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CHIRONIAN

New York Medical College



Spring/Summer 2009

Inside:

Bench to Bedside
Cancer Research

Preventing Brain
Hemorrhage in
Micropreemies

In Summer, No Slackers

Alumna Pumps Up
Her Education



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Leading Edge

Highlights of Current Research

Moderating calorie intake during pregnancy won't harm the fetus

Although obesity in pregnancy continues to be associated with a host of health problems, many clinicians have been reluctant to place non-diabetic, obese pregnant women on a monitored, calorie-appropriate nutritional regimen for fear of limiting fetal growth or even precipitating low birthweight or starvation ketosis.

A new study led by **Yvonne S. Thornton, M.D., M.P.H.**, clinical professor of obstetrics and gynecology, reports that obese women can be placed on a healthy, well-balanced, monitored nutritional program during pregnancy without adversely affecting the fetus.

A total of 257 patients were enrolled in the study in which patients were given either conventional prenatal dietary management or were prescribed a balanced nutritional regimen and were asked to record in a diary all of the foods eaten during each day. The results showed that pregnant women who adhered to the balanced regimen and recorded their food intake were less likely to develop gestational hypertension, had less weight gain during pregnancy, and were quicker to return to their prenatal weight within six weeks of delivery. Patients gaining 15 pounds or more during their pregnancy showed statistically significant differences between the groups for eight variables.

The researchers concluded that obstetricians can safely place their obese patients on a healthy, monitored nutrition program during pregnancy without fear of compromising the health of either the mother or the baby.

"Perinatal Outcomes in Nutritionally Monitored Obese Pregnant Women," *The Journal of the National Medical Association*, June 2009.
 Online at http://www.nmanet.org/index.php/Publications_Sub/jnma

Researchers examine quality of life after cancer

Cancer treatment has become so advanced in recent years that a diagnosis no longer spells certain death as it once did. In fact, many cancer patients, after undergoing successful treatment, readily return to their jobs and their lives, apparently restored to the good health and quality of life they enjoyed before they became ill. But not every cancer patient can look forward to such a rosy outcome. Have we become unrealistic in expectations of cancer treatment?

A recent study led by **Frank Baker, Ph.D.**, School of Health Sciences and Practice, examined quality of life issues for cancer patients. The team obtained data from 16,850 individuals aged 65 years and older who were enrolled in Medicare managed care plans and who had completed a quality-of-life questionnaire in 1998 and again in 2000. For those previously diagnosed with cancer, there was no evidence that their quality of life returned to normal levels (i.e., before onset of the disease) after two years. Quality of life declined for all participants over the two years studied as age increased. Those who previously had cancer had poorer quality of life than those without cancer at both times. However, the rate that quality of life worsened was the same for both groups. The change in quality of life was also greater for physical health as compared to mental health.

The researchers advise that physicians treating elderly individuals with cancer should be aware that both

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Collaborators, Educators, Administrators — and They Even Do Translational Research

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By Dan Hurley

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By Marjorie Roberts

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By Cynthia A. Read

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No schizophrenia here...it's all about two pediatricians who have made *taking care of children* their life's work.

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Three medical students tell how summer research fellowships changed their views of medicine—and of themselves as future physicians.

By Thomas Orton

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Finding Purpose in Soldiers' Eyes

A pediatrician and a soldier, "Dr. Charlie" brings empathy, lollipops and healing to sick children and young men at war.

By Andrea Kott, M.P.H.

Survival of the Fittest

How one dynamic woman plans to change the world, one stair-stepper at a time.

By Lynda McDaniel

Perpetual Learner

An interest in science and legal rights led this former basic scientist from the laboratory to the legal field, where patent law and researchers struggle to coexist.

By L.A. McKeown

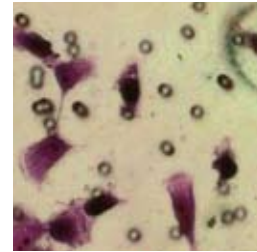
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On the Cover

For the first time, Chironian's personality profile features not one but two high-powered individuals who contribute tirelessly to the mission of the College: Leonard J. Newman, M.D., '70, professor and chairman of the Department of Pediatrics, at right, and Michael H. Gewitz, M.D., professor and department vice chairman and executive director and physician in chief at Maria Fareri Children's Hospital/Westchester Medical Center. Both are pediatricians with busy practices (although none of the giggling preschoolers who posed for our cover shot in the lobby of the Children's Hospital are patients of the good doctors). Colleagues say they make a remarkable team, working together to manage the academic and clinical needs of the Department of Pediatrics, both at the College and at the Children's Hospital. *Special thanks to Wendy Masserman, director of For Kids Only in Briarcliff Manor, N.Y., her staff and those irrepressible kids.*

Microbiology and Immunology



Collaborators, Educators, Administrators— and They Even Do Translational Research

Together and individually, Jan Geliebter, Ph.D., and Raj Tiwari, Ph.D.,
are investigating malignancies of the breast and prostate,
and training a new generation of scientists—all without missing a beat.

By Dan Hurley

The wiry, animated Jan Geliebter, Ph.D., stands, gestures at his jottings on a white board, and begins talking a mile a minute while his colleague, the considerably more relaxed Raj Tiwari, Ph.D., eases back in his chair, his hands clasped behind his head. You'd never know it, but they are discussing their educational backgrounds.

"I'm from Brooklyn; you got a problem with that, we'll take it outside," jokes Dr. Geliebter. "I got my Ph.D. from Calcutta University," Dr. Tiwari puts in. "I speak too quickly, he speaks too slowly," quips Dr. Geliebter. "I have to compensate."

Different as they are, the two men have formed a close partnership on their research in preventing, diagnosing and treating cancers, particularly of the thyroid, prostate and breast. They also share a passion for teaching and administration, and with a cadre of students, fellows, post-docs and residents all playing a role in their sizable body of research, they like to say they are training the next generation.

Both are professors in the Department of Microbiology and Immunology, and each has administrative responsibilities—Geliebter as course director and Tiwari as graduate program director. Both men have appointments in the Department of Otolaryngology, where Dr. Geliebter is also the resident research coordinator.

"They work so well together," says Ira Schwartz, Ph.D., professor and chairman of the Department of Microbiology and Immunology. "They are a perfect complement. And at a personal level, they're very close friends. It's a very prolific partnership that they've developed."

Some of their most productive work has been investigating a potent cancer-preventing compound found in all cruciferous vegetables called 3,3'-Diindolymethane, or DIM, which Dr. Tiwari has studied since 1994. A 2005 paper they co-authored with a team of researchers and clinicians, some of whom practice at The New York Eye and Ear Infirmary (NYEEI), a College affiliate in Manhattan, showed that DIM is a potent anti-proliferative agent against thyroid cancer, and inhibits the growth of primary goiter cells by 70 percent.

Dr. Tiwari is principal investigator leading a team of clinicians and basic scientists on an NIH-funded R01 grant to study the basic biology of DIM, as well as its clinical efficacy in thyroid proliferative diseases. In addition, he and Dr. Geliebter are working with principal investigator Stimson Schantz, M.D., professor of otolaryngology, who is recruiting patients for a clinical trial of DIM. The study will examine patients with goiter who will undergo surgery, to see if DIM improves their outcomes versus a placebo. Drs. Tiwari and Schantz have a long and successful history of collaborating since their days together at Memorial Sloan-Kettering Cancer Center.

Left: The research teams of Raj Tiwari, Ph.D., seated center, and Jan Geliebter, Ph.D., standing center and at right, each have a distinct focus, but their paths cross often in the course of their collaborations. Surrounding the two lead investigators are, clockwise from left: Ismael Reyes, Ph.D., post-doctoral fellow; Scott Nowicki, M.D./Ph.D. student; Josh Bedwell, M.D., otolaryngology resident; Robert Suriano, Ph.D. '07, post-doctoral fellow; visiting exchange student Parthajit Mukharjee; Andrea George, Ph.D. candidate; Arulkumaran Shanmugam, Ph.D., post-doctoral fellow; and Shilpi Rajoria, Ph.D. candidate.



“What is found in cancer cells but not in normal cells can be used as a biomarker for diagnosis or prognosis of cancer or as a target for therapeutic intervention.”

— Jan Geliebter, Ph.D.

Nothing lost in translation

At its root, their plan is to conduct research that translates directly into improved patient care, whether through prevention, diagnosis or treatment. The two researchers view their thyroid investigations as true translational research, a collaboration among clinicians who fully understand the disease and the concerns of the patient, and the basic scientists who carry out the bench studies to address the issues. As Dr. Tiwari points out, “If research cannot be translated, it may not have value in a medical setting.”

Both Geliebter's and Tiwari's groups are taking an integrated genomics approach to thyroid cancer; “where we are looking at the sum total of all the molecules in normal and cancerous thyroid cells and asking what is different between them,” explains Dr. Geliebter. “What is found in cancer cells but not in normal cells can be used as a biomarker for diagnosis or prognosis of cancer or as a target for therapeutic intervention.”

In Dr. Geliebter's lab, the team uses microarray technology to identify molecular differences between normal and cancerous thyroid tissue for the discovery of molecular biomarkers and therapeutic targets such as ALOX-5. Down at New York Eye and Ear, otolaryngology residents are studying genes identified as potential molecular biomarkers. A skilled team of pathologists and technicians provide clinical samples for the research. All are overseen by Dr. Schantz, who provides necessary clinical input (see sidebar on page 6).

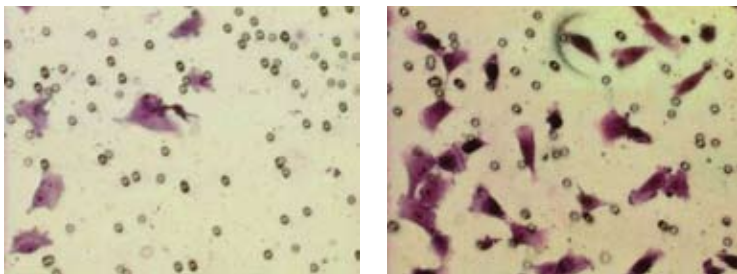
DIM is just one of many compounds being investigated by the researchers. The College now owns the patent on a novel anti-cancer agent called C-1748, developed by Dr. Tiwari in collaboration with researchers from as far away as Gdansk, Poland. Building on compounds developed in Poland in the 1970s, Dr. Tiwari sought one that would exhibit more potent effects on tumors with less systemic toxicity. The most active and least toxic proved to be the substance C-1748, also known as nitroacridine. To pave the way for a human trial targeting prostate cancer, Dr. Tiwari's group published a 2006 paper in *Life Sciences* showing that, in sharp contrast to most chemotherapeutic agents, nitroacridine produced only minimal and transient side effects.

New treatments on the horizon

“There is currently no approved chemotherapy for prostate cancer,” Dr. Tiwari says. “We have finished our toxicology and pre-clinical work, and are looking for partners to initiate a clinical trial.”

On the basic biology front, Dr. Tiwari has recently discovered progenitor stem cells that promote the vascularization of breast cancer cells. As senior author of a paper published last August in the journal *Cancer Research*, he and post-doctoral fellow Robert Suriano, Ph.D. '07,





Over-expression of ALOX-5

Enhanced expression of the gene ALOX-5 increases invasiveness of thyroid cancer cells. The panel on the right shows increased invasion of thyroid cancer cells (magenta) across a filter, digesting tissue matrix and migrating through holes (black spots on filter), due to over-expression of ALOX-5. The panel on the left shows thyroid cancer cells with a low level of ALOX expression. ALOX-5 over-expression induces the cancer cells to produce enzymes that degrade tissues and allow cells to spread. Images courtesy of Jan Geliebter, Ph.D.

described bone marrow-derived endothelial progenitor cells that are mobilized by the hormone 17 β -estradiol.

"We are very excited about the findings," he says. "We are using adult stem cells that are important in making new blood vessels, and targeting those new blood vessels for therapy in both breast and thyroid cancer."

Dr. Tiwari is also hard at work on an experimental vaccine that would boost the immune system's ability to recognize and destroy cancer cells.

"We are not only academicians—we feel we should leave a legacy of our vision with the younger generation."

— Raj Tiwari, Ph.D.

"We wondered why the immune system doesn't always recognize a cancer as foreign," he says. "We felt it becomes too tolerant. So we looked for a way to boost the immune system." His lab is finding synthetic peptides that mimic the cancer, different enough from the standard tumor cells to stimulate an immune reaction, but similar enough to result in the immune system also attacking the cancer. This is called cross-reactivity between the peptide mimic and the native antigen.

"The animal studies are very encouraging. We are collaborating with Abraham Mittelman [M.D., clinical associate professor of medicine] for patient-based clinical research," says Dr. Tiwari, who co-authored a review article with Dr. Geliebter earlier this year on the fast-growing field of cancer immunotherapy. He adds, "We have licensed this to a company that is funding the vaccine work."

Dr. Geliebter's laboratory studies prostate and thyroid cancer on the molecular level. In particular, his group is interested in the etiology of the diseases, as well as molecular biomarkers for the diagnosis and prognosis of these cancers. For example, his laboratory is studying the effects of diet, aging, environmental factors and oxidative stress on the initiation and promotion of prostate cancer. Brother and sister post-docs Ismael Reyes, Ph.D., and Niradiz Reyes-Ramos, Ph.D. '03, have found that a high fat diet and the aging process each independently increase oxidative

stress in the prostate, resulting in genetic damage and inflammation. Together the effects are synergistic, multiplying the chances for cancer.

