

New
Jersey
Medical
School

pulse



The New Science of
Blood

Skull Base Surgery

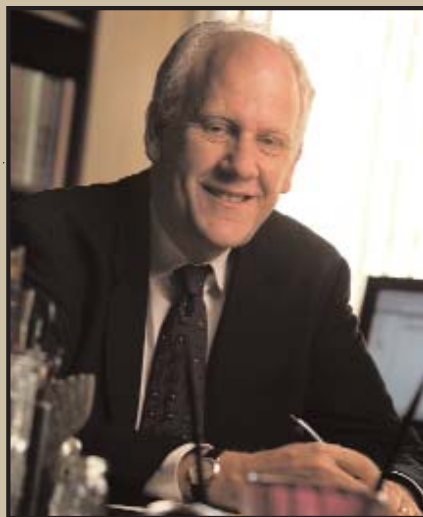
**Delivering Drugs
Through the Skin**

RESEARCH DOLLARS ON THE RISE

CME: SOFT TISSUE MASSES • ALUMNI NEWS AND FEATURES

Russell T. Joffe, MD

Message from the Dean



MEDICAL STUDENTS DEPEND ON THEIR EDUCATION to equip them with the skills necessary to pursue careers in patient care, research and teaching. At New Jersey Medical School, we recognize this tremendous responsibility and are taking steps to ensure that our graduates thrive in their chosen fields.

Recently, we embarked upon a school-wide examination of our curriculum and the challenges facing tomorrow's physicians. Research and input from students, faculty and colleagues at other medical schools have resulted in an innovative new curriculum that reflects the latest in medical education. With greater focus on multidisciplinary courses, earlier clinical exposures and small group learning, NJMS is encouraging active learning and collaboration—skills that are critical to addressing patients' needs.

At the same time, we have not lost sight of the importance of the human, compassionate aspects of medicine. With the help of a \$3.2 million grant from the Healthcare Foundation of New Jersey, NJMS is the first school in the nation to establish a center dedicated to the humanistic practice of medicine (see article on page 3). In addition to a scholarship program, a variety of enrichment and leadership development programs will ensure that our students understand and embrace humanistic care.

These new academic offerings are also assisting NJMS in preparing for a major event: reaccreditation. We are confident that our continuing efforts to assess and refine our educational programs are helping students while strengthening the future of healthcare in New Jersey. We look forward to sharing our accomplishments, and those of our students, with the Liaison Committee on Medical Education (LCME) in early 2005.

NJMS Pulse

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 UNIVERSITY OF MEDICINE AND DENTISTRY
 OF NEW JERSEY
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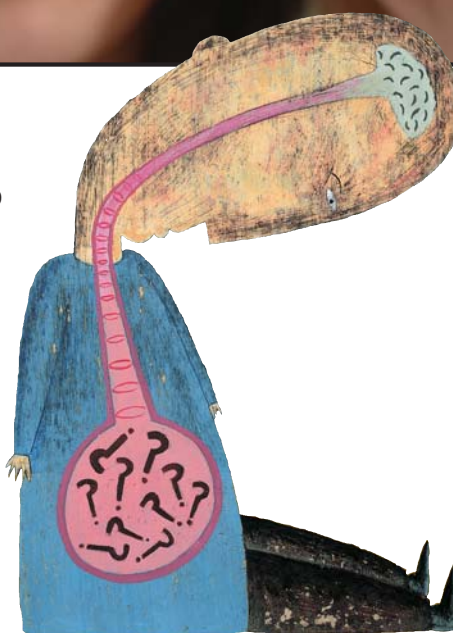
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A Heated Solution

IHPP can be used to treat gastric, colorectal and ovarian cancer, as well as other, more unusual conditions affecting the peritoneum.

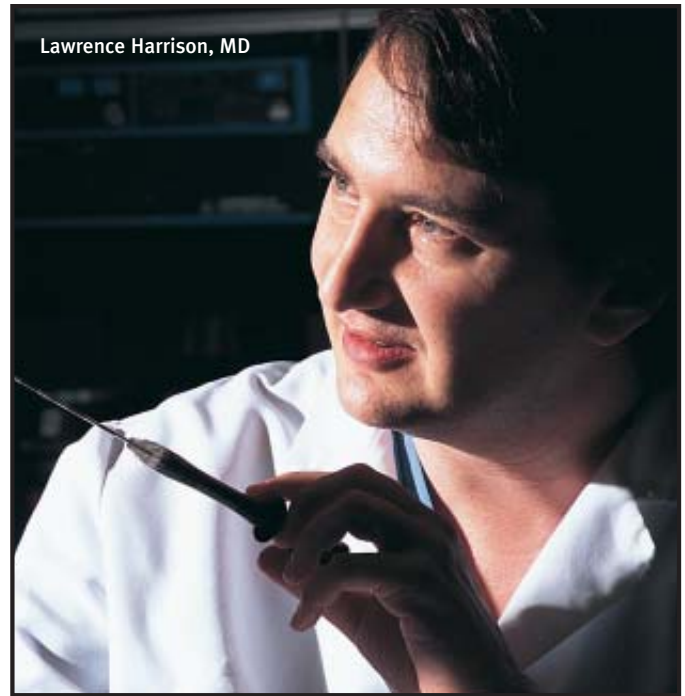
GASTROINTESTINAL AND GYNECOLOGIC MALIGNANCIES account for nearly 40 percent of cancer-related mortality in the United States. However, surgery often fails to stop the cancer's spread.

"Even when the primary tumor is resectable, there is often peritoneal and liver metastases. Or, following resection, the cancer recurs in the abdomen," says Lawrence Harrison, MD, associate professor of surgery at New Jersey Medical School (NJMS) and chief of the division of surgical oncology at University Hospital (UH). "In advanced cases, patients have a life expectancy of only between six and 12 months."

Using a method that combines surgery with regional chemotherapy, Harrison believes this outlook could change. Intraoperative hyperthermic peritoneal perfusion (IHPP) directs heated chemotherapy (such as mitomycin C and/or cisplatin) to high-risk regions for cancer spread and growth, specifically the peritoneum and liver. "Immediately following surgery, the chemotherapeutic agent is heated to about 100°F, and the open abdominal cavity is bathed with the perfusate for 90 minutes and then drained," explains Harrison, who has performed some 20 IHPP procedures at UH.

IHPP has several advantages over surgery alone or systemic chemotherapy. Even with the most meticulous of surgical techniques, cancer cells can be inadvertently jarred loose when an abdominal tumor is removed. Cancer cells are more responsive to chemotherapy's cytotoxic effects when the agent is heated, presumably by enhancing membrane permeability to chemotherapeutic agents and inhibiting DNA repair. Delivered immediately following surgery, the chemotherapy can navigate the irregular and complex surfaces of the peritoneum. Additionally, the venous drainage of the peritoneum provides direct portal vein perfusion of chemotherapy to the liver.

Studies support the premise that IHPP can produce better outcomes than surgery alone. One study of patients with gas-



Lawrence Harrison, MD

tric cancer and peritoneal metastasis found that those who had only surgery had a median survival rate of eight months. Of the patients who had surgery and IHPP, 54 percent had a one-year survival rate; 42 percent, a three-year survival rate; and 31 percent, a five-year survival rate. IHPP has been curative in a few cases and can have a role as adjuvant therapy.

IHPP can be used to treat gastric cancer, colorectal cancer, and ovarian cancer, as well as other, more unusual conditions affecting the peritoneum: pseudomyxoma peritonei, peritoneal mesothelioma, and peritoneal carcinomatosis. Patient selection is a key factor in its success. "IHPP isn't appropriate for every abdominal cancer patient; under the best circumstances, the tumor is confined within the belly," says Harrison. "The patients who fare the best are those that can be cytoreduced to minimal disease, where the heated chemotherapy is the most efficacious."

