

ROCHESTER MEDICINE



Focus on Aging

A psychiatrist and a new Medical Center program take on the challenges of health care for the growing population of older adults.

A Man of Many Hats

David Topham chases pathogens, talks computerese, and has a quest of his own.

On the cover

Yeates Conwell, M.D. director of the Office
for Aging Research and Health Services

Alumni Awards Call for Nominations



SCHOOL OF
**MEDICINE &
DENTISTRY**
UNIVERSITY of ROCHESTER
MEDICAL CENTER

The University of Rochester School of Medicine and Dentistry Alumni Council recognizes the achievements of SMD alumni through the alumni awards program. The Alumni Council relies on its fellow alumni to nominate their peers for these prestigious awards.

All graduates of the MD, PhD, MS, and MPH programs, and former residents, are invited to submit nominations for the following awards:

The **Distinguished Alumnus(a) Award** recognizes achievement that has had an impact on a national and global scale by individuals whose lives and work exemplify the standards and objectives of the School.

The **Alumni Service Award** recognizes outstanding support, commitment, and service which have furthered the interests of the School.

The **Humanitarian Award** recognizes an alumnus of the school who has provided unique, compassionate care to patients who have special needs because of specific afflictions, poverty, or living conditions that lack resources.

The **Alumni Achievement Award** recognizes an outstanding alumnus who has excelled in teaching, community service, research, clinical and/or health policy, *who completed their training at SMD within the last 25 years.*

For a complete description of award criteria and nomination instructions, please visit www.urmc.rochester.edu/smd/alumni/alumniawards.cfm.

W

hether seeking to predict storm paths, optimize web searches, or understand complex human biological processes, scientists must be able to capture and make sense of massive quantities of information, that is, manage “big data.”

Today’s teams of biomedical scientists require computational and mathematical approaches to deal with the explosion of data being generated by sensors, electronic medical records, devices, and genomics. With powerful new supercomputers, investigators are creating simulations that model human responses, much more quickly and safely than traditional clinical trials.

This summer, as part of a partnership between the University, New York State, and IBM, Rochester acquired IBM’s Blue Gene/Q, one of the most dynamic and efficient computer systems in the world. Adding to our existing portfolio of supercomputers, the Blue Gene/Q will provide extra muscle for the Health Sciences Center for Computational Innovation (HSCCI). Already 500 University of Rochester scientists use high-performance supercomputing in their research and the center has helped to attract at least \$107 million in new funding. The new addition makes Rochester one of the five most powerful university-based supercomputing sites in the country.

In this issue, you will meet biologist David J. Topham, Ph.D., the executive

director of the HSCCI. David is using the supercomputer to build highly sophisticated mathematical models that simulate the immune response to influenza and vaccination. You’ll also read about how he’s encouraging the use of the computer to marry the data sets of teams of investigators. We can only begin to imagine what discoveries lie ahead, as the Blue Gene/Q helps us to spot patterns in mountains of data.

And, it’s not just biomedical research that stands to benefit. Bioinformatics is a prerequisite for practicing personalized medicine, population health management, for controlling quality and costs, and more. Supercomputing holds enormous promise across our missions.

Watch for our next issue of *Rochester Medicine*, in which Rochester’s new chair of Biostatistics and Computational Biology, Robert J. Strawderman, III, Sc.D., talks about his vision for a focused and thriving role in academic medicine. Statisticians are not only critical for interpreting data in a sensible way, but they’re helping us at the front end to carefully design trials that allow us to see meaningful results and apply them broadly, and to discover patterns in big data that set the stage for future investigations. Yes, mining and managing big data is the next big frontier — and we look forward to being able to report our significant progress in the months and years to come.



A handwritten signature in dark ink that reads "Bradford C. Berk". The signature is fluid and cursive, with the first and last names being more prominent.

Bradford C. Berk, M.D., Ph.D. (MD '81, PhD '81), CEO, University of Rochester Medical Center; Senior Vice President for Health Sciences

It's no secret that research money from the National Institutes of Health has tightened, primarily because of the federal budget and the slow pace of the economic recovery, and competition for the available money is fierce.

The School of Medicine and Dentistry has 435 grants and contracts from NIH, and almost 1,200 when you include research grants and contracts from all sponsors. These support about 3,300 people who are directly involved in the science or who support our research enterprise.

So you can see there is much at stake as we face one of the most challenging research environments in a decade. Over the last two federal fiscal years, half of the top 50 research schools have seen grant support from the NIH decline. Like most of our peers, the School of Medicine and Dentistry's funding from grants and contracts in fiscal 2012 was flat compared to the past year.

While we might have done better than some of our peers, the cost of science is increasing at a higher rate than the cost of living. Our scientists and our research enterprise are being severely stressed.

We are working to develop more support for research on several fronts. But one of the most important is developing more endowed chairs and professorships.

Endowments, as I say frequently, are very important for the future of the School. Endowments help us retain the faculty we treasure and also recruit excellence for the future. Endowments

also help us continue or expand research, teaching and clinical care.

Since we started our campaign – *The Meliora Challenge: The Campaign for the University of Rochester* – we have received gifts that have established 25 new endowed chairs or professorships.

This issue of Rochester Medicine includes a report on Georgia Gosnell, and her late husband, Thomas, who have been generous and long-time supporters of the University and the Medical Center. Mrs. Gosnell has decided to use \$3.1 million from their previous philanthropy to establish two permanent endowed professorships: Timothy E. Quill, M.D. (M '76, R '79), receives the Georgia and Thomas Gosnell Distinguished Professorship in Palliative Care, while Robert J. Panzer, M.D. (R '80, FLW '82), receives the Georgia and Thomas Gosnell Professorship in Quality and Safety.

At convocation in August, I took part in awarding 11 endowed chairs and professorships, seven of which are new. This is a tremendous boost for our School. As you will read in this issue, we have new endowed positions in nephrology, anesthesiology, pediatrics, neuromedicine, orthopaedics, neuromuscular research and family medicine.

This is just the beginning, a very important beginning. Before we began the campaign, we had 39 endowed professorships. Our goal is to double that number by June 30, 2016. We're closing in on our goal, but I'm thinking we can surpass it.



A handwritten signature in dark ink that reads "Mark B. Taubman". The signature is fluid and cursive, with a long horizontal line extending from the end.

Mark B. Taubman, M.D.
Dean of the School of Medicine
and Dentistry, Vice President
for Health Sciences



ROCHESTER MEDICINE

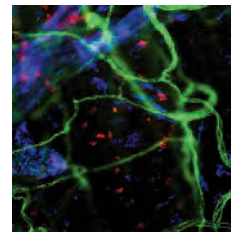
CONTENTS

FEATURES

- 4 **A Man of Many Hats:** David Topham chases pathogens, talks computerese, and has a quest of his own.
- 12 **Focus on Aging:** A psychiatrist and a new Medical Center program take on the challenges of health care for the growing population of older adults.

DEPARTMENTS

- 20 Medical Center Rounds
- 28 Philanthropy
- 32 Alumni News
- 34 Student Life
- 36 Class Notes
- 444 In Memoriam



Rochester Medicine is published by: The University of Rochester Medical Center, Department of Public Relations and Communications, in conjunction with the Department of Alumni Relations & Advancement for the School of Medicine & Dentistry.

Associate Vice President for**Public Relations and****Communications** Teri D'Agostino**Editor** Michael Wentzel**Contributing Writers** Lori Barrette, Emily Boynton, Heather Hare, Mark Michaud, Leslie Orr, Tom Rickey, and Leslie White**Art Director** Mitchell Christensen**Photographer** Ken Huth

For questions or comments, contact: Department of Alumni Relations and Advancement for the School of Medicine and Dentistry
 300 East River Road, Rochester, NY 14627
 800-333-4428 | 585-273-5954 | Fax 585-461-2081

Comments on this issue, e-mail: RochesterMedicineMagazine@urmc.edu

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RochesterMedicineMagazine@urmc.rochester.edu

Rochester Medicine Magazine
 601 Elmwood Avenue, Box 643,
 Rochester, NY 14642.



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A Man of

Virus infected lung airway stained for CD4
T Cells (blue) and CD8 T Cells (red)

David Topham chases pathogens, talks computerese and has a quest of his own.

Many Hats

By Michael Wentzel

Ask biologist and influenza researcher David J. Topham, Ph.D., what he does at the University of Rochester Medical Center and you could get a long answer.

Topham is a University vice provost and executive director of the Health Sciences Center for Computational Innovation.

He is director of the National Institute of Allergy and Infectious Diseases (NIAID) Respiratory Pathogens Research Center, which is based at the Medical Center.

He is co-director of the New York Influenza Center of Excellence (NYICE), also at the Medical Center.

A professor of microbiology and immunology in the David H. Smith Center for Vaccine Biology and Immunology, Topham also oversees his research lab and mentors scientists.

“I do wear a lot of hats,” he said.

Topham has so many jobs that he has to use two business cards because he can't fit all his titles on one card.

“David Topham is a productive and insightful scientist. His leadership and his versatility are essential for our research

utilizing high-performance computers,” said Mark B. Taubman, M.D., dean of the School of Medicine and Dentistry.

“We're aiming high and we have confidence the potential will become results.”

A biologist by inclination and by training, Topham has concentrated his research on immune responses to virus infections, with an emphasis on respiratory infections and influenza. His early career work produced a series of significant and influential papers establishing the relative importance of CD4 and CD8 T cells, B cells and cytolytic pathways in controlling influenza in the respiratory tract. After joining the Medical Center faculty, he shifted his research to secondary immunity and mechanisms of cross-reactive immune responses to influenza.

He and his team discovered that the collagen IV-binding alpha-1 integrin is essential for establishing and maintaining memory CD4 and CD8 T cells in the respiratory tract. In the absence of these tissue-memory T cells, protection from secondary infection is severely diminished in spite of substantial memory in the lymphoid organs. These studies demonstrate the critical role of tissue-localized memory for immune protection in non-lymphoid peripheral tissues.

Topham has moved into clinical and translational studies



of human immune responses to natural infection and experimental vaccines, with a major emphasis continuing to be cross-reactive T and B cells. Working with computational biologists, he has developed highly sophisticated mathematical models that simulate the adaptive immune response to influenza.

His newest hat is as director of the Respiratory Pathogens Research Center (RPRC) that NIAID views as a resource to do research on respiratory infections, targeting most other fungal, bacterial and viral pathogens, but excluding mycobacterium tuberculosis.

"It surpasses anything we've ever done in ambition and complexity," Topham said. "I'm called the director but I'm only a ringleader. This is the work of many people. We had to have a very substantial infrastructure to do the studies they want us to do. I can't take credit for winning the award. We're relying on expertise in Rochester, which is substantial."

Ann R. Falsey, M.D. (R '86, FLW '91), professor of medicine at the Medical Center and an infectious disease specialist at Rochester General Hospital, helps direct the RPRC. She is an internationally known expert on respiratory syncytial virus (RSV) and leads the team's efforts to understand the virus and any future trials of vaccines and treatments.

More than a dozen researchers are involved in the RPRC. Edward E. Walsh, M.D. (R '77, FLW '82), a professor of medicine at the Medical Center and also an infectious disease specialist at Rochester General, for example, is investigating severe RSV disease in children younger than one year of age. Gloria S. Pryhuber, M.D., a neonatologist and the George Washington Goler Professor of Pediatrics at the Medical Center, is building on her well-established work in inflammatory lung disease in children.

The RPRC establishes a new model for the way research will be conducted in the future, Topham said. The New York Influenza Center of Excellence, for example, follows a traditional model in which individual investigators conduct individual projects in their own research domain.

"It's all focused on influenza, but it is not necessarily a coordinated effort where all the resources of the center focus on a small number of problems," he said. "The RPRC is different. We research questions that could come from NIAID or from clinical faculty. We build an infrastructure to address the questions that involves many different technologies. For one investigator to do all these together is a lot. By having investigators each take a piece, we can address some big questions and do it in a coordinated fashion. The idea is to integrate data sets once they have been generated by the different investigators. We're pulling in new investigators and new resources from across the University. This is how research is going to be done down the road."

Topham envisions a project on lung infection that not only involves a study of gene expression, but also investigations of microbes present in the gut and the respiratory tract during infections and how that conditions the immune system. This data would be combined with disease information and medical histories from subjects themselves to better determine how the disease works and how vaccination works.

"It's pretty ambitious," he said. "It requires multiple investigators. You have to be able to organize them, keep them focused and keep them happy."


Blue Gene muscles

These days, Topham also often finds himself knee-deep in the world of high-performance supercomputers with his work in the Health Sciences Center for Computational Innovation (HSCCI).

For the last seven years, he has been involved in a project utilizing mathematical modeling of immune responses to influenza. It has transformed into an informatics approach, studying gene expression, proteomics, cellular parameters and clinical parameters to try to develop a multi-level model to identify the key control points of the immune responses to flu vaccination. This project in the Center for Biodefense Immune Modeling at the Medical Center, directed by Martin Zand, M.D., Ph.D., and Hulin Wu, Ph.D., demonstrates the possibilities of biomedical informatics, Topham said.

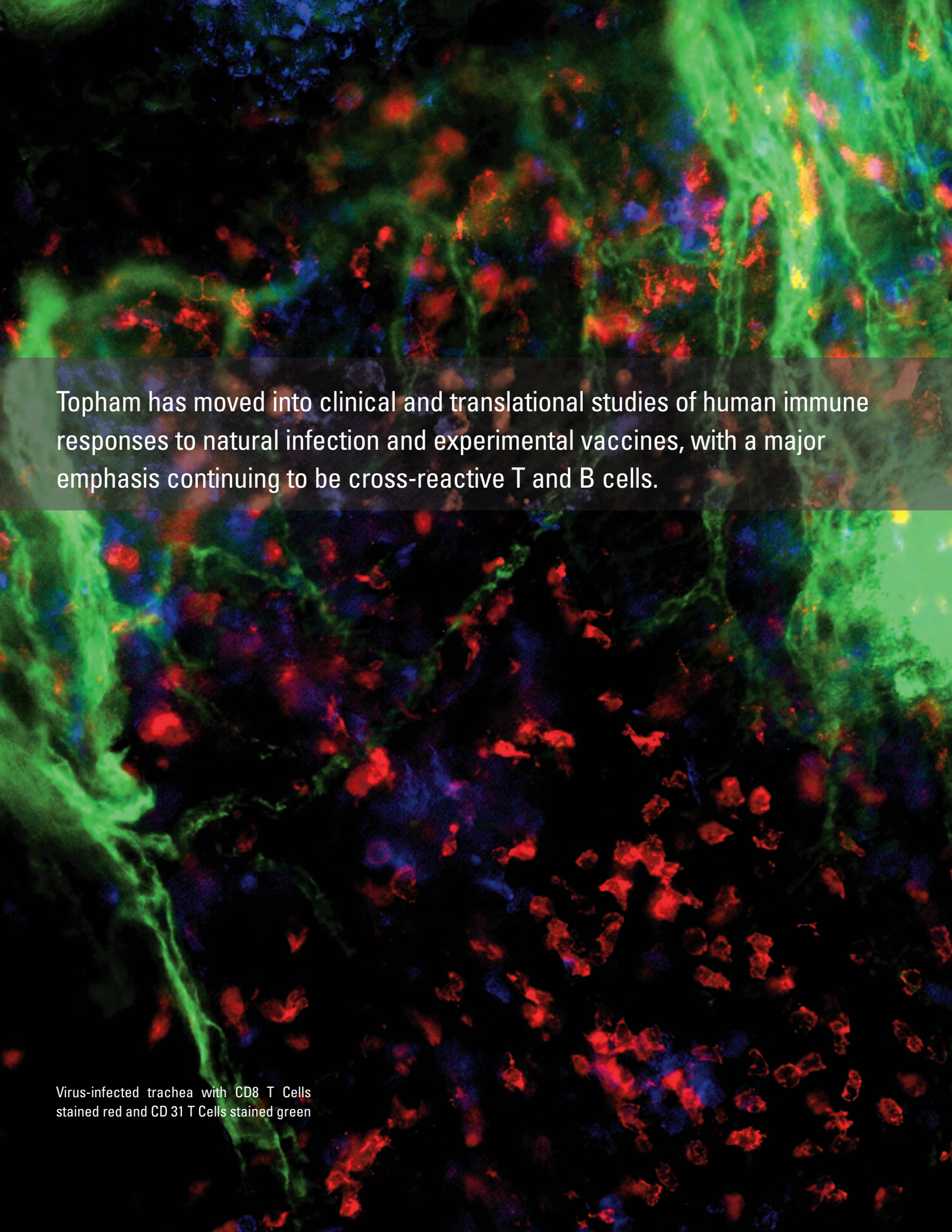
This summer, as part of a partnership between the University and IBM, the University received IBM's Blue Gene/Q, one of the most powerful and efficient computer systems in the world. The Blue Gene/Q will provide additional muscle for the HSCCI that Topham leads.

