Who will wear the White Coats of the Future

ALSO:
REIMAGINING MOTT • UNRAVELING THE MALEVOLENCE OF RHEUMATOID ARTHRITIS
COLLABORATING WITH EXPERTS FROM OTHER DISCIPLINES AND fields is an important advantage. We are fortunate to have great depth and breadth of expertise not only within the Medical School across our 26 departments, but also across the other 18 schools and colleges of the University. Collaboration is a core value and distinguishing feature of the University of Michigan, and it benefits all of our missions.

Teams of professionals care for patients in a coordinated fashion not achievable under many organizational structures. The Cancer Center and the Cardiovascular Center are two readily recognized clinical care centers where teams of physicians, nurses, social workers and other professionals provide optimal care to patients. Rather than the patient going from one specialist to the next, a team of providers comes together around the patient. This is not confined to cancer and cardiac care; similar teams care for patients with many hereditary and chronic diseases.

Our faculty members have a long history of collaborating on complex research questions crossing disciplinary boundaries. More than 300 current projects involve Medical School faculty working with faculty from other U-M schools and colleges. Michigan scientists also lead and work in research consortia across the nation and the world, creating the future of medicine, from discovery to application, with global impact.

Our students will work in teams alongside other health professionals throughout their careers. More than 18 months ago, faculty from all the health science schools began collaborating to design a genuine cross-professional, team-based learning experience for all our students. This resulted in three pilot experiences involving students from medicine, public health, nursing, pharmacy, dentistry and social work.

In subsequent issues, we’ll explore some of the unique collaborations that are positioning our faculty, staff and students to create the future of health care.

Sincerely,

JAMES O. WOOLLISCROFT, M.D. (Residency 1980)
Dean, U-M Medical School
REDESIGN REACTIONS
I’ve always enjoyed the magazine and would not have changed it, but I have to admit the new version is a move in the right direction. As one who enjoys print over Web, it was nice to get a well-designed, well-written and informative publication about the latest in medicine at the U-M. I initially thought that, with the changes, both content and design would suffer. Such was not the case.

Alan L. Bliss
Ann Arbor

I just finished reading cover-to-cover your spring issue of the revised Medicine at Michigan. Congratulations to the editorial staff and contributing authors for a superb job. It is eminently readable, interesting and informative. I especially enjoyed the article on Elizabeth Crosby — possibly the best teacher I ever encountered — and I was intrigued by the piece on Jimmy Crudup, an amazing individual. I look forward to future issues. Keep up the excellent work.

Thomas M. Brill
(M.D. 1944, Residency 1948)
Gainesville, Florida

I just loved the new magazine! It’s as interesting as “Doctor Radio” on Sirius Satellite!

Carmen Smedberg
Farmington Hills, Michigan

BEYOND THE LIMITS?
As physicians we aren’t new to nudity or pain, but the images accompanying “Imprisoned by Pain” (spring 2008) are beyond the limits of taste and common sense. These photo illustrations are the worst representatives of the kind of “art” one sees at bad Master of Fine Arts shows, where novelty and shock replace virtuosity. The symbolism and iconography are coarse and ham-handed, and the resulting images fall somewhere between soft porn and snuff film. This goes beyond “What were they thinking?” It’s depraved. Your artistic and editorial staff should be so proud. You’ve managed to transform what purports to be a serious publication into a rag with all the human sensibility of Hustler. You folks could work for George W. Bush at Abu Ghraib and Guantanamo.

James M. Rehmus (M.D. 1981)
Esther H. Rehmus (M.D. 1981)
Peninsula, Ohio

A VOICE FROM THE PAST
I just listened to the interview with Dr. Crosby (“Exclusively on the Web,” spring 2008). It is quite amazing and takes me back to our lunchtime conversations when I was working in her lab. At the beginning, those high-pitched peeps are her hearing aids. That is endearing to hear. She also said that she never expected anything, which is very true of her. It’s clear to me that her studies in Chicago were to learn more science to prepare her for teaching high school. I think that is all she wanted. All of her close friends were teachers. The year 1936 was astonishing for her, marked with success, tragedy and controversy. It was the year the famous Comparative Neuroanatomy book was published, controversial in Crosby’s small community because of the evolutionary element.

Scott Burns, M.D.
Marathon, Florida

(continued on p. 49)
PROFOUND INFLUENCE
I had the privilege of spending six years with Dr. Crosby (“Quiet Pioneer,” spring 2008), during which time I received my Ph.D. under her guidance. She was flying back and forth between the U-M and the University of Alabama in those days. During the summer of 1974, I worked in the Laboratory of Neurosurgery Research at Michigan. Dr. Richard C. Schneider was chair of neurosurgery at the time. My wife and I lived at the Michigan League that summer as Dr. Crosby’s guests, and my wife was pregnant with our daughter, Amie Elizabeth Augustine, who is named for Dr. Crosby. The League was Dr. Crosby’s home at the U-M at that time.

I recently completed a textbook, Human Neuroanatomy, and wrote in the preface: “[Dr. Crosby] was my teacher, fellow researcher and friend, whose ability I greatly admired and whose friendship I valued highly. ... She had many years of experience correlating neuroanatomy with neurology and neurosurgery in clinical conferences and on rounds. Because of that experience, one could gradually see the clinicians become more anatomically minded and the anatomists more clinically conscious.”

I thought your article about her was excellent. Thank you for reminding everyone about someone who had such a profound influence on so many people. Keep up the good work!
James R. Augustine, Ph.D.
Columbia, South Carolina

CLARIFICATION
The article “Secrets of the Cilia” (fall 2007) featuring Friedhelm Hildebrandt’s research on the cilia implies that my wife and I support this research. We do not support his cilia research; however, we do support his important genetic research on focal segmental glomerular sclerosis (FSGS).

Our son, Matthew, was diagnosed with FSGS at age 1 (he’s now 32) and successfully treated in the U-M Department of Pediatrics and Communicable Diseases. We support this research in hope that more intransigent cases of FSGS can have such an outcome.

Irv Smokler, Ph.D.
Carol Smokler, Ph.D.
Boca Raton, Florida

MORE TO THE STORY
After undergraduate and medical school in Ann Arbor, I did my postgraduate surgical training at Henry Ford Hospital. I too heard of the $25,000 fee Roy Bishop Canfield charged Henry Ford for the treatment of his son Edsel (“Triumph and Tragedy,” fall 2007).

But, as the story unfolds, the fee also included Ford’s demand that Canfield stay in Edsel Ford’s hospital room day and night until discharge. Even with this extraordinary care, Ford was so incensed by the fee that he bought an old World War I Army hospital on West Grand Boulevard in Detroit. The Henry Ford Hospital was patterned after the Mayo Clinic where doctors were salaried and fees were standardized.

Ford’s antipathy apparently went further: He called upon Johns Hopkins University Medical School instead of the University of Michigan and hired the best senior residents as his new core staff. Many of these physicians were still alive and emeritus when I was there, providing a valuable link in medical history with Drs. Halsted and Osler [two of the four founding faculty members of Johns Hopkins Medical School and seminal shapers of medicine in America].
Harvey A. Weiss (M.D. 1961)
Mancos, Colorado

Letters to the editor may be sent to rkrup@umich.edu or mailed to 301 E. Liberty St., Suite 400, Ann Arbor, MI, 48104, and may be edited for clarity or length.
**Ev**en though it’s a common bacterium found in soil and water, most people have never heard of *Burkholderia cepacia*. These hardy microbes are usually harmless, unless you have cystic fibrosis or a lung condition called chronic granulomatosis disease (CMD). For people with these diseases, *Burkholderia* infection is a death sentence.

“Every CF patient knows about fibrosis, but with more CF patients living into adulthood, LiPuma says it’s a growing problem. About 10 percent of adults over age 18 with cystic fibrosis are infected, he says. Even if they avoid *Burkholderia*, CF patients remain vulnerable to other drug-resistant bacterial killers.

LiPuma has been collecting and studying antibiotic-resistant bacteria since the mid-1980s. He says he’s been **In the Lab**

**Burkholderia Beware**

Nanoemulsions target infection deadly to cystic fibrosis patients

**EVEN THOUGH IT’S A COMMON BACTERIUM**

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LiPuma has been collecting and studying antibiotic-resistant bacteria since the mid-1980s. He says he’s been contacted many times over the years by people who believe they’ve found something new to kill *Burkholderia*. Nothing ever has worked.

So it was with some degree of skepticism that LiPuma met with James Baker, M.D., the Ruth Dow Doan Professor of Biologic Nanotechnology, to discuss testing a nanoemulsion called NB-401 against *Burkholderia* and other drug-resistant bacterial pathogens that infect CF patients.

The collaboration between Baker and LiPuma was encouraged by Carroll Haas, president of the Carroll J. Haas Foundation. The foundation, which has supported LiPuma’s research for many years, provided funding that allowed the promising new research to begin.

Nanoemulsions are made from ultra-small droplets of soybean oil and agents that affect surface tension suspended in water. Baker developed the technology and founded an Ann Arbor company called NanoBio Corporation to develop and market it.

“Nano-sized particles interact with bacterial cell membranes in ways that disintegrate and kill the cell,” explains Joyce Sutcliffe, Ph.D., NanoBio’s vice president for research.

LiPuma admits he stacked the deck against NB-401. He searched his repository of 20,000 specimens for the “most drug-resistant bacteria I could find.” LiPuma selected 75 strains of *Burkholderia* and 75 strains of other bacteria found in people with cystic fibrosis. He put the bacteria into test tubes with various concentrations of the nanoemulsion and waited to see what happened.

Much to LiPuma’s surprise, “It killed everything,” he says. “We could dilute it 16-fold and still get very good killing.”

To make it more of a challenge, LiPuma then tested NB-401 on bacteria...
Head and neck cancer used to be most common in older people who drank alcohol, smoked or chewed tobacco. But now physicians are encountering what Thomas Carey, Ph.D., professor of otorhinolaryngology, calls an epidemic of oral head and neck cancers in younger men and women. These tumors of the tonsils and base of the tongue often develop in patients who don’t smoke. They are caused by the sexually transmitted human papillomavirus (HPV) which also causes cervical cancer.

“Our biggest challenge is determining how best to treat patients with tumors that stem from tobacco and alcohol use, as opposed to tumors linked to HPV,” says Frank Worden, M.D., an assistant professor of internal medicine. “We now know they are two different cancers.”

A one-size-fits-all approach to treating cancer doesn’t work. Every patient’s cancer is unique, and survival depends on choosing the most effective therapy for each cancer. This is especially true for cancer of the mouth, tongue and tonsils. These malignant tumors all look alike, but some are much more dangerous than others.

So how are doctors supposed to know what to do? The answer, according to Carey, Worden and other researchers at the Comprehensive Cancer Center, is in the tumor’s biomarkers. In recent research, these scientists found that patients whose advanced head and neck tumors contained specific molecular markers responded well to chemotherapy and radiation. Patients whose tumors had different biomarkers did not respond to conservative treatment. They required more aggressive chemotherapy, in addition to surgery.

One bit of good news from their research, according to Carey, is that HPV-positive tumors usually responded to conservative chemotherapy and radiation. Patients whose tumors contained high levels of the epidermal growth factor receptor called EGFR in combination with other markers were much less likely to survive even after surgery and aggressive treatment.

Says Carey, “The high incidence of HPV-associated cancers also suggests that all adolescents, not just young women, should be vaccinated against this cancer-causing virus.”

—SALLy POBOJEWSKI

HPV Strikes Again

HEAD AND NECK CANCER

In sputum from CF patients, which can neutralize many antibiotics, and on bacteria growing in biofilms. Biofilms are collections of microorganisms that attach to a solid surface and form a protective envelope around the bacteria inside, making them especially resistant to the effects of antibiotics. While it required stronger concentrations of the nanoemulsion to kill the bacteria, “NB-401 passed every test,” LiPuma says.

Currently, LiPuma is testing NB-401’s bacteria-killing effects in mice with Burkholderia. He wants to test the nanoemulsion’s bug-killing ability when it’s aerosolized with saline solution and inhaled into the lungs. If drugs for CF infections can be targeted directly to the site of infection, it may be possible to give higher doses without the side effects and complications caused by high doses of antibiotics given systemically.

Based on the encouraging results from LiPuma’s initial tests of NB-401, NanoBio Corporation is convening an advisory panel of cystic fibrosis experts to evaluate the preliminary data and recommend how the company should proceed. Taking a new drug through the pre-clinical and clinical testing required by the U.S. Food and Drug Administration is expensive and risky. It’s a high-stakes decision for any business, especially a small company like NanoBio, but clinical studies are the only way to know if a new treatment will work.