Harrison is conducting a Phase I trial using doxorubicin (Doxil) as the chemotherapeutic agent. Doxil has been used intraperitoneally in advanced ovarian cancer patients with a good tumor response. Harrison believes that the drug, when used as part of IHPP, may also have promise for patients with advanced abdominal-only gastrointestinal or gynecologic malignancies. "Doxil, when given intraperitoneally, increases time of drug exposure, leading to high tissue levels and increased antitumor effects," he says. "I believe that Doxil used in IHPP will offer improved tumor response rates." ●

Healthcare Foundation Endows Center for Humanistic Medicine

THE HEALTHCARE FOUNDATION OF NEW JERSEY has awarded a \$3.2 million grant to New Jersey Medical School (NJMS) to establish a center for humanism, the first such center at any medical school in the U.S. Named the Healthcare Foundation of New Jersey Center for Humanistic Medicine, its focus will be on training physicians in communication skills, sensitivity to family issues and compassionate care. The grant, the largest ever awarded by the Foundation, will be supplemented by a \$1.2 million commitment for student scholarships.

NJMS Dean Russell T. Joffe, MD, says, "With this center, we are raising the academic bar and asking our students to be more than technically competent. We want them to learn not only the skills required to practice medicine, but the values and ideals."

As part of the new initiative, 10 academically talented, service-oriented students from New Jersey will be selected annually to receive full scholarships to attend NJMS. The students will serve as mentors to other students and may participate in a humanistic care summer program and a variety of community service projects. In addition to their medical degree, they will graduate with special distinction in humanistic medicine.

"Ninety-five percent of the complaints hospitals get are not about outcomes. They're about how the doctor treated the patient. The Center has an opportunity to change the face of medical education," says Lester Lieberman, chair of the Healthcare Foundation of New Jersey. He adds that the medical school will set a standard in humanistic training that will someday be a model for medical schools nationally.

The Center's opening in September 2004 will coincide with the introduction of a new medical school curriculum which will prepare students for today's rapidly changing healthcare environment, says Joffe. ●



Humanism inductees Maya Kolipakam (left) and Regis Renard, Class of 2004

Honors for the Compassionate

IN MARCH, 33 MEMBERS OF THE CLASS OF 2004 were formally inducted into the Gold Humanism Honor Society (GHHS). Created by the Arnold P. Gold Foundation, GHHS recognizes and supports medical students who demonstrate compassion and competency in patient care, as well as respect and support of colleagues. NJMS was among four medical schools in the nation to pilot the program in 2002. There are now more than 30 chapters nationwide.

During the ceremony, James Oleske, MD, MPH, professor of pediatrics and recipient of the 2001 Humanism in Medicine Award, spoke to inductees about the tremendous support physicians can provide patients outside of medical treatment. Sandra O. Gold, EdD, executive director of the Arnold P. Gold Foundation, presented students with their GHHS induction pin. ●



Research News

A look at some ongoing studies at New Jersey Medical School

Development of Genome Targeted Inhibitors of HIV-1

The major drawback to current anti-AIDS therapy is the emergence of drug resistant mutants of HIV-1. In the quest for novel HIV-1 specific inhibitors, a research team headed by Virendra N. Pandey, PhD, associate professor of biochemistry and molecular biology at New Jersey Medical School, has developed a strategy to target the conserved non-translated 5' region of the viral genome that contains multiple regulatory elements critical for viral replication. Selective intervention of the function of these regulatory regions may have profound therapeutic potential in blocking viral infection.

"We have identified a number of leading polyamide nucleotide analogs (PNA) which can successfully block the function of these targets *in vitro*, and devised a novel strategy to enhance biodelivery of these PNA by conjugating them with membrane transporting peptides," says Pandey.

Each of the PNA-peptide conjugates is being examined for its uptake kinetics, functional efficacy, cytotoxicity and antiviral activity in cell cultures. The leading PNA-peptide conjugates are also being examined for their pharmacokinetic behavior, tissue distribution and toxicological properties in animal models. This will be followed by subjecting these compounds to a preclinical trial in an hu-SCID mouse model reconstructed with human PBL. For these studies, Pandey received a five-year, **\$1,749,375** grant from the NIH-NIAID for "Genome Targeted Inhibitors of Retroviruses." The studies will provide invaluable information on this class of compounds, which may help in the development of effective multiprong inhibitors of high therapeutic index.

Toll-Like Receptors, Adenosine and Angiogenesis

Recent studies have suggested that inhibition of angiogenesis may be a viable

method for blocking tumor growth. Angiogenesis, the growth of new blood vessels, plays a pivotal role in wound healing, inflammation and cancer. Macrophages produce chemical mediators, including cytokines and growth factors that regulate both inflammation and angiogenesis. Macrophages are exquisitely sensitive to their microenvironment and their production of cytokines and growth factors is tightly regulated.

A research team led by Joseph Leibovich, MD, PhD, professor in the Department of Cell Biology and Molecular Medicine, and an investigator at The Cardiovascular Research Center at NJMS, has received a four-year, **\$1.3 million** grant from the NIH-NIGMS for "Toll-Like Receptors, Adenosine and Angiogenesis." The team discovered a novel signaling pathway that results in strong induction of expression of angiogenic factors such as vascular endothelial growth factor (VEGF), and strong suppression of inflammatory cytokines such as TNF and IL12, constituting a switch that changes macrophages from an inflammatory to an angiogenic phenotype. This switch involves synergistic interaction between the recently discovered toll-like receptors (TLRs 2, 4, 7 and 9) and a subclass of adenosine receptors (A2ARs).

TLRs are critical for recognition of pathogens by macrophages, and thus for innate immune responses. Adenosine receptors play important roles in inflammation and regulation of vascular tone. The angiogenic switch involving this newly discovered interaction between TLRs and adenosine receptors may be important for regulation of angiogenesis, providing an interface between innate immunity, wound healing, inflammation and cancer.

Altitude-Induced Hypoxia, IUGR and Placental Function

Scientists and physicians believe that reduced blood flow or structural abnormalities can make the human placenta hypoxic, a condition that is associated with major complications of pregnancy such as preeclampsia and/or poor growth of the unborn child in the mother's uterus.

Both preeclampsia and poor fetal growth (IUGR, intrauterine growth restriction) occur much more frequently at high (>2700 m or 8,000 ft) than at low altitude, and, just like at sea level, are associated with increased maternal and neonatal deaths. Thus high altitude provides a natural experiment for studying the relationship between low oxygen, placental development and preeclampsia or IUGR.

By comparing a population resistant to altitude-associated pregnancy complications (Aymara, a native American group in Bolivia) with a susceptible population (European migrants to high altitude), the project tests a number of placental mechanisms that may contribute to pregnancy complications.

Stacy Zamudio, PhD, assistant professor in the NJMS Department of Obstetrics, Gynecology and Women's Health and primary investigator, says the three areas they are looking at include nutrient transport from mother to baby, the development of blood vessels within the placenta and placental nutrient transport mechanisms.

"A final goal is to compare gene expression in the placenta (genes related to development/modification of blood vessels, growth factors, nutrient transporters, and markers of hypoxia) between the groups," she says. "Identification of genes related to good

vs. poor fetal growth, and/or to complications such as preeclampsia and IUGR may permit the development of new preventive therapies or treatments for pregnancy complications."

The NIH-National Institute for Child Health and Human Development awarded her a **\$1,016,600** grant for this study. Her collection of samples in Bolivia is funded by the National Science Foundation.