In 2008, the University created the HSCCI in partnership with IBM. In the same year, IBM gave an earlier generation Blue Gene supercomputer system – the Blue Gene/P – to the University. Since that time, more than 500 scientists at the University have used high-performance computing in their

A fluorescence micrograph showing a virus-infected trachea. The image displays a complex network of green and red signals against a dark background. The green signal highlights the tracheal structure, while the red signal indicates the presence of ICAM antibody. The overall appearance is that of a highly branched, interconnected network of fibers or cells.

Virus-infected trachea stained for ICAM antibody

“We build an infrastructure to address the questions that involves many different technologies. For one investigator to do all these together is a lot. By having investigators each take a piece, we can address some big questions and do it in a coordinated fashion.”



Topham has moved into clinical and translational studies of human immune responses to natural infection and experimental vaccines, with a major emphasis continuing to be cross-reactive T and B cells.

Virus-infected trachea with CD8 T Cells stained red and CD 31 T Cells stained green



research and the center has helped attract at least \$107.1 million in new funding.

“I’m not an IT whiz and some of this goes way beyond my personal comfort zone,” Topham said. “But one of the things I am realizing is that I am good at getting people to work together. I’m good at setting up collaborations, good at identifying scientific direction for different projects. It’s not my skills in computing or modeling or even immunology that were reasons they wanted me to lead the center, but because I could communicate with computational biologists and our researchers. I know enough about both domains to at least get the conversation started. I can identify who should be talking to one another and facilitate those collaborations.”

Falsey agreed with Topham’s self-assessment, saying he is “quite adept at identifying good people and bringing them together for productive collaborative research.”

“He has a unique ability to understand the science of respiratory research on a very deep level yet also has the vision to imagine what a center should be and how to grow a program,” she said.

The HSCCI should move to expand more deeply into computational biology, Topham said.

“I am encouraging everyone to move in that direction. I am looking at investigators across the University who have informatics or computational needs but don’t know how to access the technology,” Topham said. “I view one of my roles as opening up these tools to those investigators. There are opportunities all over the place for others to benefit.”

At meetings with high-performance computer scientists, Topham admits, he finds it difficult to “talk the talk.”

“But that isn’t what they need,” he said. “What we need

are translators. When you have computational biologists, mathematicians, statisticians and basic immunologists, biologists and clinicians come together, they talk different languages. They can work together, but they find it very hard to communicate. We have a data problem. We need to build the translators who work at the interface of molecular biologists, the cellular biologists and clinicians and people who use computational and mathematical approaches to deal with the data that is generated. We now can generate far more data than we can ever analyze or interpret, so we have to create tools and methods and hardware and software to really make the most of the studies we are doing and data we generate.”

Topham and others at the University are discussing a training path for “translators” that could develop into an undergraduate and graduate program.

Part of a grand plan

Kristin M. Scheible, M.D. (M ’04, R ’07, FLW ’10), assistant professor of pediatrics at the Medical Center, found herself in Topham’s lab as a neonatology fellow. She had little laboratory training, but was interested in a research career.

“I soon learned that Dave’s willingness to take on the training of novices is not a common trait in competitive academic research,” Scheible said. “It is a characteristic, however, that defines him as a scientist. Dave is consistently able to identify potential in his trainees as future scientists moving the field forward, potential in his colleagues as future collaborators, potential in new technology to advance discovery, and potential in ideas to enrich scientific understanding. He approaches other perspectives, whether clinically

or laboratory-oriented, with a positive attitude, providing a fertile environment for novel ideas and connections. No idea or individual is ever dismissed.”

Although Topham’s lab focuses on influenza research, he provided guidance and resources to Scheible so she could pursue her own research interest in neonatal T cells. For some time, Scheible said she could not envision how her work would benefit the lab’s mission. After several years, Scheible said she saw the grand plan.

“One of the priority projects for the Respiratory Research Pathogens Center addresses infant immune development, specifically how an infant’s T cell responses are shaped by the viruses and bacteria to which they are exposed,” Scheible said. “Partly through his investment in my tangential project, he was able to build collaborations and experience that resulted in a fundable translational study. This was one more example of Dave’s ability to focus beyond the present and his commitment to a bigger vision that moves science forward.”

Topham’s T cell quest

Since he was a post-doctoral fellow more than a dozen years ago, Topham has maintained a personal quest as a scientist.

“I always have wanted to understand how cytotoxic T cells function in the airways,” he said. “Influenza is an infection that only takes place in the epithelial cells that line the respiratory tract. Immune cells have to get from the lymph nodes through the blood to the tissue and then exit to the epithelial layer where they seek out infected cells and kill them. That means they have to move a lot. We don’t know how this is regulated. We have some ideas of what molecules and receptors might be important, but no one has been able to directly test at the site of the infection in tissue to see how these cells work.”

The technology now exists to make site visits possible. Using a multiphoton microscope, scientists can image the cells in real time in live animals.

“We can watch the cells migrate. We can interfere with them. We can see the target cells,” Topham said. “We’re trying to study the environment of the tissue, the proteins that form the structure of the tissue, because the T cells have to interact with those structures. I want to see this project develop because it is important. This is where we will find new ways to combat infection. Having virus-specific T cells in the airways at the time you encounter a new infection means you can resist an infection more effectively. If we can immunize in a way to place those cells in those locations, we would have better vaccines. First, we have to understand how they get there, how they stay there, and how they move around before we can figure out how to immunize in a way that promotes those cells.”

His work with the New York Influenza Center of Excellence (NYICE), which is directed by John J. Treanor, M.D. (M ’79, FLW ’85), has echoes of his personal research target.

“Our main question is: How does an influenza infection or vaccination affect the immune system?” Topham said.

“How did the virus or vaccine modify someone’s immune status? Were more antibodies elicited or different kinds of antibodies that could neutralize the virus or cross-react with other viruses? Would the virus or the vaccine modify T cells, what their specific functions are?”

A better understanding of the immune response to influenza could result in the ability to design a way to immunize so the immune system would cross-react to many influenzas.

“Some people call it a universal vaccine. I hesitate to say that. It is almost a cliché,” Topham said. “We know cross-protection exists, but we don’t know enough about how it works. So, we have a lot of projects focused on it. The jury is still out on this but we (the NYICE investigators) found that, with CD4 T cells, the immune system predominantly responds against pieces of the influenza virus that it has seen in the past.

“With the CD8 response, we actually found the near opposite. When the immune system sees a new virus, not only does it respond with T cells that have seen the influenza before, it also mounts new responses to the virus to things that are unique to the new infection. That is a pretty fundamental, new piece of information. We now know the immune system, at least in healthy young-to-middle-age adults, remains plastic and mounts new responses. That is important if you want to design a vaccine. If you can’t respond to new things, you want the vaccine to contain a lot of the old things that are conserved among many viruses. If they can see new things you can immunize and tailor it to what is circulating today.”

Topham’s enthusiastic commitment to his work is infectious too, Treanor said.

“I think David has a remarkable ability to remain optimistic in the face of daunting challenges, and to see the opportunities in situations that may not be obvious to others,” Treanor said. “Both of the two large projects that I am involved in with David, NYICE and the RPRC, were really intense competitions with other groups, most of which were considerably larger and probably more accomplished than we were. But David has this vision of ways that we can contribute something that others can’t and this real knack for figuring out the pathway for bringing a lot of people together in unique collaborations.

“Obviously, it’s driven by a very broad understanding of scientific topics from multiple points of view, but it’s also a product of a very engaging personality and this sort of “can-do” perspective towards problem solving. David is extremely passionate about his work, and I think that rubs off on others also.”



“I’m not an IT whiz...but one of the things I am realizing is that I am good at getting people to work together. I’m good at setting up collaborations, good at identifying scientific direction for different projects. It’s not my skills in computing or modeling or even immunology that were reasons they wanted me to lead the center, but because I could communicate with computational biologists and our researchers.... I can identify who should be talking to one another and facilitate those collaborations.”



Focus on Aging

A psychiatrist and a new Medical Center program take on the challenges of health care for the growing population of older adults.

By Michael Wentzel

Emmy Award-winning producer and director Manville Jennings never shows a sign of deep depression or anger in a University of Rochester Medical Center video during which he discusses the impact Alzheimer's disease is having on his life.

He can no longer drive, he says, but then Jennings stops talking, becomes lost in his thoughts and cannot describe how other aspects of his life have changed. No cure to the disease that is erasing his memory will be found in his lifetime but, Jennings says, he considers himself lucky to have nearby doctors and others who are conducting research on Alzheimer's and also providing excellent care.

Jennings is a patient in the Medical Center's Memory Care Program, through which patients and their families receive services from a multi-disciplinary team of clinicians, including specialists in neurology, psychiatry, geriatrics, neuropsychology, social work, nurse practice, and marriage and family therapy.

The Memory Care Program provides much-needed care to many like Manville Jennings, but its effectiveness and success are threatened. An estimated 30,000 people in the Rochester

region have Alzheimer's disease or a related dementia. The program is overwhelmed with requests for care.

The Memory Care Program is one of the first targets for the Office for Aging Research and Health Services (OARHS), which was created by the Medical Center this year to investigate, test and develop novel, more efficient and lower cost ways to provide health care to the elderly that are coordinated with community and regional services and partners.

"The Memory Care Program is world class," said Yeates Conwell, M.D., the director of OARHS. "But, based on a traditional clinic approach to care and constrained by current reimbursement schemes, it is not a sustainable model. They can care for only a fraction of the enormous and rapidly growing number of people who need the services.

"We're still operating in a fee-for-service reimbursement system through a hospital program that is very constrained by what the Centers for Medicare and Medicaid Services will allow providers to bill for. It's components of comprehensive care that are not now reimbursed – care management and social work services, for example – that will impact cost and

“I’m gaining insights into what the large national priorities are for health system redesign and bringing them back to the Medical Center. Through OARHS, we can shape the resources we have here in ways that make us a highly innovative institution as it relates to health care for older people.” — Yeates Conwell, M.D.

Phase	Current Status	Key Considerations	Next Steps
Data collection and analysis as basis for model modification.	In progress.	Details of the model and desired outcomes must be clear before other steps.	Continued consensus building.
What challenges are you and your team encountering in this work?			
<p>It is a fee-for-service environment, so agreement on cost incentives for the system to test changes that appear to result in reduced inpt hospitalization and ED visits (reimbursement) is difficult to achieve.</p> <p>We are rolling out a new EMR in May, so (a) they are reluctant to take on new initiatives before then, yet (b) they want to integrate communications and outcomes assessment tools into the new EMR system, yet (c) the EMR vendor (a) is a stronger force than (b).</p>			
What areas of key learnings would you share with fellow advisors and CMS?			
<p>It is important to have a strong, clear, and consistent vision of the goals and objectives of the program.</p>			

quality and outcomes. Alzheimer’s is a quintessential chronic disease. How do we provide better care, a better experience of care and at a lower cost? The answer lies in innovative approaches that fully integrate and pay for both medical and psychosocial services.”

As a professor of psychiatry at the Medical Center and an internationally known researcher in suicide prevention, Conwell might seem like an unlikely person to direct an office aimed at redesigning health care systems.

But Conwell has helped develop successful programs with community partners that improve mental health care for the elderly. And, earlier this year, he was selected as one of 73 people from across the country, and the only psychiatrist, to serve in the Centers for Medicare and Medicaid Services’ (CMS) Innovation Advisors Program.

The initiative, launched by the CMS Innovation Center, aims to develop a cadre of professionals with the skills to drive improvements to patient care and reduce costs nationwide. Among other duties, the advisors support the Innovation

Center in testing new models of care delivery and also form partnerships with local organizations to drive delivery system reform, and improve their own health systems so their communities have better health and better care at a lower cost.

“The advisors program is a wonderful educational experience for me,” Conwell said. “I’m gaining insights into what the large national priorities are for health system redesign and bringing them back to the Medical Center. Through OARHS, we can shape the resources we have here in ways that make us a highly innovative institution as it relates to health care for older people. Over the years I’ve been at the Medical Center, it’s been clear that the University has tremendous strengths in regard to aging, from basic science right up through the design and delivery of health services.

“The Medical Center is a health system that aspires to take on new responsibilities for a large population of older people throughout our region. I see the role of OARHS as helping faculty and staff across our mission areas—clinical care, education, research and community service—to understand



the challenges and opportunities, to think creatively and draw on resources across traditional boundaries to achieve better health, better-quality care and lower cost for older adults. This is about facilitation, collaboration, connecting the dots.”

The rewards of collaboration

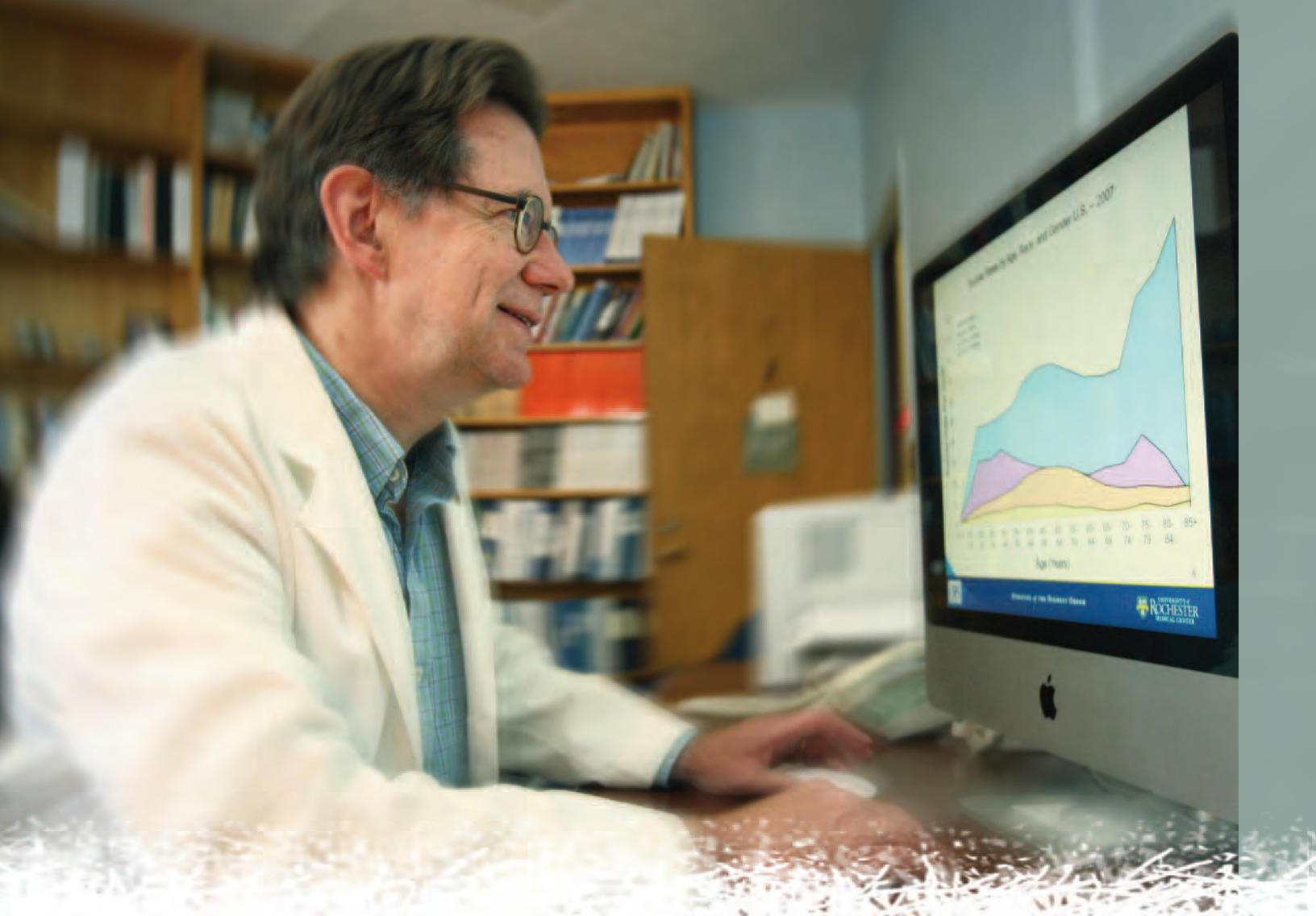
Clinical depression is common in later life and often leads to other problems, including poor health outcomes, higher costs for health care and institutionalization, and premature death due to suicide or other causes.