“Potentially, this could be an important advance for the treatment of cystic fibrosis, but we need to test it in people to know for sure,” says Baker.

—SALLY POBOJEWSKI
Skeptics Retreat  
Cells replace organ function  

DAVID HUMES, M.D., HAS PUT UP WITH  
a lot of skepticism over the years from  
people who didn’t believe that ordinary  
cells — even a few million of them —  
could replace the function of an entire  
complex organ like the human kidney.  

Now, after a decade of work, Humes’  
persistence is paying off. What was  
once just a vague concept of a “bioartificial kidney” is now a reality that is  
saving lives of critically ill patients. A  
biotechnology company, Nephrion, is  
funding the clinical trials required for  
FDA approval to make Humes’ renal  
tubule assist device, or RAD, commer-  
cially available. The company also is  
tackling the challenge of how to mass-  
produce, store and ship a device made  
of living cells.  

“We have proved the concept that  
organ replacement therapy may be  
achievable in acute and chronic organ  
failure,” says Humes, a professor of  
internal medicine. “These are just the  
first glimpses of how we may be able to  
impact the natural history of disease in  
a substantial way.”  

Each year, nearly 200,000 people  
in the United States develop acute  
renal failure — also called acute kidney  
failure. This complex, life-threatening  
disorder occurs when injured kidneys  
shut down. Although some patients can  
recover, the mortality rate for AKI has  
remained between 50 percent and 70  
percent for the past four decades.  

Shock, dehydration, infection, certain  
medications and trauma can destroy  
the kidney’s renal proximal tubule  
cells and trigger acute kidney injury.  

The body can repair renal proximal  
tubule cells and grow new ones, but  
the process takes 10-14 days. During  
this time, patients are vulnerable to a  
vicious spiral of events that can lead to  
multiple organ failure and death.  

Conventional treatment for AKI has  
been dialysis — an extracorporeal  
(outside-the-body) process that filters  
impurities and waste products from  
the blood. But filtering blood isn’t what  
renal proximal tubule cells do. They  
reabsorb vital nutrients and fluids lost  
during filtration, and they have impor-  
tant metabolic, endocrine and anti-  
inflammatory functions that can’t be  
duplicated by an inanimate membrane  
in a kidney dialysis machine.
The renal tubule assist device is a 10-inch-long cylinder containing thousands of hollow fibers lined with millions of live human proximal tubule cells. The cells are grown from progenitor cells harvested from kidneys donated for transplant, but unable to be used. Inside the RAD, the cells seem to carry out the same functions they would in a living kidney.

“The idea behind it was simple,” Humes says. “If the primary problem in AKI is damaged renal proximal tubule cells and you can replace the function of those cells, you can change the patient’s poor prognosis.”

In a recent phase II clinical trial involving 58 critically ill patients with acute kidney injury at 12 medical centers nationwide, the 28-day mortality rate for patients treated with conventional dialysis was 66 percent. Patients treated with the RAD, in addition to dialysis, had a 33 percent mortality rate. Within the first 180 days following therapy, the mortality rate for patients receiving the combination therapy was reduced by about 50 percent.

Humes says his next goal is to miniaturize the RAD and make a portable device which can be worn by people with chronic kidney disease, a condition that affects nearly 17 percent of Americans. Humes already has developed a prototype — about the size of a personal digital assistant — that contains 10 times more RPT cells and can be frozen and stored.

Humes also is exploring how cell therapy technology could be adapted for other types of organ failure.

—KIMBERLEE ROTH AND SALLY POBOJEWSKI

Disparities Not All Black and White

SOMETIMES a research study raises more questions than it answers. Arden Morris, M.D., an assistant professor of surgery and chief of general surgery at the VA Ann Arbor Healthcare System, was surprised by the results of her recent research on racial disparities in survival from rectal cancer.

Morris knew that long-term survival rates for black patients following rectal cancer surgery were 14 percent to 20 percent lower than they were for white patients. Several possible reasons for the difference, including less access to specialists, had been suggested by other researchers, but no one knew for sure.

To find the answer, Morris and her collaborators pulled data from a cancer registry maintained by the National Cancer Institute. They analyzed information on 2,582 whites and 134 blacks ages 66 and older who had been diagnosed and treated surgically for stage II or stage III rectal cancer.

The research team found no significant difference between the percentages of black and white patients who consulted a medical oncologist or radiologist after rectal cancer surgery. But there were big differences in what happened after patients left the physician’s office.

While 70 percent of white patients in the study went on to receive chemotherapy, only 54 percent of black patients did so. Only 74 percent of blacks were treated with radiation therapy, as opposed to 83 percent of whites. Adjuvant chemotherapy and radiation increase survival rates by about 20 percent in patients with rectal cancer, so the fact that fewer black patients receive these therapies is cause for concern.

“Now we know that the initial visit with an oncologist is not the barrier to treatment,” says Morris. “Our next step is to try to understand the human factors that contribute to this discrepancy.”

—SP

MORE ON THE WEB
In the Clinic

One-Two Punch for Heart Health

WHEN IT COMES TO LOWERING BLOOD PRESSURE and the associated risk of heart attack, stroke and other cardiovascular events, it appears that two drugs are definitely better than one. So much better, in fact, that a clinical trial comparing the effectiveness of two-drug regimens in 10,700 patients was stopped ahead of schedule.

The study’s clear winner was a two-drug combination tablet containing an ACE inhibitor and a calcium channel blocker, or CCB. Patients with hypertension who took this combination had 20 percent fewer cardiovascular-related events than volunteers who took an ACE inhibitor combined with a diuretic. Both drug combinations lowered blood pressure to recommended levels in 80 percent of study participants.

“These results demonstrate the superiority of the ACE/CCB combination treatment for reducing cardiovascular morbidity and mortality,” says Kenneth Jamerson, M.D., a professor of internal medicine in the Cardiovascular Center.

Current clinical care guidelines recommend starting hypertension patients on just one drug, usually a diuretic, and adding other drugs only as needed. According to Jamerson, the study results indicate it’s time to change those guidelines. —SP

MORE ON THE WEB ⚫

Cornea Count Increases

MANY PARTS OF THE HUMAN BODY DETERIORATE IN OLD AGE, but the cornea is not one of them. A nationwide study of patients who received corneal transplants found that corneas from older donors worked just as well as those from younger donors.

The cornea is a piece of clear, dome-shaped tissue that covers the front of the eye to protect it and help focus light. In the United States, more than 39,000 donated corneas are transplanted every year.

Kellogg Eye Center was one of 80 sites that participated in the Cornea Donor Study. For five years, researchers followed 1,101 people who received corneal transplants to monitor how long their new corneas continued to function and remain clear.

The transplant success rate was 86 percent. The success rate was the same for corneas from donors ages 12 to 65 as it was for corneas from donors ages 66 to 75, says Alan Sugar, M.D., a professor of ophthalmology and visual sciences at the Kellogg Eye Center.

Based on the study results, the National Eye Institute now recommends that eye banks expand the cornea donor pool to include donors up to 75 years old. Current guidelines limit the pool to people 65 and younger. Opening the donor pool to older people could increase the potential supply of corneas available for transplant by 20 percent to 35 percent, according to the NEI. —SP

MORE ON THE WEB ⚫
Health Briefs

Survival rates for children with acute lymphoblastic leukemia, the most common type of childhood cancer, have never been higher. Thanks to more effective therapies, 87 percent of five-year survivors now live to adulthood. But survival comes with a price: At least half the survivors still struggle with chronic medical conditions — a result of chemotherapy or radiation used to treat the disease. U-M researchers say leukemia survivors, especially those who received radiation or survived a relapse, should have long-term follow-up.

—SP

The Association for the Accreditation of Human Research Protection Programs recently granted full accreditation to the University of Michigan. AAHRPP accreditation indicates that the University meets or exceeds all state and federal regulations for safe and ethical conduct of research with human subjects. U-M currently has nearly 5,000 active research projects involving human participants.

—SP

Clogged carotid arteries in the neck increase the risk of a stroke. But is it safer to remove the built-up plaque with surgery or insert a mesh tube called a stent to open the blocked artery? In a study of high-risk patients, U-M researchers found there’s no difference. Patients treated with surgery were just as likely to have a heart attack, stroke or die within three years as a matched group of patients treated with stents.

—SP

More high school and college students are popping pills and downing energy drinks to stay alert and handle the stress of final exams. Studies have reported the use of stimulant drugs in up to 35 percent of college students and as many as 10 percent of high school students. U-M researchers warn that abuse of stimulants and energy drinks can have serious medical consequences — including anxiety, depression, irritability, high blood pressure and stroke.

—SP

Robert Kelch (M.D. 1967, Residency 1970), U-M executive vice president for medical affairs and CEO of the Health System, and his wife, Jeri, listen as bells in Burton Tower toll for six minutes to honor the six Survival Flight and transplant team members killed in an airplane crash on June 4, 2007. The ceremony was one of several campus events held on June 4 to commemorate the one-year anniversary of the tragedy. “Virtually every day since that horrific moment, I think about our lost team,” Kelch said. “I think about what they stood for, what they achieved and what they sacrificed.”
AN AMBITIOUS PROJECT IS BEING led by the Medical School to convert the University of Michigan’s pre-clinical health teaching materials into online educational resources. The goal of the pilot project is to decrease disparities in access to health education resources in developing countries. Lack of access, and the resulting scarcity of trained health care providers, is at crisis proportions in many parts of the world.

Working closely with the University of Cape Town and the University of Ghana in Africa, as well as with the U-M schools of Public Health, Dentistry and Information, the Medical School is converting existing educational materials into an online format. They will be available not only to partner institutions in Africa, but also to health science schools around the world to help educate health professionals. Other health science schools at Michigan, including nursing, pharmacy, kinesiology and social work, also are supporting the project.

“This is an exciting opportunity for our university,” says James O. Wooliscroft, M.D., dean of the Medical School. “This program provides the opportunity for U-M health science schools and the School of Information to collaborate in an innovative, comprehensive approach to improve educational opportunities for health care providers globally, and to help improve medical education in developing countries.”

Known as Open.Michigan, the pilot is unique from similar projects undertaken at other top universities by virtue of its use of dScribe, a low-cost method developed by the School of Information to convert educational materials into online educational resources. The dScribe method involves close collaboration among students, faculty and staff to assess the quality of resources and to clear intellectual property in course materials. A future effort is expected to include educational materials beyond the health sciences.

Funded largely by a grant from the William and Flora Hewlett Foundation, additional support for the pilot comes from the U-M, the Open Society Institute, and the Foundation for Advancement of International Medical Education and Research.

Open education resources comprise full courses, course materials, modules, textbooks, videos, tests, software and other educational tools, materials or techniques. These resources are in the public domain or have been released under a Creative Commons intellectual property license.

—BRUCE SPIHER AND RICK KRUPINSKI
2008 Entering Class

The paperwork’s been completed, reviewed, evaluated and filed. E-mail exchanges, phone calls, visits and interviews are all part of admissions history now, as are the tough decisions the Medical School and prospective students faced. August 4 marked the beginning of classes for this year’s entering medical students who will graduate with M.D.s as the Class of 2012. The following statistics provide background on the newest members of the U-M Medical School.*

Meanwhile, the process for 2009’s incoming students already is underway, with 2,479 applications received as we went to press; 150 applicants have been offered interviews. The first offer of admission for next year’s class will take place in mid-October. The school’s “transparent” admissions process makes information accessible to applicants every step of the way. This open approach allows those who apply to learn early and often where they stand in their bid to study medicine at Michigan, relieving some of the anxiety in this monumental — and monumentally important — process. —RK

**Admissions Summary**

<table>
<thead>
<tr>
<th>Applicants</th>
<th>5,818</th>
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<tbody>
<tr>
<td>Interviewed</td>
<td>744</td>
</tr>
<tr>
<td>Class Size</td>
<td>170</td>
</tr>
<tr>
<td>Class Average GPA</td>
<td>3.74</td>
</tr>
<tr>
<td>Class Average MCAT</td>
<td>11.63</td>
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**Class Composition**

<table>
<thead>
<tr>
<th>Male</th>
<th>47.6%</th>
</tr>
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<tbody>
<tr>
<td>Female</td>
<td>52.4%</td>
</tr>
<tr>
<td>M.D./Ph.D. students</td>
<td>8</td>
</tr>
<tr>
<td>Average Age</td>
<td>23.2 (Range 20–35)</td>
</tr>
</tbody>
</table>

**Class Geography**

<table>
<thead>
<tr>
<th>Michigan residents</th>
<th>78 (45.9%)</th>
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</thead>
<tbody>
<tr>
<td>Non-residents</td>
<td>92 (54.1%)</td>
</tr>
<tr>
<td>States represented</td>
<td>30</td>
</tr>
</tbody>
</table>

| California | 14 |
| Illinois   | 10 |
| Massachusetts | 9 |
| New York   | 7  |
| Florida    | 6  |
| Pennsylvania | 5 |

**Most Represented Undergraduate Schools**

<table>
<thead>
<tr>
<th>Michigan Institutions Represented</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-M Students</td>
<td>43</td>
</tr>
<tr>
<td>Harvard</td>
<td>12</td>
</tr>
<tr>
<td>Stanford</td>
<td>6</td>
</tr>
<tr>
<td>Johns Hopkins</td>
<td>5</td>
</tr>
</tbody>
</table>

**Undergraduate Field of Study**

<table>
<thead>
<tr>
<th>Biology and Biomedical</th>
<th>46.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry/Biochemistry</td>
<td>12.4%</td>
</tr>
<tr>
<td>Humanities</td>
<td>3.6%</td>
</tr>
<tr>
<td>Engineering</td>
<td>4.2%</td>
</tr>
<tr>
<td>Other Science</td>
<td>22.6%</td>
</tr>
<tr>
<td>Business/Economics</td>
<td>4.2%</td>
</tr>
<tr>
<td>Other</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

*As of July 29, 2008

Medical Education Day annually highlights educational innovations throughout the U-M Medical School. At this year’s event, held June 10 at the Towsley Center, the plenary speaker was William C. McGaghie, Ph.D., professor and associate director of the Office of Medical Education and Faculty Development for the Feinberg School of Medicine at Northwestern University. Inter-disciplinary health science education was the topic of the plenary session; a panel discussion followed McGaghie’s remarks.
Childhood Vaccines: Protection or Peril?