Nucleosomes Modulate DNA Interstrand Crosslink Repair

Chromatin structure plays a critical role in modulation of cellular response to DNA damage. Packaging of DNA into nucleosomes greatly affects its accessibility to repair proteins. However, the mechanism by which repair proteins interact with sites of damage on nucleosomal DNA is poorly understood.

Muriel Lambert, PhD, professor of pathology and laboratory medicine, was awarded a three-year, **\$885,000** grant from the NIH-NHLBI to examine the effect of nucleosome structure on the ability of human repair proteins to interact with DNA containing interstrand crosslinks produced by mutagenic and carcinogenic environmental agents. It will additionally investigate whether the mechanism utilized by endonucleases involved in the repair process to locate sites of damage (i.e. a processive mechanism of action) is critical for their ability to interact with and incise damaged nucleosomal DNA.

"These studies will provide insights into the complex mechanism by which interstrand crosslinks are repaired in nucleosomal DNA, the importance of a processive mechanism of action by repair proteins on damaged nucleosomal

DNA, and the severe consequences, such as the production of numerous cancers, that occur when this mechanism is defective," says Lambert.

Cardiovascular Actions of Melanocortins

Melanocortins consist of a family of peptides including alpha, beta, and gamma-melanocyte stimulating and adrenocorticotrophic hormones.

Disruption of melanocortin-containing neurons produces overeating and obesity, and melanocortin levels are elevated in stressful situations. Obesity and stress are two high-risk factors for cardiovascular disease, especially hypertension.

Hreday N. Sapru, PhD, professor in the NJMS departments of neurosurgery, neurosciences, pharmacology and physiology, received a four-year, **\$1,429,190** NIH grant for "Cardiovascular Actions of Melanocortins" to examine how melanocortins in the brain regulate cardiovascular function.

"Successful completion of these studies will enhance our understanding of the role played by melanocortins in the central cardiovascular regulation in normal conditions," says Sapru. "It will also provide a basis for future studies on the link between melanocortins, obesity, stress and cardiovascular disease."

Effects of Aging on Cardiovascular Function

The stiffness of blood vessels increases with aging, yet the mechanisms involved are poorly understood, which is due, in part, to lack of appropriate models. The

continued on page 10



Making Bones About It

Innovations in prosthetic materials are revolutionizing joint replacement in patients in their 50s and younger.

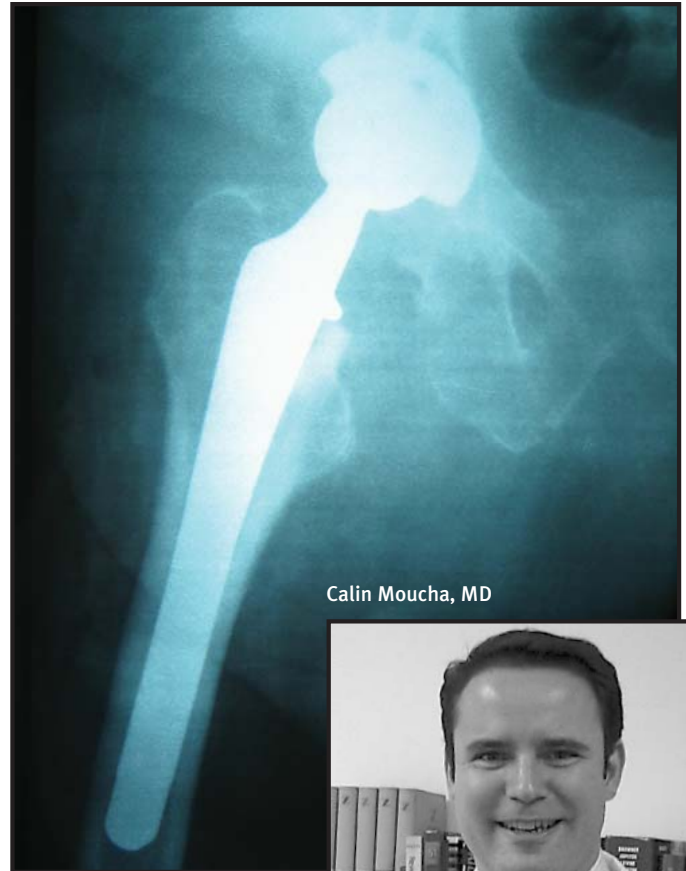
Until recently, virtually all of an orthopaedic surgeon's total joint replacement (TJR) patients were elderly. Now, however, it's not unusual for people in their 50s and even younger to undergo hip or knee replacement.

Calin Moucha, MD, an assistant professor of orthopaedics at New Jersey Medical School and a specialist in adult joint reconstruction at University Hospital, says that for younger patients who are getting a "re-do" or revision, TJR poses a challenge. Traditional prosthesis materials are not designed for the long-term use that is expected with younger patients. "The answer may be porous tantalum, a material that's been a fixture in dental prosthodontics for decades, but is now being used in reconstructive orthopaedics," says the surgeon.

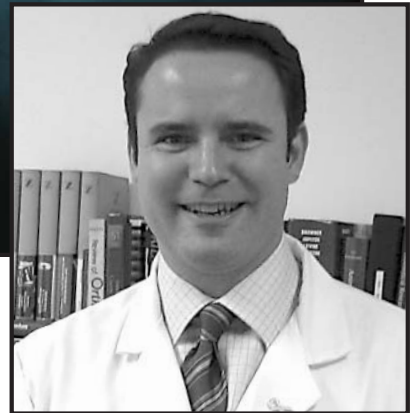
What makes this material different from other metals, ceramics or polymers, says Moucha, is its amenability for bone ingrowth. The structure of porous tantalum compares quite favorably to trabecular bone, and many basic science studies have demonstrated tantalum's capability for bone ingrowth. A poster presented at the 1999 annual meeting of the American Academy of Orthopaedic Surgeons showed the striking similarity between porous tantalum and trabecular bone, as viewed by a scanning electron micrograph. Another of porous tantalum's favorable characteristics is its ability to be molded into practically any shape. Says Moucha: "While long-term clinical research needs to be conducted, I'm very optimistic that one

"While long-term clinical research needs to be conducted, I'm very optimistic that one day, porous tantalum will be considered a revolutionary innovation in reconstructive orthopaedics."

Calin Moucha, MD



Calin Moucha, MD



day, porous tantalum will be considered a revolutionary innovation in reconstructive orthopaedics."

If that's so, then Moucha was present at the start of the revolution. While he was completing a fellowship in adult joint reconstruction at Rush-Presbyterian–St. Luke's Medical Center in Chicago, Rush's orthopaedic surgeons were collaborating with biomedical companies in the TJR applications of porous tantalum. Moucha received special training in the use of porous tantalum while at Rush.

Porous tantalum is relatively new and experimental in the field of TJR, and not many orthopaedic surgeons are currently using it. Among those who do, some use porous tantalum for primary TJR. Moucha, however, reserves the material for revisions and complex TJR cases. "There are many instances where the conventional materials work well and are perfectly acceptable," he says. "But in complex cases, such as compromised host bone settings in younger patients or when bone loss results in large defects, I'll use porous tantalum." ●

In Memoriam

Waldemar Gustav “Buzz” Johanson, Jr., MD, MPH, former professor and chair of the Department of Medicine from 1991 to 2001. He specialized in pulmonary medicine and the treatment of infectious lung diseases. His groundbreaking research included identification of a pathogen that plays a major role in hospital-acquired pneumonia. He also advanced the use of technology in the classroom. “He was an extraordinary administrator, teacher, physician, mentor and researcher,” said Dean Russell T. Joffe, MD. A fellow of the American College of Physicians and the American College of Chest Physicians, he was an elected member of the Association of American Physicians and the American Society for Clinical Investigation. A memorial service at NJMS on March 15 commemorated Johanson’s achievements and contributions.