Identifying elders at risk and providing care can improve health and hold down costs, as well as prevent self-destructive acts. Because social factors are so prominent in depressive illness, engaging social service agencies in its recognition and management is a promising strategy. In 2006, Conwell received a National Institute of Mental Health grant of \$2.57 million for a project that established a unique partnership with Rochester area aging services agencies, Eldersource Care Management

Services, Lifespan and Catholic Family Center. The partnership became known as the Senior Health and Research Alliance, or the SHARE Alliance.

SHARE Alliance activities have included: training agency care managers in the detection and basic management of late-life mental illness and the assessment and management of suicide risk, adopting a routine of screening for mental disorders in agency clients, revising the data management systems of the agencies to support research, and conducting research studies. Thousands of people in the Rochester region have been assessed for depression and other issues and received interventions from SHARE Alliance partners.

In 2010, the Centers for Disease Control (CDC) awarded Conwell and the Medical Center \$2 million for another project designed to test whether linking lonely and socially disconnected seniors with other caring older adult volunteers reduces the risk of suicide. The volunteers have been recruited, trained and supervised by Lifespan Inc., the largest aging services agency in the Rochester region and the Medical Center’s



partner in the research.

These projects demonstrated to Conwell and others the rewards to older adult health of linking an academic medical center with community-based social service agencies in collaborative projects

“The nature of the work we do as care providers will change a lot over the coming few years,” Conwell said. “Health care inevitably is moving farther afield. We need to be providing support for the delivery of care to older adults in primary care offices and other sites beyond the walls of the Medical Center.

Conwell and his colleagues at URM recognize that to meet the Institute for Health Care Improvement’s Triple Aim – improving the patient experience, improving the health status of populations, and reducing the cost of care – will require approaches that are both multidisciplinary and highly coordinated. “We have to raise awareness of people in our community about the challenges we face and the importance of working together to come up with creative solutions.

I don’t believe you can give cost-effective health care, for example, to someone with a complex disorder that has social implications without engaging social services in the care of that person.”

Among other goals, OARHS aims to obtain grants from the Center for Medicare & Medicaid Innovation (CMMI), the federal Patient Centered Outcomes Research Initiative (PCORI) and other sources to support the study of new approaches to care from health care systems and community organizations.

“Calls for proposal come out and suddenly you have people sitting around the table who have never sat together before and they are coming up with ideas and generating care models that show we can get better outcomes and for less money,” Conwell said. “Now that these discussions have started, OARHS has a responsibility to nurture them and to help ensure they yield fruit.”

“I see the role of OARHS as helping faculty and staff across our mission areas-clinical care, education, research and community service-to understand the challenges and opportunities, to think creatively and draw on resources across traditional boundaries to achieve better health, better-quality care and lower cost for older adults.”

New	5	12	17	25	11	8	12	15
F/U	0	1	1	0	0	0	2	1
Total	5	13	18	25	11	8	14	16
<i> clinic 1/2 days/month</i>	4	8	13	17	9	7	12	10

New	10	17	17	10	12	12	9	8	10
F/U	8	25	30	40	36	28	30	20	25
Total	18	42	47	50	48	40	39	28	35
<i> clinic 1/2 days/month</i>	4	17	19	16	16	15	16	10	14

New	6	7	6	8	7	9	9	8	6
F/U	0	0	0	0	0	0	0	0	0
Total	6	7	6	8	7	9	9	8	6

A map for patients

Another OARHS activity is the recently inaugurated, “Aging in Context Project,” a geospatial mapping and database linkage project that will build a foundation for future regional health and services initiatives.

“The objective is to make a comprehensive repository of data that is useful to patient-centered medical homes, the service system, policy makers and others for personalizing care and tailoring the array of resources to what the community needs,” Conwell said. “In addition to the health and service utilization information available from the medical record, we’re collecting information, for example, on the location of parks, bus lines, sidewalks, shopping malls, types of housing. There are data on crime, outlets where alcohol is available, but also places where fresh produce is available.”

With such a set of linked databases, a physician could ask specific questions about an individual patient. Say you wanted to define the risk of an elderly patient being hospitalized or requiring readmission after discharge. In addition to the usual risk

stratification metrics, put in the addresses of the patient, the primary care office and of the patient’s caregivers and relatives, and information about the means by which they interact. Add information about access to exercise options and proper nutrition, or the closeness of a bar or place to buy alcohol.

“With the necessary research and sophisticated computer modeling, we might get much better at determining who needs what kinds of extra services to remain safe and well in the community after discharge,” Conwell said. “With new financial penalties to hospitals for readmission of Medicare patients within a month of discharge, there is a strong financial incentive to do this kind of work as well.”

At the practice level, the database could give a patient-centered medical home a portrait of its population of patients and how that population related to community-based services most needed by patients. At the system level, policy makers could see utilization of services, the needs of patients and the availability of services that could result, for example, in a decision to relocate bus lines.

“By improving our interface with primary care practices and supporting providers’ ability to diagnose and manage the most common forms of dementia, our goal is to extend the highest level of care to the community.” — Frederick J. Marshall, M.D.

Another OARHS target is mobility. Falls account for a large proportion of costs of emergency room visits and hospitalizations, as well as mortality, of older people.

The Geriatric Fracture Center at Highland Hospital has taken a lead in management of fall-related injuries and in the prevention of falls. Conwell wants to find ways to coordinate Highland’s expertise with that of other centers of excellence in the Medical Center that are relevant to falls prevention – orthopaedics, physical rehabilitation, neurology and ophthalmology – to create a more complete continuum of care that excels not only in the treatment of fractured hips following a fall, but the prevention of falls and injuries as well.

The Silver Tsunami

The Memory Care Program project showcases what Conwell hopes to accomplish with OARHS.

“People with memory disorders are more than two times likely to end up in the hospital, where care is often chaotic,”

he said. “Take them out of their familiar environment and put them in a noisy, fast-paced, scary place like a hospital and they don’t do well. So, they take a lot of hospital resources. The hospital experience is bad for them and expensive and the outcomes are not very good.

“Dementia is a complex illness, a long process that unfolds in variable ways over time. At each stage, there is need for services that under current payment schemes are unreimbursed or poorly reimbursed. Without attention to these elements of care, patients utilize greater amounts of expensive services to their detriment. We think we can prevent some of that by redesigning a system upfront that cares for more people in better ways. And we think that by doing things differently we can ultimately save the Medical Center money.”

Conwell is working on the pilot project with Carol Podgorski, Ph.D., M.P.H., associate professor of psychiatry, Lisa Boyle, M.D, M.P.H., assistant professor of psychiatry, and Frederick J. Marshall, M.D., associate professor of neurology and director of the program. It targets a segment



of the program's patients by adapting elements of a dementia collaborative care model developed at Indiana University Wishard Health Aging Brain Center.

The key element of the model, according to Boyle, is using a team-based approach for assessment and management of both the patient with mild cognitive impairment or dementia and family caregivers. The pilot incorporates the use of a dementia care coordinator, who works along with specialists at the Memory Care Program, and the patient's primary care physician.

The dementia care coordinator's role includes conducting systematic screening for common problems associated with dementia and caregiver-related stress, coordinating the recommended treatment for the patient and family caregiver with the providers, and linking the patient and family to community resources.

"By improving our interface with primary care practices and supporting providers' ability to diagnose and manage the most common forms of dementia, our goal is to extend

the highest level of care to the community," said Marshall. "In so doing, our hope is to create systems of care that decrease the rates of potentially avoidable hospitalizations for these patients, and that buttress the supports available to care-givers.

OARHS will have results from the pilot project sometime in 2013.

"Older people are the fastest growing segment of our population," Conwell said. "Whether you call it the Silver Tsunami or the Golden Wave, the challenge is real. This is a large group of people that consumes a tremendous amount of health care services and a lot of health care dollars and we are not prepared for their care. The challenge is local, regional and national. We have a set of resources in the Rochester area that are very strong in relation to issues of aging and health but they haven't really been knit together in a way that allows us to optimally meet this challenge. This has to go forward. We can't stand still. OARHS gives us a framework to do so."

Canandaigua hospital formally affiliates with Medical Center

Following months of strategic planning between the University of Rochester Medical Center and Thompson Health in Canandaigua, N.Y., leaders from both organizations officially agreed to make Thompson Health an affiliate of the Medical Center.

The Thompson Health affiliation, which was announced in June, came after several months of discussions, due diligence, and board approvals involving administrative leaders, physicians, and board members among the two health systems.

"This affiliation between Thompson Health and the University of Rochester Medical Center offers a great opportunity to bring a truly integrated delivery system to the Finger Lakes region," Linda Farchione, then-president and chief executive officer of Thompson Health, said in June. "It will allow for coordinated service delivery of all levels of health care close to home."

"Thompson Health is unquestionably one of the most progressive, well-run, and medically robust health systems in our region, so it is a natural fit with the Medical Center's family of providers," said Medical Center CEO Bradford C. Berk, M.D., Ph.D. (M '81, PhD '81). "Working together, we have enormous potential to improve the health of our region."

Berk said that by partnering, a seamless network of health care delivery will be created allowing patients to access many different levels of care at a variety of locations. Both view the affiliation as an extension of successful partnerships that already exist between the two health systems within many medical and surgical specialties, including cardiology, neurosurgery, oncology, imaging and more.

Another community benefit of this collaboration will be that hundreds of Ontario County residents who are admitted to Rochester's Strong Memorial Hospital each year will be able to receive the health care they need much closer to home at Thompson. This not only benefits Ontario County patients, but also frees up specialty and sub-specialty care beds,



"Thompson Health is unquestionably one of the most progressive, well-run, and medically robust health systems in our region, so it is a natural fit with the Medical Center's family of providers." — Bradford C. Berk, M.D., Ph.D., Medical Center CEO

only available at Strong Memorial Hospital, for patients throughout upstate New York.

The parent corporation, Thompson Health, will remain intact and will continue to oversee and govern Thompson's subsidiary corporations including F.F. Thompson Hospital, the M.M. Ewing Continuing Care Center, FFTH Properties, F.F.T. Senior Communities (Ferris Hills and Clark Meadows) and the F.F. Thompson Foundation.

Thompson Health will continue to operate under the guidance and leadership of its existing board of directors comprised of members of the local community. Thompson will add new representatives from the Medical Center to the

existing board. The Medical Center also will appoint representatives from Thompson Health to its existing board of directors.

The Thompson Health parent corporation will retain its own local President/CEO. Michael Stapleton, who had been Thompson's executive vice president and chief operating officer, became president and chief executive officer in July when Farchione retired.

Pluta Cancer Center merger proposed



The Medical Center has announced a Memorandum of Understanding with the Pluta Cancer Center that could lead to an eventual merger of the two organizations.

Pluta, which is located in Henrietta, N.Y., sought a community partner, largely in response to the rapidly changing healthcare environment.

Founded in 1975 through a generous gift of the Pluta family, the Pluta Cancer Center has a staff of 42, including two radiation oncologists and three medical oncologists. The Center sees approximately 500 new patients each year, yielding about 19,000 patient visits.

"Bringing together the scope of services provided at our Wilmot Cancer Center and the Pluta Cancer Center makes good sense for a number of reasons," Berk said when the memorandum was announced in July. "Pluta has a rich, well-deserved reputation within our community for providing high quality, patient-centered care, much in line with our own initiatives.

We are leveraging the strengths of both organizations and raising the bar even higher on the quality of care we can provide to patients in our region."

Pluta would provide the Medical Center an off-site location that offers additional conveniences for some patients and add a larger pool of candidates for clinical trials. The ability to provide service at a second location also offers the Wilmot Cancer Center added flexibility, with the possibility of relocating some services to Pluta to provide room for future growth in programs at Wilmot.

The process leading to an actual merger of URMC and Pluta is expected to be complete by early 2013.

State funds medical training at Rochester

The University of Rochester Medical Center has received a \$344,000 New York state grant for a three-year project to expand and improve training and education of School of Medicine and Dentistry medical students and residents who deliver primary care at Culver Medical Group.

Residents will use mannequins and other tools to learn how to perform common office procedures such as injections to knees and ankles, skin biopsies, and tracheotomy care. The program will focus on the management of complex, chronic diseases that originate in childhood (cystic fibrosis and sickle cell disease, for example), but require well-coordinated care into adulthood.

The Culver Medical Group is a freestanding primary care center owned by the Medical Center. Its mission is to care for medically underserved people who live in Rochester, by using fresh ideas and innovative, evidence-based approaches to care.

The grant was awarded through the Doctors

Across New York Ambulatory Training Program, which is designed to defray the costs of clinical training and placement of physicians. State Health Commissioner Nirav R. Shah, M.D., M.P.H., announced the awards to train 1,000 medical residents and students at 43 community-based sites.

"This project is a great opportunity to reinvigorate the outpatient training experience, with both case-based teaching sessions and hands-on procedural curriculum," said Robert Fortuna, M.D., M.P.H., co-director of the training grant and an assistant professor of medicine and pediatrics at the Medical Center.

Brett W. Robbins, M.D. (R '97), serves as program director of the Internal Medicine-Pediatrics residency, and Tiffany Pulcino, M.D., M.P.H. (R '08), is a co-director of the grant. All three provide full-time care at Culver Medical Group.

Since 2001 the Culver Medical Group has been involved in training medical residents who want to learn about primary care in an outpatient setting. Twenty eight residents work under the supervision of seven Internal Medicine-Pediatrics faculty members. Local and national medical students also rotate through the program.

The Medical Center's grant is among \$10.6 million in total funding awarded to 17 New York health care institutions.



'Antisense' could lead to a treatment for muscular dystrophy

By Tom Rickey

Scientists have reversed symptoms of myotonic muscular dystrophy in mice by eliminating a buildup of toxic RNA in muscle cells.

After experimental antisense compounds were administered to mice twice a week for four weeks, symptoms of the disease were reduced for up to one year, a significant portion of a mouse's lifespan.

The investigators say that while the work is an encouraging step forward against myotonic dystrophy, one of the most common forms of muscular dystrophy, it's too soon to know whether the approach will work in patients. But they are cautiously optimistic, noting that the compound is extremely effective at reversing the disease in a mouse model.

The work, carried out by scientists at the University of Rochester Medical Center,

Isis Pharmaceuticals Inc. and Genzyme, was published in August in *Nature*.

"These results give us strong encouragement about the possibility of developing a treatment that could fundamentally alter the disease. It's an important step on a long path," said senior author Charles Thornton, M.D., a neurologist at the Medical Center who has been pursuing new treatments for the disease for more than two decades.

"But, it's too early to know if this treatment will work as well in people as it did in the laboratory. Unfortunately, in biomedical research there are previous examples of compounds that worked in mice but not in people," added Thornton, the Saunders Family Distinguished Professor in Neuromuscular Research.