Parents who fear a link between childhood vaccinations and autism long have debated with physicians, public health advocates and government health agencies who cite numerous studies showing no connection. Gary L. Freed, M.D., M.P.H. — the Percy J. Murphy, M.D., and Mary C. Murphy, R.N., Professor of Pediatrics for Child Health Delivery — weighs in on this heated national debate.

Q: We hear so much about autism today. Is it more common than it used to be?
A: We don’t know with certainty. There are questions about whether criteria for diagnosing autism have expanded such that more children now receive that diagnosis. There’s also a greater appreciation for what’s known as the autism spectrum of disorders, so that many autism-like conditions are looked at and classified together. In many studies of the incidence or prevalence of autism, we begin to see all of these children included in the total, which may create the impression of greater numbers of children when, in fact, we may just be calling them something different today than we called them previously.

Q: Why are some children more severely affected than others?
A: We don’t really know because we don’t know the true cause of autism. The disorders within the autism spectrum likely are not all the same thing, and they’re likely not all from the same cause.

Q: What is the status of research into associations between vaccines and the autism spectrum of disorders?
A: All credible evidence has shown absolutely no association between any vaccine and autism. There also was, for a time, concern about thimerasol, a mercury-containing preservative in vaccines. Earlier in this decade, thimerasol was taken out of all vaccines in the U.S. except for some viral influenza vaccines. However, we have not seen autism rates fall as we’d expect if in fact autism was due to this preservative. Further, thimerasol had been removed from vaccines in Europe a decade prior, yet the reported rates of autism there still increased in a fashion similar to those in the U.S.

Q: If studies are so definitive, why does the debate persist?
A: It’s important for parents to be concerned for their children, and it’s every parent’s right to understand health care recommendations made for their children. They are entitled to ask questions about immunizations and any other aspect of their child’s health care, and it’s the responsibility of health care providers to give parents informed and reasoned answers. Immunizations prevent life-threatening and devastating illnesses for children. We’re fortunate to live in a time when we don’t have to worry about our children contracting diseases that our grandparents feared for their children. Certain diseases, such as diphtheria and polio, have been eradicated as a result of immunizations, and each new vaccine means more diseases that our children don’t have to get. I cared for children who died of measles during the last epidemic in this country in the late 1980s — sadly, those deaths were all preventable by vaccines.
ALL THESE YEARS LATER, there are several versions of how, in her early 50s, Elizabeth Crosby, Ph.D., world-renowned neuroanatomist, unmarried and having little experience with children, became the mother of Kathleen Rosena Robb, a vivacious Scottish 14-year-old with red curls. One account is that the girl’s father, an impoverished gardener in Aberdeen where Crosby was spending a year teaching, begged Crosby to take Kathleen far from the dangers of World War II. Another is that Crosby became friends with the Robb family and connected deeply with the child. Still another is that Kathleen climbed a tree in her backyard, which adjoined Crosby’s, and fell over the old stone wall and into Crosby’s heart and life.

All may be true or partly true, but in any event, in 1940, Kathleen left Scotland to live in Ann Arbor with Crosby. They settled into a simple apartment on Elizabeth Street.

Crosby was, by now, a full professor in the Medical School — the first woman to achieve that rank. Her academic brilliance and dedication to her work were beyond dispute, but it was her deferent, non-threatening personality that made it possible for the powerful men she worked with to accept and even champion this “little lady” (as some called her) in their midst.

Behind the façade of a tiny, studious, middle-aged spinster, however, was a huge heart filled with love and compassion, and a desire to fill her life with meaning and experiences beyond the laboratory. Adopting Kathleen — and taking on the care and education of a young Detroit girl, Suzanne McCotter, a few years later — was an expression of that.

With no brothers and sisters, and with her parents now gone, Crosby forged relationships that sustained her. Her first major companion seems to have been Dorothea Paquette. Born just eight days apart, Crosby and Paquette grew up together in Petersburg, Michigan. Even as she worked at the U-M, Crosby bought a brick, Tudor-style home in her hometown, with the intention of eventually retiring there with Paquette, a local schoolteacher. When Paquette was killed in a car accident in Petersburg in June of 1936 — just weeks after Crosby was named professor in the Medical School — her obituary listed Crosby as a survivor.

Crosby shared the later years of her life with Tryphena Humphrey (M.D. 1931, Ph.D. 1936), whom she called “Trap.” Originally a protégé of Crosby, who oversaw her dissertation, Humphrey went on to a 28-year collaboration with Davenport Hooker, M.D., at the University of Pittsburgh.

ON THE LAST DAY OF EACH NEUROANATOMY COURSE, STUDENTS SPRANG TO THEIR FEET, APPLAUDING, AND PRESENTED CrosBY WITH A BOUQUET OF ROSES, HER FAVORITE FLOWER.
Crosby returned to Michigan in 1981 and eventually moved into Kathleen’s home in Dexter. Her son-in-law drove her to the lab every day. On July 28, 1983, at the age of 94, Crosby died at home with Kathleen at her side. On her chest was a paper she’d been working on; in her hand was a pen.

The sheer volume of Crosby’s published work, and the awards, accolades and lectures, attest to an almost impossibly productive career. And she was an extraordinary teacher of neuroanatomy. On the last day of each course, students sprang to their feet, applauding, and presented her with a bouquet of roses, her favorite flower.

Crosby’s retirement in 1958 did not slow her pace; in fact, it marked the beginning of a second career in which she applied her encyclopedic knowledge of the nervous system to neurosurgery. She worked alongside Edgar Kahn (M.D. 1924, Residency 1926) and Richard C. Schneider, M.D. (Residency 1948), and others in the Department of Neurosurgery, often accompanying them into the operating room to consult on difficult cases.

In 1963, at the age of 75, Crosby joined the faculty of the University of Alabama, in Birmingham, where Humphrey was teaching. They bought a house together. And for the next 18 years, Crosby commuted, by plane, back to Ann Arbor for two weeks at a time, staying in a room at the Michigan League, continuing her work. She suffered from osteoporosis and often used crutches — and was known to wave one, in good humor, at anyone who tried to assist her.

Throughout this time, Crosby maintained close ties with Kathleen, now married with five children of her own, and with Suzanne McCotter.

Kelly Palmer, one of Kathleen’s children, is a retired paramedic who lives in Ann Arbor and remembers his “Auntie” — as he and his siblings called her — with great fondness.

“Without question, she got great satisfaction from sitting at the house with all of us, her family,” he says. “She took us to the League to eat at the restaurant there. She’d taught so many students. They’d come up to us and ask her, ‘Do you remember me?’ and she never failed to tell them she did.”

Tryphena Humphrey died in 1971. In 1980, Crosby traveled to Washington, D.C., to receive the National Medal of Science from President Jimmy Carter; she made the President hold her crutches as a photographer snapped pictures.

Crosby returned to Michigan in 1981 and eventually moved into Kathleen’s home in Dexter. Her son-in-law drove her to the lab every day. On July 28, 1983, at the age of 94, Crosby died at home with Kathleen at her side. On her chest was a paper she’d been working on; in her hand was a pen. [M]
FOUR STUDENTS, FOUR YEARS, FOUR FUTURE PHYSICIANS

PROFILES BY JEFF MORTIMER
INTRODUCTION BY RICK KRUPINSKI

Who will wear the white coats of the future?

Meet Shaun Patel, Fasika Aberra, Ron Romero and Lindsay Brown: four students just beginning their first year of study at the University of Michigan Medical School. We’ll follow these enthusiastic members of the Class of 2012 for the next four years along their journeys to become doctors of medicine.

Each summer, we’ll check in on our foursome to see what the past year has been like: their experiences, their challenges and triumphs, their feelings and reflections — even what they did on Saturday nights. In this way, we’ll chronicle medical study and student life in Ann Arbor in the early 21st century, and learn how studying medicine has changed in light of stunning new technologies, burgeoning volumes of data from new fields of research, and the very latest patient treatment approaches.

Year-round, these students will author blogs, accessible on the magazine’s Web site, to keep us tied into the ongoing drama — and day-to-day humdrum — of life as a medical student at Michigan. Through their eyes and experiences, we all in a sense shall have the opportunity to attend medical school. Through their idealism, goals and achievements, we’ll learn what attaining an M.D. and entering the noble profession of medicine means today — to them, to us and to the world. Through the sights they set on the future, we’ll gain a truer sense of what medicine will be like in the years and decades to come.
SHAUN PATEL is entering medical school at the age of 20 in part because he skipped third and fourth grades. Being two years younger than everyone else in your class can be a challenge, to say the least, but he turned those would-be lemons into lemonade.

“When you’re that young, small differences in age are sort of magnified,” Patel says, “but it was also a positive thing because I quickly learned to relate to people who weren’t in my age range. I had friends my own age and I also had the chance to meet people who were older than me. I was able to transition smoothly. I played three sports in high school, so it wasn’t a big deal at all.”

The seeds of his passion for achievement — one might almost say his passion for being passionate — were clearly sown early. “My main focus is trying to do my best in all I do and trying to be a leader in all the fields I engage in,” he says.

During the time he was earning his B.S. in biology, he created and chaired the shadowing program of the U-M chapter of Alpha Epsilon Delta, a pre-medical honor society, which he also served as president; co-founded and served as president of the U-M chapter of Students for Organ Donation; was associate editor of the Journal of Young Investigators, an undergraduate, peer-reviewed online research journal sponsored by the National Science Foundation and Science magazine; participated in research projects in the Department of Surgery and at the National Institutes of Health; did extensive tutoring, and shadowed nine different physicians for a total of 125 hours.

“I’m extremely passionate about the causes I care about,” he says, “and I hope to continue like that, becoming a physician the same way I’ve become a graduate of the University of Michigan.

“I was always interested in the science fields but not absolutely certain I wanted to do medicine. I figured since it’s an extremely long process to actually become a doctor, the best thing you could do is understand what the career entails before you embark on such a long journey. That’s what I set out to do, and now I’m completely certain that’s what my calling is. The culmination of all these experiences really solidified my decision to go into medicine.”

When he had to make the decision about which medical school to attend, it came down to Michigan and the University of California, Los Angeles. For a lifelong Michigan-der, the latter’s climate was a strong card. “The weather at UCLA was really drawing me,” he says. Michigan’s hand, however, was even stronger.

“There were plenty of reasons I ended up choosing Michigan,” Patel says, “but probably the most important is the sense of family and togetherness that was displayed here. The Medical School admissions office did a tremendous job of being completely organized and thorough through the whole process. All the faculty seemed very approachable. It seemed like a great environment to study medicine in for four years — and you can’t turn down an institution with a fantastic football program.”

His passion for health and fitness is just as intense as all his others. “I’m a huge sports fan and I love being out-

NAME: Shaun Prakash Patel
BORN: Dearborn, Michigan
RESIDENCE: Brownstown, Michigan
AGE: 20
UNDERGRADUATE MAJOR: Biology
NON-ACADEMIC INTERESTS: Community service, football, hockey, tennis, fitness
doors,” he says. “Whenever I have spare time, I’m playing sports or in the gym. My number one team is the Red Wings, so I’m still on a high from the Stanley Cup!”