"The prostate in a young rat on a high fat diet has the same level of oxidative stress levels as a prostate from a much older rat on a low fat diet. Think of the high fat diet we eat in the U.S., and there is no wonder that prostate cancer rates have skyrocketed," Dr. Geliebter says.

As important as research is to Drs. Tiwari and Geliebter, their commitment to their students is evident to all who know them. "They're very nurturing to medical students and residents," says Steven D. Schaefer, M.D., professor and chairman of the Department of Otolaryngology.

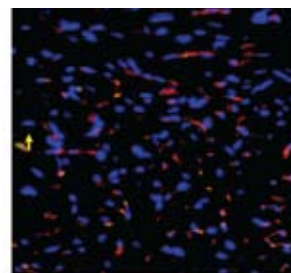
"We have a lifelong, personal commitment to education," Dr. Geliebter says. "Raj has to make sure that all 40 postgraduates in microbiology and immunology are doing productive work, that they're moving along, that their projects will take them to a thesis."

"Our vision for translational research in cancer, as well as our teaching philosophies, match each other's very well," Dr. Tiwari says. "We are not only academicians—we feel we should leave a legacy of our vision with the younger generation."

Separate paths, similar values

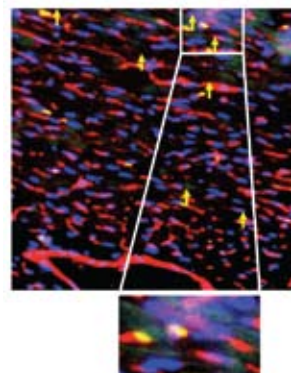
The understanding and enthusiasm that Drs. Tiwari and Geliebter share for each other's work can be traced, at least in part, to their arrival at the College within a month of each other, in 1996. Dr. Geliebter received his bachelor's degree from Hebrew University in Jerusalem, followed by a doctorate from SUNY Downstate in Brooklyn. He did a post-doc at Albert Einstein College of Medicine and was on the faculty at Rockefeller University and at Einstein.

After obtaining his Ph.D. from Calcutta University, Dr. Tiwari completed postdoctoral training at the University of Toronto's department of immunology. He then went to Memorial Sloan-Kettering, where he served on the molecular biology faculty from 1989 until 1992. From there he moved over to the faculty at Cornell University, where he



Invading Stem Cells

In this pair of slides, stem cells invade goiter nodules to initiate formation of new blood vessels. Slide at top shows normal cells. At right, arrows point to new blood vessels being formed in response to the tumor. Merged yellow and green markings are the stem cells from bone marrow that are initiating new blood vessels. These are potential targets of therapy to prevent formation of new blood vessels that help the cancer to grow. Images courtesy of Raj Tiwari, Ph.D.



remained until coming to the College. Despite their different starting points, "we quickly realized we shared an interest in the molecular basis and chemoprevention of cancer," Dr. Geliebter says. "You can't be an island in science. And it's easier to get funding when there's more than one researcher involved. In Brooklyn we call it more bang for the buck."

One more thing the two researchers share: enormous respect and admiration for their colleagues. With little prompting, they will list more than 25 colleagues, including post-docs, M.D./Ph.D. and grad students, otolaryngology residents, physician assistants, pathologists and nurse practitioners who contribute to the work. But they reserve a special regard for the two department chairs who have opened so many doors.

"It would be very tough without a chairman who supports this kind of collaborative environment," says Dr. Tiwari. "The Department of Otolaryngology under Steve Schaeffer has shown a remarkable commitment to research. They respect research and the people who do it." ▀

Making Good on the Promise of Intramural Collaboration

Inamural collaboration with clinicians in the Department of Otolaryngology has been essential to the thyroid cancer research of Dr. Geliebter and Dr. Tiwari.

Steven D. Schaefer, M.D., professor and chairman of the Department of Otolaryngology, collaborated with the researchers on the pre-clinical DIM paper (see main story), and recently decided to grant them intramural funding from his department for two new studies of thyroid cancer—one involving gene expression, the other immune markers.

"Their studies intersect with the interests of this department, so it was a good fit," Dr. Schaefer says. "They're both good scientists, producing results all the time, and they're a pleasure to work with."

Their research into molecular markers of papillary thyroid cancer began when Stimson Schantz, M.D., Dr. Schaefer's colleague at The New York Eye and Ear Infirmary (NYEEI), explained to them that in 20 percent of biopsy samples, it's impossible to tell whether or not cancer is present, and so surgery to remove the whole gland must be undertaken as a precaution.

"Remember the old Star Trek and the 'prime directive?'" Dr. Geliebter says. "We were given a prime directive by Dr. Schantz: find a molecular marker for thyroid cancer."

In a paper published in 2006 in the *Journal of Proteome Research*, Drs. Tiwari, Schaefer, Geliebter, Schantz and others described how they combed through thousands of potential biomarkers. Using proteomic techniques, they settled on a constellation of 63 that together correctly identified a non-cancerous sample that had previously been labeled suspicious.

"There is a lot of virtue in trying to find markers in the overall genomic and proteomic profile," Dr. Tiwari says.

The collaboration between clinicians at the NYEEI and the College is wholeheartedly endorsed by the chairman of the Department of Microbiology and Immunology, Ira Schwartz, Ph.D.

"The most important aspect of medical research today is translating basic scientific findings into clinical practice," Dr. Schwartz says. "As a basic science department, we need to collaborate with clinical departments to bring research from bench to bedside. Fortunately we've found a very willing partner in Dr. Schaefer and his group at New York Eye and Ear. It's developed into a wonderful collaboration."

Drs. Geliebter and Tiwari credit Dr. Schwartz with fostering an atmosphere where collaboration is valued, and shower praise on the clinicians at NYEEI.

"I have to emphasize how helpful the people are at New York Eye and Ear—not just the attending physicians and residents, but everyone, from physician assistants and nurse practitioners to pathologists," says Dr. Geliebter. "It's rare to have that kind of cooperation. And they recruit faculty who are interested in research. It's really an ideal situation."

— Dan Hurley

When basic scientists and clinicians come together on a research endeavor, the goal is to apply discoveries generated through basic scientific inquiry to the treatment or prevention of disease. Nobody knows this better than Steven D. Schaefer, M.D., professor and chairman of the Department of Otolaryngology and head of the residency program at The New York Eye and Ear Infirmary. A clinical researcher, he not only collaborates with bench scientists, he also supports their work with funding from his own department.



ZHONGTAO ZHANG, PH.D.,

Takes on Parkinson's Disease

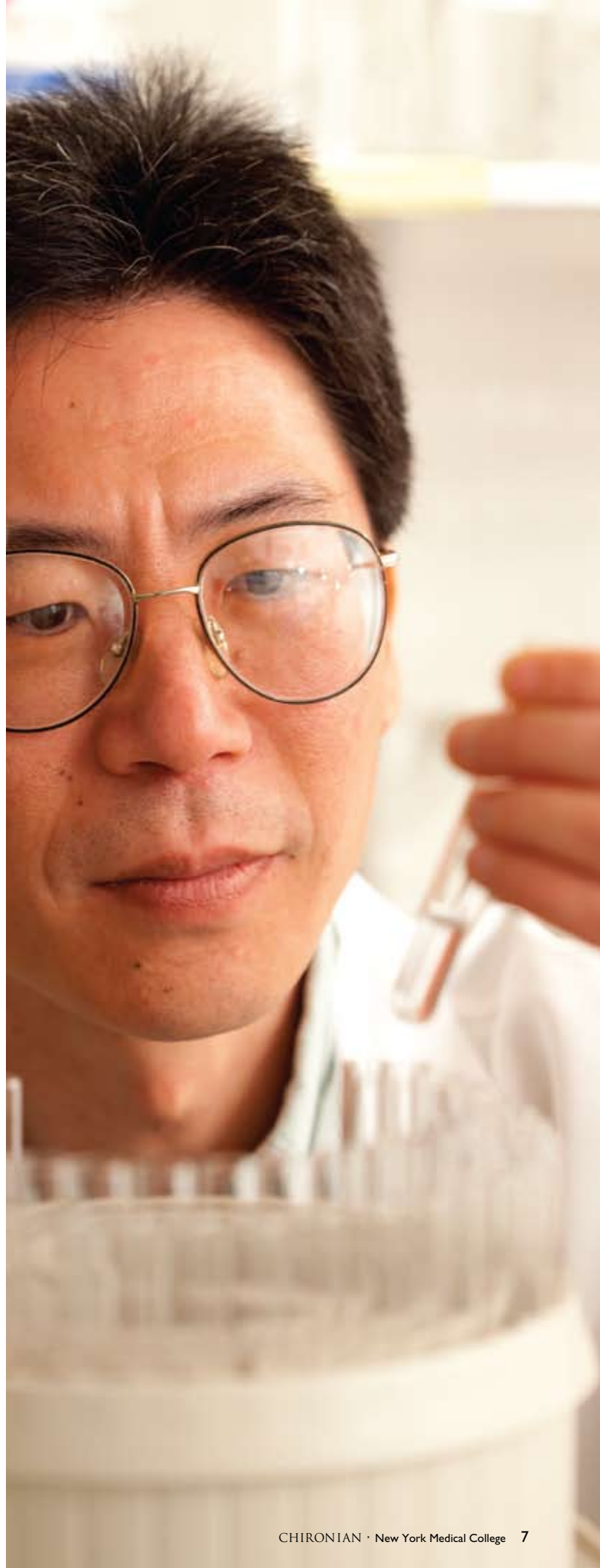
A biochemist pinpoints dopamine oxidation as the cause for brain cell death and depletion of the neurotransmitter that characterizes the disease's early stages.

By Marjorie Roberts

Before the actor Michael J. Fox gave a face and a poignant backstory to Parkinson's disease (PD), research into the motor system disorder was as inconspicuous as the neurodegenerative illness in its earliest stage—the years before the telltale symptoms of tremor, rigid limbs and slow movement begin to appear. Thanks to the actor's foundation for Parkinson's research and his passion to maneuver PD to the front burner, the disease has caught the fascination of a new breed of scientists who are eager to combine its long history of significant discoveries and disappointing outcomes with the promises of molecular biology and stem cell therapy to find a cause and cure.

Zhongtao Zhang, Ph.D., an assistant professor of biochemistry and molecular biology, is a basic science pioneer who stands by the conviction that to understand the enigma that is Parkinson's disease depends on finding out why the dopamine-producing brain cells (neurons) are disappearing from the area of the brain known as the substantia nigra. Dopamine is a neurotransmitter that helps to relay messages that control body movement. As the chemical is depleted, the lives of PD sufferers slowly diminish as the chronic illness progresses toward a debilitated end. In some 30 percent of cases, there is mental deterioration as well.

After Zhongtao Zhang received his Ph.D. in biochemistry from Purdue University, he did cancer research as a post-doc at Yale and NYU. Then he decided to study the other end of the cell growth process—neurodegeneration—and trained his sights on Parkinson's disease.





In his quest to slow down the neuronal degeneration that is the hallmark of Parkinson's disease, Dr. Zhang focuses on proteins already linked to the movement disorder. At left is a graphic of the enzyme quinone reductase 2 in complex with dopamine (red spheres), which he believes is key to retarding the process. At right is the enzyme DJ-1, a key protein against oxidative stress that can lead to Parkinson's when it undergoes certain genetic mutations. Images courtesy of Zhongtao Zhang, Ph.D.



By the time a patient's symptoms appear," Dr. Zhang advises, "70 percent of the neurons delivering dopamine have died. What we have to do is figure out how the degeneration starts and then slow it down enough for patients to live to the age of 90." Slightly more than half of the 50,000 new cases reported annually are men, and the average age of PD onset is 60. A small percentage of cases are clearly inherited, but in most instances, they are not. The National Parkinson's Foundation estimates that Parkinson's affects one million Americans, ranking it second only to Alzheimer's disease in incidence of neurological disorders. Dr. Zhang does not think the correlation is coincidental.

Partners in crime

"I believe Parkinson's and Alzheimer's are related. When you find a solution to one you will have solved the other," he says flatly. He dismisses some purported causes that have held sway from time to time, such as aluminum cookware, use of pesticides and abstaining from coffee.

If his research commitment over the last decade is any indication, Dr. Zhang is making headway. Before the term of his first NIH grant for \$1,443,000, "Structure/Function Studies of quinone reductase 2," ended in March, Dr. Zhang had applied for another NIH award. The first study confirmed his hypothesis that research in PD must begin with controlling the dopamine oxidation that is killing the neurons. "My laboratory discovered that an old enzyme, quinone reductase 2, is regulating dopamine oxidation. Many pieces are still missing, but if we can figure out how to slow the process down, we can eventually retard the progression of the disease," he says. Assisting him in the project were Yue Fu, a Ph.D. student who graduated in 2008, and a post-doctoral fellow, Leonid Buryanovsky, Ph.D., who is still working in his laboratory.

"Dopamine-producing neurons preferentially get degenerated in Parkinson's disease," Dr. Zhang explains. "Perhaps it's because these neurons contain the most dopamine. As a chemist, I took a close look at the chemical properties of dopamine and its related neuron transmitters—norepinephrine and epinephrine. These chemicals are especially sensitive to oxidation, and the oxidation products are very reactive and toxic. I reasoned that our body must have many ways to defend against the toxins and failure of any of the defense pathways will result in the early onset of neurodegenerative disorders."