The recent progress comes about a decade after several scientists, including Thornton, discovered that the genetic defect that causes the disease works quite differently than most other inherited diseases. In many diseases, a genetic flaw means that an important protein is not made correctly, or not made at all.

"For 20 years we studied myotonic dystrophy, hoping that someday we would learn enough to spot its Achilles heel. This work comes close to doing that."

— Charles Thornton, M.D.

But in myotonic dystrophy, the defect results in the creation of an abnormal messenger RNA, which accumulates in the nucleus, getting in the way and stopping other proteins from doing their jobs. One of those proteins is MBNL1, which helps create chloride channels that are important for electrical control of muscles. When that process is thwarted, muscles send errant electrical signals, causing symptoms.

The approach outlined in the *Nature* paper exploits the roots of the defect, harnessing an enzyme whose usual job is to cut RNA into pieces. Working closely with the Rochester and Genzyme teams, scientists at Isis created synthetic compounds—short snippets of chemically modified DNA—that bind to the toxic RNA, modifying it in such a way that it was targeted for destruction by



one of the body's own enzymes, RNase H.

With the team's most effective compounds, symptoms in the mice were reversed. The level of toxic RNA was reduced by more than 80 percent; stiffness in muscles eased dramatically; the microscopic structure of muscle was improved; and electrical signaling in muscles returned to normal.

The possibility of targeting "toxic RNA"—a buildup of abnormal RNA causing cellular processes to go awry—makes myotonic dystrophy an excellent target for antisense drugs, said Thornton.

The compounds are called "antisense" because their genetic code is the mirror image of the target RNA strand, known in scientific parlance as the "sense" molecule. The antisense compound will only stick to the precise RNA that is part of the myotonic dystrophy gene, leaving thousands of other vitally important RNAs alone.

While antisense technology has been in development for a couple of decades, it has not been effective at eliminating RNA in muscle cells until now.

"For 20 years we studied myotonic dystrophy, hoping that someday we would learn enough to spot its Achilles heel," said Thornton. "This work comes close to doing that ... I know it is unscientific for me to think so, but I can't help but see a little glimmer of 'medical justice' in this approach. For the same reason that the toxic RNA makes people sick, by hanging around too long in the nucleus and gumming up the works, it also becomes more susceptible to antisense drugs, because these drugs seem to work extraordinarily well against RNA in the nucleus."

Now scientists at Isis and the University of Rochester are working to improve the compound further, developing antisense compounds with stronger activity against the toxic RNA, but with minimal effects on the rest of the body. An unknown factor at this point, Thornton says, is whether the compounds will also improve the muscle-wasting aspect of the disease. That symptom, which causes great difficulty for patients, has been hard for scientists to create in mice, and so it's difficult to predict how it might respond to antisense knockdown technology.

The first author of the paper is Thurman Wheeler, M.D., assistant professor of Neurology at the University of Rochester Medical Center, who conducted many of the experiments.

In Muscular Dystrophy, what matters to patients and doctors can differ

By Mark Michaud

Complex, multi-system diseases like myotonic dystrophy require physicians and patients to identify which symptoms impact quality of life and, consequently, what treatments should take priority.

However, a study published in July in the journal *Neurology* reveals that there is often a disconnect between physician and patient over which symptoms are more important, a phenomenon that not only impacts care but also the direction of research into new therapies.

"In order to design better therapies we must first develop a clear understanding of what patients think are the key mental and physical burdens of this disease," said University of Rochester Medical Center neurologist Chad Heatwole, M.D. (R '05, FLW '06), lead author of the study. "It is clear from this study that, in the case of myotonic dystrophy, researchers have not always been concentrating on the symptoms that are most important to the patient."

Myotonic dystrophy has been characterized as one of the most diverse and complex genetic diseases with a wide range of symptoms ranging from fatigue, muscle weakness, cognitive impairment, depression, difficulty sleeping, impaired vision, pain, difficulty swallowing, gastrointestinal problems, and myotonia, the inability to relax muscles after contraction that is the hallmark of the disease.

As a result, physicians and patients are often confronted with a bewildering array of treatment options and researchers have previously had no comprehensive method to measure the meaningful impact of experimental therapies. Further impetus for a patient-centered approach has come from a recent push by the federal Food and Drug Administration to require that new drugs take into account what outcomes patients feel are important.

Using a national database of muscular dystrophy patients developed by the Medical Center, Heatwole and his colleagues surveyed 278 people with myotonic dystrophy type-1. They asked them not only which symptoms they were experiencing, but which ones have the most impact on their lives. Answers were cross refer-

"It is clear from this study that, in the case of myotonic dystrophy, researchers have not always been concentrating on the symptoms that are most important to the patient." — Chad Heatwole, M.D.

enced with the respondent's age and a genetic measure, called CTG repeat length that roughly correlates with the severity of the disease.

The study revealed that certain symptoms like myotonia, which are experienced by more than 90 percent of individuals with the disease, are less important to patients than symptoms such as such as fatigue, limited mobility, and sleep problems. Respondents also identified specific symptoms that have the greatest impact on their lives. These included difficulty having children, not being able to stay in the standing position, and difficulty holding down a job.

"One of the more surprising results is that myotonia — the condition that gives the disease its name — is down the list of things that patients feel most affect their daily lives," said Heatwole. "These insights will not only have important implications for how patients are treated, but also how new therapies for the disease are evaluated by building better outcome measures."

Heatwole and his colleagues have developed a questionnaire for myotonic dystrophy patients that weights patient responses based on their study findings. The questionnaire, called a disease-specific patient reported outcome measure is one of many being developed for neuromuscular diseases at the Medical Center by Heatwole and his team. They will enable researchers to more precisely measure whether the impact of experimental therapies is meaningful to patients.

Without PSA testing, more men would die, study concludes

By Leslie Orr

Eliminating the PSA test to screen for prostate cancer would be taking a big step backwards and would likely result in rising numbers of men with metastatic cancer at the time of diagnosis, predicted a University of Rochester Medical Center analysis published in the journal, *Cancer*.

The Medical Center study suggests that the prostate-specific antigen (PSA) test and early detection may prevent up to 17,000 cases of metastatic prostate cancer a year. Data shows, in fact, that if age-specific pre-PSA era incidence rates were to occur in the present day, the number of men whose cancer had already spread at diagnosis would be three times greater.

"Our findings are very important in light of the recent controversy over PSA testing," said Edward M. Messing, M.D., study co-author, chair of the Department of Urology, and president of the Society of Urologic Oncology. "Yes, there are trade-offs associated with the PSA test and many factors influence the disease outcome. And yet our data are very clear: not doing the PSA test will result in many men presenting with far more advanced prostate cancer. And almost all men with metastasis at diagnosis will die from prostate cancer."

In 2011 the U.S. Preventive Services Task Force recommended against PSA screening in all men, prompting criticism from the medical community. The government panel reviewed scientific evidence and concluded that screening has little or no benefit, or that the



Edward M. Messing, M.D.

harms of early detection outweigh the benefits. One major concern, for example, was that doctors are screening for, finding, and treating non-aggressive cancers that might have remained quiet, causing patients to needlessly suffer from serious treatment side effects such as incontinence or erectile dysfunction.

The U.S. Task Force recommendations against screening caused some confusion, and in response, a special panel of experts from the American Society of Clinical Oncology decided that for men with a life expectancy of less than 10 years, general screening with the PSA test should be discouraged. For men with a longer life expectancy, though, it is recommended that physicians discuss with patients whether the PSA test is appropriate for them.

Messing's study looked back at the era prior to 1986, when no one was routinely screened for prostate cancer with a PSA test. To analyze the effect of screening on stage of disease at initial diagnosis, Messing and Emelian Scosyrev, Ph.D., assistant professor of urology, reviewed data from 1983 to 2008 kept by the nation's largest cancer registry, Surveillance, Epidemiology and End-Results or SEER. They

compared SEER data from the pre-PSA era (1983 to '85) to the current era of widespread PSA use (2006 to 2008), and adjusted for age, race, and geographic variations in the United States population.

Approximately 8,000 cases of prostate cancer with metastases at initial presentation occurred in the U.S. in 2008. Using a mathematical model to estimate the number of metastatic cases that would be expected to occur in 2008 in the absence of PSA screening, Scosyrev and Messing predicted the number would be 25,000.

The authors emphasized the study was observational and has some limitations. In particular it is impossible to know if the PSA test and early detection is solely responsible for the fewer cases of metastasis at diagnosis in 2008.

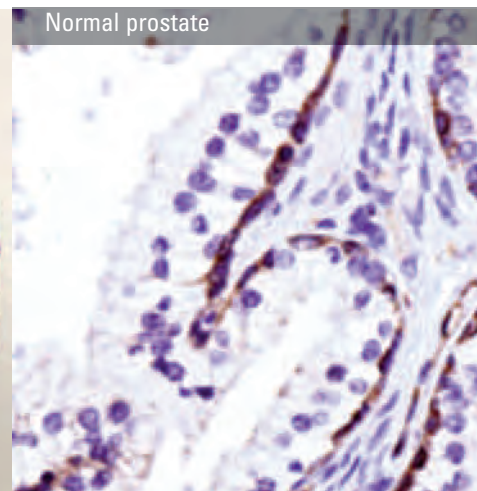
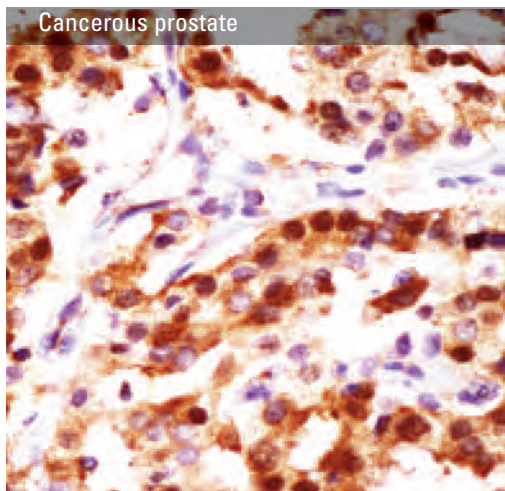
The potential lead-time of screening also should be considered when interpreting the study findings, Scosyrev said. For some people an earlier stage of cancer at diagnosis may not always translate into better survival. This may happen, for example, in cases when the cancer had already metastasized at the time of screening, but the metastasis remained undetected.

In general, however, the study concluded that massive screening and PSA awareness efforts during the 1990s and early 2000s resulted in substantial shifts toward earlier-stage disease and fewer cases of metastases at diagnosis.

In the United States over the most recent 20 years, Messing said, prostate cancer death rates have been reduced by close to 40%. This occurred without substantial changes in how men were treated (via surgery and radiation therapy). Other models published in the scientific literature have suggested that more than 50% of this reduction is due to early detection.

The Ashley Family Foundation funded the Medical Center research.

"Our findings are very important in light of the recent controversy over PSA testing. Yes, there are trade-offs associated with the PSA test and many factors influence the disease outcome. And yet our data are very clear: not doing the PSA test will result in many men presenting with far more advanced prostate cancer."



Scientists find protein controlling development of treatment-resistant prostate cancer

By Emily Boynton

Scientists have identified what may be the Peyton Manning of prostate cancer. It's a protein that's essential for the disease to execute its game plan: Grow and spread throughout the body.

Like any good quarterback, this protein has command over the entire field; not only does it control cell growth in tumors that are sensitive to hormone therapy, a common treatment for men with advanced disease, but also in tumors that grow resistant to such treatment, a development that leaves men and their doctors with no good options to turn to.

In a study published in July in the *Journal of Clinical Investigation*, a team led by scientists from the University of Rochester Medical Center found that the protein paxillin is a major player in prostate cancer. Though in the very early stages, the discovery is an important first step towards developing a treatment for men whose cancer prevails even after the most aggressive treatment.

"The holy grail in prostate cancer is to figure out why cells stop responding to hormone

therapy," said senior study author Stephen R. Hammes, M.D., Ph.D., chief of the Division of Endocrinology and Metabolism at the Medical Center.

Initially, hormone therapy, which starves tumors of the hormones that fuel their growth, works well and may lead to remission. But, nearly all prostate cancers treated with hormone therapy become resistant over a period of months or years and the cancer makes an unwelcome comeback.

"Somehow, tumors find a way to grow even when their main power source is choked off," said Hammes, also the Louis S. Wolk Distinguished Professor in Medicine. "Our work is exciting because we've identified a protein pathway that controls growth even in the absence of hormones and provides a completely new treatment target for the disease."

Hammes and first author Aritro Sen, Ph.D., research assistant professor in the Division of Endocrinology and Metabolism, knew from their previous research that paxillin is important in prostate cancer, but they didn't know why or how.

Under certain conditions, they found that the protein, which normally hangs out in the cytoplasm or gel-like substance that fills a cell, actually goes into the nucleus. There, it's an extremely commanding force, regulating signals that lead to the creation of cancer cells.

"This is the first time anyone's shown that paxillin goes into the nucleus and controls gene expression," said Sen. "When we eliminated this protein from prostate cancer cells their growth was significantly arrested, but what surprised us most was that this effect was identical in both hormone therapy-dependent as well as resistant prostate cancer cells."

In typical tumors stimulated by male

hormones called androgens, paxillin partners with the hormones to turn on genes that lead to the creation of more cancer cells. Such tumors shrink, at least for a time, when subject to hormone therapy.

But for tumors that continue to grow despite hormone therapy, Hammes' team found that paxillin takes another route and connects with naturally occurring substances called growth factors to activate genes that produce more cancer cells. Take paxillin out of the nucleus and growth comes to a halt: Without it, genes directed by androgens don't get turned on, nor do genes directed by growth factors.

"Lots of pathways are being examined as scientists look for what makes a prostate cancer cell become castration resistant, but ours is a completely novel approach," said Hammes of the paxillin-mediated pathway.

Sen added: "We have now found a common factor that regulates both hormone-dependent and castration-resistant prostate cancer cells."

The team found that paxillin is ramped up in tissue from human tumors, much more so than in normal cells. And in mice with human prostate cancer cells, getting rid of paxillin caused the tumors to grow more slowly.

The next step is to figure out how to stop paxillin from getting into the nucleus, or to inhibit its activity once it's in the nucleus. "Paxillin has important functions in the cytoplasm, like helping cells communicate with each other to form organs and other structures," Hammes noted. "If we can target paxillin in the nucleus where it mediates cancer cell growth, but leave it intact in the cytoplasm so it can continue to do the important work it does there, that would be the goal."

Scientists find previously unrecognized cleansing system in brain

By Tom Rickey

A previously unrecognized system that drains waste from the brain at a rapid clip has been discovered by neuroscientists at the University of Rochester Medical Center.

URMC scientists are hopeful that these findings have implications for many conditions that involve the brain, such as traumatic brain injury, Alzheimer's disease, stroke, and Parkinson's disease.

The highly organized system acts like a series of pipes that piggyback on the brain's blood vessels, sort of a shadow plumbing

system that seems to serve much the same function in the brain as the lymph system does in the rest of the body—to drain away waste products.

"Waste clearance is of central importance to every organ, and there have been long-standing questions about how the brain gets rid of its waste," said Maiken Nedergaard, M.D., D. M.Sc., senior author of the paper, Frank P. Smith Professor of Neurosurgery and co-director of the University's Center for Translational Neuro-medicine. "This work shows that the brain is cleansing itself in a more organized way and on a much larger scale than has been realized previously.

The findings were published online in August in *Science Translational Medicine*.

Nedergaard's team has dubbed the new system "the glymphatic system," since it acts much like the lymphatic system but is managed by brain cells known as glial cells. The team made the findings in mice, whose brains are remarkably similar to the human brain.

Scientists have known that cerebrospinal fluid or CSF plays an important role cleansing

brain tissue, carrying away waste products and carrying nutrients to brain tissue through a process known as diffusion. The newly discovered system circulates CSF to every corner of the brain much more efficiently, through what scientists call bulk flow or convection.

"It's as if the brain has two garbage haulers—a slow one that we've known about, and a fast one that we've just met," said Nedergaard. "Given the high rate of metabolism in the brain, and its exquisite sensitivity, it's not surprising that its mechanisms to rid itself of waste are more specialized and extensive than previously realized."

