprise.) I still remember reading the description of the award, moved by Dr. Vida’s validation of the kind of path I took to medicine.

Yes, this change seemed to me an audacious move. I had a more comfortable and predictable path ahead. But the philanthropy I encountered at Michigan would not let me settle for that. Such faith and confidence does not simply recognize my past; it inspires my future. I can now focus on procuring the knowledge that will help my patients while demonstrating the humanism that motivated this choice in the first place. This could have been a one-act play. Because of the support I have received at Michigan, there is a second act.

— Jonathan Awori
ON APRIL 26, THE U-M HEALTH System held the Discovery Ball, a celebration of the Victors for Michigan campaign that aims to raise an unprecedented $1 billion in philanthropic support for UMHS.

The event itself raised more than $1.7 million, a total that includes contributions to the Discovery Fund, which supports innovative research into today’s most pressing health care issues.

Held at the U-M North Campus Research Complex, itself home to some of the most groundbreaking medical research anywhere, the event drew more than 500 guests — including Richard Rogel and A. Alfred Taubman, respectively the UMHS campaign chair and co-chair.

Sanjay Gupta (M.D. 1993), CNN’s chief medical correspondent, emceed the celebration, leading the audience through an evening that included a discussion with James O. Woolliscroft, dean of the U-M Medical School, and a musical performance by Grammy Award-winning singer Michael McDonald.

Ora Pescovitz, M.D., who recently completed a five-year term as U-M executive vice president for medical affairs and as UMHS CEO, wrote in a blog post after the ball that, “To be a Victor for Michigan means refusing to stop fighting for answers and cures. It means refusing to believe that anything is impossible. And it means that the University of Michigan – the home of victors valiant — is where the future of health care can and will be created.”
Professorships Recently Inaugurated

Endowed professorships are among the highest honors the University of Michigan Medical School awards to our faculty. These professorships, often made possible by the generosity of private individuals and foundations, honor the groundbreaking work that our faculty members pursue — in the name of education, patient care and research. Below is a list of professorships inaugurated from August through December 2013. Expanded descriptions of each are online at: medicineatmichigan.org/magazine

The *Cis Maisel Professorship in Oncology* was inaugurated in an August 1, 2013 ceremony. *Maha Hussain*, M.D., the associate director for clinical research at the Comprehensive Cancer Center, is the first Maisel Professor. Geneva “Cis” Maisel Kellman has been a staunch supporter of the Comprehensive Cancer Center since its inception 25 years ago.

In an August 15, 2013 ceremony, *William Rainey*, Ph.D., became the first *Jerome W. Conn Collegiate Professor*. Conn was the first director of the Division of Metabolism, Endocrine, Nutrition and Diabetes (1943-1973) and Rainey, a professor of molecular and integrative physiology and internal medicine, is an expert in the area of endocrinology.

Honoring a long career in orthopaedics and contributions to knee and hip replacement prostheses, the *Larry S. Matthews, M.D., Collegiate Professorship in Orthopaedic Surgery* was established in a September 30, 2013 ceremony. *Jon Sekiya*, M.D. (Residency 2001), professor of orthopaedic surgery, associate director of MedSport and team physician for the U-M Athletic Department, was installed as its first professor.

Battle Creek psychiatrist *Carlos Solano-Lopez*, M.D. (Residency 1991), celebrated his mother with the establishment of the *Rosa Casco Solano-Lopez Research Professorship in Child and Adolescent Psychiatry*. *Soo-Eun Chang*, Ph.D., an assistant professor in psychiatry, was inducted as the first professor in an October 15, 2013 ceremony.

The *Bartley R. Frueh, M.D., and Frueh Family Collegiate Professorship in Eye Plastic and Orbital Surgery* was inaugurated in an October 17, 2013 ceremony. Frueh was a renowned expert on thyroid-associated eye disease, who served on the Kellogg Eye Center faculty for 30 years. The first Frueh professor, *Christine C. Nelson*, M.D., is a professor of ophthalmology and surgery, and her research focuses on disorders of the eyelid and orbital diseases.