Richard Henry Rapkin, MD, former professor of pediatrics and vice chair of the Department of Pediatrics. He served at Children’s Hospital of New Jersey for more than 20 years, including positions as director of pediatrics and director of the pediatric residency program. His affiliation with NJMS began in 1970 as an assistant professor and continued until his recent death. In addition to his expertise in pediatric infectious disease, he was well-known for his teaching abilities. “He trained thousands of medical students and residents who went on to pursue careers of distinction,” said Barry Dashefsky, MD, associate professor of pediatrics. Rapkin was also a trustee of the United Way of Somerset County and the Matheny School and Hospital in Peapack.

Rose Prystowsky, MD, a child psychiatrist and former faculty volunteer, is credited with starting a child psychiatry program and supervising medical students studying psychiatry at NJMS. She is the wife of Milton Prystowsky, MD, a pediatric cardiologist and former clinical professor at NJMS, and the mother of five sons (including Barry Prystowsky, MD, NJMS’81, a pediatrician and clinical assistant professor). She maintained a practice in Nutley for more than 40

years. She and her husband established reputations as particularly caring physicians. In 1995, the couple established the Foundation of UMDNJ’s Drs. Milton and Rose Prystowsky Award, presented annually to a student with an interest in pediatrics. She served as president of the New Jersey Psychiatric Association from 1990–1991, and was recognized by the organization for a lifetime achievement award in 1996. ●

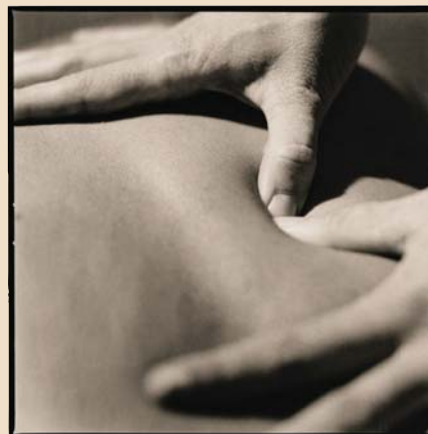
The Perfect Perk

T’S RAINING BUCKETS. There’s a fire alarm and 13 flights of stairs to descend. Back and neck muscles are crying for attention after too many hours sitting in office chairs. The instinct to go home and slouch on a couch is overwhelming. Three of us take a different route ... and it makes all the difference.

The Massage Clinic of the Institute for Therapeutic Massage at University Hospital (UH) offers the perfect perk for UMDNJ employees—and it comes with no strings or fees attached. Because of ongoing University interest in alternative therapies for pain management, the Institute, based in Pompton Plains, NJ, operates a satellite campus in the hospital on Tuesday and Friday evenings. Massage students who have already completed several months of classroom instruction and training earn clinical credit in full body Swedish massage by practicing on real people in the pediatrics wing on Level D.

This art of therapeutic touch, designed to manipulate the soft tissues of the body, lower blood pressure, reduce heart rate, increase circulation and improve overall well-being, definitely works its magic, according to UMDNJ Publications Office staffers. Back out on the street, even the pounding rain can’t erase our smiles.

Call George Fraggos or Rafael Paez, clinic supervisors, at 973-953-1153 for a 5, 6:30 or 8 pm appointment. ●





House Calls in Newark

TWICE A WEEK, KEERTI SHARMA, MD, leaves UMDNJ's Newark campus carrying a bag that contains a laptop computer, a stethoscope, bandages and medical supplies to make house calls to elderly patients in Newark.

Sharma, assistant professor of medicine and a geriatrician at New Jersey Medical School (NJMS), and Doreen Monks, an advanced practice nurse at University Hospital, administer the House Calls for Seniors program, created by Debbie Salas-Lopez, MD, chief of the NJMS Division of Academic Medicine, Geriatrics and Community Programs.

Salas-Lopez said data from the 2002 American Community Survey indicates that 11 percent of the population in both Essex county and the city of Newark is 65 years and older. Of this cohort, 9 percent live in poverty, 4 percent do not have telephone service and 15 percent do not have access to a car for private use.

House Calls for Seniors helps elderly patients manage chronic health issues—such as diabetes, heart disease, insomnia, gait problems, urinary incontinence, memory loss, hypertension, osteoporosis and asthma—through home visits from a physician rather than having to go to the physician's office. Individuals who are 65 years or older are eligible to participate in this program.

Social workers at three of New Community Corporation's senior citizen residences in Newark arrange patient appointments for the medical team. The location of each appointment depends on a patient's preference, taking place

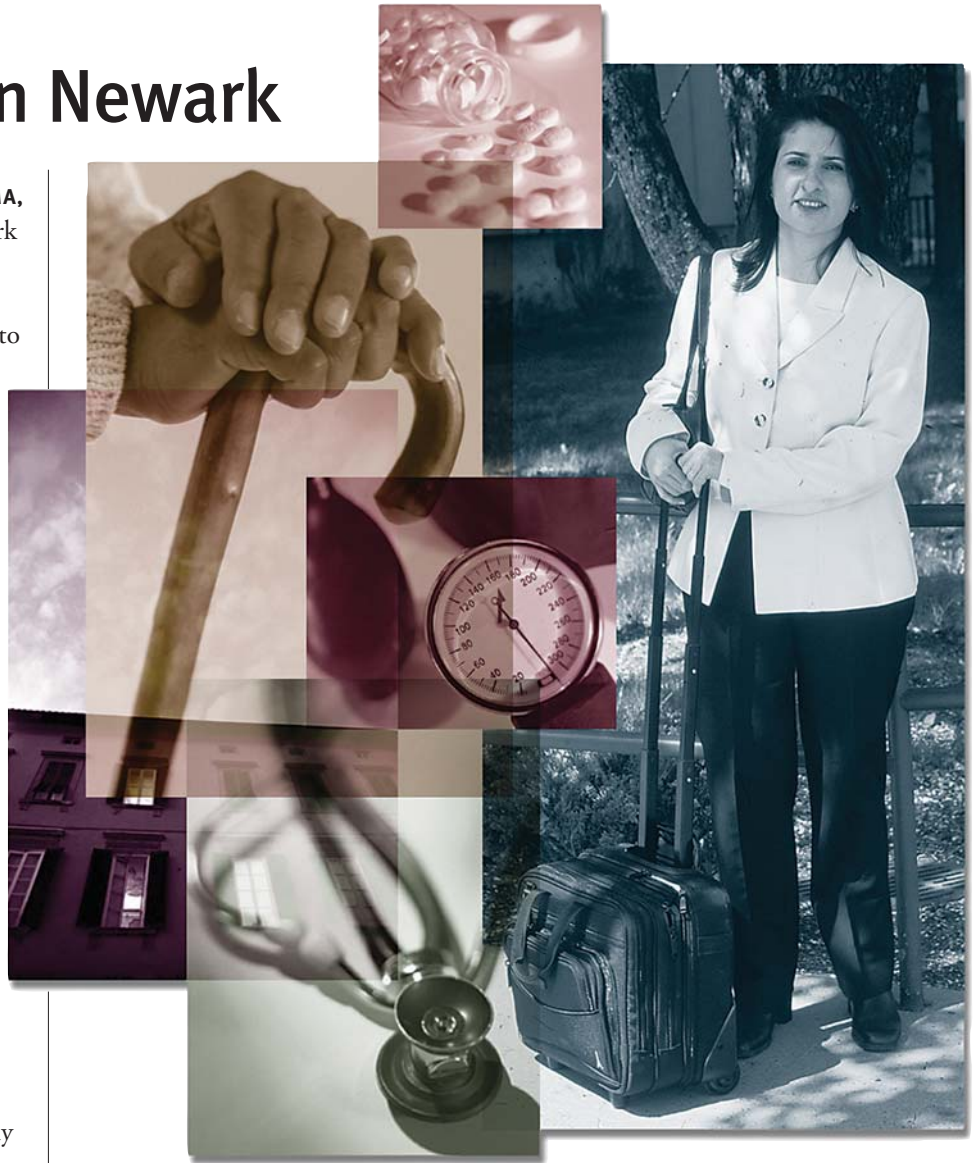
either at an onsite office or in the patient's apartment.