The new grant would support further investigation of three of eight Parkinson-related proteins that have been discovered by other laboratories over the last decade. "These are important proteins that are defending against dopamine oxidation, but we don't know exactly how they do it," he says. Dr. Zhang has elected to study alpha-synuclein, a major component of Lewy bodies, which are abnormal aggregates of protein that develop inside neurons and eventually displace other components of the cell. He considers alpha-synuclein a major contributing factor to neurodegradation.

Critical proteins

His second target is called DJ-1; its purpose is undetermined, though it is considered essential to the human body. The third

protein is Parkin, also known as ubiquitin ligase, which he calls "the garbage disposal responsible for the degradation of junk proteins in the cell." He is trying to determine what type of damaged proteins Parkin is seeking.

Basic scientists often disparage clinical concerns in favor of pure science in their research, but Dr. Zhang is not one of them: "I am going to stick with Parkinson's because I believe age-related diseases have the most impact on society. They are expensive to treat, both economically and socially." His initial research interest was cancer, and he accepted fellowships to study receptor proteins with Dr. Joseph Schlessinger, first at New York University Medical Center and later at Yale. Dr. Zhang began his long road to a Ph.D. with an undergraduate degree in chemistry and education—"I was trained to be a chemistry teacher," he says—from a university in Shanghai, China, followed by a master's degree in organic chemistry from Beijing Medical University.

He graduated in 1989, the same year he decided to come to America for his Ph.D. In 1994 he received his doctoral degree in biochemistry from Purdue University, where he had started researching protein tyrosine phosphatase—fascinated, he says, by cellular signal transduction pathways, especially protein phosphorylation and dephosphorylation. In 2002, after the post-docs were completed, he accepted an assistant professor appointment at New York Medical College.

"I believe Parkinson's and Alzheimer's are related. When you find a solution to one you will have solved the other."

— Zhongtao Zhang, Ph.D.

“Many pieces are still missing, but if we can figure out how to slow the process down, we can eventually retard the progression of the disease.”

— Zhongtao Zhang, Ph.D.

Opposing forces

Dr. Zhang's background has given him a leg up on Parkinson's disease. “Neurodegeneration and cancer are at the opposite ends of the cell growth process. Neurodegeneration is caused by early cell death, whereas cancer is the result of uncontrolled cell growth,” he explains. “It is a fact that PD patients have a significantly reduced risk of several cancers, including lung and prostate. However, they also have a slight increase in risk for brain, melanoma and breast cancers. The question is, if we find something to prevent PD and AD, will it increase the risk of cancer? At this point I just don't know the answer.”

While there still is no drug that can cure, delay, prevent or reverse the course of Parkinson's

disease, there are therapies that relieve symptoms—at least for a while, until they stop working. Levodopa (L-dopa) was discovered 40 years ago and remains the gold standard of treatment—but at a price. It is the precursor of dopamine, taken up by nerve cells to make dopamine and replenish the brain's dwindling supply. But it does nothing to halt the continuing death of the brain's remaining neurons. What's worse, Dr. Zhang believes L-dopa may even be accelerating their demise. In any case, in five to ten years the neurons are no longer responsive to treatment.

Periodically, another drug or treatment emerges in the Parkinson camp and causes

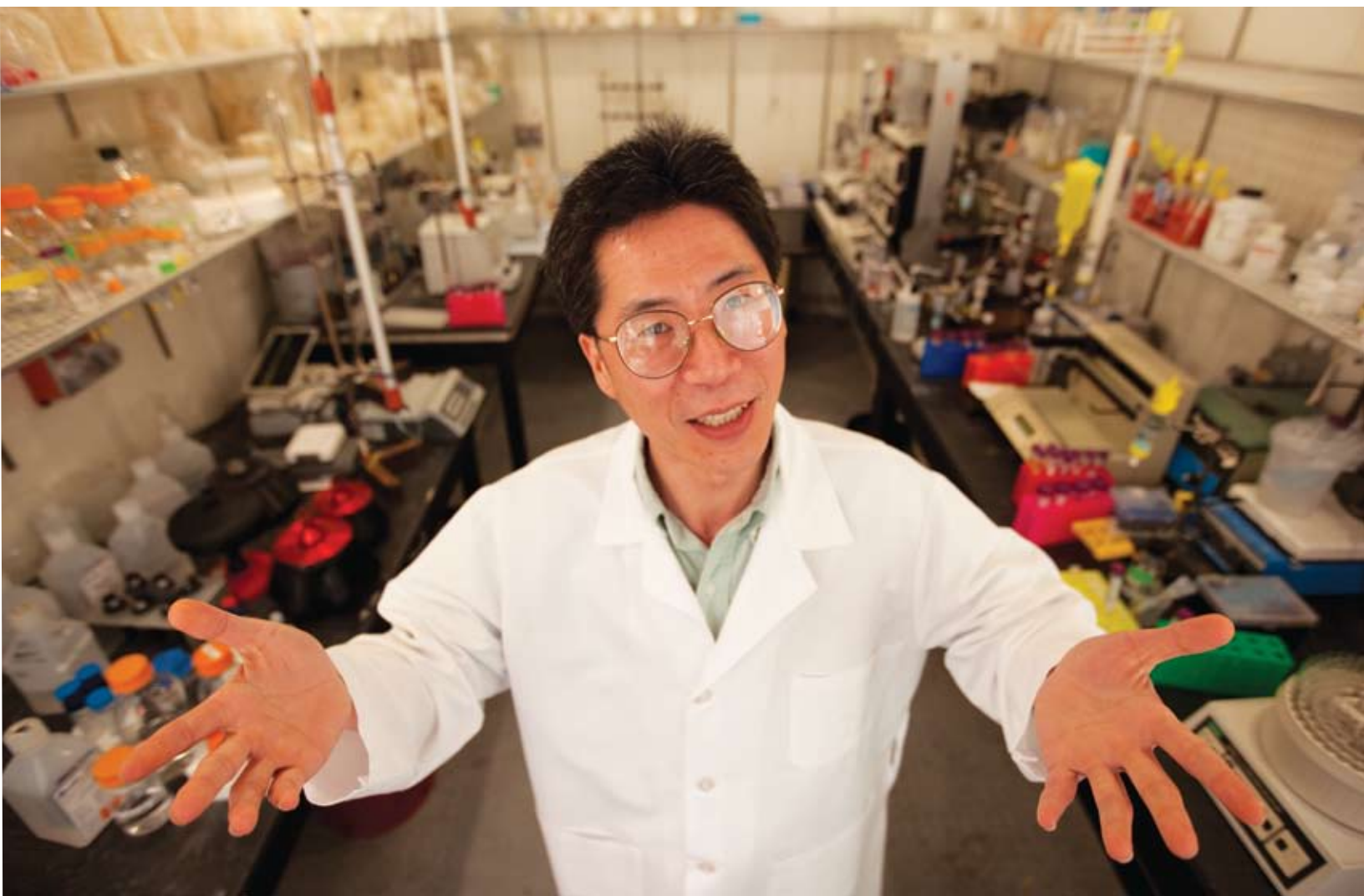
some excitement. Dopamine agonists like Mirapex and Requip, which can substitute for dopamine quite effectively, are now standard treatment. But eventually they stop working, too.

Alleviate symptoms

Gaining in popularity is a surgical procedure called deep brain stimulation (DBS) that is remarkably effective at alleviating the tremors and flailing movements (dyskinesia) that steadily worsen as the dopamine fades away.

As for the stem cell approach touted by Michael J. Fox, Dr. Zhang does not have much confidence in it as a cure, although his open mind dictates that he go wherever his experiments take him.

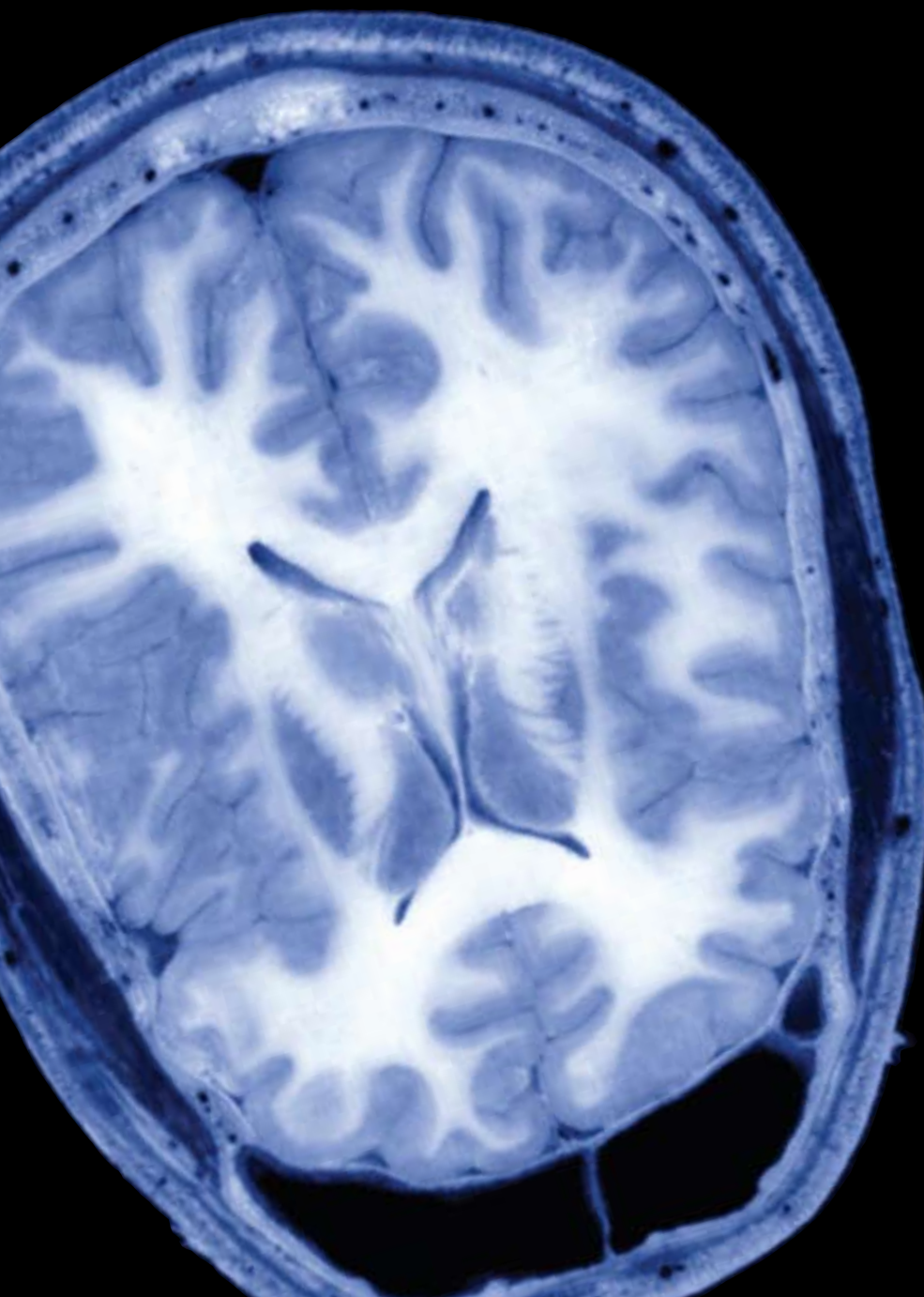
“People, especially scientists, make everything very complicated and they often miss the obvious, the simple things,” he says. “My goal is to find something cheap enough for PD patients to use until the day they die.” Certainly, he asserts, there will be a need. “Parkinson's and Alzheimer's diseases go hand in hand with aging, and getting them may be inevitable if you live long enough.”



Protecting the Fragile Baby Brain

Neonatologist and researcher Praveen Ballabh, M.D., is discovering possibilities for preventing brain hemorrhages in vulnerable preterm infants.

By Cynthia A. Read



Medicine's ability to save even the tiniest premature babies—those weighing less than 1,000 grams (about 2.2 pounds) and born as early as 23 weeks—is a scientific miracle. What was once almost unimaginable is the fact that now 85 to 90 percent of these infants survive. But the miracle often comes at a high price.

Fragile blood vessels in the immature brain frequently rupture with damage from the hemorrhage causing devastating complications: hydrocephalus, cerebral palsy and mental retardation. While parents of these tiny, vulnerable infants may have prayed for their children to survive, they probably did not realize that it may come at the cost of brain hemorrhage, the most common neurological problem in premature infants.

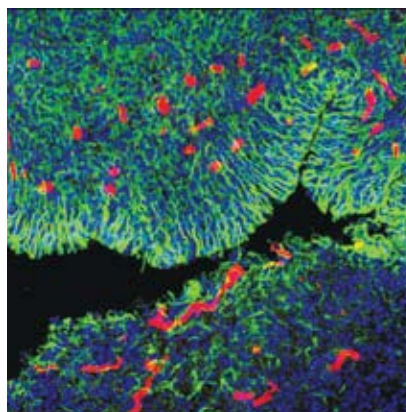
Praveen Ballabh, M.D., associate professor of pediatrics in the Division of Newborn Medicine, wants to improve the odds for these micro-preemies. Since coming to New York Medical College in 2001, he has been researching the causes of germinal matrix hemorrhage (GMH), which occurs in up to 20 percent of preterm infants born at less than 1,500 grams. With a steely determination belied by his gentle eyes and lilting voice, he is tracking ways to prevent GMH and to mitigate its dreadful effects.