*Richard D. Swartz* (M.D. 1970), was honored for his dedication as an expert teacher and passionate physician with the establishment of the *Swartz Collegiate Professorship of Nephrology*. In recognition of his many teaching awards and his more than 25 years of supervising chronic dialysis, *Joseph Messana* (M.D. 1982) became the first Swartz Professor in an October 23, 2013 ceremony.

The *Melvin T. Korobkin, M.D., Collegiate Professorship in Radiology* was established during a November 11, 2013 ceremony, recognizing Korobkin’s seminal contributions to diagnosing abdominal disease using CT scans. The first recipient of the professorship, *Isaac Francis*, M.B., is an outstanding radiologist with expertise in gastrointestinal and genitourinary oncology.

Established through an estate gift, the *Richard D. and Katherine M. O’Connor Research Professorship in Alzheimer’s Disease* was celebrated in a November 20, 2013 ceremony. Associate Professor of Neurology *Judith Heidebrink*, M.D. (Residency 1995, Fellowship 1997), was named the first professor, recognizing her outstanding care of dementia patients while continuing to play a key role in advancing the understanding of Alzheimer’s disease.

Recognizing the first chair of the Department of Pediatrics, the *David Murray Cowie, M.D., Research Professorship in Pediatrics and Communicable Diseases* was inaugurated with *Ram K. Menon*, M.D., the first recipient. Menon, a professor of pediatrics and communicable diseases and of molecular and integrative physiology, is an internationally respected scientist in pediatric endocrinology.

Saluting a pioneer in the field of systems biology, the *Michael Savageau Collegiate Professorship in the Department of Computational Medicine and Bioinformatics* was established with *Brian Athey* (Ph.D. 1990), installed as its first professor on December 4, 2013. Savageau, Ph.D., had the vision and dedication to make the department a reality in 2012. Athey, the first chair of the department, is a leader in biomedical informatics and computational medicine, and he has made key contributions in research, clinical translation and education. Athey is also a professor of computational medicine and bioinformatics, a professor of psychiatry and of internal medicine.
HUDA AKIL, Ph.D. received the 2013 Award for Distinguished Research in the Biomedical Sciences from the Association of American Medical Colleges in November 2013. The Gardner C. Quarton Professor of Neurosciences in Psychiatry and co-director of the Molecular and Behavioral Neuroscience Institute, Akil has made seminal contributions to the understanding of the neurobiology of emotions and the interplay between pain, anxiety, depression, stress and substance abuse. At the same ceremony, GILBERT S. OMENN, M.D., Ph.D., received the David E. Rogers Award, which is granted annually to a medical school faculty member who has made major contributions to improving the health and health care of the American people. Omenn, currently the director of the Center for Computational Medicine and Bioinformatics, has held numerous positions within the U-M, including executive vice president for medical affairs and UMHS CEO from 1997 to 2002. In addition, he has held high-level government appointments, served on prestigious advisory boards and contributed to genetic research.

JOHN AYANIAN, M.D., the Alice Hamilton Professor of Medicine and director of the Institute for Healthcare Policy and Innovation, was appointed associate editor at The New England Journal of Medicine. Ayanian is also a professor of health management and policy in the School of Public Health and professor of public policy in the Gerald R. Ford School of Public Policy.

MATTHEW L. BOULTON, M.D., became the editor-in-chief of the American Journal of Preventive Medicine in January. Boulton, an associate professor of internal medicine specializing in infectious diseases, also has appointments in the U-M School of Public Health.

VIVIAN CHEUNG, M.D., is the vice president-elect of the American Society for Clinical Investigation. After a year, she will serve as president-elect and then as president. The Frederick G.L. Huetwell Professor, she is a professor of pediatric neurology and human genetics in the Medical School and a research professor in the Life Sciences Institute. She is also an investigator at the Howard Hughes Medical Institute.

SENAIT FISSEHA, M.D. (Fellowship 2006), received Ethiopia’s Ministry of Health highest award to recognize her profound contributions to medical education. An associate professor of obstetrics and gynecology and chief of the Division of Reproductive Endocrinology and Infertility, Fisseha’s efforts in Ethiopia focus on faculty development and retention, and the expansion of subspecialty training programs and research.