"We have extended the boundaries of healthcare to the home," Salas-Lopez comments. "Because of this collaborative partnership between UMDNJ and community-based organizations, we are meeting a health care need and providing holistic care for the most vulnerable population in Newark, the elderly."

Sharma adds, "This comprehensive community-health program brings dignity, sensitivity and a sense of inclusiveness to the care of aged individuals.

Through House Calls for Seniors, we are able to emphasize disease prevention and health maintenance so that seniors can maximize their independence."

Home environment assessments are part of Sharma's comprehensive approach. "By visiting our patients at home, we hope to establish trust and offer culturally and linguistically appropriate care. We make every effort to gain greater insight by helping them manage their health. Our goal is to expand our program to other senior citizen residences in Newark." ●



RWJ Foundation Funds Health Initiative

THE BROTHERHOOD HEALTH INITIATIVE (BHI) at New Jersey Medical School (NJMS) has received a three-year, \$450,000 grant from The Robert Wood Johnson Foundation to address the medical, emotional and socioeconomic issues of minority males in Essex County between ages 12 and 25. The funds will be used to provide medically disadvantaged males with case management, and health and preventive care services.

A BHI coordinator will conduct evaluations on individuals who volunteer for this free program. Outcomes of the evaluations will be used to identify appropriate support services. The program's health professionals will also offer referrals, group support and follow-up evaluations for participants seeking services such as healthcare, employment, education, housing, and legal and financial assistance.

Social workers at University Hospital, health professionals at the DAYAM adolescent health clinics at NJMS and representatives from community-based organizations will provide the referrals. In addition to support group meetings, the BHI will continue to provide health information on sexual reproductive health, self esteem, anger management and conflict resolution. ●

Heritage, Hope and Healing

EIGHTEEN OF THE NATION'S 19 BLACK TRANSPLANT SURGEONS gathered at New Jersey Medical School (NJMS) in February to participate in a panel discussion on the status of minority organ donation in the U.S. At the event, the physicians reflected upon their journey to become transplant surgeons and answered questions from students on organ donation in minority communities.

Joseph S. Roth, president and chief executive officer of the New Jersey Organ and Tissue Sharing Network, opened the program by noting that out of the nearly 100,000 patients nationwide who are waiting for a lifesaving organ donation, close to 50 percent of them are people of color. Dorian J. Wilson, MD, a liver transplant surgeon at University Hospital (UH) and assistant professor of surgery at NJMS, addressed the low rate of organ donation among certain minority groups.

The panel was moderated by David S. Kountz, MD, son of the country's first African-American transplant surgeon, Samuel Lee Kountz, Jr., MD. David S. Kountz is an associate professor of medicine and associate dean for postgraduate education at Robert Wood Johnson Medical School.

All the panelists agreed that "patience, persistence and purpose" were essential in overcoming the many obstacles they faced. Summing up the shared experiences of the group, Wilson said, "The true challenge of the future is to become trained so you can bring the advances of medical technology to those who need it, and also to improve the community's understanding of minority donation so we have the organs to transplant."

The event was co-sponsored by the New Jersey Organ and Tissue Sharing Network, UH and the Student National Medical Association at NJMS. ●

Dorian J. Wilson, MD (second from left), and David S. Kountz, MD (fifth from left), with participants.





Research *continued from page 5*

majority of research in aging has been conducted in rats or in humans with associated diseases of aging, such as diabetes or atherosclerosis.

A team led by Stephen Vatner, MD, professor and chair of cell biology and molecular medicine, has developed a unique primate model, which is phylogenetically closer to humans, yet does not have the associated diseases of aging, therefore allowing for the targeting of specific mechanisms related to aging alone. One important theme in this five-year, **\$2,577,000** grant from the NIH-NHLBI includes examination of gender differences during aging.

They will examine three hypotheses: 1) Vascular stiffness increases in old male monkeys, but old female monkeys are relatively protected; 2) Differences in the pattern of the expression of genes could explain the gender differences involved in the development of vascular stiffness; and 3) Gender differences must exist in the pattern of expression of proteins that could explain the differences involved in the development of vascular stiffness.

Novel Pathways for Bcr-Abl Transformation

Virtually all patients with chronic myelogenous leukemia (CML) have a chromosomal rearrangement called the Philadelphia chromosome, which produces an abnormal protein (Bcr-Abl) known to be the causative agent of CML. Bcr-Abl, a complex protein, binds to several other proteins in the cell. Determining which of these pro-

tein-protein interactions is causing a cellular event that is contributing to CML is a great challenge to cancer biologists. It is important to address this challenge, since these sites of interaction can be good targets for drug intervention.

Interestingly, there are two forms of the Bcr-Abl protein, yet only one form causes CML. Since the CML-causing form contains a domain that is not present in the inactive form, researchers reasoned that this domain must have a function that contributes in some way to disease initiation or progression.

“We have studied this domain and identified binding sites for two proteins that have been previously implicated in

other types of human cancers,” says Ian P. Whitehead, PhD, assistant professor of microbiology and molecular genetics at NJMS. “However, we do not yet know whether these associations contribute to the progression of CML.”

Whitehead was awarded a five-year, **\$1,383,950** grant from the NIH-NCI for his study.

Measuring Outcomes of Diabetes Care in Managed Care Settings

NJMS has been awarded **\$832,652** from the CDC—part of a \$4.2 million

MiniMed Makes “Maxi” Impact

THE HUMAN BODY IS COMPLEX AND SOMETIMES TROUBLESOME. The American medical system is also complex and sometimes troublesome.

Voila! A program is born that makes both a bit less mysterious and a lot more comprehensible. NJMS MiniMedical School has drawn hundreds of participants each spring since its inception in 1998. After a series of 10 weekly evening



lectures by physician-educators in a range of subspecialties, coupled with small discussion groups and weekend elective courses on basic life support, medical librarianship and cardio-pulmonary physiology, participants ages 15 to 80+ are smarter about their own health-care and more informed in their advice to others. Some even go on to attend medical school and become doctors. Jacob J. Lindenthal, PhD, DrPH, NJMS professor of psychiatry, is the founder and director of the program. ●



Rankings on the Rise

WHEN IT COMES TO NIH RANKINGS, the figures speak for themselves. On the newest (FY 2003) rankings of NIH awards to medical schools, New Jersey Medical School comes in at No. 56, significantly higher than where it stood last year at No. 69. According to the NIH, awards to NJMS rose from \$38,237,000 to \$64,922,000. ●

grant to six institutions—to participate in a new five-year study of diabetes care within managed care settings. The study is called Translating Research Into Action for Diabetes (TRIAD). Norman L. Lasser, MD, NJMS professor of medicine, is principal investigator.

The TRIAD project was initiated by the CDC in 1998 to assess the quality—and identify the factors that affect quality and outcomes—of diabetes care. The new TRIAD study continues those objectives and will examine changes in quality of care during the past five years.

“Our purpose is to try to assist the CDC to identify interventions that may help people at high risk for diabetes make the right choices to help prevent the disease,” says Lasser, a preventive cardiologist. “One of the study’s primary components is to develop methods to identify people who do not yet have diabetes but are at high risk of developing it.”