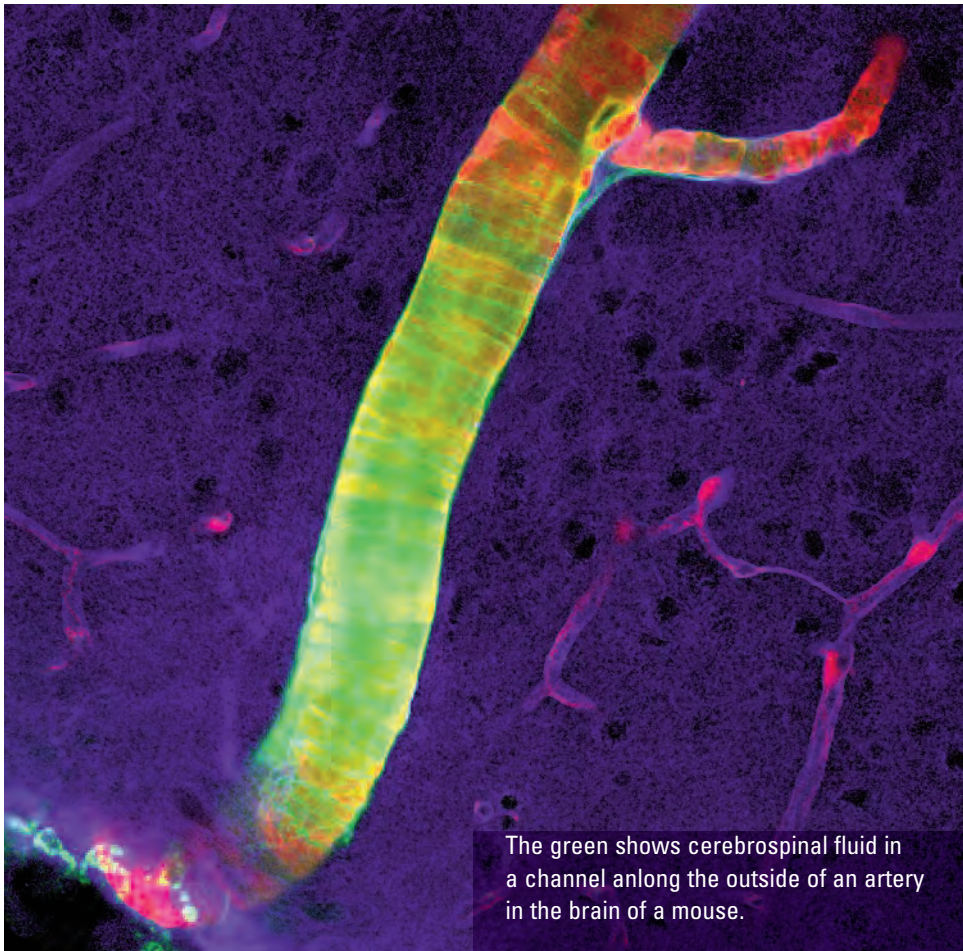
The glymphatic system is like a layer of piping that surrounds the brain's existing blood vessels. The team found that glial cells called astrocytes use projections known as "end feet" to form a network of conduits around the outsides of arteries and veins inside the brain.

Those end feet are filled with structures known as water channels or aquaporins, which move CSF through the brain. The team found that CSF is pumped into the brain along the channels that surround arteries, and then washes through brain tissue before collecting in channels around veins and draining from the brain.

The scientists say the system operates only when it's intact and operating in the living brain, making it very difficult to study for earlier scientists who could not directly visualize CSF flow in a live animal, and often had to study sections of brain tissue that had already died. To study the living, whole brain, the team used a technology known as two-photon microscopy, which allows scientists to look at the flow of blood, CSF and other substances in the brain of a living animal.

First author Jeffrey Iliff, Ph.D., a research assistant professor in the Nedergaard lab, took an in-depth look at amyloid beta, the protein that accumulates in the brain of patients with Alzheimer's disease. He found that more than half the amyloid removed from the brain of a mouse under normal conditions is removed via the glymphatic system.

"If the glymphatic system fails to cleanse the brain as it is meant to, either as a consequence of normal aging, or in response to brain injury, waste may begin to accumulate in the brain," Iliff said. "This may be what is happening with amyloid deposits in Alzheimer's disease. Perhaps increasing the activity of the glymphatic system might help prevent amyloid deposition from building up or could offer a new way to clean out buildups of the material in established Alzheimer's disease."



The green shows cerebrospinal fluid in a channel along the outside of an artery in the brain of a mouse.

School of Medicine and Dentistry names new endowed chairs and professorships

At convocation in August, the University of Rochester School of Medicine and Dentistry awarded 11 endowed chairs and professorships. At last year's convocation, the School awarded 10.

Increasing the number of endowed professorships is a major goal of the School of Medicine and Dentistry and the Medical Center in *The Meliora Challenge: The Campaign for the University of Rochester*, the \$1.2 billion fundraising effort.

This year's recipients are:

David A. Bushinsky, M.D.

John J. Kuiper Distinguished Professor

Established in 2012, this new professorship supports the work of an outstanding faculty member in the Division of Nephrology in the Department of Medicine. Bushinsky is a professor of medicine in the Nephrology Division, a position he has held since October, 1992. He has been a member of the School of Medicine and Dentistry faculty since 1989.

Thomas L. Campbell, M.D.

William Rocktaschel Chair in Family Medicine

This professorship, a part of the Department of Family Medicine and Highland Hospital since the early 1990s, is new to the School of Medicine and Dentistry. It is to be held by the Chair of the Department of Family Medicine. Campbell was appointed department chair in 2004 and is currently professor of family medicine, a position he has held since 1998. He has been a member of the faculty since 1983.

Yuhchayou Chen, M.D., Ph.D.

Philip Rubin Professorship in Radiation Oncology

Established in 1995, this professorship is held by the chair of the Department of Radiation Oncology. Chen was appointed chair in January, 2012, and is a professor of radiation oncology, a position she has held since 2006. She has been a member of the faculty since 1995.

Michael P. Eaton, M.D.

Denham S. Ward, M.D., Ph.D. Professorship

This is a new professorship, established in 2011, and is to be held by the chair of the Department of Anesthesiology. Eaton was appointed chair in January, 2012, and is professor of anesthesiology, a position he has held since 2011. He has been a member of the faculty since 1995.

Richard E. Kreipe, M.D. (FLW '81)

Dr. Elizabeth R. McAnarney Professorship in Pediatrics Funded by Roger and Carolyn Friedlander

This new professorship honors Elizabeth R. McAnarney, M.D., for her service to children in the Rochester region and for inspiring volunteer involvement with the University. Kreipe is professor of pediatrics in the Adolescent Medicine Division, a position he has held since 1999. He has been a member of the faculty since 1981.

Maiken Nedergaard, M.D., D. M.Sc.

Frank P. Smith Professor of Neurosurgery

This professorship was established in 1981 to help an outstanding member of the Department of Neurosurgery so that he or she can devote time to teaching and research. Nedergaard was appointed co-director of the Center for Translational Neuromedicine in 2007. She is professor of neurosurgery, first in the Center for Aging and Developmental Biology (2003–2007) and then in the Center for Translational Neuromedicine (2007 to present). She has been a member of the faculty since 2003.

Webster H. Pilcher, M.D., Ph.D. (M '83, PhD '83, R '89)

Ernest and Thelma Del Monte Distinguished Professorship in Neuromedicine

This new professorship was created in grateful appreciation to the University of Rochester Medical Center and Webster H. Pilcher, in particular, for health care provided for the Rochester community and for its broader mission of education and research. Pilcher is chair of the Department of Neurosurgery and professor of neurosurgery, positions he has held since 2002. He has been a member of the faculty since 1990.

Edward M. Schwarz, Ph.D.

Richard and Margaret Burton Distinguished Professorship in Orthopaedics

This is a new professorship, created to support a tenured faculty member with a primary appointment in the Department of Orthopaedics in the Center for Musculoskeletal Research. Schwarz was appointed director of the Center in 2012 and is professor of orthopaedics in the Center for Musculoskeletal Research, a position he has held since 2006. He has been a member of the faculty since 1997.

Robert L. Strawderman, III, Sc.D.

Dean's Professorship

Dean's Professorships were established in 1983 to be assigned to individuals of outstanding research excellence, usually, but not limited to, newly appointed faculty to the School of Medicine and Dentistry and designated by the dean of the School. Strawderman is the new chair and professor of biostatistics and computational biology.

Charles A. Thornton, M.D. (FLW '90, '92),

Saunders Family Distinguished Professorship in Neuromuscular Research

Established in 2012, this professorship provides transformational support for efforts in clinical and translational science in neuromuscular research. Thornton is a professor of neurology, a position he has held since 2006. He has been a member of the faculty since 1991.

Hulin Wu, Ph.D.

Dean's Professorship

Wu is a professor of biostatistics and computational biology, a position he has held since 2003 when he joined the faculty.

Children's hospital designed for best health care and support of patients and families

Plans for the new Golisano Children's Hospital at the University of Rochester Medical Center were unveiled in March, revealing a space that is special in design and spirit. A groundbreaking ceremony was held in September.

Created to foster an outstanding health care environment dedicated to supporting patients and their families, the new \$145-million tower, located on Crittenden Boulevard and attached to the Medical Center and Strong Memorial Hospital, will be eight floors with approximately 245,000 square feet of space. It is slated to open in 2015.

Private patient rooms will provide a comforting experience that reduces stress and anxiety, while enhancing confidentiality. Amenities include a new hospitality suite that parents can use to shower, eat home-cooked meals as a family or even run a load of laundry.



Continued on page 55

A toddler playroom and a new two-story playdeck will be located on the seventh floor, and a school room and a teen room that will overlook the playdeck will be located on the eighth floor. An outdoor rooftop playspace and a healing garden are also planned.

The new pediatric operating rooms and the new Pediatric Cardiac Intensive Care Unit/Pediatric Intensive Care Unit will open in the new building in 2016. In a later phase of construction, the Ronald McDonald House within the hospital also will be relocated.

Golisano Children's Hospital's \$100-million campaign supports both a new children's hospital and major enhancements to pediatric programs. A \$20 million lead gift from entrepreneur and philanthropist B. Thomas Golisano, for whom the hospital is named, bolstered plans to build the new facility. The campaign is part of the University of Rochester Medical Center's \$650 million campaign and the overall \$1.2 billion goal of *The Meliora Challenge: The Campaign for the University of Rochester*.



For a virtual tour of the building, go to:
www.givetokids.urmc.edu

Trustee and neurosciences benefactor Ernest J. Del Monte dies

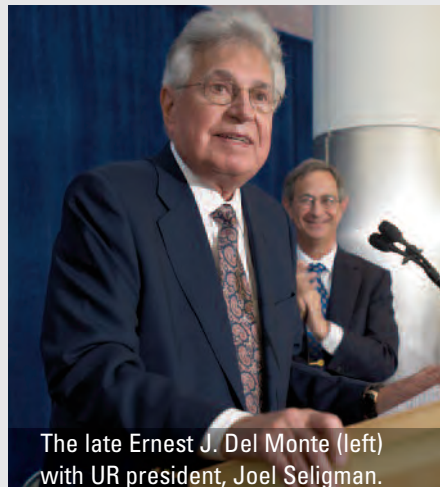
First Del Monte Distinguished Professor installed

Ernest J. Del Monte, visionary, philanthropist and University of Rochester Trustee from 1998 to the time of his death, died April 21, 2012. He was 87.

With a \$10 million gift to the University in 2009, Del Monte and his late wife, Thelma, made a commitment to support the study of some of the most progressive research programs in the field of neurosciences to translate neurobiological discoveries into better health for all.

The Ernest J. Del Monte Neuromedicine Institute was named in his honor.

Among Del Monte's many business achievements is pioneering the construction of hotels using modular units. This approach, for which he received more than 20 patents, has since been used to construct hotels around the world. In 1972, Del Monte developed a relationship with the Marriott Corporation, and today the company owns and operates 17 Marriott hotels throughout New York.



The late Ernest J. Del Monte (left) with UR president, Joel Seligman.

In addition to his support of the Institute, Del Monte established the Ernest and Thelma Del Monte Distinguished Professorship in Neuromedicine, to show his appreciation for the Medical Center's health care services and its broad mission of education and research.

Webster H. Pilcher, M.D., Ph.D. (MD '83, PhD '83, R '89) was installed in March as the first distinguished professor for his outstanding contributions to the Department of Neurosurgery and vision for the Del Monte Institute. Pilcher was appointed chair of the department in 2002.

School of Medicine and Dentistry Dean, Mark Taubman, M.D., explained that Pilcher's goal is to bring a large group of scientists, working among eight departments and within different centers, into one state-of-the-art research building.

Endowed professorships are a key initiative for the School as part of *The Meliora Challenge: The Campaign for the University of Rochester*.

Gosnell gifts support new NICU and two endowed professorships

Georgia Gosnell, who, with her late husband, Thomas, has a long history of giving in the Rochester area, has committed \$5 million to name the Neonatal Intensive Care Unit in the new Golisano Children's Hospital at the University of Rochester Medical Center.

Mrs. Gosnell also has created two professorships in the School of Medicine and Dentistry in Quality and Safety and Palliative Care.

"Georgia and Thomas have been great friends of the University-and countless other Rochester institutions-for many years. This gift and the new professorships they have created are part of their incredible philanthropic legacy," said University President Joel Seligman.

The \$5 million commitment will help fund the hospital's new Gosnell Neonatal Intensive Care Unit (NICU), which will include 60 beds both in the new building, and in the current NICU space on the third floor of Strong Memorial Hospital. The Gosnell NICU in the new building will provide intensive care to the region's sickest babies in private rooms. Renovations will be made to the current NICU space to deliver highly specialized care for babies who need less acute treatment.

"There are few ways to make a greater impact on a community's future health than by ensuring babies the best start they can have in life, and the Gosnells' gift is going to help us do just that," said Bradford C. Berk, M.D., Ph.D., CEO of the Medical Center.

Mrs. Gosnell's gift is one of the largest the Golisano Children's Hospital \$100 million campaign has received since its public launch in October 2011.

"Without forward-thinking philanthropists like Georgia and Tom Gosnell, we wouldn't be breaking ground on a new children's hospital tailored to the needs of families of today and tomorrow," said Nina F. Schor, M.D., Ph.D., William H. Eilinger Chair of Pediatrics and pedi-



Webster H. Pilcher, M.D., Ph.D. with the Del Monte family during his installation as chair.



Timothy Quill, M.D.



Robert Panzer, M.D.

atrician-in-chief of Golisano Children’s Hospital. “Grateful’ doesn’t begin to describe how we feel about Georgia’s generosity to our region’s most fragile babies.”

The Gosnell family is one of Rochester’s most generous families, having supported the Medical Center, Rochester Institute of Technology (RIT), Rochester Museum & Science Center, Rochester Philharmonic Orchestra, Al Sigi Center, Genesee Land Trust, and the Memorial Art Gallery, among other important Rochester institutions. The Gosnells were instrumental in the restoration of the George Eastman House and the wing-footed Mercury statue on the top of the Aqueduct Building along the river in downtown Rochester.

Mr. Gosnell, who died three years ago, was chairman emeritus of RIT’s Board of Trustees and was a major force behind that school’s Access to the Future fundraising campaign that raised more than \$120 million. He served in the U.S. Navy during World War II and earned many honors during his service, including a Purple Heart. He then went on to earn his bachelor’s degree from Yale and worked his way up in the Lawyers Co-Op publishing firm from elevator operator to become the fourth generation of his family to run the company.

Over the years, the couple’s ongoing giving to the Medical Center has exceeded \$3 million. Mrs. Gosnell has decided to use these endowed funds to establish two permanent endowed professorships: the Georgia and Thomas Gosnell Distinguished Professorship in Palliative Care and The Georgia and Thomas Gosnell Professorship in Quality and Safety.