HOPE HAEFNER (M.D. 1985, Residency 1990), was elected president of the International Society for the Study of Vulvovaginal Disease (ISSVD). Haefner is a professor of obstetrics and gynecology and opened U-M’s multi-disciplinary Center for Vulvar Diseases in 1993. Founded in 1970 by the International Federation of Obstetricians and Gynecologists, the ISSVD also includes dermatologists and pathologists.

ELLA A. KAZEROONI (M.D. 1988, Residency 1992), received the Presidential Inspiration Award for Leadership from the Society of Thoracic Radiology at the group’s annual meeting in March. In May, Kazerooni also received the Gold Medal from the American Roentgen Ray Society. The Gold Medal is the highest honor awarded for distinguished service to radiology. Kazerooni, a professor of radiology, is the associate chair for clinical affairs, director of cardiothoracic radiology and chair of the Radiology Service Excellence Program.

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CRISTEN WILLER, PH.D., STANDS AT THE DOOR OF her lab and ushers in a visitor. “It’s not very interesting – just a bunch of computers,” she says.

But those computers hold the genetic profiles of 10,000 Norwegians, and the data they contain are leading Willer closer to potential treatments to prevent heart attacks. And that is very interesting.

Willer’s interest in genetics, which began with an internship, now reaches through her professional and personal lives. She grew up in Fort Erie, Ontario, just across the Niagara River from Buffalo, New York. In high school, she participated in a five-month internship program at the Women and Children’s Hospital of Buffalo, studying genetics in the classroom and the lab. Years later, Willer remembers the first time she watched DNA form.

“When you put DNA in a tube, in a solution, you can’t see it right away,” says Willer, an assistant professor of cardiovascular medicine and human genetics in the U-M Medical School. “Then you add ethanol and gently move it back and forth and you can see the strings of DNA form. The first time I saw this, I was hooked. I knew I had to go into genetics.”


She came to the U-M for postdoctoral research and to train with Michael Boehnke, Ph.D., director of the Center for Statistical Genetics and the Genome Science Training Program. Boehnke and his team were searching massive amounts of data for genes associated with lipid levels, body mass index and blood pressure.

In 2008, Boehnke’s team published a paper announcing the discovery of a region of chromosome 19 that was associated with lipids, but the researchers did not identify specific genes at the time.

Then in the fall of 2010, while pregnant and on bed rest, Willer applied for an R01 grant from the National Institutes of Health, proposing a statistical study to search for genes related to blood cholesterol levels. Willer got the grant and also became a member of the 2010 class of the U-M’s Biological Sciences Scholars Program.

Willer was given access to the Health in Nord-Trøndelag (HUNT) Study. The huge collection of DNA samples collected in Norway over three decades is “a very unusual and carefully collected resource,” Willer says. Exploring the same DNA region as she had with Boehnke, Willer narrowed in on genetic variations that change the function of proteins. Of the many genes they found, only one, TM6SF2, hadn’t been on the radar at all. Willer noticed a subset of Norwegians with a particular change in the gene and with lower blood lipid levels. This group also had a lower rate of heart attack.

Willer’s colleague, Eugene Chen, M.D., Ph.D., Frederick G.L. Huetwell Professor of Cardiovascular Medicine and a professor of internal medicine and surgery, boosted and suppressed TM6SF2’s expression in mice, confirming Willer’s HUNT findings. That confirmation was the key moment, Willer says. Earlier this year, Willer’s study was published in Nature Genetics. Willer cautions that further research is necessary before TM6SF2 can be confirmed as a new drug target.

Willer also made a personal connection to her research. An amateur genealogist, she found out that some of her ancestors had lived in Nord-Trøndelag – the same geographic region in her study. Those computers, then, not only hold the possible keys to future heart attack prevention but also a piece of Willer’s family, which includes her husband, U-M Professor of Biostatistics Goncalo Abecasis, D.Phil., and their four young children.