TRIAD is the largest multicenter study of diabetes and factors affecting quality of care and quality of life for individuals with diabetes. It includes 12,000 patients who represent a wide cross-section of the U.S. population in terms of age, gender, ethnicity and socioeconomic factors.

The five other institutions involved in the study are the University of Michigan in Ann Arbor, the University of California in Los Angeles (UCLA), Pacific Health Research Institute in Honolulu, Kaiser Research Foundation Institute in Oakland, CA, and the Indiana University School of Medicine in Indianapolis. ●



It’s a Match

ON MARCH 18, THE CLASS OF 2004 at New Jersey Medical School (NJMS) got a glimpse into the future during annual National Resident Match Day. At this highly anticipated ceremony, students learn where they will begin their residencies upon graduation.

Match Day is part of the National Resident Matching Program, a Washington, D.C.-based organization that matches student requests—compiled in order of choice—to residency openings at hospitals. This year, more than 25,000 applicants participated in the match. More than 20,000 matches were made for 2004.

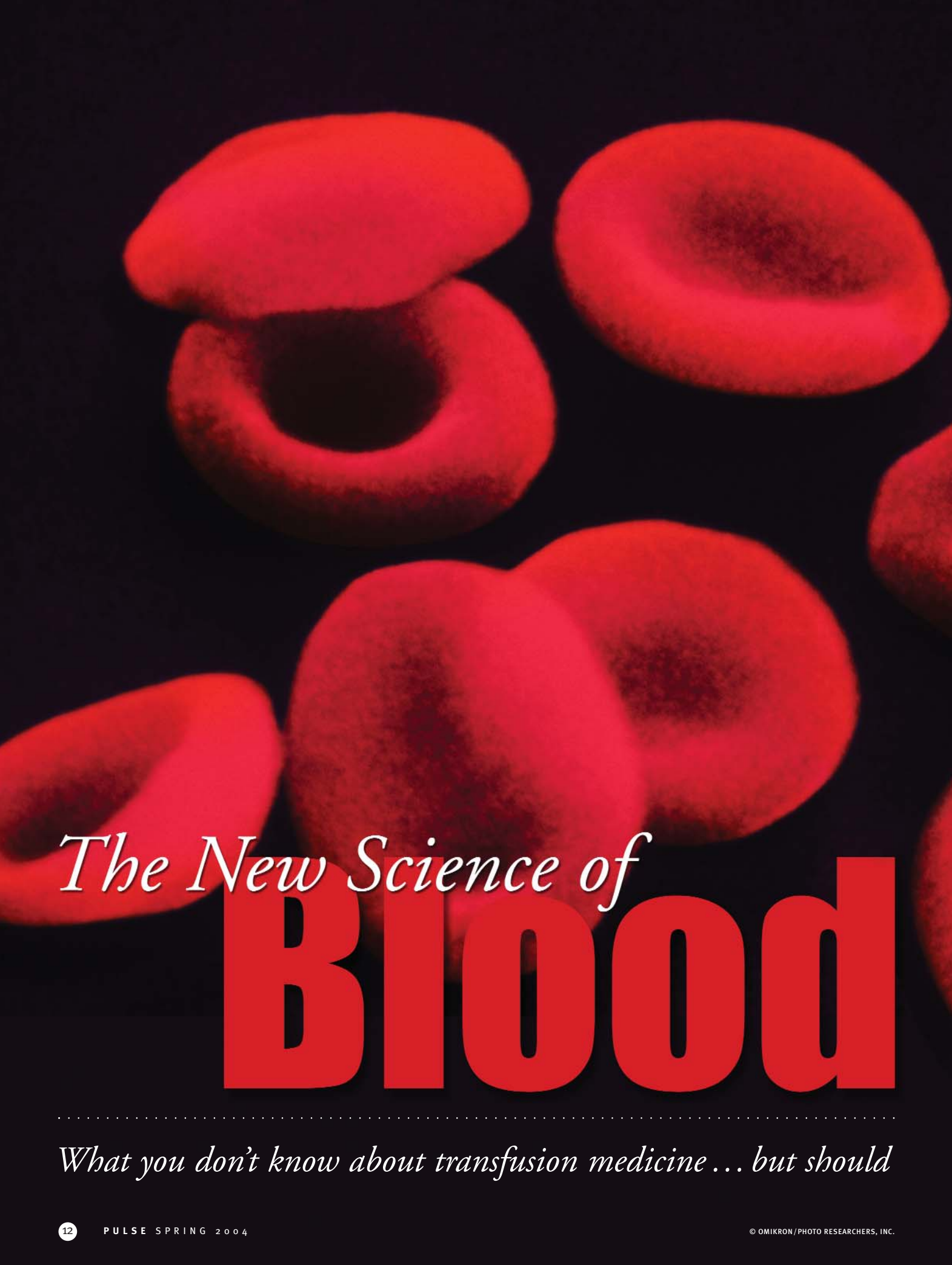
In terms of career choices, NJMS students are pursuing a broad range of specialties. Among the most popular are residencies in internal medicine, pediatrics and emergency medicine.

Approximately 20 percent of the class will enter residency programs at NJMS. In total, 90 percent of graduating students will remain close to home, taking on residencies in New York, New Jersey, Pennsylvania and Connecticut. Still other graduates will join programs as far away as California and Hawaii.

Some of the out-of-state institutions where this year’s graduates “matched” include: Massachusetts General Hospital, NYU School of Medicine, Emory University School of Medicine, Hospital of the University of Pennsylvania, New York Hospital–Cornell, Yale–New Haven Hospital, Einstein/Montefiore Medical Center, Duke University Medical Center, University of Michigan Hospitals, Rhode Island Hospital/Brown University, Thomas Jefferson University, Miami Children’s Hospital, Baylor College of Medicine, Johns Hopkins Hospital, University of North Carolina Hospital, Memorial Sloan Kettering, New England Medical Center, University of Chicago Hospital and Beth Israel Deaconess Hospital. ●



Matthew Cuaycong '04



The New Science of
Blood

What you don't know about transfusion medicine ... but should



By Maryann B. Brinley

Edwin A. Deitch, MD, has a rubbery, round replica of a red blood cell (RBC) on his desk. It fits in the palm of the hand.

“In your bloodstream under normal circumstances as seen by electron microscopy, they are shaped like soft-sided donuts,” says this professor and chair of surgery at New Jersey Medical School (NJMS). “If you squeeze one part, other parts are pushed out in other directions.”

A simple squeeze demonstrates the property of deformability, which allows RBCs to adjust physically to the smallest capillaries in the body’s vascular network so they can bring oxygen to cells on their journey. After a traumatic shock, however, RBCs lose this nice resting shape, are no longer as versatile and degenerate into strange, crushed, odd-angled components.

“Look at them,” Deitch says, pulling out two photos of RBCs: one taken after 90 minutes of hemorrhagic shock and the second, after six hours. Not all, but many of the RBCs in both pictures are crenated spheres—with edges that are scalloped out and no longer smooth. “They can’t perform properly and get stuck in the small capillaries.” Deitch points out that decreased blood flow because of these circulatory jams contributes to the initial injury and can also lead to multiple organ failure. In the last 12 to 18 months, working with NJMS surgeon George W. Machiedo, MD, their team of researchers, both in Newark and the Soviet Union, have published four scientific papers describing this and other discoveries about the power of blood and the safety of the transfusion supply. (See “Breakthrough Research: What Sex, Storage and Leaking Lymph Ducts Have To Do With Blood,” page 15.)