At right: As principal investigator on NIH-funded studies of the delicate mechanisms of the newborn brain, Dr. Ballabh (center) relies on his team. From left they are: Caroline Chua, M.D., neonatal-perinatal fellow; Govindaiah Vinukonda, Ph.D., instructor of pediatrics; Muhammad T. Zia, M.D., assistant professor of pediatrics; Krishna Dummula, M.D., neonatal-perinatal fellow; and Furong Hu, research associate.

Neonatologist, researcher

Dr. Ballabh was trained as a general pediatrician at the Institute of Medical Sciences, Varanasi, India. After coming to the United States to study pediatric critical care, he decided to specialize in neonatology. Although, he observed, "In general, neonatologists are more focused on clinical issues than on research," he thought he could be both creative and productive in this field. During a neonatal fellowship at The New York Presbyterian Hospital-Weill Cornell Medical Center, his first studies focused on chronic lung disease in premature infants. It quickly became obvious, however, that although you could fix the lungs of a newborn, the brain was another matter. "The baby might survive," he comments, "but at what cost, if the parents were left with a child seriously damaged by a brain hemorrhage?"

Usually occurring in the first 72 hours after birth and primarily in extremely premature newborns, brain hemorrhages affect nearly 12,000 newborns each year in the United States. They originate in the germinal matrix, a temporary structure around the cavity of the brain in all developing fetuses. Neurons and glial cells originate in the germinal matrix and migrate out to form the cerebral cortex of the brain. Rich in blood vessels, the germinal matrix slowly regresses in the baby's maturing brain and almost disappears by 36 weeks gestational age. But if the baby is



The germinal matrix (GM) is made up of premature neurons and glial cells (green), enriched with blood vessels (red). Nuclei of neuronal and glial precursors are stained blue. Unlike blood vessels in other parts of the brain, GM vasculature is especially vulnerable to hemorrhage. When the hemorrhage is substantial, blood leaks into the ventricle (appearing here as a black cavity), resulting in intraventricular hemorrhage. Confocal microscopy showing brain section of a 24-week premature infant courtesy of Praveen Ballabh, M.D.

born prematurely, the germinal matrix is still a looming presence—and it bleeds with alarming ease. If the hemorrhage is substantial, it spreads into the brain's ventricles; doctors call this an intraventricular hemorrhage (IVH).

Group effort

Dr. Ballabh collaborated with Maiken Nedergaard, M.D., D.M. Sc., a former faculty

researcher now at the University of Rochester. He began to explore why the blood vessels in the germinal matrix are so fragile and porous. Their research focused on vascular density—the germinal matrix has two to three times more vasculature than the cerebral cortex—and on the cellular structure of the germinal matrix blood vessel. Papers were published in *Neurobiology of Disease* and *Pediatric Research*.

With NIH grant support, Dr. Ballabh re-focused his attention on angiogenesis, the process by which new blood vessels are created. Angiogenesis is primarily influenced by two molecules, vascular endothelial growth factor (VEGF) and angiopoietin-2, both of which cause rapid proliferation of blood vessels in humans and in animal models. He and his team evaluated angiogenesis in postmortem brain tissue, both human and animal, and observed active vessel growth in three comparative models. They also found that VEGF, angiopoietin-2, and endothelial cell proliferation were consistently higher in the germinal matrix relative to the rest of the brain.

If angiogenesis in the germinal matrix could be slowed or halted close to the time of preterm delivery, Dr. Ballabh hypothesized, perhaps there would be fewer new blood vessels susceptible to the stress of birth and adjusting to life outside the uterus and, consequently, fewer hemorrhages. Various drugs have been shown to reduce angiogenesis in tumors,



“The research would be impossible without teamwork. My team members have contributed as much as I have.”

— Praveen Ballabh, M.D.



including celecoxib, a selective COX-2 inhibitor primarily used to treat arthritis, menstrual pain and certain tumors. So Dr. Ballabh and his team tested prenatal treatment of rabbits with celecoxib and with a VEGF inhibitor, ZD6474. What they found is that it not only decreased VEGF, angiopoietin-2, and endothelial cell proliferation, it also decreased the incidence of a moderate or severe GMH by half—from 90 percent to 45 percent. Their research was published in *Nature Medicine* in 2007, with a follow up study published in 2008 in the *Journal of Neuroscience*.

An important question, Dr. Ballabh points out, is whether it might be risky to stop the formation of new blood vessels in the baby brain. But the pharmaceutical intervention he has been investigating must be administered within three days before delivery, shrinking the window of risk. Moreover, a small study by another group has already safely used celecoxib to slow preterm labor in pregnant women. His third point of fact is that once an infant is born—whether at 24 or 30 weeks—the increased oxygen in its system upon exposure to room air naturally suppresses angiogenesis. For a neonatologist who has seen his share of grieving parents, he hopes to discover that the treatment is worth the risk.

Pursuing prevention

While continuing to pursue this line of investigation, with the eventual goal of a clinical trial testing the use of celecoxib in pregnant women as a preventive, Dr. Ballabh and his group are investigating other possibilities for preventing or minimizing brain damage after the development of GMH and IVH. In working with rabbit pups, he believes they have hit upon an excellent animal model for IVH. If he induces hemorrhage in these preterm rabbit pups at birth, by the end of two weeks 25 percent will have motor problems that mimic cerebral palsy, and 44 percent will have hydrocephalus. Their research, called “revolutionary” by Edmund F. LaGamma, M.D. '76, director of the Division of Newborn Medicine at the College and the Regional Neonatal Center at the hospital, is under review for publication.

There are five members on the team, each with expertise in a specialized area. Neonatologist Muhammed Tahir Zia, M.D., assistant professor of pediatrics, is particularly interested in oxidative stress, while genetics and the gene detection of molecules are the focus of Govindaiah Vinukonda, Ph.D., an instructor in pediatrics. Two neonatology fellows, Krishna Dummula, M.D., and Caroline Chua, M.D., who is skilled in using head ultrasound to diagnose IVH, are emerging neuroscientists. Furong Hu, a

pharmacy graduate from China, is in charge of the premature rabbit pups. Dr. Ballabh emphasizes, “The research would be impossible without teamwork. My team members have contributed as much as I have.”

Dr. Ballabh received \$187,625 from Pfizer to study the postnatal use of celecoxib in their rabbit model. Giving this drug to newborn rabbit pups appears to decrease neuronal death after the brain bleeds, so he is investigating whether this will also reduce the incidence of cerebral palsy. While these studies are ongoing, Dr. Ballabh is seeking another NIH grant to continue his research.

A promising alternative to the celecoxib approach is the use of apocyanin, a NADPH oxidase inhibitor. Supported by an intramural grant awarded to Dr. Zia, Dr. Ballabh and his team collaborated with colleagues in the departments of Physiology and Pediatrics on a paper for *Stroke* (now in press) showing that apocyanin reduces cell death in premature rabbit pups with brain hemorrhage. Another intramural grant, this one awarded to Dr. Vinukonda, will enable the group to explore protective interventions after IVH.

Support from the Division of Newborn Medicine, along with a two-year, \$100,000 grant from Maria Fareri Children's Hospital Foundation, is financing the research of cell surface proteins (integrins) in the germinal matrix and in the brain tissue in other parts of the brain as well. Because integrin beta-2 is critical to embryonic angiogenesis, inhibiting its expression might be a way to suppress the growth of blood vessels, thus reducing the chance of GMH.

Holding a vision

Like all dedicated researchers, Dr. Ballabh must make considerable sacrifices in his personal life to pursue his research goals. He rotates into clinical service at the children's hospital for two to three months a year and is frequently on call. He is always teaching, whether at the conferences, in the hospital, or with fellows in his lab, whom he says he drives very hard.

His objective in everything he does is “to make life better for the babies.” By hunting down better ways to protect their vulnerable brains from bleeding, he holds the vision of a day when he will never again have to “wipe away the tears of a mother after I've told her that her baby's chances are slim because he has a major hemorrhage all through his brain.” //



SPLIT PERSONALITY:

Leonard J. Newman, M.D. '70, and Michael H. Gewitz, M.D.

No schizophrenia here...
it's all about two pediatricians
who have made *taking care
of children* their life's work.

By Marjorie Roberts



Leonard J. Newman, M.D. '70



Michael H. Gewitz, M.D.

Leonard J. Newman, M.D. '70, and Michael H. Gewitz, M.D., think alike. This surely accounts for what they have accomplished for their constituency—the children of the seven-county lower Hudson Valley, and areas in neighboring Connecticut and New Jersey. First class facilities and a team of specialists second to none are the achievements of Dr. Newman, chairman of the Department of Pediatrics at New York Medical College, and Dr. Gewitz, vice chairman, and physician-in-chief and director of the Maria Fareri Children's Hospital at Westchester Medical Center.

When you speak to them separately they often verbalize as one, answering questions nearly in identical words and speaking in oddly similar cadences. Over and over, as if it were the first commandment of evolution, they talk about *taking care of children*, and the listener is left comfortable and satisfied. They both continue to see patients, new and old, who keep their doctoring skills from getting rusty. What leaves the biggest impression, though, is how

seamlessly they work together, chalking up one success after another with each endeavor.

Leonard Newman has a CV that should be enshrined for viewing by every applicant interviewed at New York Medical College. With the exception of an internship at University Hospital of San Diego County in California, and a fellowship in pediatric gastroenterology and nutrition at Albert Einstein College of Medicine in the Bronx, Dr. Newman has spent every year of his professional life with the College—both on the Valhalla campus and in New York City, when the College was located at Flower and Fifth Avenue Hospitals. Asking what else there is to accomplish elicits a heartfelt answer that evinces something he can't control: "Just leave us alone. No more cutbacks." In this time of unprecedented economic stress then, is it perhaps time to get out?

"I enjoy what I'm doing, but I might retire in three, four or five years," he says, with a near dead-pan that implies he isn't serious about stepping down at all.

Future is now

Dr. Newman knows what it takes to make a department run smoothly, but the economic treadmill is a tough opponent. "No one is desperate to come to this part of the country, and the cutbacks make it worse," he says. "To get good people you need to recruit, and there is a process. My wish is to keep the good people I have, and to keep them satisfied. We are also trying to increase research in the department, and programs are impacted when dollars are cut. It's a problem all over the country, especially in pediatrics.

"There was a time when we were worried about survival. It's not like that now, even though things are tough all over. But I don't think the hospital ever had the so-called good old days," he continues. "There was always turmoil of one kind or another. Times would get better but then turn dicey when government cuts removed support.



Still, we are optimistic. The opening of the children's hospital satisfied a big chunk of my wish list. What I'd really like to see is cooperation between Westchester Medical Center, the College and the Department of Pediatrics. I'm not sure it ever existed before."

Dr. Newman prefers to leave discussion of the Maria Fareri Children's Hospital at Westchester Medical Center to its director, Dr. Michael Gewitz. He credits Karl P. Adler, M.D., now president of the College, with the foresight of putting them in the right jobs: "When Karl was dean [School of Medicine, 1987 to 1994], in a moment of genius he made me chair of the department and Mike director at the hospital. Mike and I have worked together from the beginning and have always had a close relationship. He enjoys the more administrative and political sides, but he is also a first rate academician and teacher. I'm more interested in practice management and faculty development, and also in strong academics. We have found our niche, but at the core we are both caring doctors with a

good overview of what is needed to run a huge program. That teamwork is essential. You can't be chairman and also run a major hospital."

Inspiring teachers

A big what-if in Dr. Newman's past offers a glimpse into his gut instincts: his high school guidance counselor told him he would make a good social worker. "No, I really want to be a doctor," he insisted. Accepted to several medical schools but preferring to be in Manhattan, he chose the College because "the people I met from Admissions were wonderful." And so, after an undergraduate degree from Rutgers University in his home state of New Jersey, Dr. Newman began his love affair with New York Medical College. Helping him to decide on pediatrics and gastroenterology were two "inspiring teachers in my junior year rotation," he says: the late Edward Wasserman, M.D. '46, former chair of the department, and George D. Rook, M.D., former professor of pediatrics. For his fellowship, Albert Einstein beckoned: the renowned

“The goal of the Department of Pediatrics is still the same: to be a resource for children in the seven counties and beyond. Mike Gewitz and I have the same desire to provide this excellent care and by all measures, I think we have succeeded.”

- Leonard Newman, M.D. '70

Murray Davidson, M.D., was there. “He could be called the father of pediatric gastroenterology,” says Dr. Newman. “Davidson developed treatments for ulcerative colitis, Crohn’s disease and celiac disease.”

Dr. Newman delights in taking credit for marketing the hospital practice to local pediatricians, who initially feared competition “from Valhalla” when the College moved up from New York City. As he continued to recruit stellar chiefs for sections that range from endocrinology to neonatology to immunology and infectious diseases, the word began to circulate: send your really sick children to Westchester. “The goal of the Department of Pediatrics is still the same: to be a resource for children in the seven counties and beyond,” says Dr. Newman. “Mike Gewitz and I have the same desire to provide this excellent care and by all measures, I think we have succeeded.”

The making of a hospital

They spend most of their work days supervising 200 full-time faculty pediatricians, 100 of them on campus. Since 2004 the primary location is the Maria Fareri Children’s Hospital, a stunning architectural showpiece filled with stuff that kids love, like a real locomotive, a wall of furnished dollhouses, a baseball museum and a gigantic aquarium to explore. Oh, and it also boasts state of the art technology and some of the best doctors in the Hudson Valley, making it the leading choice for the care of children and their parents who can stay overnight with them if they desire.