“It makes me feel connected,” she says, “like this scientific collaboration was meant to be.” — Whitley Hill
(continued from p. 40)

JOYCE M. LEE, M.D. (Fellowship 2006), became the first social media editor for JAMA Pediatrics. Lee has a keen interest in emerging technologies and is excited about helping translate research to a wider audience. An associate professor of pediatrics, Lee has a joint appointment with the School of Public Health and specializes in obesity and diabetes.

BISHR OMARY, M.D., Ph.D., DIANE ROBINS, Ph.D., and JOHN TESMER, Ph.D., were elected 2013 fellows of the American Association for the Advancement of Science. Omary, the H. Marvin Pollard Professor of Gastroenterology and a professor of internal medicine and molecular and integrative physiology, was recognized for his research in gastroenterology. A professor of human genetics, Robins was recognized for her work in the fields of molecular endocrinology and cancer genetics. Tesmer is the Cyrus Levinthal Collegiate Professor in the Life Sciences, research professor at the Life Sciences Institute, and professor of pharmacology and biological chemistry. His seminal studies of the structure and mechanism of intracellular signaling pathways were recognized.

ELIF A. ORAL, M.D., Ph.D., has been appointed a sitting member of the Clinical and Integrative Diabetes and Obesity Study Section at the National Institute of Health’s Center for Scientific Review. Her four-year term ends June 30, 2017. Oral is an associate professor of internal medicine and is also the medical director of the UMHS Bariatric Surgery Program and director of the MEND Obesity and Metabolic Disorder Program. She also directs the Post-Bariatric Surgery Care Program.

ROBERTO ROMERO, M.D., professor of obstetrics and gynecology, was appointed editor-in-chief for obstetrics of the American Journal of Obstetrics & Gynecology. Also the chief of the Perinatology Research Branch of the National Institutes of Health, Romero leads a research team that has made seminal discoveries related to premature birth and congenital anomalies — the two leading causes of infant mortality in the United States.

MANUEL VALDIVIESO, M.D., was named honorary professor by the Universidad Peruana Cayetano Heredia in Lima, Peru. This pays tribute to his work on the role of H. pylori infection and cancer in Latin America. Valdivieso is a clinical professor of internal medicine and senior executive officer at SWOG (previously the Southwest Oncology Group), one of five cooperative groups within the National Cancer Institute’s National Clinical Trials Network. Responsible for quality assurance and international initiatives for SWOG, which is headquartered at the U-M Health System, he continues to build on clinical trials and collaborates in countries throughout Central and South America.


Edited by Ronald D. Chervin, M.D., the Michael S. Aldrich Collegiate Professor of Sleep Medicine, professor of neurology and director of the Sleep Disorders Center: *Common Pitfalls in Sleep Medicine*, Cambridge University Press, 2014.


Edited by George A. Mashour, M.D., Ph.D., the Bert N. La Du Professor of Anesthesiology Research, associate professor of anesthesiology and associate professor of neurosurgery; and Michael S. Avidan, M.B.: *Neurologic Outcomes of Surgery and Anesthesia*, Oxford University Press, 2013.

By Mary A.M. Rogers, Ph.D., research associate professor in internal medicine: *Comparative Effectiveness Research*, Oxford University Press, 2013.

Class Notes

70s

William Shaffer (M.D. 1976), became the new medical director of the American Academy of Orthopaedic Surgeons (AAOS) on December 2, 2013. He oversees the Office of Government Relations and the Department of Research and Scientific Affairs in Washington, D.C. An experienced spine surgeon with a passion for science and evidence-based medicine, Shaffer has served in leadership roles with the AAOS and other organizations such as the North American Spine Society.

Karl A. Poterack (M.D. 1985), was among fewer than 450 physicians who passed the first Board Certification examination in Clinical Informatics, administered by the American Board of Preventive Medicine in October 2013. Poterack is an assistant professor in the anesthesiology department at Mayo Clinic Arizona, where he has practiced since 1997.

80s

Andrew Pasternak (M.D. 1993), was recognized as the Family Physician of the Year in Northern Nevada by the Nevada Academy of Family Physicians. In addition to being on staff at the Silver Sage Center for Family Medicine in Reno, Pasternak is a clinical assistant professor at the University of Nevada School of Medicine.