Patel was also active as an undergraduate in the Indian American Student Association, and he says his spiritual heritage is an integral part of his ambition to help others. “As a Hindu, one of our main beliefs is the concept of altruism and always putting others in the forefront,” he says. “Being a physician, that’s what you need to do, put the patient first. It’s these very same things that I developed as a child being raised in a Hindu family that I can give to the community in my career as a physician.”

While no one at this stage in life can accurately predict where their path will lead, Patel has set his sights on a classic tripartite career.

“Being an academic physician is perfect for me,” according to Patel, “because I not only have an interest in taking care of other people’s health, but it also allows me to utilize my passion for medical research, and my teaching and tutoring experiences. I can integrate all three things: patient care, research and teaching. To become a leader in the field is sort of my long-term goal. That’s another reason I chose Michigan, because they’re a leader in all three of those areas.”

“I’m extremely passionate about the causes I care about, and I hope to continue like that, becoming a physician the same way I’ve become a graduate of the University of Michigan.”
As a child growing up in Ethiopia, FASIKA ABERRA saw unmet needs everywhere.

Her mother suffered from what Aberra eventually recognized as clinical depression, but there were only a handful of psychiatrists in the entire country. The standard “treatment” for her condition was exorcism. Rejecting that option, Aberra would rub her mother’s feet, hold her hands and read verses to her from the Bible.

When she was in junior high, she went to see a neighbor every week to have her hair braided. “She was the only one who knew how to do it,” Aberra says. “She had heart problems and used to suffer a lot, then she eventually passed away right when I started high school. I kind of wanted to be a physician even before then, but once I saw what happened to her, I was really heartbroken.”
She realized that her country’s paucity of medical resources was the root cause of her heartbreaks, which meant that the path she wanted to follow would take her across an ocean.

The images on television didn’t help. “I remember seeing all these kids dying of heart diseases because they didn’t have cardiovascular hospitals in Ethiopia that provided the right kind of care,” she says. “That and a lot of other problems in the community were breaking my heart, too.”

She longed to meet those needs. She longed to heal others. And she realized that her country’s paucity of medical resources was the root cause of her heartbreaks, which meant that the path she wanted to follow would take her across an ocean.

Aberra was accepted at several American colleges that her parents couldn’t afford, so she came to live with an aunt in Pontiac, Michigan, the only member of her family in the United States, and attended an extra year of high school so she could qualify for financial aid as a resident.

“That’s when I applied to Michigan,” she says. But then some of her test scores were delayed in transit, her aunt moved to Maryland, and she wound up spending a semester in a community college there before finally landing in Ann Arbor to pursue a bachelor’s degree in psychobiology at the U-M.

She’s candid about the fact that not having to move again was a factor in choosing to stay at Michigan for medical school. “I already went through a lot of changes in my life,” she says. But she’s quick to add that staying put is not the major reason that “Michigan’s a great place to be. It’s got a lot of resources, very good people, and it’s a nurturing environment for educational experiences as well as personal experiences, social life and cultural diversity.”

Aberra contributes to that diversity. While she passed on exorcism for her mother, she’s nonetheless keenly attuned to the dimensions of medicine that lie beyond the physical.

“When you say somebody’s sick, there are two parts to it,” she says. “There is the biological part of what’s going on in the person’s body, and then the feelings and emotions and all the other non-physical things that are attached to being sick. The biological problem might not be as serious as the emotional trauma that comes with it.”

Her medical experiences so far also reveal diversity. She spent a year working on a research project on the detection of pediatric kidney diseases. As part of the national Summer Medical and Dental Education Program, she shadowed doctors in a range of specialties for six weeks at Case Western Reserve University. “I spent a day with a surgeon,” she says, “and I got to watch two surgeries, which was like the coolest thing.”

And she shadowed a U-M obstetrician and gynecologist during her junior and senior years. “Each time she met a new patient, she was quick to connect on a personal level,” Aberra says. “Her patience and willingness to listen showed me the compassion that one ought to have in order to be a successful physician.”

Exactly what form that will take is still an open question. “I haven’t really made up my mind yet,” she says. “If I don’t end up becoming a mental health specialist, I still want to do some work with mental health issues, especially in developing countries where it’s not as recognized as it is here.”

Whatever her specialty, she’s as clear as ever about her path. She wants to practice and do academic medicine and research in the U.S., then get a master’s in public health, either in epidemiology or international health, and, she says, “be a health care worker in underserved countries, places where I can really be useful.”

It’s hard to imagine a place where she wouldn’t be. Her core principles travel well: “In order for the healing process to be complete,” she says, “the person has to be healed emotionally as well as physically. Doctors in training, like we are, should never forget that.”
By the time he reached his late 20s, RON ROMERO had already been a consultant at a public financial advisory firm, an assistant at a community medical clinic, a legal assistant at an international corporate law firm, and the first in his family to go to college (Harvard, no less).

Then, as he and his wife were returning to their San Francisco home after a cross-country road trip to visit his mother in Miami, he made up his mind.

“We were somewhere in Arizona,” he recalls. “I was driving and I said, ‘You know what? I'm tired of being afraid of it. I'm tired of not making a choice that seems perfect for me because I’m scared of the financial and personal challenge. I’m just going to do it. I’m going to become a doctor.’ ”

It was, he says, a monkey off his back. “After I made that decision, I felt the most incredible sense of freedom and lightness.” And after the U-M Medical School offered him a full scholarship and his wife, Jennifer Price, a substantial partial scholarship, he felt even more liberated.

“It was just the most freeing experience I could ever imagine,” Romero says. “You can’t quantify how amazing that is, for allowing us to truly practice how we want to practice, and not have the heavy cloud of debt. I want to work with the underserved, and the financial freedom will allow me to go into that head-first.”

Serving the underserved has been the leitmotif underlying all his pursuits. The financial firm he worked for helped cities and counties issue bonds for school construction, sanitation projects and low-income housing. The clinic was the primary provider of medical services to uninsured patients in its area. And he took the law firm job right out of college to help support his mother, whom he cites as his greatest inspiration.

Romero and his mother moved to Miami from Colombia when he was 18 months old. She spoke no English and took whatever jobs she could to support them.

“Despite having to clean bathrooms and mop floors, she always had a positive attitude — that there were no limits to what we could do despite our economic circumstances,” he says. “She got up every day with a smile on her face and positive energy. She gave me the model I still use to show me that if I worked hard and always did my best and was kind to people, I’d be able to accomplish anything.”

Romero resolved early on “to figure out how I could contribute to the world in a positive way. For the longest time, I didn’t know what that was,” he says. “It took a lot of soul-searching and a lot of time doing other activities and jobs where I really got to see all the different ways I could make an impact before I finally got to choose the one that was right for me.”

While his involvement in public finance was undeniably beneficial to society, “it was very much detached from the actual experience of the people we were helping,” he says. “I was in my office punching numbers on a computer. I really wanted something where I could help people in a

NAME: Ronald Romero
BORN: Bogota, Colombia
RESIDENCE: Millbrae, California
AGE: 29
UNDERGRADUATE SCHOOL: Harvard University, 2001
UNDERGRADUATE MAJOR: Psychology
NON-ACADEMIC INTERESTS: Community service, water polo, basketball, football, soccer
much more personal way that allowed me to experience who they were as people. But what I was doing was very stable and somewhat fulfilling, and I wouldn’t have been brave enough to leave that to chase my dream without the support of my wife."

They had all but made up their minds to attend the University of California, San Francisco, for medical school. After all, that area had been their home for five years. But, in the end, it was their experience with Michigan that won out.

“There was something truly special about Michigan that we had always felt, even from our interview days,” Romero says. “There was a real sense of family and community, both in the school and the city of Ann Arbor. That sense of family makes you feel like you’re one of their own and that they’ll take care of you. And then financially, they offered more than any other school and more than we could have imagined when we started this process. You can’t beat a full scholarship at an incredible place like Michigan.”

Lest he appear one-dimensional, however admirable that dimension may be, Romero confesses to something else that can’t be beat. “I’m a big sports fan,” he says. “Being able to go to Michigan Stadium and cheer the football team is another reason Michigan is very exciting for me.”

Romero resolved early on “to figure out how I could contribute to the world in a positive way. For the longest time, I didn’t know what that was.”
If such a thing is possible, **LINDSAY KENNEDY BROWN** has almost too many interests.

When she began her undergraduate career at Johns Hopkins University, she envisioned a double major in chemistry and English “because growing up I loved science and I loved writing,” she says. Then a course in the epidemiology of violence turned her head. “I took it almost by accident as a freshman,” says Brown. “To be perfectly honest, public health wasn’t something I knew about before getting to Hopkins, but it seemed to be a major where I could explore so many of the interests I have. I could take all the science and pre-med courses but also express my interest in English and history and social science.”

She took classes in disaster response, emergency food and nutrition relief, and refugee health care. She earned a certificate in humanitarian assistance. She served as co-editor-in-chief of *Epidemic Proportions*, the Hopkins undergraduate

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**NAME:** Lindsay Kennedy Brown  
**BORN:** Salem, Massachusetts  
**RESIDENCE:** Marblehead, Massachusetts  
**AGE:** 22  
**UNDERGRADUATE SCHOOL:**  
Johns Hopkins University, 2008  
**UNDERGRADUATE MAJOR:** Public health  
**NON-ACADEMIC INTERESTS:**  
Community service, tutoring, writing, swimming
Brown and her co-editor overhauled its design and editorial process and produced two issues instead of the standard one per year.

“It opened my eyes to what’s going on in the world,” she says. “I became aware of so many possibilities that I didn’t know existed. I feel so fortunate that I ended up as a public health major. Now it’s something I’m positive I’ll pursue for the rest of my life.”

Brown had been positive she wanted to be a physician since she was 6 years old, when her mother was diagnosed with breast cancer. Given six months to live, her mother survived for 10 years.

“I’m very grateful for that, obviously,” she says. “She had a chance to raise my sister and me and inspire us to live life to the fullest. I think things fall into place in unexpected ways.”

For example, the inadvertent inspiration of her mother’s illness: “She would take my sister and me to doctor appointments and it became a normal thing,” says Brown. “I really got a perspective on the influence physicians have, not only on the patient’s life but the whole family. When I went to college, I got involved with research and volunteer work and medical shadowing, and I couldn’t see myself doing anything else.”

The range of her interests notwithstanding, the disease that claimed her mother’s life has stayed, and will remain, in her crosshairs.

Needless to say, numerous decisions await her, but Brown is in no hurry to find a congenial box.

“I certainly hope I can find ways to merge my passions for writing, medicine and public health in the years to come,” she says. “I haven’t decided about a master’s in public health, but I’m really excited that Michigan has a fantastic school of public health and I’ll have the opportunity to take classes and work with researchers there even if I don’t get a degree.

“And I definitely see myself staying involved with breast cancer, although I’m not sure if that’s going to be on the oncology side or the surgery side. I really don’t know where the next four years are going to take me. I’m going to keep an open mind. There’s so much I don’t know yet, and I don’t want to close myself off to any possibilities.”

Based on her record so far, that hardly seems likely.
It started one morning several months ago when you woke up with some stiff joints in the fingers of your left hand. Hardly noticeable, really, and easily explained as the effects of overwork or aging. But the soreness and swelling never went away, and now the same joints in your right hand are stiff and swollen. You feel tired and achy all the time, especially first thing in the morning.

So you make an appointment with your doctor who orders some blood tests. Three days later, you get a phone call. It could be rheumatoid arthritis, says the doctor, who wants you to come in for more tests. It’s a chronic, progressive disease that can be treated with powerful medications, but not cured. If your disease proves difficult to treat, you may need injections of drugs that cost between $15,000 and $40,000 per year. You’ll probably have to take them for the rest of your life.
Better Therapies, Basic Unknowns

Rheumatoid arthritis is an unpredictable and mysterious disease. It strikes nearly twice as many women as men, and is usually diagnosed between the ages of 30 and 65. The disease can affect nearly every joint in the body or just a few. Symptoms can be mild or severe. Some patients have long periods of remission; others progressively get worse.

Because RA is difficult to diagnose and affects people in different ways, no one knows for sure how many people have it. Some studies have estimated that nearly 1 percent of the world’s adult population is living with rheumatoid arthritis, although it is more common in some areas than others.

The good news is that people with RA are much better off today than they used to be. New therapies developed over the last decade can reduce symptoms and slow progressive joint damage for about 90 percent of people with the disease.