The Georgia and Thomas Gosnell Distinguished Professorship in Palliative Care enhances a program that recently became one of the first nationwide-and the first at an academic medical center-to earn advanced certification from the Joint Commission, the nation’s predominant standards-setting and accrediting body in health care. The Palliative



Georgia Gosnell

Care program celebrated its 10th anniversary in 2011 and continues to grow, providing more than 1,000 new inpatient consultations and about 400 new outpatient and home consultations, annually.

“Our program is now among just a handful nationally that enjoy such endowed support, which will help fuel our mission of providing, studying and teaching about comprehensive, multidisciplinary, evidence-based palliative care for our seriously ill patients and their families,” said Timothy Quill, M.D. (M ’76, R ’79), the inaugural Gosnell Professor in Palliative Care, as well as professor of Medicine, Psychiatry, and Medical Humanities, and director of the Center for Ethics, Humanities, and Palliative Care.

Patient safety and patient-centered care are cornerstones of high-quality health care and major priorities at the Medical Center. Supporting this vision, the Georgia and Thomas Gosnell Professorship in Quality and Safety will bolster innovative quality and safety initiatives at the Medical Center and ensure an optimal

patient experience. By helping providers and staff learn about and incorporate “best-practices” for safe and high quality care, the endowed professor will promote better patient outcomes and reduce the risk of complications.

“Taking quality and safety at the Medical Center to the highest level requires more than individual projects,” said Robert Panzer, M.D. (R ’80, FLW ’82), the first Gosnell Professor in Quality and Safety, Chief Quality Officer and associate vice president of patient care quality and safety. “It requires a long-term commitment to create highly reliable care where patients get the right care at the right time from the entire team-consistently and safely. This professorship will ensure that this work will continue to be supported well into the future.”

Creative destruction

Eric Topol advocates a digital revolution in medicine.

When Eric Topol, M.D., (M '79) wrote his address for the University of Rochester School of Medicine and Dentistry's Class of 2011 commencement ceremonies, he intended to title his speech "The Creative Destruction of Medicine."

But Mark B. Taubman, M.D., dean of the School of Medicine and Dentistry, told Topol his title would "scare everyone" and urged him to change the title. Topol's wife and his daughter agreed with the dean, so he changed the title of his address to "Medicine Rebooted."

But Topol did not relinquish the title or the concept. Earlier this year, he published a book titled, *The Creative Destruction of Medicine*, and he is shaking up people, if not scaring them, and trying to get them to join the digital revolution he believes will make health care better.

"I'm trying to get my colleagues and the public to realize there is a new exciting opportunity to change medicine by embracing new technology and tools—such as genome sequencing and wireless wearable sensors—that can bring a new height of precision to medicine," Topol said in an interview. "I've been seeing things that can change the practice of medicine dramatically. I can see where this is all headed. It is happening in the digital world, but just hasn't invaded the medical cocoon."

Like a preacher on a mission, Topol is taking his message to the public, reiterating his points in interviews and lectures. A number of his talks are available on *YouTube*. And he is not being mild-mannered.

"This will be a consumer health revolution. People will drive it," Topol said. "This is the



printing press and the Gutenberg Bible that started opening up reading and knowledge to the people. Doctors have had all the information until now. That is changing. With the smartphone, sensors and other tools, we can build a social medical health network and create a level playing field of information ... This is not just a mini-disruption; it's a mega-disruption. It is the biggest shake-up in medicine ever."

Topol has the credentials to support his predictions of significant change.

Known as one of the nation's top medical researchers, he is the director of the Scripps Translational Science Institute in California, which focuses on individualized medicine. He also is the chief academic officer of Scripps Health, a senior consultant cardiologist practitioner at Scripps Clinic, professor of genomics at The Scripps Research Institute and co-founder and vice chairman of West Wireless Health Institute, which develops wireless health technology as a means to lowering health care costs.

Author of more than 1,000 original peer-reviewed publications, Topol has edited more than 30 books, including major textbooks on interventional cardiology and cardiovascular medicine. He has been elected to the Institute of Medicine of the National Academy of Sciences. And he was voted the number-one most influential physician executive of 2012 in a national poll run by *Modern Physician* and *Modern Healthcare*.

Topol is not only challenging his colleagues in medicine, he is participating in the revolution.

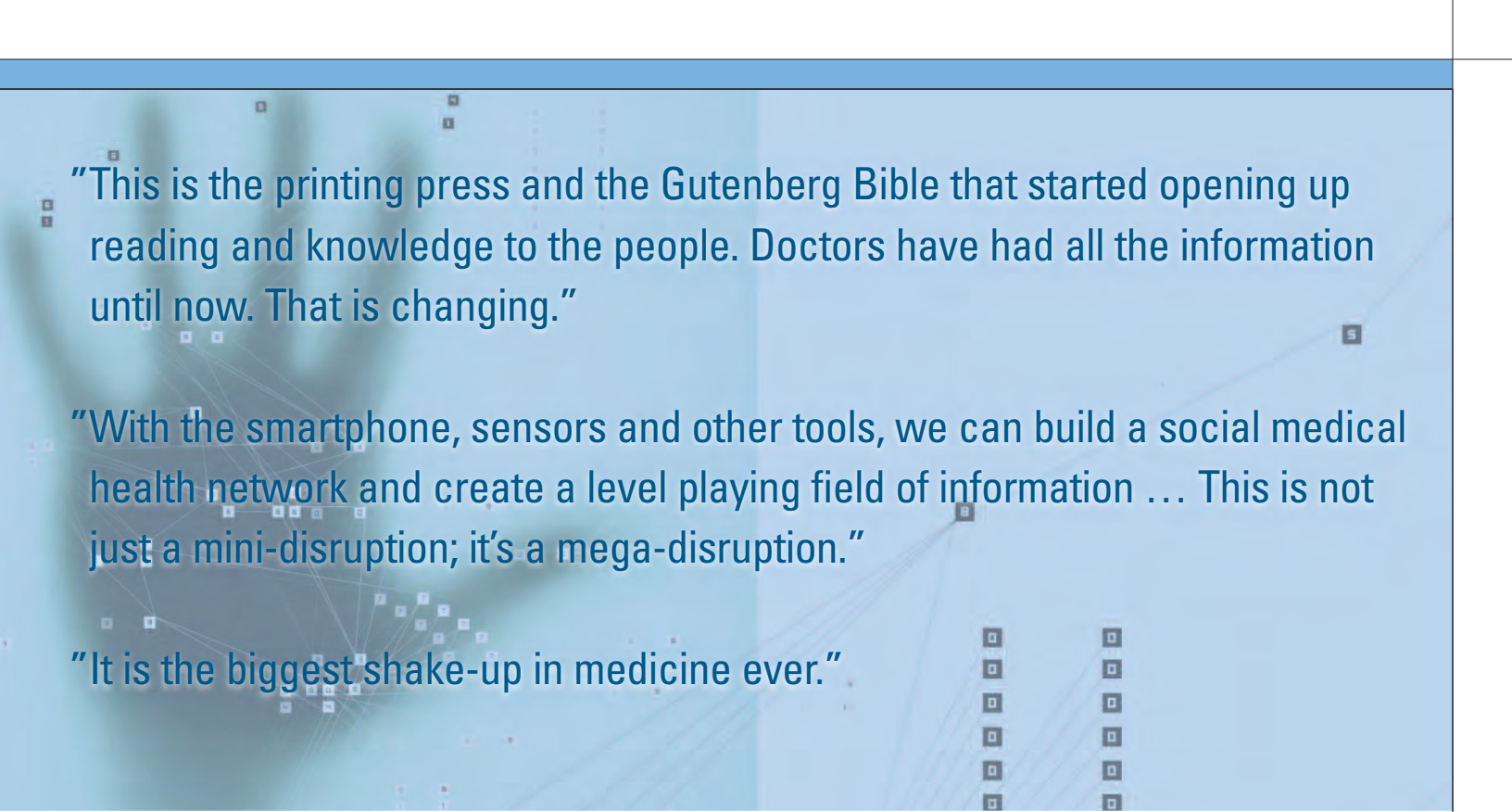
"I haven't used a stethoscope in more than two years to listen to the heart," he said. "I use a portable high-resolution ultrasound. I'm showing the patient what I see in real time. If they went for an echo, they never would see it. They would be sent to a lab. The person who administers the ultrasound can't tell the patient anything. They have to call their doctor to get a report. I'm talking to the patient as I examine the heart. I can show a valve that is not moving properly. That is powerful and intimate. Tools used properly can heighten the relationship between doctor and patient. Ultimately, George Engel would celebrate this change."

Topol has tried a glucose monitor that links to an app on a smartphone.

"It was an education for me discovering what I ate that sent my glucose way up. It has changed my lifestyle," he said. "Sensors are not only for the gym, for counting our steps or tracking our heart rate when we exercise. When sensors get into the medical space, everyone will realize the opportunities."

Topol is leading a study of whether a new technology called the Zio Patch, a wireless monitor that is applied to the chest like an adhesive bandage, does a better job detecting arrhythmias than the Holter monitor. The Zio can monitor the heart for up to 14 days. After the prescribed time, the patient removes the patch and mails it for analysis.

"It is amazing how simple it is," Topol said.



“This is the printing press and the Gutenberg Bible that started opening up reading and knowledge to the people. Doctors have had all the information until now. That is changing.”

“With the smartphone, sensors and other tools, we can build a social medical health network and create a level playing field of information ... This is not just a mini-disruption; it’s a mega-disruption.”

“It is the biggest shake-up in medicine ever.”

“We are using the Holter, an invention from 1949 with wires that won’t allow you to shower or exercise. You can only use it for a day and it is very expensive. You have to go to a hospital to get hooked up and back to a hospital to have it removed. This trial will show whether this patch can deliver better diagnostic information than the Holter. This is symbolic of creative destruction. We’ve been using the same technology for almost 70 years. This could be a better idea. We can do better.”

A wireless monitor that can track heart rhythms and report by smartphone will help physicians manage patients remotely and reduce visits to hospital emergency departments and unnecessary admissions, Topol said. Sensors can pick up conditions that could cause an asthma attack, warn the patient and preempt the attack. Sensors can monitor sleep patterns in the home.

“These technologies and these changes will not increase health care costs. They are ways to cut costs,” Topol said. “We’re spending \$300 billion a year for prescription drugs and \$100 billion is waste or the wrong drug or wrong dose for the person. We can do genomic screenings to match up the patient with a drug and dose that works and avoid serious side effects. There will be enormous savings every year.”

Why don’t we do many office visits with Skype? he asks.

“It would make in-person appointments less frequent and reduce costs,” Topol said. “For the patient, it would eliminate an hour’s wait after going through the hassle of driving and parking. With the use of sensors, all the data could be gathered in advance of the Skype call or in real time. You can have 10 minutes on a video link with streaming information. It is intimate and will increase the interaction. If widely used and properly reimbursed, it will make it easier for patients to have access to their doctors and it will give doctors a reach that is amplified.

“One study has shown that 62 percent of doctors refuse to communicate with patients by e-mail. I’ve been e-mailing my patients since the 90s. We have to get over this stuff. Studies by organizations like Kaiser have shown communication between doctors and patients improves efficiency and reduces need for office visits.”

Consumers have reacted strongly and positively to his message of “creative destruction,” Topol said.

“Whether we’re talking about the genome or blood pressure sensors or glucose readings on a smartphone, they want to be there. They want to consult with their doctor. They want a partnership,” he said. “These changes can make medicine so much more efficient and scientifically sound. We will have information and data on each individual patient we never

had before. The data belongs to patients and they should own it. They should be our partner. The role of the doctor is changing and it means empathy and compassion are more critical now than ever.”

In an interview published by the website *Medscape*, Topol said the rise of technology and personalized medicine is inevitable.

“It’s just a matter of when. The question is: what is the plasticity of the medical community? What are the willingness and initiatives that could be taken on the physician’s side, or is this going to have to all be driven from the consumer’s side?” Topol said. “It has to happen because we are in a situation that’s untenable and unsustainable in health care today. We can move to a whole new plateau where we have so much more data on each individual that we didn’t have before. Whether it’s high blood pressure or trying to prevent the progression from prediabetes to diabetes, we have new tools; there should be a new day in medicine if we are willing to accept that and try to catalyze this opportunity.”



John T. Hansen, Ph.D., the University of Rochester School of Medicine and Dentistry's associate dean for admissions since 1996, has seen thousands of applicants to the School over the years and he knows what they want. A professor in the Department of Neurobiology and Anatomy and a former chair of the department, Hansen maintains a special interest in the role of anatomy in medical education. He was a member of the committee that designed the School's Double Helix curriculum that weaves basic science and clinical work throughout all four years of medical school. Hansen, who came to Rochester in 1985 from the University of Texas Health Center at San Antonio to direct the course in anatomy, has authored several medical textbooks, including *Netter's Atlas of Human Physiology*, *Essential Anatomy Dissector* and *Netter's Clinical Anatomy*. He also is co-author with Philip Rubin, M.D., of *TNM Staging Atlas*.

Q&A: John T. Hansen, Ph.D.

Admissions dean discusses the art and science of medicine and anatomy lab

Q: About a dozen years ago, you helped design the Human Structure and Function course. What is different about this course?

A: At most medical schools, anatomy and histology are first semester courses and physiology is second semester. As a result, students have to wait four to six months to learn how the kidney or the heart works physiologically. For example, in our course, students learn the embryology, the gross anatomy, microscopic structure and cardiovascular and renal physiology all in the same contiguous time slots so they can think across disciplinary boundaries the way they are going to as physicians, instead of thinking in disciplinary silos. This approach takes away the artificial boundaries of anatomy, histology and physiology. It makes eminent sense. It's really a natural way to relate function and structure.

How can you look at a nephron under a microscope and dissect a kidney in the anatomy lab and then have to wait four months to find out what a nephron and a tubule or collecting duct does physiologically? It's the same thing with the heart. You look at the heart and it's a wonder, but unless you understand the physiological dynamics going on in each heart chamber and all the pressure changes associated with systole and diastole during the cardiac cycle, how can you appreciate the complexity of the cardiovascular system? Our students get to understand this dynamic from the development level all the way up to the adult anatomy and physiology.

Q: What is valuable in designing the Human Structure and Function course the way you did?

A: Everything microscopic or macroscopic starts to make sense once you understand the function. These elements of embryology, histology,

anatomy and physiology all play out in the objectives of the weekly problem-based learning classes so students can think across boundaries and across those disciplinary lines and see them as the whole, not as parts pasted together artificially.

It is wonderful in anatomy lab to hold a heart or kidney, or any other organ in your hand, and know the students understand the functional relationship. Or for a physiologist to talk about what goes on in the stomach or the heart, and know the students have already seen these organs and looked at them microscopically, often within just the past day or two. It's a natural extension of learning for them, not a leap of faith.

No one learns this material on the first pass. You keep coming back in later courses and in more advanced ways throughout medical school and graduate training. There are planned redundancies that help you begin to understand and retain important material. You review for the board exams and then you're in the clinic and you start thinking about basic science in a different way. Patients are people with real symptoms of things going on and often exhibit multi-system diseases. Even with our first-year students working with preceptors in the community, it drives home the importance of learning and using basic science in this context. They think of the heart not only as an evolutionary wonder, which it is, but they also think of it in relation to hypertension and how this disease process changes the morphology and the physiology of the system. They start thinking dynamically about interrelationships as first-year students. The science is not theoretical. Students see their patients and the medications they are taking and start putting it all together in a way that is more natural and relevant than when the disciplines were relegated to separate silos. The way it happens at Rochester is spectacular and our students are evidence of that. Our students can't imagine that it is not taught this way everywhere. Fortunately, the trend is catching on, but it is nice to be at the vanguard.

Q: Rochester stands out in this integrated approach to teaching anatomy, histology and physiology. Why is that?

A: A lot of anatomy programs try to integrate anatomy with histology, but very few in the country integrate anatomy and histology with medical physiology. The reason it doesn't

happen at most schools is because it means two or three departments have to coordinate their efforts. They have to give and take. They have to work together and usually those departments have different research and teaching approaches. Anatomy is largely qualitative and visual while physiology is much more quantitative. Merging these disciplines can be a tough act to pull off.