90s

Brett Kissela, M.D. (Residency 1999), began his appointment as the Albert Barnes Voorheis Chair of Neurology and Rehabilitation Medicine at the University of Cincinnati on January 1, 2014. On the UC faculty since 2000, Kissela is a renowned stroke researcher.

Myles Spar (M.D. 1993), was recently honored by the Bravewell Collaborative, a foundation dedicated to bringing about optimal health and healing for individuals and society. On November 7, he received a 2013 Leadership Award for his pioneering work in integrative healthcare. Spar directs the nation’s first health, wellness and integrative medicine program offered at a free clinic just outside of Los Angeles.

00s

Joel L. Young, M.D. (Medical Residency 1993), recently authored a book entitled When Your Adult Child Breaks Your Heart: Coping with Mental Illness, Substance Abuse and Other Issues, published by Globe Pequot. In 1999 Young founded the Rochester Center for Behavioral Medicine, a multidisciplinary research and treatment clinic with 30 professionals located in Rochester Hills, Michigan.

Jason Dykstra (M.D. 2004), is a diagnostic radiologist from Western Michigan whose first book, Healing Hereafter: Finding Rational and Refreshing Answers for Why We’re Here and Where We’re Headed, was recently published by Samizdat Creative. Dykstra has chosen to live on the U.S. median income and will donate all proceeds from the book to charity.

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Alumni Profile  Michael M.E. Johns Comes Home

In the years since he graduated from the University of Michigan Medical School, Michael M.E. Johns, M.D., has led departments, medical schools, a health center and served as chancellor of a major university. By any measure, his has been a successful career in academic leadership. That road now circles back home, as Johns (M.D. 1969, Residency 1975) becomes interim executive vice president for medical affairs for the U-M.

Johns began his role on June 2. He succeeds Ora Pesco-vitz, M.D., who led the Health System for five years, a time of growth across the organization. Hospitals — C.S. Mott Children’s Hospital and Von Voigtlander Women’s — opened and clinical reach extended further. Together, the clinics and hospitals received their highest ever patient satisfaction scores. And, looking to the future, UMHS launched its $1 billion Victors for Michigan campaign.

Johns will fill the position on an interim basis, during a search for a long-term replacement. A Detroit native, he graduated with distinction from the Medical School, and completed his internship and residency at the U-M. After Michigan, Johns worked in the Medical Corps of the U.S. Army as assistant chief of the Otolaryngology Service at Walter Reed Army Medical Center from 1975 to 1977. He then joined the Department of Otolaryngology and Maxillofacial Surgery at the University of Virginia Medical Center, where he rose to the rank of professor.

“The U-M has a great legacy of producing leaders,” Johns says. “By the time you leave the program, you are prepared to ask questions, get more responsibility and lead.”

In 1984, Johns became professor and chair of the Department of Otolaryngology-Head and Neck Surgery at Johns Hopkins School of Medicine. He was dean of the School of Medicine and vice president of the medical faculty at Johns Hopkins from 1990 to 1996.

Johns led the Robert W. Woodruff Health Sciences Center at Emory University from 1996 to 2007 as executive vice president for health affairs. The center includes Emory Healthcare, the schools of Medicine, Nursing and Public Health, as well as the Yerkes Primate Center. From 2007 to 2012, he was Emory University’s fifth chancellor.

“As I transitioned more and more into administrative roles, I learned that no one — well, almost no one — comes to you and tells you everything is great,” Johns says. “The best way to get people to embrace your solutions is to clearly identify ways to fix problems on a departmental level, while at the same time bringing benefit to the entire institution.”

Elected to the Institute of Medicine in 1993, Johns has served with several other medical organizations and with the Journal of the American Medical Association, the Advisory Council to the Congressional Taskforce on Biomedical Research and Innovation, and the Uniformed Services University of the Health Sciences Board of Regents.

As he returns to the U-M, Johns is grateful for the opportunity — even as an interim leader — to lead the institution that prepared him for the challenges he faced throughout his career.