But in spite of years of research, scientists still have no definitive answers for fundamental questions like: What causes rheumatoid arthritis? Why does the immune system target certain joints and not others? What triggers the onset of symptoms? Why are some people affected more severely than others?

Healthy joints are surrounded by a fluid-filled sac lined with a thin membrane called the synovium. The membrane contains specialized cells that nourish and lubricate joints to keep them moving smoothly. But in rheumatoid arthritis, something triggers a malevolent transformation in the synovium. It turns into a hornet’s nest of angry immune cells primed to attack and destroy healthy joint tissue.

Fed by an overgrowth of new blood vessels, the inflamed synovium starts growing like a tumor, pumping out destructive enzymes and invading the surrounding cartilage and bone. The joint becomes swollen, red and feels warm — classic signs of the body’s inflammatory response to infection or injury. But instead of targeting an invading microbe or dying tissue, the immune system is attacking the patient’s own body.

Rheumatoid arthritis is not the same as osteoarthritis, which causes the pain and degenerative changes in hips and knees that often come with aging or trauma. In osteoarthritis, the cartilage fails mechanically and there’s an overgrowth of bone. “There can be some inflammation in the cartilage and the synovium, but it’s much milder than in RA,” explains David A. Fox, M.D., a professor of internal medicine who treats patients with RA and studies immune cells involved in one of the most visible effects of the disease — chronic inflammation. “In rheumatoid arthritis, the bone and cartilage are destroyed and inflammation can affect the entire body.”

One of the earliest diagnostic tests for RA was for a substance called rheumatoid factor, an antibody found in the blood of about 75 percent of people with the disease. The problem with rheumatoid factor is that many patients who don’t have RA — those with chronic infections, autoimmune diseases or even some healthy elderly people — also have the antibody. Diagnosing RA became easier five years ago when a new, more specific test for a different antibody called anti-CCP (cyclic citrullinated peptide) became available.

The disease actually begins long before any physical changes develop in the joints. “Rheumatoid factor and anti-CCP antibodies have been found in stored serum samples from people who donated blood years before they had any signs of rheumatoid arthritis,” Fox says.

Like most chronic diseases, rheumatoid arthritis is the result of complex interactions between multiple genes and environmental factors. It’s a progressive disease that can be treated with powerful medications, but not cured.
studies of many infectious organisms, however, scientists have been unable to confirm a connection.

There’s nothing you can do about your genes, but Fox says there is something you can do to reduce your chances of getting rheumatoid arthritis: Don’t smoke.

“Studies in several countries have confirmed that the risk of getting RA is two to three times higher if you smoke, compared to people who don’t smoke with all other factors being equal,” Fox says.

BRIDGING THE MORTALITY GAP

Years ago, people with rheumatoid arthritis usually became totally disabled after five to 10 years, and had a shortened life expectancy. Anti-inflammatory drugs, steroids and a chemotherapy drug called methotrexate reduced pain and swelling. But for about half of those with RA, these drugs did not stop the progressive destruction of affected joints.

A big step forward occurred in 1998 when a new type of therapy for RA was approved by the U.S. Food and Drug Administration. Called biologics, these drugs are designed to mimic the effects of natural substances produced by the human immune system. The first biologics were etanercept (Enbrel), infliximab (Remicade), and adalimumab (Humira). They prevent runaway inflammation in joints by blocking a protein called tumor necrosis factor-alpha that triggers the inflammatory process. Since then, several new biologic agents targeted at other immune system proteins have been approved for treatment of rheumatoid arthritis.

“These new drugs dramatically changed the outcome of the disease,” says Mariana Kaplan, M.D. (Residency 1998), an assistant professor of internal medicine.

Unlike traditional therapies, biologics do more than just treat symptoms of the disease. In most patients, they can actually prevent joint damage — or at least slow it down. Physicians still start most patients on traditional treatments,
but if active disease persists, they will try to nip joint damage in the bud by prescribing biologics as part of a comprehensive treatment strategy.

Biologic therapies are expensive. But biologics gave RA patients hope that they could live a normal lifespan with minimal pain and disability. Unfortunately, this hope didn’t last long. Researchers found that people with rheumatoid arthritis were still dying prematurely. They were just dying of something else.

“Today, the No. 1 cause of death in RA patients is atherosclerosis [clogged arteries] from cardiovascular disease,” Kaplan says. “Even though we’re now much better at treating RA, the mortality gap between patients and the general population is widening. We think the development of premature cardiovascular disease is related to the ongoing inflammation that occurs with rheumatoid arthritis, but the exact mechanisms have not been established.”

The increased risk of cardiovascular disease starts early — long before joint inflammation develops. People who have just been diagnosed with rheumatoid arthritis already may show signs of vascular damage, according to Kaplan. Even more alarming, people with RA are less likely to have the classic warning signs of a heart attack or heart failure, like chest pain, so they may not realize they have cardiovascular disease.

An additional reason for concern, according to Kaplan, is that some physicians may not realize their RA patients are at high risk for cardiovascular disease. She emphasizes that all physicians who treat rheumatoid arthritis patients must watch for cardiovascular risk factors like smoking, high blood pressure, high cholesterol and obesity, and treat them aggressively and early. Even though smoking is associated with RA, it doesn’t account for all of the increased risk of heart disease in patients with rheumatoid arthritis.

“I think physicians are not as aware as they should be about this,” Kaplan says. “Mild cases of RA are often treated initially...
by primary care physicians, who may not refer the patient to a rheumatologist until later on. By then, the cardiovascular damage may already have occurred.”

THE EPITOPE CONNECTION

While U-M physician-scientists focus on the most effective ways to treat patients with rheumatoid arthritis, they also are trying to figure out what causes the disease in the first place.

Most immunologists believe RA is an autoimmune disease like lupus or type 1 diabetes. In autoimmune diseases, the immune system mistakenly reacts to something in the body as if it were an antigen — a foreign substance flagged by

an HLA gene called HLA-DR. In the language of science, it’s called the shared epitope, and it is the most significant genetic risk factor for rheumatoid arthritis.

How could such a tiny difference — just five little amino acids — cause the immune system to shift into overdrive and turn normal, nurturing synovial cells into crazed, out-of-control killers?

To find the answer, Alisa Koch, M.D., the Frederick G.L. Huetwell and William D. Robinson Professor of Rheumatology, is bringing together a team of U-M scientists who study different aspects of the RA puzzle. Koch focuses on angiogenesis, the development of new capillaries from existing blood vessels. Working with Holoshitz, she hopes to learn whether signals from the shared epitope can control angiogenesis.

“In rheumatoid arthritis, we think the large inflamed synovial tissue mass that invades cartilage and bone is the result of an overgrowth of blood vessels,” Koch says. If she could stop the growth of excess blood vessels in synovial tissue, Koch thinks she might be able to shut off the incoming supply of immune cells and signaling molecules that drive inflammation and bone erosion in joints.

Koch’s work with angiogenesis is connected to David Fox’s research with a recently identified type of immune system T cell known as Th17. These cells make a cytokine, or signaling protein, that stimulates the growth of blood vessels and intensifies inflammation. Researchers in Fox’s lab have found intriguing evidence suggesting that Th17 cells play a major role in the development of rheumatoid arthritis and other diseases.

By pooling their expertise and looking for connections among their different areas of research, U-M scientists hope to find answers to questions that have baffled researchers since rheumatoid arthritis was first identified early in the 1800s. Millions of people who must cope every day with the pain, disability and expense of the disease are hoping they will succeed. [M]
n the age of computerized design, Douglas Compton — a principal architect and senior vice president of HKS Inc., of Dallas, Texas, one of the leading architecture firms in the U.S. — still likes to draw with pencil and paper. He uses a flimsy vellum called trash paper.

Compton, a quiet Texan in his mid-50s, had been appointed lead architect for the new C.S. Mott Children’s Hospital and Women’s Hospital. Early in 2005, the time had come to draw the structure’s essential shape.

His first aim as a designer of hospitals is to maximize patient health and safety. Then, he says, “I go beyond functional to aesthetic — to make sure people inside have good things to look at and that it looks good from the outside.”

The hospital was to be very big. Compton didn’t want it to look daunting. So, on a sheet of trash paper, his pencil traced two sweeping curves.

He moved to his computer. In a design program called SketchUp, he converted the curved shapes he had created into graceful three-dimensional forms. Then, stack upon stack, he began to draw patient towers with curved facades facing southeast. “I think those curved forms help de-institutionalize it some, to where it’s not so rigid a building,” Compton says.

SketchUp showed that natural light would flow into every patient room and into long, curved corridors on the lower floors. And there would be long vistas over Nichols Arboretum, the lush, treed expanse which begins just across the street.

Building on that form, Compton and his colleagues at HKS worked through dozens of meetings with hospital staff. Floor by floor, the planners talked over the layouts of departments and how one department would connect to another.

“We created the plans,” Compton says, “and they kept getting refined and refined and refined. It’s kind of like an incredible puzzle. You move one piece and it ripples through the entire order of things.”
he sweep of Compton’s pencil may have given the new Mott Children’s Hospital and Women’s Hospital — now under construction — its signature form, but that was only one small moment in an extraordinary process of planning and design. It has drawn upon the collective thinking of some 450 University of Michigan faculty, staff and students; dozens of architects, designers and engineers; and more than 40 patient families and other members of the community.

The planning had begun two years earlier, in 2003, with the widespread recognition, as Chris J. Dickinson, M.D., chief of pediatric gastroenterology, put it, that “We just need a better space.” For years, the medical staff had been making do in facilities designed in the 1940s and ’60s. But so much had changed in children’s and women’s medicine that new quarters had become essential.

Early on, architects held “visioning sessions” with staff, students, patients, patients’ parents, and people from around Ann Arbor. They asked: How do you want this hospital to look? When people come inside, how do you want them to feel? And they requested answers in the form of photographs. So Patricia Warner, Mott’s chief administrative officer, drove to Sam’s Club and bought 250 disposable cameras for the visioning groups. They came back with thousands of photos symbolizing concepts such as comfort, calm, tranquility, spirit and environment. Architects sorted the photos, chose a bunch, and pasted them into eight big collages filled with images of trees, waterways, forest paths, flowers, reeds and woods.

Those images were very much in sync with what Timothy R.B. Johnson, M.D., chair of obstetrics and gynecology, had been saying to hospital leaders. As often as he can, Johnson walks to work through Nichols Arboretum, winding his way along twisting valleys carved by glaciers some 18,000 years ago.

“I’m an obstetrician,” he says. “I don’t know much about trees and glades and prairies and different kinds of ecosystems. But I sure do love to walk through the Arb — to meditate and just think about things.”
Discussion of several possible sites led to an agreement: The new Mott Children’s Hospital and Women’s Hospital would be built next to the old Mott, on East Medical Center Drive. Johnson liked that site. He’d heard people say hospitals should have special spaces for contemplation and healing, inside and out. He agreed and thought: How many hospitals have 140 acres of space like Nichols Arboretum right across the street?

“It seemed to me that making the Arb part of this hospital and this hospital part of the Arb was just a natural evolution,” he said. He didn’t know what form that connection might take, but he was sure the idea made sense — and he said so at every opportunity.

Johnson’s idea, supplemented by the images supplied by the visioning groups, led Compton to face those curving walls of windows toward the Arboretum. It also deeply influenced the thinking of John O’Rear, HKS’s lead interior designer for the project.

O’Rear does a lot of his best thinking on his back porch on Saturday mornings. Like Compton, he likes to sketch on paper. He started by writing a simple list of words, “everything I could think of that went with that arboretum” — trees, leaves, flowers, glaciers, reeds, streams, children, tree house. He says: “As interior designers, we can’t really copy nature, because we’re going to lose that battle every time. We can’t make it look like the Arboretum. But we can allude to things about the Arboretum.” He winnowed his list of words, then sketched and sketched and sketched. He shared his sketches with colleagues, who then did their own sketches.

The basic shape of a flower or leaf shifted into a symbolic ellipse, which will appear as a shape in the ceiling or floor pattern at every nurse’s station and welcome desk. Reeds and trees on O’Rear’s pad evolved into abstract shapes in floor-to-ceiling art glass panels. Trees became towering columns in the main lobby. An overhanging space in the lobby, with windows looking into the floor above, will conjure thoughts of a tree house.

O’Rear noticed the rolling cloud banks over Ann Arbor, and how the light is always changing. So those column-trees will end in cavities in the ceiling, where colored shafts of light will appear and disappear, as if through the canopy of a Michigan forest. A suggestion of glaciers in ice-colored terrazzo tile will melt into warmer-colored rings hinting at the Arb’s hills and streams. The same glacier theme will appear in wall panels with “incredibly bright apple-green swirly-metal laminate” in the cracks between them.