Built on such a grand scale, it is hard to believe the space is already too small—by 30 percent, Dr. Gewitz advises. “It is frequently over capacity, something we predicted during the planning. But the consultants we were using then voted us down,” he says, adding slyly, “The new consultants agree with us.” If it is unseemly to call something a success that is built because of the needs of sick children, one should remember that it was the death of one young girl that provided the impetus in the first place.

“Lenny and I are pretty symbiotic. Our partnership has allowed us to make the most of our talents.”

– Michael Gewitz, M.D.

After their daughter Maria died in 1995 at Westchester Medical Center, where she was moved when a community hospital was unable to diagnose her deadly condition as rabies, John and Brenda Fareri offered the motivation and momentum to create one of the first children’s hospitals designed solely for children and families, and only one of four freestanding acute care children’s hospitals in the state. “The Fareris became involved because they felt the top notch medical care we provided should be delivered in a better environment, having experienced the deficiencies of the original building and the absence of facilities for families to stay,” says Dr. Gewitz.

“Sometimes around here we have a tendency to snatch defeat from the jaws of victory. My colleagues and I, along with the key support from the Fareris and families throughout the region, worked very hard to see this project through. In fact, writing a book about the trials and tribulations of the academic health center that is Westchester Medical Center/New York Medical College is something I threaten to do in retirement, along with playing with my grandchildren and still contributing to the education of future doctors.”

Full time job plus

Michael Gewitz has helped to take pediatric cardiology around the world—as far as El Salvador and Ukraine. As professor and vice chairman of the College department, and chief of pediatric cardiology and physician-in-chief/executive director of the hospital, he has not had time lately for such things as travel. Even his weekend social life revolves around honoring colleagues and other fundraising events that come with the territory. He qualifies for the best and that is what he gives; starting with his training, it’s the way he’s lived his life.

Brooklyn-born Mike Gewitz received his undergraduate degree from Yale in 1970, and his medical degree from Hahnemann Medical College in Philadelphia. Internship and residency were at Children’s Hospital of

Philadelphia (CHOP), the oldest facility of its kind in America. He finished residency as a CHOP representative to The Hospital for Sick Children in London, the oldest one anywhere. Then he returned to Yale for an NIH sponsored fellowship in pediatric cardiology. In 1979 Dr. Gewitz began his attending career at CHOP and the University of Pennsylvania School of Medicine. He left as an assistant professor after five years to join the College as associate professor, and was appointed chief of the section of pediatric cardiology at the medical center. In 1989 he was promoted to full professor, and three years later became vice chairman of the Department of Pediatrics.

Love of teaching

There are 49 residents and 18 fellows learning the trade this year, making Westchester Medical Center a top graduate program in pediatrics, says Dr. Gewitz. Both he and Dr. Newman interact with them and the College medical students regularly. "Lenny and I built a team that spans the scope of complex medical specialties and includes a great primary care group and child advocacy program. We have an unbelievable combination of people and programs, held together by an entrepreneurial approach within an academic medical center. And we did it in the shadow of the New York City giants. Lenny and I are pretty symbiotic. Our partnership has allowed us to make the most of our talents."

Those include patience and perseverance.

"Working with Lenny means every day is a new day. He throws lots of balls into the air and then gets out of the way. Lenny has a great capacity for thinking outside the box. Sometimes the unpredictability of it is challenging. It is always interesting," says Dr. Gewitz.

When Dr. Newman does retire, what will that do to Gewitz's own plans for the future? There is still a lot to be accomplished," he says. "I'm not ready to go yet. We need to expand the hospital, expand our research programs, and enhance the total capacity of surgical specialties. And all the time to continue our mission as advocates to upgrade children's health care in the region."

Will that be enough? The good doctor reveals he has taken on the chair-elect position of the Council of Cardiovascular Diseases of the Young, one of the 13 scientific councils of the American Heart Association. "It's a four-year commitment," he reveals. "I guess I just don't know how to get out of the way." //



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_____ News about students, faculty, or leadership

_____ Trends in research and medical education

_____ the "state of the university"

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A Taste of Real World Medicine

Three medical students tell how summer research fellowships changed their views of medicine—and of themselves as future physicians.

By Thomas Orton

Any medical school curriculum will immerse students for their first two years in a veritable tidal wave of information—paper and electronic, lecture and small group study, journals and labs. But getting out of the classroom and library to work with a top-flight team of researchers, or to accompany a surgeon on patient rounds—these are realities that most medical students can hardly wait to experience.

At New York Medical College, there's a way to get this training in a hurry: student summer research fellowships. Each year, some 50 first- and second-year medical students are awarded fellowships by the Student Research Fellowship Program. More than 130 faculty-mentored projects, each lasting 6-8 weeks in the summer, cover a broad spectrum of disciplines. On one level the fellowships give extra practice in fundamental skills, such as writing patient status summaries or mounting slides. Spending a summer immersed in a project, whether in a clinical setting or a basic science lab, can help clarify a student's career goals and give a welcome jolt of inspiration for the remaining years of study.

Still, the real benefit of a fellowship is the exposure to a field of inquiry, a branch of medicine or an affinity for the bench—something totally new or unexpected that ignites a passion they never knew was there. This is how it happened to three medical students last summer, during fellowships they undertook following their first year of study.



Alberto Distefano



Narissa Small



Paul Nestadt



Photo by John Vecholia

Students



From Westchester to West Indies

Alberto Distefano

As if his neurosurgery fellowship at Westchester Medical Center (WMC) wasn't enough of a new experience, Alberto Distefano, 24, left his fellowship briefly to go on a church-sponsored charitable mission in the Dominican Republic. There he worked with a medical team in La Romana, helping to build a hospital and teaching the children of sugar workers on the plantations.

Back in the states, Distefano resumed his neurosurgery fellowship. In addition to his full schedule of second-year classes, he began observing brain surgeries at least three days a week. "The surgeons let us literally look over their shoulders," he says. "When they were using microscopes, they'd show us what they were doing on a TV monitor."

He was particularly impressed by a procedure involving deep brain stimulation of a conscious Parkinson's patient. The surgeon probed the man's brain with electrodes, then asked him to describe the sensations. After observing in the OR, he accompanied his mentor, Raj Murali, M.D., professor and chairman of the Department of Neurosurgery, on post-op visits. It was heartening to see the extent of some patients' recovery and their gratitude. But, he adds, "it was difficult to see patients who were very sick and weren't expecting a good outcome."

Distefano came to medical school already armed with some research experience. After earning a B.S. in biological sciences degree from the University of Connecticut, he spent two years at Yale researching Type II diabetes. While he thoroughly enjoyed the experience, he now concludes, "Working in a hospital makes things a whole lot more interesting. It's a lot more alive." His summer clinical experience impressed him enough to consider a neurosurgery specialty, although he is also contemplating a specialty in ophthalmology or gastroenterology. And research may still be in the picture. "When you're doing research," he says, "you can see how it correlates to people. But it's not as direct as treating patients, where the reward is extremely visible and direct."

A knack for compassion

Narissa Small

Narissa Small, 25, has always been fascinated by how people interact. As an undergraduate she majored in sociology. "Nothing medicine-related at all," she says with a laugh. "But I was really intrigued by theories about why humans get along or don't get along."

Small's summer fellowship took her to Maria Fareri Children's Hospital at Westchester Medical Center, where she worked in the Division of Newborn Medicine, a subspecialty of pediatrics. "I was attracted to neonatology because it's a fast-growing field. It's also where you get to treat the sickest newborns," she says.

This wasn't Small's first exposure to the medical center. The daughter of a nurse manager, she volunteered in the hospital's ambulatory care unit during high school. After graduating from New York University, she spent two years as a fellow in the cardiovascular research laboratory of former faculty researcher Piero Anversa, M.D. Working with his team studying myocardial cells in the repair of the heart, she decided her future lay in attending medical school and earning her place as a member of the Class of 2011.

Those years of exposure to both medicine and research benefited her during the summer fellowship. Rather than being overwhelmed by the hospital's hectic pace and the rigors of working with extremely sick infants, Small found herself thriving. After morning rounds, she would follow the progress of certain patients, recording information needed for a research project conducted by her mentor, Boriana Parvez, M.D., professor of pediatrics. The research focused on necrotizing enterocolitis, a disorder in which parts of an infant's bowel tissue begin to die.

While the experience heightened her interest in doing more research, Small found great satisfaction from her close contact with patients. Working with doctors, she says, "gave me a special sense of purpose. Being able to relate to the families of sick infants was very intense and moving." Perhaps echoing lessons learned from that early interest in human interaction, she concludes, "Working with people in a hospital setting teaches you a lot about compassion."

Psychiatry summer

Paul Nestadt

Psychiatry has always been of keen interest to Paul Nestadt. Accordingly, he followed that inclination when applying for a psychiatry fellowship. A bonus: it was being mentored by Spencer Eth, M.D., professor of psychiatry, who achieved wide renown for his work with 9/11 survivors and post traumatic stress disorder (PTSD), and one of Nestadt's heroes.

At Saint Vincent's Hospital Manhattan, a College affiliate, Nestadt accompanied Dr. Eth's team on daily consulting liaison rounds, evaluating patients for conditions like delirium and psychosis. "I'd check their charts, make notes and report to the residents," Nestadt recalls. "I learned psychiatry's role in the treatment of general hospital inpatients."

In the afternoons he participated in lab research projects at Mount Sinai Medical Center. He also worked on several papers, presenting one at the College's 2009 Medical Student Research Forum, where he placed second. Once a week, Nestadt attended mental health court where psychiatric inpatients sued for their release from the hospital. Nestadt recalls, "At first the judge and lawyers seemed so cold and procedural, but they only want what's best for the patients."

Though always drawn to research, Nestadt admits that "med school was never really on my radar when I was younger." After completing undergraduate work in neuroscience at Brandeis University, Nestadt, who is 27, returned to his hometown of Baltimore to help start a charter high school. Eventually he made his way back to medicine, working several years with a psychiatric research team using magnetic resonance spectroscopy to locate biomarkers for depression and PTSD. After that, medical school started to make the most sense to him.

While his fellowship reaffirmed his love of research, his work at Saint Vincent's considerably widened his opportunities. "The clinical side of medicine has always captivated me a lot more than the research side," he says. "But eventually I'd like to do a combination of teaching, research and patient care." Matter of fact, that trio of interests happens to match the mission of New York Medical College. ▀

Finding Purpose in Soldiers' Eyes

A pediatrician and a soldier, “Dr. Charlie” brings empathy, lollipops and healing to sick children and young men at war.

Col. Charles Garbarino, M.D. '78

By Andrea Kott, M.P.H.

What keeps Col. Charles Garbarino, M.D. '78, going back to war? It is the memory of his beloved Uncle Willy, who fought in the Battle of the Bulge, and all the children he has cared for in his 30 years as a pediatrician. It is the child within each wounded soldier he treats, and what he sees in the eyes of those soldiers.

“These soldiers out there are still young,” says Dr. Garbarino, who has served two tours of duty in Iraq and this summer will deploy to Afghanistan. “Even the older ones need their hands held. No matter what their age, when I hear their stories... I can feel how they’re missing their families back home.” He adds fervently, “We must tell their stories. We must tell people what war is all about.”

And so he has self-published *Pediatrician Soldier*, a collection of essays about his tours of duty in Iraq and Kuwait. Compiled from his emails and diary entries, the book tells how Dr. Garbarino left a successful medical practice for a combat zone. It provides graphic, eyewitness accounts of war and its aftermath, and sings praise to Dr. Garbarino’s “true heroes,” the soldiers who do and do not come home and their loved ones, including his wife Lydia, who are left waiting. All proceeds from the book’s sales will benefit Our Military Kids, an organization that funds enrichment activities and tutoring for children of deployed and severely injured National Guard and Military Reserve personnel.



“No matter what their age, when I hear their stories... I can feel how they’re missing their families back home.”

- Charles Garbarino, M.D. '78

“People don’t know what these soldiers are going through,” Dr. Garbarino says. “Here you have your life and I have my life, and right now there’s a soldier who’s coming home in a box or who is mentally scarred for life.”

In an entry titled, “Guarding a Road,” Dr. Garbarino writes about the risks he encountered every day, as a soldier: *How to hold up your hand and tell a vehicle to stop while others have weapons pointed at them. Good luck. My hand in the air is going to stop a moving vehicle loaded with bombs and insurgents who don’t care, who will not stop and who will shoot me as they go by—but with my hand still in the air asking them to stop.*

Real heroes

In another entry, “One Soldier—Never To Return,” he describes the anguish of reviewing a dead soldier’s medical records: *I held in my hands this soldier’s medical record. Here was his name and his identification. But I knew nothing of this brave individual who gave his life. Then I thought about this soldier’s family. Was he married, did he have kids? How was his family coping with his loss? So many questions—and yet I could not even see his face. All I knew [of him] was a name and number. All I could do was cry.*

Dr. Garbarino pays special homage to individuals like the late Captain John J. McKenna, who was killed by sniper fire while leading a mission. His book also tells the story of Sgt. Daniel Tallouzi, the victim of a mortar attack who died in February 2009 after living for more than two years in an “eyes open” coma. “The real heroes are in my book,” he says. “I’m just a simple pediatrician and a soldier.” Yet little about Dr. Garbarino is simple.