“I recognize that I am here for only a short time, but I know that I can have a positive impact by asking questions, seizing opportunities and helping to bring people together to create real and lasting solutions,” Johns says. “I believe that the University of Michigan is one of the most important universities in the world. It set the path for my life and career in the most positive way, and I am eager to pitch in and give back to a place that has meant so much to me.”

— Dan Thomas
Alumni

Akio Aburano (M.D. 1953), a resident of Avalon, Pennsylvania, died on December 25, 2013. The 87-year-old was a pathologist in Pittsburgh.

Charles W. Aldridge (M.D. 1943, Residency 1945), of Grand Rapids, Michigan, died August 17, 2013. He served as a physician in the U.S. Army during World War II, and then continued his career practicing obstetrics and gynecology, delivering thousands of babies over the years.

Peter P. Barlow, M.D. (Fellowship 1959), age 74, died December 6, 2013. After completing his fellowship in allergy and immunology — which was interrupted while he served as captain in the U.S. Army Medical Corps in Germany (1954-1956) — he remained on the U-M faculty as a senior clinical instructor and then as assistant professor of internal medicine. In 1962, he joined the Birmingham Allergy Clinic. He continued to practice there and was on the staff of the William Beaumont Hospital in Royal Oak until his retirement in 1998. During his career, Barlow was a member in numerous professional societies, including the Michigan Allergy Society, where he served as president from 1973 to 1974. He was published in many medical journals and newspapers.

Sarah Foster (M.D. 2008), of Petoskey, Michigan died of cancer on February 4, just before turning 34. She graduated from Lake Superior State University before attending the University of Michigan Medical School, where she was active on the Mott hockey team. Soon after completing her general surgery residency at Spectrum Health Systems in Grand Rapids in June 2013, Foster joined the Charlevoix Surgeons practice as a partner.

Stuart A. George (M.D. 1971), a general surgeon who spent most of his career in Salt Lake City, died on January 2. He was 69. While completing a surgical residency in Boston, George portrayed the iconic American surgeon William S. Halsted in “Strange Sleep,” a NOVA documentary about the development of anesthesia. As a retired major from the Air Force, he was stationed in Marquette, Michigan for two years before moving to Salt Lake City. After retiring from surgery, he became a financial services representative.

Philip D. Gordy (M.D. 1943, Residency 1949), passed away on February 28 in Casper, Wyoming. The 95-year-old, a World War II Army veteran, was the chief of surgery at the 78th Field Hospital in France when the war ended. He received on-the-job training in neurosurgery while in the service and began his formal neurosurgery residency program at the U-M upon his return. Gordy first practiced in Wilmington, Delaware and was later honored as the first neurologist and neurosurgeon in the state of Delaware. In 1973, he moved to Casper and established a private practice. Retiring in 1986, he then established the rehabilitation department at the Natrona County Memorial Hospital, retiring permanently two years later.

Grace M. Hyde (M.D. 1948), of Oakland, California, died March 2 at the age of 94. She was a pathologist for 40 years at Highland Hospital in Oakland. Later in her career, she also worked as a cytologist before retiring at 70.


Lawrence J. Kelly Sr. (M.D. 1946), of Grosse Pointe Woods, Michigan was 96 when he died on January 4. While attending Medical School during World War II, he was drafted into the Navy. He was drafted a second time during the Korean War, serving as a captain in the Army Medical Corps in Battle Creek. He was among one of the first staff members of St. John Hospital, and he delivered more than 10,000 babies during his long career.

George Henry Koepke, M.D. (Residency 1953), died November 26, 2013 at the age of 97. A former chair of the Department of Physical Medicine and Rehabilitation, Koepke began his
career with the U-M in 1953 as the first resident of the fledgling department. On the faculty from 1954 until his retirement in 1976, he worked on polio treatments during the mid-1950s epidemics and later developed orthotics and prosthetics for amputees. In addition, he created new techniques for respirator-dependent patients and became a national expert in burn rehabilitation. In a 2006 citation, the U-M Board of Regents named him a professor emeritus. After retirement, he established a private practice in Saginaw and later moved to Findlay, Ohio.