“Kids are gonna be immediately over there touching those,” O’Rear predicts. “I know it, ’cause I’m basically a big kid myself. They’re going to be running all over the place. Their parents will probably be mad at me.”

O’Rear likely will be in Dallas when the first kids run into that lobby. But he got to see Warner’s face light up when she saw the plans for the interior design.
“A lot of hands touched the design,” he says. “You could never nail it down to just one person. The ideas came from everywhere, and I think that was one of the great things about it — that it was such a coming together of minds and people to make that all happen. To see clients light up, and see they’re going to be proud of their space — that’s what makes it worth doing what we do.”

Warner herself played a key role in a small but important design feature. She says it was Kathy Ballew’s idea. Ballew says it was Warner’s. In any case, one day, one of them said: “There should be Pewabic tiles!”

The century-old Pewabic Pottery, a landmark in downtown Detroit, was a hub in the turn-of-the-century Arts and Crafts Movement, which merged factory production with the aesthetic of handmade artifacts. Surviving and thriving, Pewabic became a non-profit center for education and crafts. Its beautiful ceramic tiles, with iridescent glaze over distinctive colors and shapes, have become widely known symbols of Michigan.

Ballew, senior interior designer for the hospital project, had worked with Pewabic before. She conceived a Mott program that would serve several needs at once. Mott patients, while visiting the hospital, would be invited to make tiles with help from Pewabic potters. Those tiles would be used as way-finding symbols throughout the hospital. So the signature symbols greeting visitors to the new Mott will be clay designs made by kids themselves — kids making art as they wage their battles against disease.

“In those clinics, it isn’t always good news,” Ballew says. “What we find is that when children make the tiles, more times than not, the families say, ‘Thank you, this has been just what we needed today.’”
THE NEW MOTT HOSPITAL HAS DRAWN ON THE COLLECTIVE THINKING OF SOME 450 UNIVERSITY OF MICHIGAN FACULTY, STAFF AND STUDENTS; DOZENS OF ARCHITECTS, DESIGNERS AND ENGINEERS; AND MORE THAN 40 PATIENT FAMILIES AND OTHER MEMBERS OF THE COMMUNITY.

TOP: The new labor-delivery-recovery-post-partum rooms provide ample room at the foot of the bed. BOTTOM: Interactive elements like this “swirl tube” will entertain energetic children.
of course, the design of a new hospital is less about art than it is about medicine. So the ideas of dozens of clinical staff, in months of meetings, had a direct bearing on the configuration of every floor.

Planning participants were assembled in groups representing every medical service. Then, says Valerie Castle, M.D. (Fellowship 1990), chair of the Department of Pediatrics and Communicable Diseases and a member of the steering committee, “We said to them, ‘What does your unit have to look like so you can provide the kind of care you want to provide?’ Then these working groups, whether it was the bone marrow transplant team, or the gastrointestinal clinic team — you name the service — were given the latitude to help us understand, very intimately, how they felt the design of the building needed to be.”

One of those staff members was Sue Kofflin, clinical nurse manager of the Women’s Hospital Birth Center, which will occupy the ninth floor in the new facility. Kofflin helped with layouts for rooms, including the rooms called LDRPs — for labor, delivery, recovery and postpartum. Kofflin suggested the planning team visit a new children’s hospital in Gastonia, North Carolina. She’d seen it written up in a hospital journal.

Staff of that hospital said one of the smart things they did was to mock up a prototype room to see what worked best. So the U-M team reserved a lobby in the Towsley Center and went to work with masking tape. They taped off new shapes for LDRPs; rolled all the furniture and equipment right in; then brought in obstetricians, nurses, pediatricians, neonatologists, nurse-midwives and family practitioners.

“We had to make sure we were meeting the needs of all of those disciplines at the same time that we were trying to design a room that would meet the patient’s need for safety and comfort,” Kofflin says. “Our biggest concern was putting together a layout that accommodated the equipment and supplies that all of those caregivers would need at the point of birth in order to keep Mom and Baby safe.”

They realized an awful lot of people and equipment have to be accommodated at the foot of the mother’s bed: a physician to receive the baby, a nurse for the mother, a nurse for the baby, a resident or two plus an attending, sometimes a neonatologist or a pediatrician, and a baby warmer and supplies. And mothers’ significant others need room at the head of the bed.

So as they kept moving the masking tape, an architectural principle emerged: LDRPs should be long, not wide. “It’s tough when you’re looking at a piece of paper,” Kofflin says. “You can think, ‘Oh, this should work fine.’ But what we learned was that until you try it, until you push a bed in and out of the room, and take a bed apart as you would during delivery, and think about all the various people that are in a room at the time of delivery, and all the different functions they have to perform — until you have that space mocked up, and you try it out, it’s tough to know how it’s going to work.”

Ground was broken in October 2006. In 2011, the University will open the new hospital, a landmark facility comprising a nine-story clinic tower and a 12-story inpatient tower, 1.1 million square feet in all, with 264 patient beds, 12 operating rooms, a pediatric emergency department, the Michigan Congenital Heart Center, the Women’s Hospital Birth Center and extra space that can be quickly fitted out to accommodate possible future pandemics.

These days, Chris Dickinson, an early advocate for a new hospital, sometimes goes up to the top of the parking structure to watch the towering cranes. Since the beginning, he has served as physician lead for the project.

“I pretend like I know which piece of steel should go where, to make sure they get it right,” he says. “And then I lie in bed at night and I think, ‘We put the dialysis unit up near the ICUs. Was that a good idea? Did we build the orthopaedics clinic big enough?’

“I don’t have a great architectural sense. I mean, I would have been happy had we built a box. But I wanted the building to work. And I’m very excited about how this building’s going to work.”

Construction of the new C.S. Mott Children’s Hospital and Women’s Hospital has been supported by the generosity of the C.S. Mott Foundation, Carls Foundation, former U-M Regent David Brandon and wife Jan, Mike and Helen Vlasic, and Lloyd and Laurie Carr.

More on the Web
• Take a virtual tour of the new facility
• “Fly around” a 3-D computer model of the building
• View additional illustrations of the interior
• Link to the Mott Tile Project, Women’s Health Program, HKS Inc., and more
Championing the Hearts of Children

Not far from the construction site for the new University of Michigan C.S. Mott Children's Hospital and Women's Hospital, another Mott building project recently took place, albeit on a much smaller scale.

Known as the Mott Storybook Cottage project, the 90-square-foot playhouse includes a complete kitchen, a furnished dining room and living room with faux fireplace, as well as natural outdoor landscaping. In true community spirit, all building materials and services were donated by local businesses specializing in construction and architectural and interior design.

The cottage was built for auction during the May 17-18 Champions for Children's Hearts celebrity golf tournament, hosted by the NFL’s Brian Griese and Steve Hutchinson — both U-M alumni. Guests at a gala dinner during the event heard Shannan and John Shaw, a U-M associate professor in aerospace engineering, speak about the exceptional care their 4-year-old daughter, Maddie, was receiving at Mott Children’s Hospital. Maddie had been waiting nearly 16 months in the cardiac intensive care unit at Mott for a new heart to replace her own which, doctors believe, was attacked by a viral infection that caused it to enlarge and weaken.

Inspired by the Shaws and challenged by Griese and Hutchinson to
match their own gifts of $1,000 each in order to keep the cottage at Mott, many guests contributed $1,000 to catch a signed-football pass from Griese, quarterback for the Tampa Bay Buccaneers. A total of $67,000 was raised in this way to purchase the cottage for Mott. 

Just a week later, on May 27, little Maddie Shaw died while still waiting for her new heart. Though she was never an organ recipient herself, Maddie’s liver and kidneys were donated by the Shaw family to help save the lives of other children. In her memory, the cottage will be named Maddie’s Storybook Cottage and will bring delight and distraction to young Mott patients for many years to come. [M]

Recent Gifts to the Health System

Grateful patients of the Department of Obstetrics and Gynecology have made a $625,000 gift to fund the first five years of the Fellowship in Breast Health for Experienced Obstetrician-Gynecologists. The U-M is committed to sharing its proven model of training future ob-gyns with other practitioners in hope that the multidisciplinary model will influence and ultimately affect residency and post-residency training requirements, as well as improve outcomes for women with breast disease. Ob-gyns are the primary caregivers for most American women, placing them on the front lines of breast disease diagnosis.

Joshua H. Pokempner and Gretchen Gardner of Ann Arbor are joining Phil Jenkins, also of Ann Arbor, in supporting preventive and alternative medicine at Michigan. With their $500,000 contribution, the Phil F. Jenkins and Joshua H. Pokempner Preventative and Alternative Medicine Endowment Fund will be used to empower, teach and support people in taking control of their wellness through preventive and alternative means. The fund will support the Jenkins/Pokempner Director of Preventive and Alternative Medicine. Pokempner is an alumnus of the College of Architecture and Urban Planning, and Gardner is an alumna of the School of Social Work. —RK

Athletes for Mott

BRIAN GRIESE AND STEVE HUTCHINSON, THE NFL HOSTS OF MAY’S Champions for Children’s Hearts celebrity golf tournament, are among many past and former members of Michigan’s Department of Athletics whose whole-hearted and heartfelt commitment is helping the U-M raise awareness and funds needed to build the new Mott facility. From taking to the airwaves for a 12-hour Ann Arbor radio-a-thon, to leading events with that indomitable Go Blue spirit, to personally visiting pediatric patients at their bedsides, Michigan athletes have been a powerful part of the Health System team, working toward the shared goal of health and well-being for children and women. —RK
Taking the President’s Challenge

U-M PRESIDENT MARY SUE COLEMAN’S SCHOLARSHIP CHALLENGE, which provides a 1-to-2 match for all new graduate/professional scholarship gifts made between September 1, 2007, and December 31, 2008 (or until matching funds are committed), has brought the Medical School approximately $7.5 million in new scholarship funding, including the following named scholarship funds of $5,000 or more:

The Dr. and Mrs. Rudi Ansbacher Scholarship
The David and Linda Bachrach Family Scholarship
The Jill and Thomas R. Berglund, M.D., Endowed Scholarship
The Dr. Edward Berkwits and Berkwits Family Endowed Scholarship
The Brehm Medical Scholars
The Ernest G. and Audrey Brookfield Scholarship
The Richard L. Carter, M.D., Scholarship
The Craig/Denhart Endowed Scholarship
The Michael H. Freedland, M.D., Scholarship
The Dr. Benjamin Gamburd, ’48, Scholarship
The Fannie and Alegro J. Godley, M.D., Endowed Scholarship
The Dr. Robert T. and Elaine Goldman Scholarship
The Marilynn R. and Seymour Gordon, M.D., Scholarship
The Marvin Gordon, M.D., and Sylvia Gordon Scholarship
The Robert D. and Maxine B. Greenberg Scholarship
The Dr. and Mrs. Stephen E. Higgins Family Scholarship
The Kenneth J. Sobeski Scholarship
The Stalburg Student Scholarship
The Trunsky/Buckfire Endowed Scholarship

Kenneth Buckfire, Noreen Trunsky, Ronald Trunsky and Judy Trunsky have established the Trunsky/Buckfire Endowed Scholarship.

The Lloyd A. Marks, M.D., and Janice Siegel Foundation Inc. Scholarship
The Dr. Phil L. Marsh Memorial Endowed Scholarship
The Dr. and Mrs. Donald A. Meier Scholarship
The Joe Luther Menger Medical School Scholarship
The Kenneth D. McClatchey, M.D., Endowed Scholarship
The William E. and Marian D. Pearson Memorial Endowed Scholarship
The Margaret B. Pittman-Hadley Endowed Scholarship
The Dr. Jack F. Ross Scholarship
The Saltman Family Scholarship
The George W. Schnetzer III, M.D., and Mary H. Lhevine Endowed Scholarship
The Oscar D. Schwartz, M.D., Scholarship
The Marshal Shlafer, Ph.D., Scholarship
The Kenneth J. Sobeski Scholarship
The Stalburg Student Scholarship
The Trunsky/Buckfire Endowed Scholarship
The Gail and Floyd S. Tukel, M.D., Family Endowed Scholarship
The Thomas G. and Marilynn Varbedian Family Endowed Scholarship
The Karen Ann Welke Scholarship
The Dale L. Williams, M.D., Family Medicine Scholarship
The Dr. Richard and Virginia Wineland Scholarship
The Woolliscroft Family Scholarship
The family of Marilyn H. “Molly” Vincent established the Marilyn H. Vincent Professorship in Diabetes Research to help battle a disease which affected her, as well as son Burt Vincent Jr. Burt Jr. and brother, John Vincent, are trustees of the Molly Vincent Foundation, which was formed in 1996 to support diabetes research. On March 24, Associate Professor of Internal Medicine and Molecular and Integrative Physiology Martin G. Myers Jr., M.D., Ph.D., was installed as the first Vincent Professor.