It has worked well here because our faculty are inherently very collaborative. We have a lot of common research interests among pharmacology, physiology and neurobiology, and anatomy. The fact that we have research collaborations, that we respected each other's areas of investigation even though we had different approaches to teaching, has helped make it work out beautifully. Some schools try to merge anatomy and histology, and that's a major task for them, but they aren't even thinking about including physiology, and that's a shame.

Q: Is this course a selling point for choosing Rochester?

A: Students want to come here because they like the curriculum. They see the medical students here are happy with the curriculum. The faculty who teach are very devoted and are excellent teachers who are learning-centered. Now, integrate the basic science with the clinical experience that happens in the afternoons—the two strands of the Double Helix basic—it is a natural for them.

Rochester has the Double Helix and the biopsychosocial model, which means a holistic and open-ended approach to medicine and the patient. The applicants sit outside our admissions office and see a portrait of George Engel, and they know we're the home of the biopsychosocial model. The students know they will learn the science of medicine in Rochester, but they also will learn the art of medicine. We're fondly known, and I wear this as a badge of honor, as the liberal arts of medical schools because this is the place where the art and science of medicine come together from day one. Our students start thinking holistically about the patient, all the factors that surround a patient's life; everything is placed in a much larger context and they get a broader view.

Collegiality is an offshoot of the biopsychosocial model. The research collaborations of John Romano and George Engel had a halo effect that can be seen in many of our teaching and

Continued on page 47

Students take medicine and care out of the hospital into the streets

Emma Lo, a third-year student at the University of Rochester School of Medicine and Dentistry, has spent a lot of time in city parks, under bridges and wandering city streets, settings not usually recommended for students.

But the neighborhoods and the people there hold great interest for her and are the target of the School's UR Street Outreach, a street medicine program she helped launch last year to improve access to quality health care for Rochester's homeless population.

"You realize that these people, who superficially seem so different, could really be you," Lo said. "They are some of the most challenging patients, which makes every small success so rewarding. Our goals are two-fold, both to improve access to health care and resources for the street homeless and to break down barriers between the medical world and this very misunderstood population. This project embodies the values of the biopsychosocial model and is necessary for my education as a physician."

UR Street Outreach is one of several programs supported by the School of Medicine's and Dentistry's Center for Advocacy, Community Health, Education and Diversity (CACHED), through which medical students volunteer at clinics, schools and other community organizations.

In 2010, Lo put together a detailed proposal to Adrienne Morgan, senior director of CACHED,

for UR Street Outreach. Lo modeled her proposal, in part, on Operation Safety Net, a street medicine program founded by Jim Withers, M.D., 20 years ago that is now part of the Pittsburgh Mercy Health System. Lo spent a year in AmeriCorps, working with Operation Safety Net.

In UR Street Outreach, at least one night a week, one or two medical students and a physician or nurse join a former homeless person, who acts as a liaison, for visits to sites where the homeless gather to sleep, to camp or to get a free meal.

In the first months of the program, Lo and others worked to build trust and relationships with the wary people they encountered, simply talking with them or providing them with clean socks. The UR Street Outreach volunteers now carry over-the-counter medications and antibiotics they give to those in need.

The volunteers have found people with frostbite, high blood pressure, chronic asthma, fractures and even seizures.

"We start by building relationships and trust, trying not to have an agenda. We address their immediate needs; only after some time will they consider going to a clinic or the hospital," Lo said.

About 25 medical students participate in UR Street Outreach, some of whom have taken over leadership of the program as Lo is involved in the busy schedule of a third-year medical student.



Balloon flight at Letchworth State Park



An eye for the camera

Gary D. Paige, M.D., Ph. D., chair of the Department of Neurobiology and Anatomy and the Kilian J. and Caroline F. Schmitt Professor of Neurobiology and Anatomy, was introduced to photography at the age of 7. Photography has remained one of his passions since then. He sees a common thread in medicine, science and photography in "a foundation of knowledge, creative innovation and improvisation." His research and his photography have taken him to many places around the world. Paige provided a few of his photos to *Rochester Medicine*.

To view more of his photos, go to: <http://frontpaige.smugmug.com/>

If you see any alumni whom you would like to contact, use the Online Directory at www.alumniconnections.com/URMC to find address information.

Submit your class notes to your class agent or to RochesterMedicineMagazine@urmc.rochester.edu.

Note: MD Alumni are listed alphabetically by class, Resident and Fellow alumni follow in alphabetical order, and Graduate Alumni are listed separately in alphabetical order.

MD Alumni

Class of 1947

William L. Parry is a professor emeritus at the University of Oklahoma College of Medicine after serving 32 years as its first academic full-time chairman of the Department of Urology. At the 2012 meeting of the American Association of Genito-Urinary Surgeons, Parry was appointed historian. He is a former president and one of eight honorary members. He also has started his tenure as historian of the Society of University Urologists, of which he is a founding member, the first Secretary-Treasurer and president. He is recipient of the first SUU Presidential Award.

Class of 1955

David L. Rogers retired July 1, 2012 from his position as health officer for Calvert County, Maryland, a post that he has held for the past 39 years. The Maryland State Medical Society recently presented Rogers with its Dr. Henry P. & M. Page Laughlin Award for his "long and distinguished service to physicians and patients in Maryland and his commitment to improving public health in Calvert County."

Class of 1960

William E. Powell (BA '56) writes: "I have been working as physician oversight for the University of Houston Downtown student health clinic. I also am teaching physical assessment to the University of Texas Health Science Center School of Nursing in Houston. I function as feature editor for the Harris County Medical Society Retired Physician Organization, singing bass in the Houston Symphony-Bay Area League chorus "Noteables"; Maestro the Magnificent hand puppeteer, teaching all first

graders in the Clear Creek Independent School District the four families of a symphony orchestra for the Houston Symphony; ushering at the Alley Theater and doing all those retired things forbidden by a busy obstetrical practice which I left 10 years ago.”

Class of 1961

Hechmat (Heshey) Tabechian (R '64) retired in July after 10 years as the executive director of the Rochester Academy of Medicine. Formerly, he served as chief of the Nephrology Division at the then Genesee Hospital in Rochester. He remains active with the School of Medicine and Dentistry as a clinical professor of medicine, preceptor in the Introduction to Clinical Medicine course, and interviewer of first-year student applicants. Tabechian also serves as the class agent for the Class of 1961 and maintains a close relationship with the School's Alumni Relations Office.

Class of 1962

Jerry Moress writes: “After 43 years of neurological practice, I retired in September, 2011. The last 11 years were spent in Ketchum, Idaho, where having a BMI over 23 is a punishable offense. Due to health issues, I was unable to attend my 50th reunion. Best to all my classmates.”

Robert Newman has been awarded the EUROPAD Chimera Award by the European Opiate Addiction Treatment Association; the award recognizes those most committed to “realizing their dream of helping drug addicts.” He is only the second non-European (among some 20 awardees) to be a recipient.

Class of 1966

President Barack Obama has appointed **Warren M. Zapol** to a second term on the Arctic Research Commission. Zapol, who was first appointed in 2008, is director of the Anesthesia Center for Critical Care Research at Massachusetts General Hospital. From 1994 to 2008, he served as the Anesthetist-in-Chief. He also is the Reginald Jenney Professor of Anesthesia at Harvard Medical School in Boston. He also served on the Polar Research Board of the National Academy of Sciences from 2003 to 2006. In 2006, the United States Board on Geographic Names named a glacier after him. He has also been part of nine expeditions to Antarctica since 1974 to study the diving physiology of the Weddell Seal.

Class of 1967

Kenneth J. Maiocco has been named to Top Doctors in Connecticut, Best Doctors in America in *U.S. News and World Report* and again as *Best Doctors in America, Top Docs in the New York Metropolitan Area* and *Top 128 Physicians in Fairfield County* as a dermatologist.

Class of 1969

Richard Peer (R '75) was elected chairman of the Medical Society of the State of New York board of trustees at its 206th annual House of Delegates (HOD) meeting in Saratoga Springs in April. He is in private practice with the Buffalo Medical Group and is the medical director of

two health care facilities and a consultant for Roswell Park Cancer Center. Peer also is an associate clinical professor of surgery at the State University of New York at Buffalo, where he has taught since 1977.

Class of 1970

Ron Worland (R '77) writes: “I have recently retired from the active practice of plastic and reconstructive surgery after 35 years in Medford, Oregon. I plan on continuing my medical practice as an international humanitarian surgeon. I have completed 26 international missions to India, China, the Dominican Republic, Venezuela, and many missions to

Dolphins at Baja's Los Islotes





Takeoff at Mendon Ponds, N.Y.

Oaxaca, Mexico. Thus, I am only retired from active private practice.”

Class of 1974

Robert F. Ozols (BS '66 PhD '71) received the Distinguished Achievement Award from the American Society of Clinical Oncology (ASCO) this year for his leadership in the field of oncology. Ozols is an internationally known expert in ovarian cancer and a leader in advancing chemotherapy research. His research has focused on how cancer cells develop drug resistance and on strategies for overcoming resistance. Ozols has chaired ASCO's Cancer Research Committee and Cancer Communications Committee. He has served on the board of directors of the American Association of Cancer Institutes and ASCO. He is a fellow of the American Society of Clinical Oncology.

Class of 1977

William Y. Hoffman is chief of the Division of Plastic and Reconstructive Surgery and vice-

chair of the Department of Surgery at University of California at San Francisco.

Class of 1978

Jeffrey Charen (R '80) writes: “My son, Daniel Charen, is attending the University of Rochester School of Medicine and Dentistry. He just graduated from Cornell University. I graduated from the U. of Rochester School of Medicine in 1978 and did two years of general surgery residency at Strong Memorial Hospital. I subsequently did an orthopedic surgery residency at Tufts-New England Medical Center. I currently practice in a four-man orthopedic group in Edison and Old Bridge N.J., specializing in the hip and knee. I am married to Karen Charen, a physical therapist and have a daughter Rebecca who is a junior at the U. of Michigan.”

Leslie Scutt has been inducted as a fellow in the American College of Radiology (ACR). Scutt is medical director of the non-invasive vascular lab at Yale University School of Medicine and chief of the ultrasound section at Yale-New

Haven Hospital. She is a member of the ACR, a member of the board of trustees of the American Registry of Radiologic Technologists and a member of the board of governors of the American Institute of Ultrasound in Medicine.

Alan G. Palestine writes: “After 30 years of practicing ophthalmology in the Washington, D.C. area, I have retired to Colorado to ski, hike, shoot shotgun sports and spend more time enjoying the outdoors. I may return to part-time practice, but am really enjoying retirement.”

Class of 1982

Mark Adams (R '84 MBA '93) was elected to the council steering committee of the American College of Radiology.

Robert A. Herbstman (BA '78) was elected to the executive board of the New Jersey Society of Plastic Surgeons.

Harold L. Paz (BA '77), Penn State Milton S. Hershey Medical Center CEO, Penn State's senior vice dean for health affairs, and dean, Penn State College of Medicine, has been



Grazing near the Mount Tabor-Weston Road in Vermont.

named to *Becker's Hospital Review's* recently released "100 Physician Leaders of Hospitals and Health Systems" list, which features some of the top physician leaders in health care. Paz has held the top position at Penn State Hershey since April 2006.

Joseph Serletti (R '88) has been elected a member of the American Surgical Association. Serletti is the Henry Royster-William Maul Measey Professor of Surgery and chief of plastic surgery at the University of Pennsylvania. He also is a director of the American Board of Plastic Surgery.

Class of 1985

Dennis Kraus (BA '81) writes: "After 22 years at Memorial Sloan-Kettering Cancer Center, I have joined the Northshore Health Care System as the director of the head and neck oncology program. My clinical practice is located at the Lenox Hill Hospital in Manhattan. My position includes responsibility for the clinical and research efforts for head and neck oncology

across the 15 hospital health care system."

Class of 1986

Robert McGowen has joined Southcoast Physicians Group as the chief of primary care services for the Wareham, Mass., region. McGowen also practices internal medicine at Southcoast Health System at Rosebrook in Wareham.

Class of 1988

Jeffrey M. Lyness (BA '83), professor of psychiatry, has become the senior associate dean for academic affairs for the University of Rochester School of Medicine and Dentistry. Lyness, who was appointed associate dean for Academic Affairs a year ago, has been director of curriculum for medical student education since 2008 and medical director of continuing medical education since 2010.

David L. Waldman (MS '83, PhD '88, R '90) has been inducted as a fellow in the American College of Radiology (ACR). Approximately

10 percent of ACR members achieve this distinction. Waldman is a professor and chair of radiology at the University of Rochester Medical Center.

Class of 1989

Peter Hotvedt writes: "I sent my daughter to Rochester. She started as an undergrad this fall."

Class of 1994

Joseph E. Losee (R '99) currently serves as the program director for the University of Pittsburgh's plastic surgery residency program and chief of plastic surgery at the Pittsburgh Children's Hospital. Losee recently was elected a director of the American Board of Plastic Surgery.

Class of 1995

Dwight Heron has been inducted as a fellow in the American College of Radiology (ACR). Heron is a professor and vice-chairman of clinical

affairs in the department of radiation oncology at the University of Pittsburgh School of Medicine (UPMC), where he also is a professor of otolaryngology, head and neck surgery; deputy director of the University of Pittsburgh Cancer Institute; and the director of radiation services at UPMC Cancer Centers.

Manish Vig (BA '91 BS '91) writes: "The family and I recently moved from Massachusetts where I served as medical director and chief of the emergency department at the Holyoke Medical Center. I led a turnaround of a department in demise and managed to recruit a full-time team of 14 physicians and eight mid-level providers in the midst of 33 percent growth in the annual population we served. I also implemented best-practice processes and altered the various systems that lead to efficient and safe patient care, particularly in the areas of acute stroke and coronary disease, and managed to do all of this as we adapted to state health care reform.

"More importantly, during this time, we welcomed our daughter, Sofia Rani Vig, who was born in July 2010, and has quickly become best friends with her big brother Rohan. The kids are now learning to settle in the metro Atlanta area as I assume a new role with the Schumacher Group as its State of Georgia Area Medical Officer. The company provides leadership and staffing solutions at over 200 emergency departments and hospitalist departments nationwide, and my territory will eventually expand to providing oversight at our 18 sites in the state ... The support I get from my wife and kids along with the ongoing friendships from medical school has been something to cherish as I continue to find novel ways to integrate clinical excellence, operational oversight and business development in medicine."

Class of 1998

Robert Whorf (R '01) writes: "On a personal note I, my wife, Patty, and two sons are living in Southwest Florida on the Gulf of Mexico. We are having fun kayaking, jet skiing and sailing and continuing my tradition of damaging local golf courses." Whorf is director of research operations at Florida Cancer Specialists and Research Institute. In addition to the goal of increasing participation in clinical trials, he helps oversee the expansion of the drug development unit. He has served as principal and sub-investigator on almost 60 clinical research trials. He has been named by *U.S.*



Sunset at Elk Lake in the Adirondacks.

News and World Report as one of the Top Doctors in the United States in their 2011 and 2012 Rankings Guides.

Class of 2000

Christopher Ellis, assistant professor of cardiac electrophysiology at Vanderbilt Heart

and Vascular Institute, and his wife Wendy Drew Ellis M.D. (pediatric radiologist, Vanderbilt Children's Hospital), announce the birth of their first child, a girl, Parker Josephine.

Class of 2006

Cara Agerstrand has accepted the position of



Elk Lake in the Adirondacks, just before dawn.

assistant professor for clinical medicine in the Division of Pulmonary, Allergy, and Critical Care Medicine at Columbia University Medical Center, New York-Presbyterian Hospital, in New York City. She is specializing in critical care and extracorporeal membrane oxygenation (ECMO). She completed her residency in internal medicine and a fellowship in pulmonary and critical care medicine at Columbia University Medical Center.

Ryan Anthony recently completed a cardiology fellowship at Vanderbilt University Medical Center in Nashville and has joined Mount Carmel Columbus Cardiology Consultants in Columbus, Ohio.