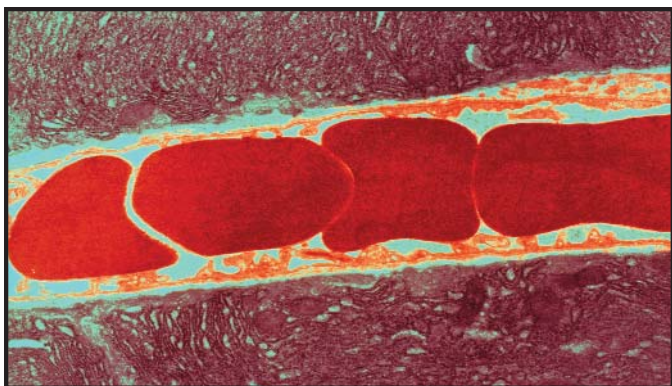
Yet, not all the discoveries are quite as dramatic in the new science of blood—an area of medicine not always understood by healthcare givers, according to Ranie Koshy, MD, director of University Hospital’s blood bank. In fact, as researchers like Deitch and Machiedo uncover new aspects of blood, there are points of controversy among transfusion specialists and physicians who depend upon a safe, available blood supply.

Understanding Transfusion Medicine

“Transfusion medicine is constantly evolving so there is room for misunderstanding. To ensure safety, quality and supply, everyone in the medical community needs to know about the intricacies of the blood bank,” Koshy says. Not only has science gone far beyond Karl Landsteiner’s 1901 discovery of different blood types which made transfusions safer, but researchers now also see chemical signatures and protein traces in the blood which are so individualistic that patterns and biomarkers could forewarn the arrival of a disease, long before symptoms appear. For instance, an ovarian cancer test will soon be able to identify a single protein antigen (CA-125) in the blood as a warning signal of danger ahead. Your blood, it turns out, may be idiosyncratically unique: a product of your life experiences as well as your genes.

A lot of regulatory guidance has gone into weighing and overcoming the risks of blood bound for transfusion before it arrives at the hospital. What’s been missing from this successful move toward safety in the last decade has been a focus on the blood after it reaches the hospital. Each year nationwide, 24 people die from receiving the wrong blood in a transfusion error. “That is the worst mistake,” according to Koshy, and one that is termed a “mistransfusion” on charts generated by blood bank-accrediting agencies like the American Association of Blood Banks or regulatory agencies such as the Food and Drug Administration (FDA) or the state of New Jersey. “We may want to think of regulatory requirements as a nuisance but staying in compliance keeps us all up to standards so we can avoid those mistakes.” In fact, the real threats to blood safety aren’t from HIV, hepatitis, Creutzfeldt Jakob disease (CJD) or

Color enhanced transmission electron micrograph (TEM) of red blood cells, or erythrocytes, in a capillary. Red blood cells are biconcave and highly elastic, enabling them to pass through narrow capillary vessels.



Ranie Koshy, MD (left) and Edwin A. Deitch, MD



West Nile virus. Because of improvements in eliminating questionable donors and the development of numerous serological tests to detect infectious diseases and pathogens present in blood, transfusion-transmitted infections have been virtually eliminated. The risk of contracting HIV from a blood donor is down from one in 100, where it stood scarily in 1984, to less than one in a million in 2002.

“Right now in transfusion medicine,” Koshy explains, “we are minimizing the possibility of human errors within the hospital setting and paying attention to risks that matter.” From the moment a patient’s blood sample is drawn, UH hospital personnel follow a lock-step system of checks and balances.

Steps to Safety

To understand how basic some of the current steps to safety are, put yourself in a patient’s position. You’ve just been admitted. A sample of your blood is being taken. Does the nurse or technician who is drawing that sample stay physically close by your side for the entire time? Are you asked detailed questions right there about your identity and medical history? Say your name out loud. Spell it correctly. Now in addition to the hospital ID you’ve already been issued, are you given a second wristband called a Typenex band to match you to your blood type? Is the Typenex label affixed onto your sample tubes which correlate to your ID band and become part of your permanent medical record? No mistakes are accepted. Even in a busy hospital or under a rushed emergency condition, hospital blood bank policy states that nurses, phlebotomists, technicians, attendings, residents and med students: “Stand right there. Don’t leave the patient until all steps and paperwork are complete. We make sure that everything—patient, medical record number, name of individual drawing the blood, requisition slip—absolutely everything is mistake-free before it comes to the blood bank to be entered into the computer. Issuing the wrong red blood cells for a patient could be fatal.” This type of insistence on routine management of patient, as well as donor blood, is essential and overseen by Koshy. The Transfusion Committee, chaired by Jonathan Harrison, MD, which includes representatives from

BREAKTHROUGH RESEARCH:

What Sex, Storage and Leaking Lymph Ducts Have to Do With Blood

A TEAM OF RESEARCHERS from the NJMS Department of Surgery, including Edwin Deitch, MD, George W. Machiedo, MD, and Zoltan Spolarics, PhD, as well as two Russian collaborators and nearly a dozen other scientists, have been exploring the underworld of one of the oldest mysteries in science: blood. What's in it? What does it do? How does it flow throughout the body? Even ancient Egyptians as far back as 2500 B.C. asked some of the same questions and came up clueless. Bloodletting was common then. Now, four recently published NJMS studies shed new light on blood's components and properties.

SEX. In *The American Journal of Surgery* (186, 540–546 [2003]), the team reported that female hormones in blood, especially estrogen, play an important role in protecting red blood cells (RBC) from damage by allowing them to hold their healthy shape after a major burn injury. While their subjects were rats (since damaged RBCs appear to contribute to organ injury in humans as well as animals), this study provides new evidence that female sex hormones may favorably influence the outcome of burns and other conditions associated with RBC dysfunction, such as shock and sepsis.

BLOOD STORAGE. Published in the *Journal of Surgical Research* (102, 6–12 [2002]), the researchers related, “Serious hemorrhagic disorders, including the decrease in RBC deformability secondary to shape abnormalities, acidosis, and the decrease in blood clotting, start at the second week of storage... Transfusion of packed RBCs older than seven days may contribute to hemorrhagic disorders in critically ill patients.” Since current blood bank policies allow RBCs up to 42 days old to be transfused, this is important news.

SHOCK. In the March 2003 issue of *Shock*, the researchers published their findings on the shape changes which transform RBCs during, after and sometimes irreversibly, as the result of a traumatic injury. As Deitch explains, “Rigid RBCs with altered geometry do not traverse the capillary network well and are therefore less efficient in delivering oxygen to tissues.”

LEAKING LYMPH DUCTS. The team also wrote an article which appeared in the 2003 edition of the *Journal of Surgical Research* (109, 51–56 [2003]), detailing how the lymphatic system allows dangerous factors produced during gut injury to reach the systemic circulation. According to Deitch, “What happens is that toxic factors from the intestines reach the bloodstream by traveling through the lymphatic vessels. This bad stuff changes the shape of the RBCs, and the now rigid RBCs cannot pass through the tiny capillaries and subsequently choke off blood supply to the organs. Interruption of lymph flow from the gut to the bloodstream by ligation of the main intestinal lymph duct” will prevent this damage. Stopping this dangerous lymph flow has worked successfully in models of burn injury, shock and pancreatitis. The researchers look forward to more investigations to determine whether “this strategy during the resuscitative period of trauma/hemorrhagic shock” to the abdomen will speed patients’ recoveries.