The U-M’s commitment to cardiovascular medicine was celebrated May 28 with the inauguration of the Cyrus and Jane Farrehi Professorship in Cardiovascular Research and the Frank Norman Wilson Professorship in Cardiovascular Medicine. A gift from Cyrus Farrehi, M.D., and his wife, Jane, created the Farrehi Professorship, which was awarded to Professor of Internal Medicine and Molecular and Integrative Physiology José Jalife, M.D. The Wilson Professorship, named for the U-M’s first modern cardiologist and an alumnus of the school (M.D. 1913), went to Mario Delmar, M.D., Ph.D., also a professor of internal medicine and molecular and integrative physiology. Jalife and Delmar are co-directors of the U-M Center for Arrhythmia Research.

A longtime benefactor of medicine at Michigan, including support in the areas of cancer, pediatrics and depression, the Ravitz Foundation has established its second professorship in the Medical School. On June 4, the Ravitz Foundation Professorship in Ophthalmology and Visual Sciences was inaugurated to promote the research and clinical efforts of a faculty member whose work focuses on ophthalmic pathology. Professor of Ophthalmology and Visual Sciences and of Pathology Victor M. Elner, M.D., Ph.D., is the first to hold the professorship.

More than a quarter-century of service to the Medical School and Department of Pathology was celebrated June 11 with the inauguration of the Peter A. Ward Professorship in Pathology. A tribute to a continuing leader in academic pathology and a former interim dean of the Medical School, the Ward Professorship was bestowed upon Kathleen R. Cho, M.D., Ward’s colleague in the department and a professor of pathology and of internal medicine. —KB
The University of Michigan has named James R. Baker, M.D., as the Distinguished University Innovator for 2008. Baker’s work with synthetic lipid and polymeric nanostructures has resulted in the development of nanoemulsions as a new class of antimicrobial agents with activity against bacteria, spores, fungi and viruses. Baker’s nanoemulsion technology became the basis for NanoBio Corporation, founded in 2000. A second startup, Avidimer Therapeutics, was launched in 2003 to develop pharmaceuticals formed from dendrimers, nanometer-sized polymers that serve as an inert bio-scaffolding. Baker is the Ruth Dow Doan Professor of Biologic Nanotechnology.

Arul Chinnaiyan (M.D./Ph.D. 1999), director of the Michigan Center for Translational Pathology and the S.P. Hicks Professor of Pathology, received the American Association for Cancer Research Award for Outstanding Achievement in Cancer Research. The award is one in a series given annually by the association, which is the world’s oldest and largest professional organization representing cancer scientists from the U.S. and nearly 70 other countries. The award honors outstanding accomplishments in basic cancer research, clinical care, therapeutics and prevention.

Paul Gauger, M.D. (Residency 1998), associate professor and associate chair in the Department of Surgery, and associate professor of medical education, has been honored with the Association for Surgical Education’s Outstanding Teacher Award. Gauger was recognized in part for helping to establish the Clinical Simulation Center. The association’s mission is to promote, recognize and reward excellence, innovation and scholarship in surgical education. Its 850 members represent more than 190 medical schools in the U.S. and Canada.

The American Geriatrics Society has named Jeffrey B. Halter, M.D., as the 2008 Nascher/Manning Award recipient. The premier honor of the society is given to an individual with distinguished, lifelong achievement in clinical geriatrics. Halter, who is the director of the U-M Geriatrics Center and Institute of Gerontology and professor of internal medicine, was cited as a leader in the field of geriatrics, and as an educator and author. A renowned geriatrician who specializes in the treatment of diabetes mellitus in older adults, Halter is the founding director of the Geriatrics Center, established in 1987.

Awori Hayanga, M.D., a fourth-year general surgery resident, has been named a recipient of the American Medical Association Foundation’s 2008 Leadership Award. The award provides medical students, residents/fellows, and physicians with special training to develop skills as future leaders in organized medicine and community affairs. Hayanga was the 2007 recipient of the American College of Surgeons Resident Leadership Award.

The Association of Professors of Gynecology and Obstetrics, representing academic obstetrician-gynecologists in the U.S. and Canada, has named Timothy R.B. Johnson, M.D. (Residency 1979), as its new president for a one-year term. Johnson is the Bates Professor of the Diseases of Women and Children, and chairs the Department of Obstetrics and Gynecology. He initiated the U-M Women’s (continued on p. 44)
Lewis Morgenstern: Closing the Gaps

WHEN LEWIS MORGENSTERN WAS 5 YEARS old, his mother’s mother came to live with him and his parents in their Manhattan apartment.

“She was a wonderful woman who played a pivotal role in raising me,” he says. “When I was 12, she had a large stroke. I remember that as if it happened yesterday. She survived for a couple of months with all the ravages of disease, then had another stroke and died. As I grew older and became more interested in the brain, I decided to be a neurologist. It was then I realized that stroke was an unbelievably common disease that nobody studied or took as a specialty."

As the director of the U-M Stroke Program, a collaboration among neurology, emergency medicine, neurosurgery, radiology, physical medicine and rehabilitation, and cardiology since its inception in 2002, Morgenstern (M.D. 1990) has been doing as much as one person can to change that.

“Stroke is the No. 1 cause of adult disability in this country, the No. 1 reason people end up in nursing homes, and the third-leading cause of death. It’s a very complicated disease of the body’s most complicated organ,” he says. “To treat it appropriately and aggressively requires people from a lot of different backgrounds working together.”

Given its significance, and an aging population, the fact that it’s such a small blip on the medical radar is both alarming and all but incomprehensible. Morgenstern points out that in Texas, where he worked for seven years before returning to his alma mater, “There are more than 1,000 board-certified cardiologists, but only 12 stroke doctors.”

Such a state of affairs makes outreach, prevention and education as vital as helping patients get better. “We have a fantastic stroke fellowship program here,” he says, “and we recruit and train only the best individuals who we think will be leaders in the country.”

A major focus of Morgenstern’s research has been disparities in stroke rates and outcomes between Mexican-Americans and non-Hispanic whites in the U.S. What he and his colleagues have learned is that Mexican-Americans have a much higher incidence of stroke, and their strokes are just as severe, but they’re less likely to die than non-Hispanic whites.

“As a researcher,” he says, “I have two questions that follow: What can I do to lower the stroke rate in Mexican-Americans, and what can I learn from Mexican-Americans that would reduce the death rate in non-Hispanic whites?”

While health disparities research yields information ultimately useful for all populations, Morgenstern’s motivation is rooted in social justice. “One group should not suffer more than others,” Morgenstern says. “It’s incumbent upon all of us to reduce disease in minority populations for clear ethical reasons.”

And what might he have done if he hadn’t become a physician? “I would have enjoyed being a commercial airplane pilot,” he says. “I’ve always had this incredible love of airplanes and of travel, and I think that would be really cool.”

Instead, Morgenstern keeps the Stroke Program flying.

—JEFF MORTIMER
Health Program, which was designated by the U.S. Department of Health and Human Services as a National Center of Excellence in Women’s Health.

ANNA LOK, M.D., professor of internal medicine and director of clinical hepatology, was honored by the Hepatitis B Foundation as its Distinguished Scientist for 2008 for her outstanding contributions to advancing the science and medicine of hepatitis B. Lok is a world renowned hepatologist and one of the premier leaders in hepatitis B research. Lok and JUANITA MERCHANT, M.D., Ph.D., professor of internal medicine and of molecular and integrative physiology, were named Outstanding Women in Science for 2008 by the American Gastroenterological Association Foundation for Digestive Health and Nutrition. Merchant’s recent studies involve animal and cell culture models to dissect the pathways through which bacterial colonization leads to ulcer development and subsequent cancer. Lok and Merchant were honored for exemplary contributions to digestive disease science.

JOHN V. MORAN, Ph.D., associate professor of human genetics and of internal medicine, is among 56 top national scientists who have been appointed the newest Howard Hughes Medical Institute investigators. Moran is a pioneer in understanding the biology of common repetitive DNA elements in the human genome often dismissed as “junk DNA.” He leads a group of U-M researchers who examine how these repetitive elements impact the evolution of the human genome. One of the nation’s largest philanthropic organizations, the institute has invested more than $8.3 billion to support the most promising and creative scientists in the U.S.

JAYESH THAWANI, a member of the Medical School Class of 2009 and an Edsel B. Ford Scholar, has been awarded a Howard Hughes Medical Institute/National Institutes of Health Research Scholars Program Fellowship for 2008-09. Established in 1985, the fellowships provide 42 outstanding students at U.S. medical, dental, osteopathic and veterinary schools an opportunity to receive research training at the NIH headquarters in Bethesda, Maryland.

EDWARD M. WOJTYS (M.D. 1979, Residency 1984), professor of orthopaedic surgery, chief of the Sports Medicine Service, and medical director of MedSport, has been selected as editor-in-chief of Sports Health: A Multidisciplinary Approach, a bi-monthly publication to be launched in January 2009 aimed at physicians and allied health professionals who work with athletes. The journal is a collaborative publication by the American Orthopaedic Society for Sports Medicine, American Medical Society of Sports Medicine, National Athletic Trainers’ Association and the Sports Physical Therapy Section, and will be published by SAGE Publications.

Edited by James R. Baker, M.D., professor of internal medicine, associate professor of pathology and the Ruth Dow Doan Professor of Biologic Nanotechnology; and Istvan J. Majoros, Ph.D., research assistant professor of internal medicine: Dendrimer-Based Nanomedicine. Pan Stanford Publishing, 2008.

Edited by Scott A. Flanders, M.D., associate professor of internal medicine; Vikas I. Parekh, M.D. (Residency 2002), clinical assistant professor of internal medicine; and Lakshmi Halasyamani, M.D.: Medical Clinics of North America: Hospital Medicine, volume 92, number 2. Elsevier Saunders, March 2008.


Class Notes

**60s**  
Hossein Gharib  
(M.D. 1966) was elected president of the American College of Endocrinology at its annual meeting in May. He has been practicing and teaching endocrinology as a consultant and as professor of medicine at the Mayo Clinic College of Medicine since completing his internal medicine residency and endocrinology fellowship at the Mayo Graduate School of Medicine in 1971. He resides in Rochester, Minnesota.

Robert D. Greenberg  
(M.D. 1967) has been elected assistant secretary-treasurer of the American Academy of Dermatology and its corresponding association. His term will begin in 2010. Greenberg is in private practice with a faculty appointment at the University of Connecticut School of Medicine. Previously a member of the academy’s board of directors, he also chairs its ethics committee. Greenberg resides in South Windsor, Connecticut.

**70s**  
Elizabeth Burns  
(M.D. 1976) has been named assistant dean, president and CEO of the Michigan State University Kalamazoo Center for Medical Studies, effective July 1. Previously, Burns was a tenured professor at the University of North Dakota School of Medicine & Health Sciences in Grand Forks and an elected member of the university’s graduate faculty.

Roger Albin, M.D.  
(Residency 1988), is the recipient of one of five Michael J. Fox Foundation for Parkinson’s Research 2007 Clinical Discovery Awards, announced in December. This annual initiative funds clinical research projects with strong potential to yield new treatments for people living with Parkinson’s. Albin, professor of neurology at the U-M Medical School, will use the award to help support his research on improving sleep disorders, a common problem for people with Parkinson’s.

**90s**  
Michelle J. Alpert  
(M.D. 1991), along with Saul Wisnia, has authored *Spinal Cord Injury and the Family: A New Guide*, published by Harvard University Press in 2008. The book addresses issues that affect families in which one person is recovering from a spinal cord injury — from daily routines to larger issues concerning sex, education, employment, childbearing and parenting. Alpert is director of rehabilitation medicine at the Hebrew Rehabilitation Center, and clinical instructor in physical medicine and rehabilitation at Harvard Medical School. She was the founder and first director of the Spinal Cord Injury Program at Spaulding Rehabilitation Hospital. She resides in Newton, Massachusetts.

**ALUMNI: Update your classmates!**

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Alumni Profile  Kathleen Weston: Still Blazing Trails at 101

WHEN KATHLEEN WESTON JOINED PARKE-Davis to help test the newly invented Salk vaccine in the 1950s, she was the first woman M.D. the pharmaceutical giant had ever hired.