Tracey Henderson writes: "My husband, Joe Henderson (M '05) and I welcomed our first child, Elizabeth Violet, on Jan. 24, 2012. I completed my chief residency in pediatrics and have joined Bay Creek Pediatrics in Webster, N.Y."

Lenny Lesser finished a research fellowship at UCLA and has taken a research physician job at the Palo Alto Medical Foundation, where he will

be working on obesity and nutrition research. He continues to enjoy the California lifestyle, and is in his second season of amateur bike racing.

Benjamin Petre writes: The Petre family is moving again. Kristen and Ben with their two daughters, Grace (3) and Hannah (1), have finally finished his orthopedic training at Johns Hopkins Hospital and subspecialty training in sports medicine at The Steadman Clinic in Vail, Colo. Ben is excited to be joining an orthopedic practice in Annapolis, M.D.

Class of 2007

Gregg Lawrence Chesney (BA '03) and Taylor Blake Lubitz were married at the Woodmere Club in Woodmere, N.Y. Rabbi Debra M. Bennet officiated. Chesney was a chief resident in emergency and internal medicine at Long Island Jewish Medical Center in New Hyde Park, N.Y. He recently began a fellowship in critical care medicine at Stanford University Medical Center in Stanford, Calif.

Class of 2008

Vasanth Kainkaryam completed a combined internal medicine and pediatrics residency at Baystate Medical Center. He joined Hartford Medical Group in Connecticut. He and his wife, Pranjali, had their first baby, a daughter, Vihana Prishti Kainkaryam, in April, 2012.

Class of 2009

Alexis Weymann (M '09) and **David Perlmutter** (M '10) were married in Shelburne, Vermont, on May 26, 2012. They write that Dr. Chin-To Fong (genetics, pediatrics at UPMC) was the wedding officiant. Many MDs from the classes of 2009 and 2010 were in attendance. David is a third-year Wills Eye ophthalmology resident, and Alex is just finishing up her pediatrics residency at Children's Hospital of Philadelphia. She will be working for a year at CHOP and then will start a dermatology residency at Geisinger with plans to pursue pediatric dermatology.

Class of 2010

Brian Jenssen writes: "I'm finishing up my pediatric residency at Children's Hospital of Philadelphia this next year, where I'll be chief resident for the academic year of 2013–2014. More importantly, I'm recently engaged to one of my co-residents, Kate Henry, and we're planning to marry the summer after residency."

David Perlmutter (M '10) and **Alexis Weymann** (M '09) got married in Shelburne, Vermont, on May 26, 2012. They write that Dr. Chin-To Fong (genetics, pediatrics at URMC) was the wedding officiant. Many MDs from the classes of 2009 and 2010 were in attendance. David is a third-year Wills Eye ophthalmology resident, and Alex is just finishing up her pediatrics residency at Children's Hospital of Philadelphia. She will be working for a year at CHOP and then will start a dermatology residency at Geisinger with plans to pursue pediatric dermatology.

Resident/Fellow Alumni

Mark J. Adams (MD '82, R '84, MBA '93) – See *MD Class of 1982*.

Teresa Ainsworth (R '97) is an emergency medicine staff physician for Finger Lakes Health in Geneva, N.Y. She is pursuing international medicine and is engaging a part-time appointment in Guam. Her husband David Ainsworth is a system analyst for Summit Federal Credit Union. They reside in Honeoye Falls, N.Y. Their daughter, Aspen Ainsworth, is completing her third year clerkships at State University of New York at Buffalo School of Medicine. Their son, Austin, will be a sophomore at Honeoye Falls-Lima High School, with emphasis in Latin and instrumental music.

Scott Bissell (R '02) has joined the medical staff of St. Francis Hospital and Medical Center. He is practicing as a member of Connecticut Orthopedic Associates.

Vladimir Bogin (R '01) is chairman of the board

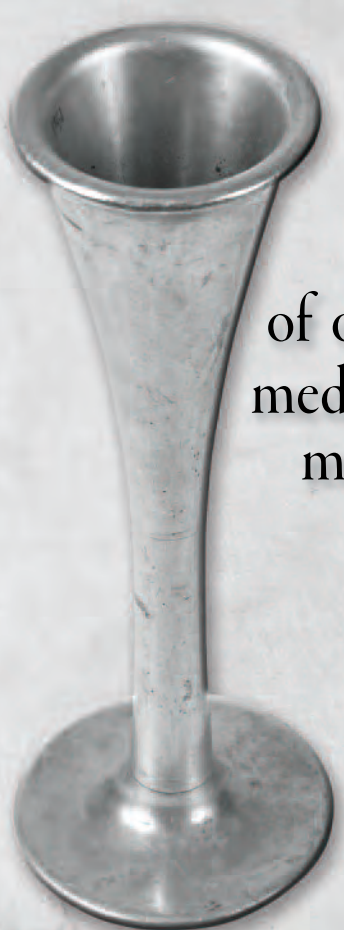
at Medistem Inc. Medistem is a clinical stage adult stem cell company that has discovered Endometrial Regenerative Cell, a universal donor cell that has potent vasculogenic properties. The company has received approval for phase Ib study in patients with critical limb ischemia from the FDA and is conducting a phase IIa study in patients with congestive heart failure.

Jeffrey H. Charen (MD '78, R '80) – See *MD Class of 1978*.

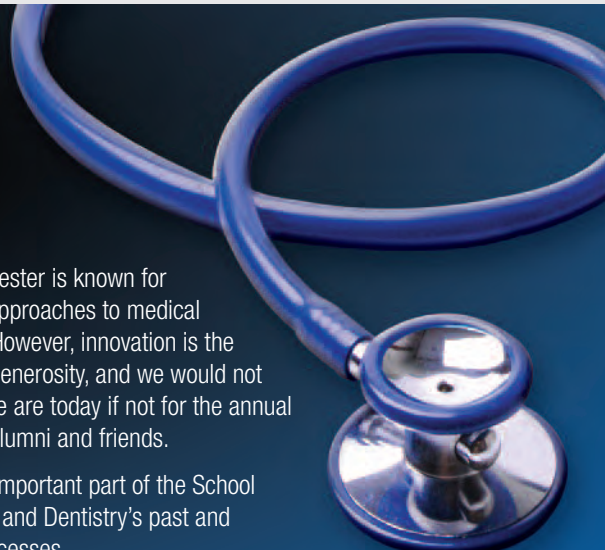
Joseph Edward Losee (MD '94, R '99) – See *MD Class of 1994*.

Navin C. Nanda (FLW '73) is Distinguished Professor of Medicine and Cardiovascular Disease, and director of Heart Station/Echocardiography Laboratories at the University of Alabama at Birmingham.

In May, 2011, Nanda was presented the "Father of Modern Echocardiography" award by the Chinese Ultrasound Doctors Association in Wuhan, People's Republic of China. In February, 2012, he also received "The Father of Modern



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Echocardiography" award from the Indian Association of Cardiovascular and Thoracic Anesthesiologists for his pioneering contributions in all fields of cardiac ultrasound, including perioperative echocardiography. Among several other awards, Nanda was presented a Lifetime Achievement Award from the Indian Heart Rhythm Society. He was the first in the world to image cardiac catheters and pacemakers by echocardiography and assess pacemaker function including detection of complications, such as pacemaker perforation and thrombosis. He was the first to show increase in stroke volume by Doppler with sequential pacing compared to regular ventricular pacing and developed the Doppler technique to maximize stroke volume and minimize mitral regurgitation during cardiac pacing.

Richard Peer (MD '69, R '75) – *See MD Class of 1969.*

Lance Rodewald (FLW '87) received the Distinguished Alumni Award for 2012 from Southern Illinois University School of Medicine. Rodewald is the director of the immunization services division in the National Center for Immunization and Respiratory Diseases at the Center for Disease Control and Prevention (CDC). The awards from the School's Alumni Society board of governors recognize outstanding contributions to medicine and distinguished service to humankind. Rodewald supervises 215 personnel stationed both at CDC headquarters in Atlanta as well as throughout the United States and oversees a budget of \$4.4 billion. Record or near-record highs in immunization coverage and record or near-record lows in incidence of vaccine-preventable diseases have been achieved since Rodewald was named director in 2000.

Ann Rosenthal (R '86) has been appointed chief of the division of rheumatology at the Medical College of Wisconsin. Rosenthal also is the new Will and Cava Ross Professor of Medicine, and assumes the new position of vice chair for faculty development in the Department of Medicine. She heads the rheumatology practice at Froedtert Hospital, and practices at the Clement Zablocki VA Medical Center. Rosenthal is internationally known as an innovative laboratory investigator in the fields of crystal-related arthritis and cartilage degeneration. Her research program has been continuously funded from the VA and/or National Institutes of Health since 1992.

Joseph Serletti (MD '82, R '88) – *See MD Class of 1982.*

David L. Waldman (MS '83, MD '88, PhD '88, R '90) – *See MD Class of 1988.*

Robert Whorf (R '01) – *See MD Class of 1998.*

Ron Worland (MD '70, R '77) – *See MD Class of 1970.*

Graduate Alumni

Joseph G. Brand (PhD '72) has retired after 39 years and more than 110 publications, from Monell Chemical Senses Center in Philadelphia. He served as associate director of Monell from 1991 until his retirement.

Mary Fox (MPH '89), an assistant professor in the Health Policy and Management Department of the Johns Hopkins Bloomberg School of Public Health, has been selected to serve on the Environmental Protection Agency's (EPA) Science Advisory Board Ad-hoc Panel. Fox and others on the Ad-hoc panel will focus on developing advice based on current information about perchlorate, a naturally occurring and processed chemical found in drinking water.

Steven Gilbert (BS '73, MS '83, PhD '86) writes: "The second edition of my book *A Small Dose of Toxicology: The Health Effects of Common Chemicals* was just launched as a free e-book for downloading for an iPad, kindle or PDF. It is published by Healthy World Press (www.healthyworldpress.org). All the chapters were updated and several new chapters added with links into Toxipedia (www.toxipedia.org) and free PowerPoint presentations for each chapter (www.asmalldoseof.org). *A Small Dose of Toxicology* is an introductory toxicology textbook that examines the health effects of common chemical agents and places toxicology within the framework of everyday life. Agents covered include not only obvious candidates such as lead, mercury, and solvents, but familiar compounds such as caffeine, alcohol, and nicotine. Additional chapters cover basic toxicology, targets of toxic agents, risk assessment, history, and ethics.

Kelly Goonan (MPH '97) is the director of care coordination for Cornerstone Health Care in High Point, N.C.

John Joseph Karijolich (MS '08, PhD '11) and Katie Michelle Lovria were married Jan. 28, 2012, at Casa Larga Vineyards in Fairport, N.Y. The couple lives in New Jersey.

Heather Lanke (MS '03, MPH '06, PhD '06) and Amit Lugade (MS '03, PhD '06) were married on

June 6, 2012.

Carol Warren Nichols (BA '72, MS '75) has been certified by IYNAUS (Iyengar Yoga National Association the United States) as an Introductory II Iyengar Yoga Teacher. This certification is approved and signed by B.K.S. Iyengar of the Ramamani Iyengar Memorial Yoga Institute, Pune, India

Robert Felix Ozols (BS '66, PhD '71, MD '74) – *See MD Class of 1974.*

Rachel Lee Roper (MS '90, PhD '92) was issued a patent covering discovery and characterization of the A35 pox virus gene. If this gene is removed from vaccine strains the vaccines are much safer. In addition, since this gene encodes an immunosuppressive protein, removal of the gene from vaccine strains yields a vaccine that gives improved immune responses. This technology can be used for vaccines against a number of diseases and for cancer treatment. The patent also covers the potential future use of this gene, or its cognate protein, to clinically suppress undesirable immune responses, such as in organ transplantation and autoimmune diseases. Also covered is the detection of the A35 gene or protein in pathogens carrying the gene.

Marcia Joslyn Scherer (MPH '86, PhD '86) has published two books, *Assistive Technologies and Other Supports for People with Brain Impairment* (Springer Publishing Company) and *Assistive Technology Assessment Handbook* (CRC Press). She is president of the Institute for Matching Person & Technology in Webster, N.Y.

David L. Waldman (MS '83, MD '88, PhD '88, R '90) – *See MD Class of 1988.*

Deborah Warner, Ph.D. (PDC '80), ran for the New Hampshire Senate District 1, the northern most area in the state, which includes Mt. Washington. She says: "All are welcome to visit the North Country and enjoy its mountains, lakes, rivers and people."

Stephanie Wragg (PhD '96) was appointed associate dean for academic affairs for the College of Medicine of the University of Illinois at Urbana-Champaign. She is also associate professor of biochemistry.

In memoriam

Bruce Larry Brown (MD '47)
 James G. Brown (R '46)
 Anthony J. Capone (MD '57, R '61)
 Carlo C. Davis (MD '51)
 Robert Morgan Fink (PhD '42)
 Hilliard E. Firschein (PhD '58)
 John B. Flick (MD '45)
 Alice Foster (BA '45, MD '48)
 William L. Greer (MD '43)
 Lewis Hogg (MD '45)
 Richard A. Isay (MD '61)
 Walter "Worth" E. Linaweaver (MD '55)
 Charles C. Lobeck Jr. (MD '52)
 Martha R. Lumpkin (R '52)
 Thomas M. Mettee (MD '68)
 Robert P. Perry (MD '76)
 Stephen R. Pope (MD '53)
 William D. Salmon (R '52)
 Richard H. Saunders Jr. (MD '43)
 Thomas D. Smith (R '74)
 Clifford W. Skinner (R '57)
 Elizabeth Anna Werner (PhD '68)
 Joel Jacob WidELITZ (MD '71)

Hansen Q&A

Continued from page 37

research faculty. It's an attitude. It's about looking at things in the largest context possible. If you approach education that way, in a liberal arts mode, there is no limit to what you can learn. You open your mind. You meet new people, and experience new ideas and approaches. It all builds upon itself.

Q: Do you think the traditional anatomy course and dissection lab will disappear from medical school curriculums because of advancements in digital technology?

A: I don't think we'll see changes, at least in the immediate future. I don't know what the finances are going to be for any medical school in the future, but schools are not abandoning traditional anatomy. Most schools still adhere to a good dissection course and have a viable anatomical gift program to support it.

Yes, things are digitized and online and they are wonderful adjuncts, but they are no replacement for a cadaver. I think most clinicians would tell you the same thing. Anatomy plays a key role in the mindset of a beginning medical student. It is the one thing they are thinking about as they start as a first-year student. How will I react? How will I deal with this? It is one of the most lasting memories of their undergraduate medical education.

Anatomy traditionally has been taught by a devoted group of faculty who value excellence in teaching. You have to be a committed teacher. It is the most time intensive basic

science course. It is physically demanding to be in anatomy lab. It is emotionally draining for students and faculty, but it is such a rich learning experience. Students don't just learn anatomy. They learn resilience. They learn about physical and emotional stamina. They learn to work as a team, perhaps for the first time. They have to work together and support one another. It's an intensive learning environment but it is also a positive learning environment. There is no doubt this is real experience. You are in medical school and your commitment to learn must be genuine.

Yes, we have flat screen TVs and access to radiographic images and videos on a computer. But they can't replace dissection. You learn manual skills-how to handle a scalpel and forceps, a dissecting scissors, a Striker saw-in the anatomy lab. The experience helps you become a better physician in a lot of different ways beyond simply learning the anatomy. You learn how to learn under stress and how to deal with your emotions, while at the same time supporting those around you. Computer simulations can't convey the difficulty encountered in teasing out a nerve or preserving an artery in an obscured dissection field.

Medical school is four years long. We have an explosion in many fields. We have molecular biology and molecular genetics. There is something new every day. You have to find more efficient ways to convey information and better ways to teach future physicians to learn on their own. But I think students would feel they got cheated if they didn't have the traditional anatomy lab. I feel sorry for those who don't get to do the whole dissection because they are missing out not only on the anatomy but on all the other skills this unique laboratory experiences teaches.

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