Born and raised in the Bensonhurst section of Brooklyn, he grew up, in his words, “lower middle class,” an only child from a close-knit family. Outgoing and athletic, an Eagle Scout, a tennis player and a member of many clubs, he attended St. Francis College on a full scholarship. “First I wanted to be a missionary priest, and then I got to know girls better,” he says, chuckling. Then he thought seriously about the people he wanted around him and the kind of work that would allow him the freedom to be the pediatrician he always wanted to be—one who delights children with a clown nose, propeller beanie, Mickey Mouse shirt and lollipops, the one affectionately known as “Dr. Charlie.”

“I always wanted to be a pediatrician and there was only one place I wanted to work: Flower and Fifth Avenue Hospitals,” he says of the College’s former home in Manhattan, now College-affiliated Terence Cardinal Cooke Health Care Center. Inspired by two pediatrics professors, the late Harry Dweck, M.D., and Marvin Green, M.D., neonatologists who were then teaching at affiliated Metropolitan Hospital Center, Dr. Garbarino pursued a neonatal fellowship at SUNY Stony Brook, where he also became a pediatric emergency physician and a pediatric developmentalist. He practiced neonatology on Long Island and later in Lynchburg, Va., but felt that something was missing from his life. The wanderlust turned him into a medical officer in the U.S. Army with the hope of seeing the world.

Mickey and Minnie

Soon after enlisting, he met and married Lydia Fernandez, an emergency room nurse and his wife of 23 years. A woman after his own heart, Lydia matched her husband’s wedding attire with a Minnie Mouse sweatshirt (he wore Mickey), dungarees and sneakers. In 1987, the couple moved to Germany, where they lived and traveled around for the next three years.

Although initially headed for Operation Desert Storm, the war’s brevity brought Dr. Garbarino and Lydia back to the United States and to Livingston, N.J., where he now shares a pediatric practice with Deborah Coy, M.D. He is also an associate in the neonatal intensive care unit at St. Barnabus Medical Center in Livingston, where he teaches several courses in life support.

In 2003, Dr. Garbarino became the first New Jersey Army National Guard physician deployed in support of Operation Iraqi Freedom. Convinced he wouldn’t be coming back, he wrote a letter to Lydia asking that she not mourn his death. “I want you to celebrate my life, my dungarees, my t-shirt with Mickey, my sneakers,” he recalls writing. As he anticipates his next mission, the one that will take him to war-torn Afghanistan, he says he is afraid, but not of dying. “I look at all these soldiers with missing limbs,” he says. “I’m not afraid to die but I’m afraid to come back in pieces.”

He goes, nevertheless, to appease the soldier and pediatrician inside him, for the soldiers who are just “big kids” and need his humor, empathy, love and lollipops to make them smile, and for children everywhere. “Kids are the future,” Dr. Garbarino says. “You need to have a world where kids can grow up.” //



“Dr. Charlie” Garbarino and his wife Lydia

Survival of the Fittest

How one dynamic woman plans to change the world, one stair-stepper at a time.

By Lynda McDaniel



Elizabeth DeLuca, M.P.H. '07, grew up enjoying the carbohydrate-rich foods of her native Cuba. Then one day, at an age when other kids are still feeding quarters into snack machines, she made a conscious decision to change her diet. Today, she's one of the most sought-after fitness instructors in the Northeast and owner of FitWell Group, a fitness consulting and management company based in Stamford, Conn.

Sounds like quite a turnaround, but for this human dynamo, it's just business as usual.

"My passion has been health and fitness since I was 12 years old," DeLuca says. "As an overweight child, I couldn't compete or partici-

pate effectively in sports, so I started to exercise and eat healthier foods so I could be more competitive in school sports. Later, when I realized that I wanted to help others create healthy lifestyles, I decided I needed an advanced degree in public health."

In the late 1990s, DeLuca was taking classes in what was then known as the Graduate School of Health Sciences, but had not yet decided on a concentration. At one point the school offered a career workshop, and there she had an epiphany that clarified her vision for the future. When the instructor asked, "What would you do right now if you could start doing it today?" DeLuca didn't hesitate.

"That's when I knew I wanted to run a fitness consulting company. One that could create high-quality nutrition and exercise programs geared to corporations," she says.

For most of us, that vision would take a few years to bring about. Not DeLuca. Imbued with her father's entrepreneurial spirit, she incorporated FitWell Group within nine months of that workshop.

"My family moved to America right after Castro, in the late 1960s when I was just a baby," DeLuca says. "I always remember my parents saying that America is the best place to live, work and prosper. And I carry that spirit with me."

Just two years later, she has 22 employees and a roster of consultants, serving clients such as Legg Mason, Elizabeth Arden and Citigroup as well as other corporations, country clubs, institutions and private clients in Fairfield and Westchester counties.

Never a dull moment

With the business up and running, it would seem like a good time for DeLuca to enjoy the fruits of her labors. Not yet. Last September she enrolled in the College's two-year doctor of public health (Dr.P.H.) program in order to take her dream to the next level.

"Once I started working, I knew I wanted to do more," she says. "The Dr.P.H. at New York Medical College is the only program in the Northeast that pays so much attention to the social determinants of health. Economic and social conditions are crucial to the health of everyone, and we all need to be more aware of their impact. This degree program, especially now that health care is changing, is worth all the time and investment. It continues to inspire me and grow my business."

DeLuca learned a lot about the positive impact of exercise in the workplace from preparing a study for her master's thesis, "The Relationship Between Body Mass Index (BMI) and Health-Related Quality of Life Among Participants in a Worksite Fitness Center." In March, she and a fellow doctoral student in the School of Public Health, Ihsaam Alim, won first place for their poster presentation at a conference on obesity sponsored by the Bronx County Medical Society.

"The existing literature shows that exercise in the workplace not only breaks the tedium of work, it also reduces absenteeism and healthcare costs. Plus it increases morale by helping people feel good about themselves and their workplace," she says. "My study showed that employees who participate in a FitWell program report more healthy days than those who don't."

Back on the job, DeLuca is involved with everything from conceptual site designs, master planning and programming to instruction, management, and marketing. She also develops dynamic transitional programs to help ease reluctant employees into safe and effective practices that will help them achieve good health.

Her busy schedule includes teaching classes at local fitness centers as well as at FitWell Group corporate locations. Occasionally she's

invited to model for fitness magazines and videos. And she visits with clients to determine special needs, such as coordinating a health fair or a popular event she has dubbed Corporate Spa Day.

"We host Pilates and yoga classes, chair massages, blood-pressure screenings, body-fat fitness analyses, and mini-nutritional consultations," DeLuca explains. "A lot of people sign up for these company-sponsored events. We promote it as a much healthier alternative to the holiday party."

Heart in her work

Even with her busy schedule, DeLuca finds time to volunteer for the local Young Women's League, helping with community and children's issues. She's also involved in the Boys and Girls Club and is a sponsor of an annual 5K run. So it's hard to imagine that she has much free time for herself and her husband, Louis, who is president of AIM Health Plans in New York City. But this holistic teacher knows better than to neglect her own well being.

"We live in a beautiful area with wooded and open natural spaces where I take long walks," she says. "I love taking Big Blue, my 7-year-old, 150-pound Mastiff with me. That's challenging—Mastiffs were bred as guard dogs during the Roman Empire, so walking is not their thing."

As her career vision grows, DeLuca isn't content to confine her goals to the corporate setting. She's ready to take on the nation and the world. While she values her impact on companies and their employees, she wants to contribute to improving the health of the entire population.

"I hope that by helping employees become healthier, they'll go home and share this information with their families," she says. "But I want to help as many people as possible make good health a priority, creating a lifestyle with better eating and exercise habits. My doctorate will enable me to better understand healthcare policy so that I can have a greater impact. My ultimate goal is to partner with the new presidential administration. Once the White House meets FitWell Group, together we can make America a healthier place." //



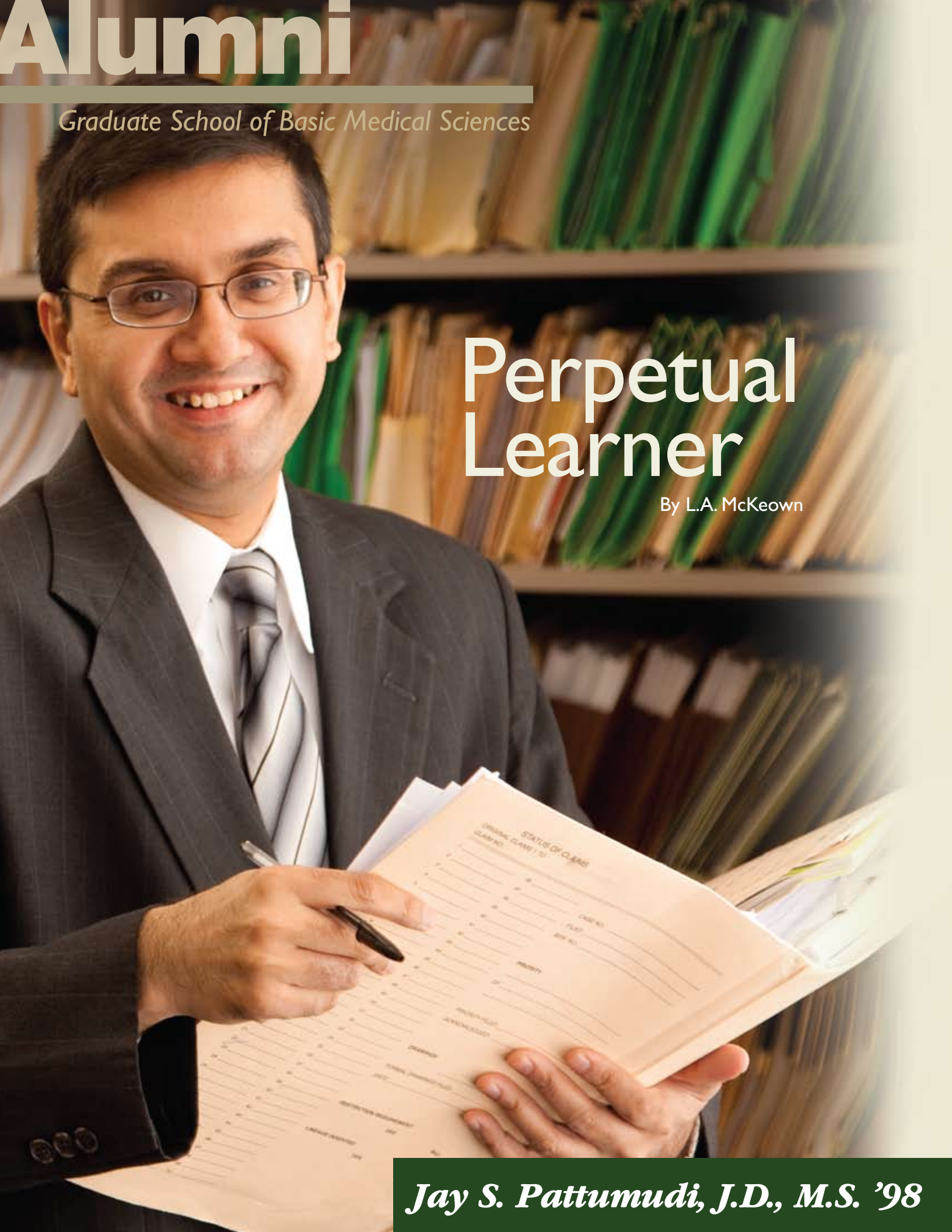
Elizabeth DeLuca, M.P.H. '07

Alumni

Graduate School of Basic Medical Sciences

Perpetual Learner

By L.A. McKeown



Jay S. Pattumudi, J.D., M.S. '98

An interest in science and legal rights led this former basic scientist from the laboratory to the legal field, where patent law and researchers struggle to coexist.

Have you ever seen a really cool new invention and wondered how in the world you patent something like that? Well, if you've got questions, Jay Pattumudi, J.D., M.S. '98, is your go-to guy. "It's true. I love what I do," he says with a laugh.

As a patent attorney, Pattumudi is part of the behind-the-scenes work that takes an invention or device from the inventor's hands to the public. He first became curious about this specialized field of law while studying biochemistry and molecular biology in the Graduate School of Basic Medical Sciences. One of his favorite professors in the department was Ira Schwartz, Ph.D., now professor and chairman of the Department of Microbiology and Immunology, who he says "conveyed an infectious enthusiasm for molecular biology." While Pattumudi always enjoyed science and liked to write, he also sensed that life as a researcher wasn't for him. He soon began to see a problem that few researchers think about, or may even be aware of, until after they begin publishing their research.

"Some of the aims of patent law may be in conflict with how researchers operate," Pattumudi says. "For example, under U.S. patent law, you are precluded from a right to a patent if you have published a paper on the same invention more than one year prior to filing the patent application."

He continues, "It made me realize that faculty and graduate students at research universities should be educated about the innate conflict between what operates in patent law and what operates in research," Pattumudi says. "By their very nature, researchers are in the business of sharing knowledge and are thus very eager to share such information." Conversely, patent law aims to provide exclusive rights to the person seeking the patent and to exclude others from violating those rights. Someone like Jay Pattumudi, with his first-hand experience in the world of academic research, can help scientists and inventors navigate these complexities, resulting in greater protection of their rights.