“They needed a lot of people and I was handy,” says Weston, from Grosse Pointe, Michigan, who turned 101 in March. The mobilization to produce the vaccine that virtually eradicated polio created new employment opportunities for women in the drug industry much as the mobilization for World War II had done in other fields, and she was “handy” because her husband directed one of their laboratories. Weston’s family participated in early trials of the vaccine.

“The head of research knew I had worked with microscopes and the nervous system, so he recruited me,” she says. “He said, ‘You know, you’re an M.D. and we have to pay you this salary that’s way beyond what we usually pay women.’ But that was what the rest of the pharmaceutical companies paid M.D.s. He also took me to the executive dining room to have lunch after he talked to me. I was the first woman to eat there. That caused quite a stir.”

Weston grew up in Kenton, a tiny town in Michigan’s Upper Peninsula that’s now just a name on the map. There were only 15 students in her high school. She went on to earn a B.A. in biology at Northern State Normal School (now Northern Michigan University), then taught high school biology in Munising. During the summers, she attended the U-M Medical School, earning a master’s degree in anatomy and physiology in 1934.

Upon receiving her Michigan degree, she and her husband, Jean K. Weston, M.D. (M.S. 1931, Ph.D. 1933), joined the faculty of Temple University in Philadelphia. After more than a decade of teaching various courses to medical students there, she felt obliged to go to medical school herself.

“I felt if I was teaching medical students, I ought to know more about the subject,” she says. “Sometimes there were questions I couldn’t answer adequately.” She approached the dean about it, and he offered a deal.

“He said, ‘You’re a good teacher, why don’t you teach the nurses to pass the board exam?’ I began to teach the nurses; they responded and passed their exams, and he said, ‘Okay, you can go to medical school.’”

In 1951, at age 44, Weston received her M.D. from Temple. She was one of only five women in a class of 125.

After Parke-Davis, Weston and her husband worked in toxicology for Burroughs-Wellcome; later, he went to work for the National Pharmaceutical Council in Washington, D.C., and she worked as a toxicologist for a variety of government agencies, including the NIH.

After her husband died in 1985, Weston continued to work as a consulting toxicologist until retiring in 1997. She lived on her own till age 100 when she moved in with her son and daughter-in-law. Weston uses a walker to help her get around these days, but her mind travels as fast as ever.

“I read a great variety of things,” she says, “especially about nutrition. That’s something we weren’t taught in medical school.”

Today’s medical curriculum is just one of the amazing changes Weston’s witnessed — and helped bring about — in a long and amazing life. —JEFF MORTIMER
Alumni Profile

Donald Miller: The Lawyer Is a Doc

DON MILLER HAS A MESSAGE: IT’S NEVER TOO LATE TO BE USEFUL.

At the age of 54, in what seemed to be the middle of a distinguished career as an orthopaedic surgeon and researcher, Miller (M.D. 1967) was diagnosed with post-traumatic stress disorder. One of the first orthopaedists in the country to transplant cadaver meniscus and the first to use the technique of cryopreservation, Miller was withstanding long hours and significant professional pressure over procedures that were out of the mainstream of orthopaedic surgery at the time. His physicians prescribed, among other things, retirement.

But after seven years of therapy and six hours of golf a day (“My wife called it dropping me off at day care”), “I couldn’t believe how much I missed making a difference in people’s lives,” he says.

Believing his background would serve him well as a mediator in medical malpractice, personal injury and wrongful death cases, Miller started work toward a master’s in mediation at Pepperdine University School of Law when a colleague told him a law degree would help him be more effective. He enrolled in the Arizona State University College of Law and finished his degree in two-and-a-half years, graduating in December 2005, three weeks after he turned 65 and went on Social Security.

“I’m enjoying private practice in my small firm of Donald Miller and Associates,” he says now from his home in Scottsdale, Arizona. “Each case is like a ‘whodunit,’ and unraveling the puzzles is challenging. About 90 percent of personal injury involves orthopaedics, so I use my medical background every day. That’s why I love it.”

So after playing in two Rose Bowls and as part of a national championship team for the University of Minnesota, training as a classical pianist, working for professional athletic teams in addition to his regular practice, and helping to pioneer arthroscopic surgery techniques in the knee, Miller is creating yet another productive chapter of his life.

“I plan to go out with my boots on,” he says. “I still want to make a contribution.” —JEFF MORTIMER

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www.medicineatmichigan.org/magazine
Ray C. Anderson, M.D., Ph.D. (Residency 1947), of Sun City, Arizona, died May 20, 2008, at age 90. In 1947, Anderson, an Army captain, helped organize the genetics program that became part of the Atomic Bomb Casualty Commission in Hiroshima and Nagasaki, Japan. From 1951 until retiring in 1980, he was a member of the pediatrics faculty at the University of Minnesota. There, Anderson became associated with the Lillehei-Varco surgical team, now viewed as the founder of open-heart surgery.

John Howard Bell, M.D. (Residencies 1982 and 1984), an avid cyclist, died in a biking accident on May 26, 2007. He was 58. Bell practiced cardiothoracic surgery in Lynchburg, Virginia, where he resided with his wife, Michelle, and their two children.

John W. Berghuis (M.D. 1951, Residency 1956), 86, died on May 23, 2008. During his career, he practiced in the towns of Holland, Zeeland and Adrian, Michigan. In his free time, Berghuis enjoyed fishing, gardening, U-M football and spending time with his family.

Seymour Gordon (M.D. 1954), 78, died on July 29, 2007. He performed the first cardiac catheterization to take place at Detroit’s William Beaumont Hospital, where he served, along with his professional partner of 50 years, Gerald C. Timmis, M.D., as co-chief of cardiology. A believer in giving back, Gordon was active with the United Way and the American Heart Association.

Hal B. Jennings (M.D. 1941, Residency 1947) died on February 12, 2008, at age 92. After serving overseas in World War II, he trained in plastic surgery, repairing many cleft lips and palates during the course of his career with the U.S. Army. Jennings served as surgeon general of the Army in Vietnam from 1969-73, then became CEO of the American Urological Association in Baltimore, Maryland. He retired in 1975.

Chester D. Johnson, M.D. (Residency 1947), of Sun City West, Arizona, died on May 8, 2008. He was 91. As a lieutenant in the U.S. Army, Johnson served on a hospital ship in the Pacific during the Bikini Atoll Atomic Tests of World War II. He practiced ophthalmology in Moline, Illinois, for 30 years, and enjoyed sports and computers.

David M. Katchka (M.D. 1939) died on February 17, 2008, at age 92. He was a founding partner of Katchka, Friedman, Crider Medical Corp (now Anesthesiology Consultants of Toledo) which provided anesthesia services to Toledo Hospital. Katchka was a founder of the Toledo Society of Anesthesiologists and the World Congress of Anesthesiologists in Copenhagen. After retiring in 1985, he maintained a presence at Toledo Hospital, and enjoyed golf, the stock market and traveling with his wife, Elsie.

Paul E. Larkey (M.D. 1961) died May 10, 2008, after a long illness. He was 75. During medical school, Larkey was active with Phi Chi fraternity and the Galens Medical Society, and graduated with classmate and brother-in-law Richard Dorr (M.D. 1961, Residencies 1965 and 1968). He practiced as a family physician for 46 years in the Lansing, Michigan, area, serving for a time as chief of staff at St. Lawrence Hospital.

Marion G. McCall Jr. (M.D. 1959) died September 16, 2006, at age 76. He was a prominent ophthalmologist in Detroit for more than 40 years.

James A. McLean (M.D. 1946, Residency 1955), 86, died on December 5, 2007, at a hospital in Pinehurst, North Carolina. McLean attended the U-M Medical School, then went on to Baylor University in Texas for his residency training. After service as a captain in the U.S. Army during the Korean War, he returned to the U-M and joined the faculty, where he trained and specialized in allergy, eventually becoming a full professor. In 1986, McLean retired after 30 years of service.

Rolf G. Sommerhaug, M.D. (Residency 1971), died on May 2, 2008. He was 69. Born and raised in Norway, Sommerhaug developed a passion for slalom skiing as a young boy and carried it with him throughout his life. He moved to Seattle, Washington, with his parents at 19, earned a bachelor’s degree from the University of Washington, and took up sailing while attending the University of Wisconsin Medical School. Sommerhaug served with the Air Force Reserve from 1964-71, then moved to California’s Bay Area with his wife, Gunvor. In 1974, he helped establish the cardiovascular program at Mt. Diablo Hospital in Concord, California, now part of John Muir Health.
Friends

Samuel P. Frankel, of Bloomfield Hills, Michigan, one of America’s visionary developers, died April 7, 2008, at the age of 94. Frankel helped develop the discount-store concept in the 1960s and built the first Kmart store, in addition to several major retail malls and other building projects in southeast Michigan. Frankel was a philanthropist whose support of the U-M and Detroit’s cultural institutions leaves a lasting impact on the region. Frankel, wife Jean, and other family members have generously supported cardiovascular health at the U-M, as well as business, social work and Judaic studies.

John A. Klein, of Easton, Connecticut, president and CEO of People’s United Bank and its holding company, People’s United Financial Inc., died on January 25, 2008, at the age of 58. Klein and his wife, Carla, established the John A. and Carla S. Klein Family Research Professorship in Thoracic Surgery following his treatment at the U-M, to support a faculty member whose research focuses on diseases of the esophagus. The family asks that memorial gifts be made to the professorship at the U-M Department of Surgery, 1500 E. Medical Center Dr., 2110 Taubman Center, Ann Arbor, MI, 48109-5346.

Mary Upjohn Meader of Kalamazoo, Michigan, died on March 16, 2008, at age 91. Born Rachel Mary Upjohn, Meader was one of 11 grandchildren of W.E. Upjohn (M.D. 1875), founder with his brothers of the Upjohn pharmaceutical company. With her first husband, neurosurgeon and military pilot Richard Light, Meader pioneered aerial photography in the 1930s over parts of Africa and South America which had not yet been photographed from above, including Mount Kilimanjaro, Mount Kenya, and the Pyramids of Egypt. With her second husband, Edwin Meader, she became a major philanthropist, supporting education and community charities. The Meaders’ generosity benefited the Kellogg Eye Center, the Depression Center, Kelsey Archeological Museum, the arts and education, among other areas at the U-M. Edwin Meader died in 2007.

Facility

David Kurnit, M.D., Ph.D., former professor of pediatrics and communicable diseases and of human genetics, died January 30, 2008, at the age of 60. After completing his M.D. and Ph.D. at Albert Einstein College of Medicine, Kurnit became an associate professor at Harvard Medical School, then professor at the U-M where he was a Howard Hughes Medical Investigator from 1986-96. Throughout an accomplished career, Kurnit always devoted himself to the academic achievement of the students and researchers who worked in his lab.
Science with Heart

JOHN PRENSNER, ORIGINALLY from the Boston area, is starting his third year of the M.D./Ph.D. program. Since coming to Michigan, Prensner has worked in the lab of Arul Chinnaiyan (M.D./Ph.D. 1999), whose research team a few years ago discovered intriguing evidence that gene fusions are implicated in the development of prostate cancer.

INTERVIEW BY WHITLEY HILL
PHOTO BY J. ADRIAN WYLIE

I FELT A SENSE OF WELCOME AND belonging from the very first day. Arul is all about the science, not pretense. The first time I met him his shirt had a hole in the elbow. After talking in his office, he took me into the lab and introduced me to people looking at data on a computer screen, and immediately Arul and the others included me in the conversation. At one point, somebody commented, ‘This is private data, just so you know.’ I simply nodded. There was no time lag between meeting people in the lab and becoming a part of the lab. I was assimilated, so to speak, as soon as I walked in the door.

“To be in a place where what’s going on is directly involved in the future of patient care and the advancement of science and medical knowledge is a great feeling. My interest in cancer research is — well, not secondary to, but maybe a parallel component of a desire to ease the pain of someone going through the ordeal of cancer.

“To me, all my efforts — clinical and research — are guided by a common goal: to make a difference in somebody’s life.

— JOHN PRENSNER
Take the Challenge!

“I planned to rely on grants and loans, but then I got the most wonderful e-mail I’ve ever gotten — saying I had been selected to receive a scholarship from Michigan. Dr. Varbedian has also been a wonderful mentor, providing valuable advice about medical school, as well as life in general.”

—RYAN BEYER, CLASS OF 2011
THOMAS AND MARILYNN VARBEDIAN FAMILY SCHOLARSHIP RECIPIENT

The President’s Challenge provides a 1-to-2 match of scholarship gifts and offers the ideal chance to maximize the benefit of your support. For more information on this limited-time opportunity, contact B.J. Bess at (734) 998-6044 or bjbess@umich.edu.