Charles G. Kramer (M.D. 1949, Residency 1950), died on July 9, 2013, in Lake City, Minnesota. He was 87. After graduation, Kramer served on the front lines in the Korean War and earned a Bronze Star. He spent 25 years at the Indian Health Service, where he worked with the Lakota tribe of the Sioux Nation.

Glenn E. Mohney (M.D. 1945), was 92 when he died April 26. As a medical resident, he contracted tuberculosis and was bedridden for a year and a half. After that experience, he changed his career plans to ophthalmology. After residency, he served two years as a captain in the U.S. Army in Fort Gordon, Georgia, where he served alongside several lifelong friends from Medical School. Mohney then established a medical practice in Port Huron, Michigan where he served patients from the thumb of Michigan to Detroit and Canada. When macular degeneration forced him to retire in the mid-1980s, he relocated to Venice, Florida.


Donald Cameron Smith, M.D. (Residency 1955), died in Ann Arbor on February 5 at 92. Before coming to the U-M, he attended Queen’s University Medical School in London, Ontario, where he also completed a residency. He served in the Royal Canadian Navy as a surgeon lieutenant and undertook post-graduate work in psychology and preventative medicine. After completing his residency, he worked at the U-M School of Public Health and, from 1961 to 1978, he was a U-M professor of pediatrics and a professor of behavioral sciences at Northwestern University. Smith held a number of professional leadership positions including the director of Michigan Department of Mental Health, chair of the State Board of Health and member of the President’s Council on Medicaid. In addition, he was a consultant to the World Health Organization in Eastern Europe and the Middle East, and to the Ford Foundation in South Korea.

Russell F. Smith (M.D. 1955), of Port Orchard, Washington died April 21, 2013 at the age of 84. Smith worked for decades in various hospitals and addiction treatment programs in southeastern Michigan, including the W.J. Maxey Boys Training School. He researched areas that included alcoholism and traffic safety. Later, he worked in rural health clinics in California and Washington.

William S. Wilson, M.D. (Residency 1956), died on November 8, 2013 in Portland, Maine. Wilson was 86. He founded Northeast Cardiology in Bangor and pioneered satellite clinics in the area’s smaller communities in order to serve patients unable to travel.

Faculty

Patrick William Gibbons, D.O., a widely known and respected addiction psychiatrist, died on March 26 at the age of 59. An adjunct clinical instructor in the Department of Psychiatry, he treated patients at the U-M Addiction Treatment Services and served as Washtenaw County Health Organization’s medical director on its Community Crisis Response Team.

David Eduardo “Ed” Schteingart, M.D., died September 3, 2013 at the age of 82. Having retired in June 2010, he was an active emeritus professor in the Division of Endocrinology, Metabolism and Diabetes. During his 50-year career, he was a pioneer in the fields of adrenal cancer and Cushing’s syndrome. He established the U-M’s Adrenal Cancer Program and its Obesity Clinic, and created and directed the MICH-R Clinical Research Training Mentorship Program for which he received a U-M Lifetime Achievement Award.
When I was 22, I had just gotten into the biomedical engineering program at Duke, but I didn’t know what to do with my life. I was playing catch with my dad around that time, and I had an epiphany. I thought: You know what? I’m not an idiot. I’ve got some gifts. Up until that point, the drive I had to succeed was to prove to my elementary school teachers that I would amount to something. Eventually, I decided I wanted to go to medical school and treat patients and bridge the gap between research and medicine.

I was very open about my dyslexia in my residency application to Michigan. I was told it was viewed as, ‘Wow, this is someone who has overcome a lot; this is someone who has character.’ And that’s one of the biggest reasons I wanted to come here.”
Personally, I know what it means to need help.
Executive Leadership of the U-M Health System
Michael M.E. Johns, Interim U-M Executive Vice President for Medical Affairs, U-M Health System; Douglas Strong, CEO, Hospitals and Health Centers; Kathleen Potempa, Dean, School of Nursing; James O. Wooliscroft, Dean, Medical School

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