Taking a different path

Intrigued by the intricacies of patent law and how they relate to the research community, Pattumudi changed his career path after getting his master's degree. He went to work as a patent clerk for a small law firm in New York City that prepared patent and trademark applications for research universities, corporate clients, small chemical companies and biotechnology firms. "I assisted the patent attorneys with writing applications and doing

patent searches. I just wanted to get a feel for patent law so I could be sure it was the right career for me," Pattumudi says.

While attending the University of Wisconsin Law School, he worked as a law clerk for a Wisconsin law firm and several government agencies, including the U.S. Department of Energy, before receiving his law degree in 2002. Eventually he moved to Tampa to take a position as an associate at Fowler White Boggs Banker, one of the oldest and largest law firms in the state. It was there that he experienced first-hand the kind of problems researchers can face if they are unfamiliar with patent law.

He elaborates: "Some academic researchers are unaware that their own actions can jeopardize their patent rights. For example, European patent law, even stricter than the U.S., generally forbids a researcher from filing a patent application from the moment he or she publishes a research paper on that subject, according to the Absolute Novelty Bar." Depending on the country, there may be limited exceptions, serving only to further complicate the matter and making the expertise of someone like Jay Pattumudi all the more valuable.

Always learning

A science or engineering background is a requirement for all patent attorneys and a keen interest in technology is important too, says Pattumudi, who considers himself a perpetual learner. While some patent attorneys are solely focused in one area, such as biotechnology or pharmaceuticals, Pattumudi has worked in many technical fields and most areas of patent law except litigation. Having a B.S. in biological sciences from Fordham University, in addition to his master's from New York Medical College, has boosted his ability to assimilate different research concepts. His fluency in these areas allows him to assist clients in taking their ideas from experimentation to real-world use.

"I keep up on certain things that I was interested in while I was in graduate school, such as adenoviral vectors in gene therapy," Pattumudi says. "It's interesting to me to see how that field is progressing, and I can do that by keeping up with whatever my clients are working on"—which could be anything from biotechnology to aircraft cabin technology. "I'm often required to learn what

(continued on page 29)

Milestones

'06 and '07

Angel M. Garcia Otano, M.D. '06, and **Dana M. Delach, M.D. '07**, are married. Both are second-year residents at the Williamsport Hospital Family Medicine Residency Program in Williamsport, Pa.

'03

Cathie T. Jones, M.D. '03, completed a fellowship in pediatric anesthesiology at Children's Hospital in Boston. Dr. Jones is now on staff at Wilford Hall Medical Center with the U.S. Air Force in San Antonio, Tex., where she lives with her husband Jared and daughter Lillian.

'02

Roger R. Feo, M.D. '02, who graduated from the Fifth Pathway Program at St. Vincent's Medical Center in Bridgeport, Conn., completed his general hospital family medicine residency in 2008. Dr. Feo practices at Berks Family Care-Pottstown Memorial Medical in Douglassville, Pa.

'01

Timothy McClung, M.S., M.P.H., '01, is director of quality improvement operations at Norwalk Hospital (Conn.). He is a fellow of the American College of Healthcare Executives.

'00

Susan L. Morton-Pradham, M.D. '00, was inducted into the Cambridge Who's Who Executive, Professional and Entrepreneurial Registry. Dr. Morton-Pradham is a physician for Chloe Obstetrics and Gynecology in Phoenix, Ariz.

the 90s

Keith Berkowitz, M.D. '95, has co-authored *The Stubborn Fat Fix—Eat Right to Lose Weight and Cure Metabolic Burnout without Hunger or Exercise*. Dr. Goldstein is founder and medical director of the Center for Balanced Health in New York City and a former medical director of the Atkins Center for Complementary Medicine.

Andrew O. Chow, M.D. '95, is on the staff of Health First in Fairfield, Conn., a facility "specializing in restoring, maintaining and optimizing the health of the Boomer Generation." Dr. Chow is a Stanford-trained acupuncturist and an active member of the American Academy of Medical Acupuncture.

Catherine G. Winkler, M.P.H. '95, has received her doctorate from Yale and is a nurse at Danbury Hospital (Conn.), specializing in cardiovascular disease.

Tess Kryspin, M.D. '94, is a certified physician executive and director of ambulatory practice for the Griffin Faculty

MASTERING A CRAFT, TEACHING A SKILL



David Goldenberg, M.D. '82

Photo by William Tauric

By Andrea Kott, M.P.H.

Remember shop? As in woodshop, where students made tie racks and coat hooks? For some, it was a high school elective, respite from the drudge of academics. For others like David Goldenberg, M.D. '82, shop is a place for solving problems, for learning focus and self-discipline—distant values in this instant-gratification, multi-tasking age of cell-phones, Twitter and Facebook. "People are enormously distracted, and kids today are horribly unfocused," Dr. Goldenberg says. What's more, he adds, "People have forgotten how to make things."

Dr. Goldenberg, a Connecticut-based plastic surgeon, has spent his life making things. When he is not seeing patients in his Danbury office or making rounds as chief of plastic surgery at Danbury Hospital, he is in his shop, casting a concrete tabletop for plants, crafting knives or jewelry, building a telescope or making surgical instruments. "I make anything. I don't care what it is...every spare minute," he says. "The hobby is making."

School of Public Health Changes Its Name

On June 1 the School of Public Health officially became the School of Health Sciences and Practice, and established the Institute of Public Health. The school's new name, leaders say, reflects a restructuring of the school's mission, as well as a new organizational scheme that offers more flexibility in planning degree programs and academic offerings. The School of Health Sciences and Practice will comprise three accredited professional programs—in public health, speech-language pathology, and physical therapy. The public health program will consist of three departments: Environmental Health Science, Epidemiology and Community Health, and Health Policy and Management. In addition, the new Institute of Public Health will expand research and community outreach opportunities for students and faculty.

Long before he became a physician, Dr. Goldenberg was a machinist. He ran metalworking equipment in high school and worked summers in machine shops. He always planned to attend medical school and knew plastic surgery was the specialty that suited him best. "I'm an anatomic problem solver," he says. "The satisfaction in plastic surgery is being able to solve problems, getting a wound to close, repairing a breast, restoring facial symmetry."


While he finds medicine much more challenging than, say, fashioning an arrowhead, he loves both because he appreciates shape and creativity. "They go together very well," he says. "Plastic surgery is really just moving the tissues around, and what I do in the shop—knife making, stone carving, building telescopes, blacksmithing—works from the same concept of taking raw materials and shaping them into tools, devices and machines."

One of Dr. Goldenberg's favorite projects is building telescopes. "I'm always building the next biggest telescope," he says. It isn't the result alone that Goldenberg prizes, however: It is the process and the commitment and concentration it requires, qualities he says are not promoted in today's education system. This is why he insisted that each of his three children, two of whom are now grown, build a telescope for the science fair during high school. (His 16-year-old son recently won first place in his school fair's senior division.)

"You've got to make kids focus," Dr. Goldenberg says. "They're so used to multi-tasking that they can't focus on a task and finish it." He gave his kids no choice. He told them, "God help you if you're upstairs playing a video game while I'm downstairs learning something. You're going to learn to use a table saw. You're going to figure this out. There's no instant messaging, no talking to friends, no cell phones, no interruptions. You do it until it's done right." And they did. "The first time you look at a magnified vision of the moon through your own telescope...you've got to see the smiles on their faces."

Dr. Goldenberg is trying to cultivate self-reliance, not self-satisfaction. "My wife tells my son to take the triple-A card with him in case he gets a flat, and I say, 'Teach him how to change a tire!'" he exclaims. "Society makes it easy to be dependent on others. Whatever happened to self-reliance and confidence in your own abilities?"

Even when things go wrong, there is plenty to learn from process and outcomes, he says. "You can't be afraid of failure. Too many people don't do woodworking or a craft because they can't get past the initial hump of failure. I fail all the time. I'm always making mistakes, but that's how I get better."

At 53, Dr. Goldenberg is thinking about retirement. For years, he has been writing a book about the history of surgical instruments. He also has been planning to build a bigger, freestanding shop where he might start building things to sell. "It doesn't sit right with me that I have a hobby that consumes but doesn't produce any income," he says, noting the economic downturn. So he is considering selling hand-carved stone planters for bonsai trees—unless he decides to dedicate himself to making knives. Whatever he chooses, perhaps his "shop motto" will be the phrase that he once used with his children: "Come with me, sit by my side. I'll teach you something that you can use for the rest of your life." 

Practice Plan in Oxford, Conn. Dr. Kryspin is board certified in medical management.

Janet A. Stockheim, M.D. '91, M.P.H. '92, a clinical assistant professor of pediatrics at NYMC, has written *Nothing but Newborn: A First-month Primer for Parents*, a book for new mothers. Dr. Stockheim lives with her family in Pleasantville, N.Y.

Roger A. Gallup, M.D. '91, is a Colonel in the U.S. Army and a III Corps Surgeon at Ft. Hood, Tex., where he specializes in pulmonary/critical care.

Mark J. Sterling, M.D. '91, who specializes in physical medicine and rehabilitation, is acting chairman in the division of physical medicine and rehabilitation at St. Catherine of Siena Hospital, Smithtown, N.Y.

Michael J. Traurig, M.D. '91, is a board certified phlebologist. Dr. Traurig treats diseases of the veins. He lives in Greenville, S.C., with wife Nancy and their two children, Julianna, 12, and Alaynah, 10.

the80s

Alan H. Cohen, M.D. '88, works at MAP Pharmaceuticals in Mountain View, Calif., where he is Vice President of Clinical Development and Medical Affairs, Pulmonary.


Michael Fredericson, M.D. '88, is professor of orthopedic surgery at Stanford University in Palo Alto, Calif. Dr. Fredericson's research focuses on the etiology, prevention and treatment of overuse injuries; patellofemoral pain, and stress

Jay S. Pattumudi, J.D., M.S. '98

(continued from page 26)

makes an invention unique," Pattumudi says. "Just keeping up with the law is challenging enough, but patent attorneys have clients in many technological fields. I think I'm more enriched by working in so many different areas."

Late last year, Pattumudi and his wife Vaishnavi relocated from Florida to New Jersey, where they have family nearby. It's also where he now works for Hoxie and Associates, LLC, a firm that specializes in patents for biotechnology, medical devices and pharmaceuticals. Though he is specialized in one area of law, as a patent lawyer he considers himself a generalist when it comes to technology.

He enjoys answering people's questions about patents, even if the answers are not always what the person wants to hear. "When someone asks me to research an invention that they think is patentable and it quickly becomes obvious that isn't, I tell them so. Sometimes it leads them to a different line of thinking and they end up making a better product—you know, the proverbial 'better mousetrap.' In the end, that might be good for lots of people, and professionally, that's very fulfilling for me." 

LOOKING AT MEDICINE FROM THE INSIDE AND OUT

By Andrea Kott, M.P.H.

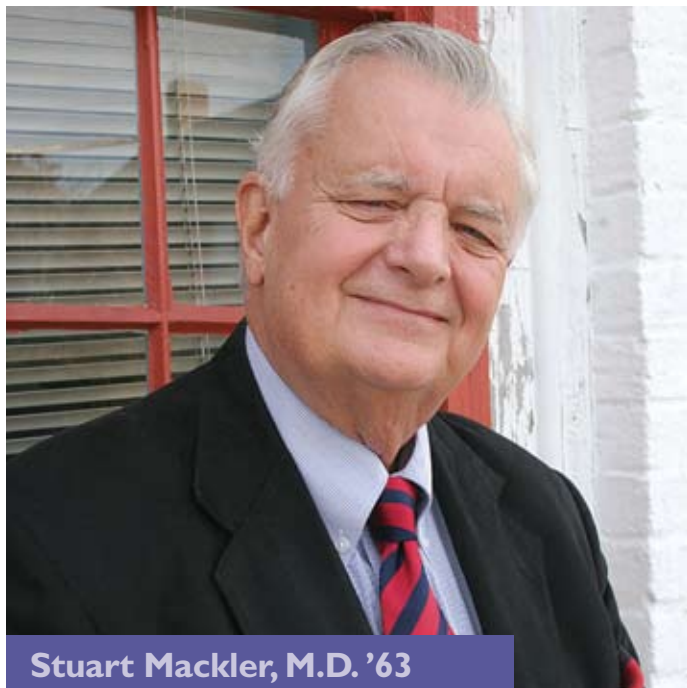


Photo by Linda Cicoria

Stuart Mackler, M.D. '63

In work, as in life, it is the detours that have brought this alumnus home. And home happens to be in Franktown, Virginia—not exactly where Stuart Mackler, M.D. '63, imagined he'd settle when he became an orthopedic surgeon more than 40 years ago and headed to Boston for an internship and residency at Beth Israel Hospital.

"It's all because of New York Medical College," Dr. Mackler says with unabashed appreciation. It was there, as the fourth-year student president of the Phi Chi medical fraternity, that he attended a lecture where Charles Bailey, M.D., spoke about achieving satisfaction in medicine—professional, not monetary, satisfaction. Bailey was the world famous cardiovascular surgeon and then-chairman of Beth Israel's department of surgery.

"He recommended practicing in a rural area, because doctors were needed there," says Dr. Mackler, who retired in 2004. So, when he noticed an ad in a medical journal for an orthopedic surgeon in Virginia, he applied. "Within six months I was in Radford, a town of 15,000," he says. "I was the first and only orthopedic surgeon between Roanoke and Abingdon, Virginia."

It was 1976, and at the time there weren't enough orthopedic surgeons to populate the country. "I did get that satisfaction from being needed," Dr. Mackler says. "I got so busy I couldn't take a vacation."

It wasn't just his professional practice that made Dr. Mackler feel content. It was also living where he did. "There's something about a smaller community," he says. "People know you by name when they run into you on the street. You don't get that in a big city."

Dr. Mackler speaks modestly about his career achievements, but his CV reveals another side of his life. He is currently a captain in the U.S. Public Health Service Reserve, having served as a senior medical officer in Coast Guard

fractures in athletes. In addition to serving as chief of the physical medicine and rehabilitation outpatient clinics at Stanford Hospital and Clinics, he is team physician for Stanford sports teams and senior associate editor of *PM&R*, the journal of injury, function and rehabilitation.

John Panella, Jr., M.A., M.P.H. '88, is executive director of the Baltimore office of SeniorBridge, an organization that serves seniors and their families by managing chronic health care needs in the home and other settings.

Joseph R. Wax, M.D. '86, returned to the Valhalla area for the Seventh Annual Hudson Valley Regional Perinatal

Forum in November 2008, where he presented the latest in female reproductive issues following bariatric surgery. Dr. Wax, professor of obstetrics and gynecology at the University of Vermont School of Medicine, Maine Medical Center in Portland, specializes in high-risk obstetrics and ultrasound.

David R. Charnock, M.D. '84, practices otolaryngology at Mid-Vermont ENT in Rutland. Dr. Charnock reports that his oldest son graduates college the same weekend as his 25th NYMC reunion. "Three more to go!"

Kevin C. Delahanty, M.D. '84, practices internal medicine with a small group in Salisbury, Mass. In 2006,

Dr. Delahanty retired after 26 years in the U.S. Navy and relocated from Seattle, Wa., to his current home in Newburyport, Mass. He married Joan Elizabeth in 2001 and is the father of two.

Andre Konski, M.D. '84, M.B.A., is chair of the department of radiation oncology for the Wayne State University School of Medicine and service chief for radiation oncology at the Barbara Ann Karmanos Cancer Center in Detroit, Mich.

Miriam David, M.D. '83, married Richard B. Stranger on March 29, 2009. She is director of breast magnetic resonance imaging in the department of radiology at Jacobi Medical Center in the Bronx.

Jill S. Hirsch, M.D. '80, reports that twin daughters Allison and Jessica are in their third year of a Ph.D program in organic chemistry at the University of California, Berkeley. Youngest daughter Larissa is a Drew University senior, also majoring in organic chemistry. Dr. Hirsch's husband, **Randolph Cohen, M.D. '80**, is working in a large multispecialty group in Middletown, N.Y.

the 70s

Edward Scott Valentine, M.D. '78, is currently a student in the Yale M.B.A. for Executives: Leadership in Healthcare program, Class of 2010.

In Memoriam

Squadron 3 in Vietnam from 1967-1968. He was awarded the Republic of Vietnam Campaign Medal, Vietnam Service Medal, National Defense Service Medal, the Sikorsky Air Rescue Award, as well as the 1990 Certificate of Appreciation from the U.S. Department of Health and Human Services.

Dr. Mackler is equally reserved when he talks about Virginia Governor Timothy Kaine appointing him in 2008 to the Virginia Board of Medicine, an unexpected and very timely honor. "It's difficult for someone to just go cold turkey and stop practicing medicine," he says, "so it's nice to keep your hand in the field."

Sitting on the board is a volunteer post to which Dr. Mackler devotes 15 to 20 days each month, regularly driving nearly three hours to Richmond for hearings and reviewing approximately 12 cases. "It is a very interesting job," he says, describing the board's oversight of physicians, osteopaths, interns, residents, athletic trainers, physician assistants, acupuncturists, radiology technicians and respiratory care practitioners. "We have more than 30,000 licenses," he says.

It is eye-opening for any physician to be in the position of policing his peers, especially in a climate that has grown increasingly litigious. "I've become aware of how the system of law and the system of medicine are so intertwined," Dr. Mackler says.

He finds that, on balance, very few physicians come before boards for infractions. "There is the colleague who generally gives excellent care and makes the occasional error of judgment—an omission, a missed diagnosis, a choice made that doesn't serve the patient well. It can happen to anyone, even the best doctors in the country," he says. "Perfection is not a part of medicine any more than it is part of any other endeavor." Yet, he says, "It's a very important thing that we police ourselves." ▀

Dennis Roggemann, M.D. '76, is a cardiologist in Fort Lauderdale, Fla., who devotes his practice exclusively to interpreting echocardiograms via the internet. "My current endeavor is to enable the ultrasound of the heart to be performed wherever a physician encounters a patient."

Richard Kresch, M.D. '71, is president and chief executive officer of Ascend Health Corp., which is renovating and converting the old Cedar Hills Hospital in Portland, Ore., into a 36-bed psychiatric facility.

Ian Gale, M.D. '70, is "still practicing in Los Angeles, after 32 years as a urologist."

Dr. Gale and wife Lisa, a flight attendant for American Airlines, travel the world extensively when they're not visiting their four grandchildren.

the60s

Robert J. Master, M.D. '68, received an award in March 2009 from the National Committee for Quality Assurance for his leadership in improving the quality of care for vulnerable populations, especially the frail and disabled.

Edwin S. Stempler, M.D. '61, is practicing orthopedics (with a strong osteoporosis program) part time in Rancho Mirage, Calif.

Dawn P. Dawson, M.D. '91, died August 20, 2008. She was 45.

John B. Montana, M.D. '79, died September 28, 2008. He was 61.

Richard L. Brown, M.D. '75, died November 28, 2008. He was 59.

R. Harold Parmalee, M.D. '73, died December 19, 2008.

James P. Angiulo, M.D. '72, J.D., died February 8, 2009. He was 61.

Kwabena A. Addei, M.D. '68, died November 8, 2008.

Melvin Gerber, M.D. '64, died April 7, 2008.

Arthur L. McGovern, M.D. '62, died November 14, 2008. He was 71.

Harry C. Smith, M.D. '61, died December 17, 2008. He was 74.

Daniel M. Baer, M.D. '57, died April 5, 2009.

Benjamin Lamstein, M.D. '57, died October 29, 2007.

Thomas P. Mathews, M.D. '57, died November 19, 2008. He was 77.

Lawrence A. Norton, M.D. '56, died May 13, 2009. He was 78.

Robert Dickinson, M.D. '55, died February 18, 2008.

John A. Schultz, M.D. '55, died March 25, 2009.

William R. Flynn, M.D. '54, died April 15, 2009.

Glenn S. Aggerup, M.D. '53, died March 10, 2009. He was 80.

Vernon E. Thomas, M.D. '52, died February 26, 2008.

Walter G. Elliot, M.D. '51, died September 12, 2008. He was 90.

Theodore S. Smith, M.D. '51, died October 29, 2008.

Albert M. Ondrako, M.D. '49, died June 16, 2008.

Nicholas Antoszyk, M.D. '48, died November 3, 2008. He was 87.

Arthur S. Kaplan, M.D. '48, died April 14, 2009.

Philip R. Gale, M.D. '46, died December 12, 2008.

Elisabeth M.F. Shanks, M.D. '46, died July 3, 2008.

Anthony Barbaccia, M.D. '45, died June 14, 2008.

Julian F. DuBois, Jr., M.D. '45, died December 16, 2007. He was 90.

Martin Nissel, M.D. '44, died January 28, 2009.

Robert Northway-Meyer, M.D. '44, died December 27, 2007.

Joseph F. Maiorano, M.D. '43, died July 23, 2008. He was 89.

Wallace T. McCaffrey, M.D. '43, died October 29, 2008.

Jeanne S. Miller, M.D. '43, died January 3, 2009.

Norman D. Stevens, M.D. '43, died November 1, 2008. He was 89.

David I. Kraft, M.D. '42, died October 29, 2008.

Robert C. Burnham, M.D. '41, died April 20, 2008.

Irving S. Behr, M.D. '39, died September 11, 2007.

Thomas G. Caceci, M.D. '39, died January 2, 2009. He was 94.

S.T. Coppola, M.D. '39, died June 27, 2008.

Charles J. Grubin, M.D. '39, died January 26, 2009.

Nathan Arenson, M.D. '37, died April 2, 2008.

Morris D. Rudick, M.D. '32, died December 4, 2008. He was 99.

Faculty

Sheila Dotson Davis, M.D., professor of clinical radiology at Westchester Medical Center; died May 11, 2009.

Paul L. Chodosh, M.D., clinical professor of otolaryngology at The New York Eye and Ear Infirmary; died September 6, 2008. He was 84.

Mark H. Friedman, D.D.S., clinical associate professor of dental medicine, of medicine, and of cell biology and anatomy at Westchester Medical Center; died December 18, 2008.

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(*) Deceased

2009 Alumni Celebrations



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Photos by John Vecchiola, except 1, 2 (courtesy of Department of Medicine), 18, 20 (Photobureau), and 19 (Lisa Wanderman).

Research News

(continued from inside front cover)

physical and mental health are likely to worsen over time and not necessarily expect that they will "bounce back," although declines in physical health are likely to be greater than declines in mental health.

"Changes in Health-Related Quality of Life of Newly Diagnosed Cancer Patients, Cancer Survivors and Controls," *Cancer*, April 28, 2009.

Is there an alternative theory of evolution?

The animal kingdom, or Metazoa, arose from single-celled ancestors in a few bursts of several million years between 500 and 600 million years ago. Embryos of all animal groups—those containing insects, oysters, worms and vertebrates like ourselves—use the same set of proteins to produce their complex forms. According to Darwin's theory of natural selection, the major evolutionary steps needed to generate animal forms would have required much more genetic change and happened slowly.

Now a growing number of developmental biologists are trying to understand how the transition from single-cell to complex animal forms happened so abruptly. **Stuart A. Newman, Ph.D.**, professor of cell biology and anatomy, has presented a new mechanism to explain these early evolutionary steps, one that recognizes the role of the material properties of cell aggregates in the generation of biological form and pattern. Eons ago, changes in the environment caused some ancient proteins already present on the surfaces of single cells to clump the cells into multicellular clusters. Once these clusters existed, the products of other previously existing genes began to mobilize physical mechanisms and effects not relevant on the smaller spatial scale of the individual cell to mediate the formation of hollow, multilayered, segmented, appendage-bearing forms. The result was a "pattern language" capable of generating all body plans and organ forms of the animals.

"Dynamical patterning modules: a 'pattern language' for development and evolution of multicellular form," *The International Journal of Developmental Biology*, in press, online at <http://www.ijdb.ehu.es/web/paper.php?doi=10.1387/ijdb.072481sn>



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1. At the Alpha Omega Alpha (AOA) induction ceremony on March 25, alumni initiate Peter A. Indelicato, M.D. '69, was congratulated by AOA chapter councilor William H. Frishman, M.D., and Edmund F. LaGamma, M.D. '76.

2. AOA alumni initiate James E. Udelson, M.D. '81, was joined by AOA president Julie Krystal, Class of 2009, and AOA junior member Allyson Chesebro, Class of 2010.

3. Laurence Friedman, M.D. '59, and his wife Marilyn Friedman attended his 50th reunion at the New York Sheraton on May 16.

4. James Voskovitch, M.D. '59, and Diane Bauer:

5. Members of the Class of 1959.

6. John Weg, M.D. '59, and Mary Loretta Weg.

7. Congratulating Mark Rosenblum, M.D. '69, winner of an Alumni Medal of Honor; were Ralph A. O'Connell, M.D., provost and dean; Eileen M. Dieck, '86, Alumni Association President; and Karl P. Adler, M.D., College president and CEO.

8. Class of 2009's Jeffrey Eliason was selected to give the student address at Commencement, while Angela Fusaro, Student Senate president, received the Alumni Endowed Scholarship.

9. Members of the Class of 1984.

10. Angela Fusaro, Class of '09, was presented with the Alumni Endowed Scholarship by Eileen M. Dieck, '86, Alumni Association President, and Karl P. Adler, M.D., NYMC President and CEO.

11. Medal of Honor winner Mark Rosenblum, M.D. '69, and his wife Pam Rosenblum.

12. Joseph Dursi, M.D. '59, associate dean for continuing medical education, and Benjamin Sadock, M.D. '59.

13. Michael Grenis, M.D. '84, Medal of Honor recipient Joseph Cervia, M.D. '84, and Mario Tagliabambe, M.D. '84.

14. Herman Schaffer, M.D. '59, Bernard Sonnenblick, M.D. '59, and Lawrence Sheff, M.D. '59.

15. Honoree Joseph Cervia, M.D. '84, was joined by Denise Blumberg, M.D., Carol Swift, and Steven Carolan, M.D. '84.

16. Friends and spouses of the Class of 1984 were ready with their cameras when the celebrants assembled for a portrait.

17. Tedd Weisman, M.D. '84, and Michael Grenis, M.D. '84.

18. A very proud Peter Coffin, M.D. '75, posed with son Samuel Coffin, M.D. '09, at Commencement in May.

19. At age 98 the oldest alumnus to attend the May 17 reunion luncheon, Sidney Wanderman, M.D. '34, stood before a portrait of Dr. Walter Gray Crump, his former professor of surgery.

20. Lawrence Sahler, M.D. '88, and son Christopher Sahler, M.D. '09, at Commencement.



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