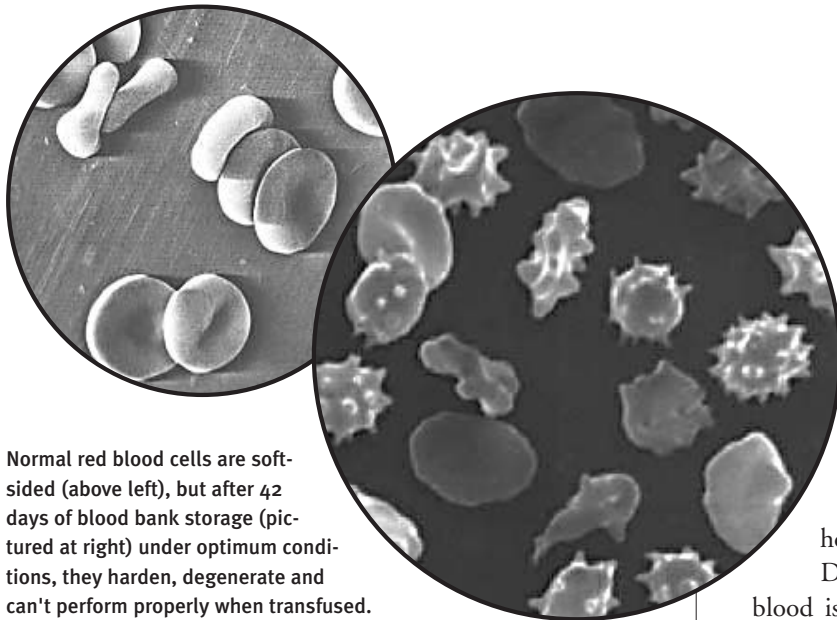
several UH departments, approves appropriate transfusion practices.

Under Koshy, the hospital has installed a semi-automatic blood typing and compatibility testing system with pre-printed identification labels for bar code reading. This improvement decreases the potential for human errors. She has also established continuing education for all personnel levels from registration clerks to attending surgeons. “It’s best not to be flexible in my situation,” she admits. If there is a single handwritten error or cross-out in the labeling, requisitioning or add-on changes anywhere in the records regarding a blood sample—on the tube, the ordering slip or in any documentation—the blood bank “will not accept that vial. I have to know that what I am issuing later is perfect. Two people check and recheck every-

thing.” Even when a blood product has eventually reached the operating room for possible transfusion, the exact name of the requested blood component must be read aloud and matched to the original order in a final check by two more people. There is nothing simple about a simple mistake in transfusion medicine.

Pneumatic Blood Highway

As construction on a new operating room proceeds, Koshy is asking that redesign plans include pneumatic tubes linking the blood bank to the new OR, and also the ER, the intensive care unit (ICU) and the cardiac care unit. A pneumatic tube system for sending blood quickly throughout the hospital would eliminate couriers carrying blood in emergencies. Theoretically and



Normal red blood cells are soft-sided (above left), but after 42 days of blood bank storage (pictured at right) under optimum conditions, they harden, degenerate and can't perform properly when transfused.

electronically, blood could be ordered, cross-matched for type and other compatibility factors, and then beamed pneumatically for immediate delivery.

Such a highway might also reassure physicians who feel compelled to requisition more blood for transfusion than they actually use. Just a single unit of unused blood can be wasted because when not utilized, reserved blood must wait 72 hours before going back into the supply. That hurts, according to Koshy, especially when the age of blood for safe transfusion is being questioned. As researchers under Deitch have discovered, abnormalities can develop in blood even when held in optimum storage. Challenging the inherent standard shelf life for RBCs—under refrigeration for up to 42 days after collection—Deitch says, “Looking at normal blood, just sitting in storage, the older it gets, the worse it looks and functions.”

Thrown into this question about aging blood's viability is the issue of spinning out white blood cells, or leukocytes, a natural component of blood. “After blood is collected as a unit from a donor, the supplier separates out the plasma, the platelets, the red blood cells and you've also got leukocytes, which remain in the red blood cells and are contaminants,” Koshy explains. They can create problems because they are phagocytes (cells that engulf foreign materials, removing common debris like pieces of degenerating tissue or bacteria). Leukocytes can produce pyrogens under storage conditions which will cause chills, fever and other symptoms when transfused into a patient. Phagocyte contamination also increases the risk of bacterial contamination. In fact, patients who must be chronically transfused and receive repeated doses of phagocytes will start generating HLA antibodies in their blood which can unleash problems with platelets and also be instrumental in transplant rejections. The big question is: Will filtering out these cells lead to a longer shelf life for blood? In Europe, where concerns about

blood safety reached a peak during a Mad Cow disease crisis, leukocytes are routinely separated from RBCs before every transfusion. Koshy believes, “While we don't have all of the theoretical background yet, giving leuko-reduced red blood cells to immune compromised patients, newborns or people who might be susceptible to bacteria or certain viruses, is one of the avenues our hospital takes to ensure not just safety but quality.”

Deitch is not so sure. The logic in leuko-reduced blood is there but the scientific proof has yet to be confirmed. “When you look at the data on leuko-reduced blood, there is no good clinical evidence that it improves outcome. Since this is a very expensive proposition, the jury is still out on it,” he says. In the meantime, while side-stepping the leukoreduction issue, Deitch and other surgeons routinely ask the blood bank for the freshest donor blood available or less than seven to 10 days on the shelf.

Recruited three years ago to head the bank, Koshy is passionate about the elementary changes she's overseen to eliminate hospital risks, as well as what innovations lie ahead. With a large hospital patient population of blood-needy trauma victims, high-risk maternity cases and a busy transplant program, she manages the dwindling supply, currently on critical shortage alert, by asking questions: “Is every transfusion indicated? Are we ordering too many tests? Is each unit of whole blood—plasma, red blood cells, platelets—being properly used?”

Those cries about shortages are real. “We are critically short of blood and one hundred percent dependent upon a steady core of altruistic donors, who, as a group, are fast becoming too old to give blood,” Koshy explains. In response, nationwide, regulatory agencies are currently addressing blood requisitions within hospitals. “The standard order for cross match to transfusion ratio should be less than two units ordered for every unit actually used.” This ratio goes up with extensive cross-matching, or testing multiple samples of a patient's blood for compatibility with multiple units of donor blood. Each step costs money and can take up to 45 minutes for technicians to complete. The good news is, “You don't have to do extended cross-matching if the patient's blood doesn't have any clinically significant antibodies,” she explains. The blood bank can spin a patient's plasma and donor cells together, watching for a reaction to predict compatibility and “be ready to issue blood in 10 minutes.”

continued on page 23

Facts Fuel Growth of Bloodless Medicine

BLOOD CONSERVATION MEASURES ARE IMPORTANT TO SOME PATIENTS for religious reasons and others who don't want to receive a blood transfusion. The University Center for Bloodless Surgery and Medicine at University Hospital (UH) has about 500 patients who express a preference for bloodless techniques every year. However, from a scientific perspective, the proliferation of bloodless programs—now about 100 in the United States—is based on more than patient preference: there are numerous physiological benefits to bloodless medicine and surgery.

More than 500 scientific articles support the benefits of the bloodless approach. That's impressive but not surprising to Michelle Thomas, RNC, BSN, the Center's coordinator, who's been with the UH program since its inception in 1997. Today, about 150 UH physicians representing more than 30 specialties have signed the Center's statement of commitment to bloodless medicine and surgery. "In practice, our experiences with Center patients have been similar to the conclusions reached by many studies that bloodless patients have fewer post-operative infections and a shorter hospital stay than people who receive transfusions," says Thomas.

Thomas says the results of a study by Lars G. Svensson, MD, PhD, reported in *The Annals of Thoracic Surgery* (74 (5) [2002] S1786–S1788), clearly demonstrate the advantages. In Svensson's study, 187 patients undergoing ascending and aortic arch procedures at the Cleveland Clinic were treated with blood conservation techniques, namely, autologous blood donation. Cell saver was used for all patients. Compared to the other 216 patients in the study, the bloodless subjects were intubated for a shorter period, a mean of 1.1 days compared to 3.3 days for the other patients. The bloodless group also had a shorter stay in the intensive care unit (2.4 days versus 4.4 days) and were released from the hospital sooner (8.0 day postoperative stay versus 9.6 days).

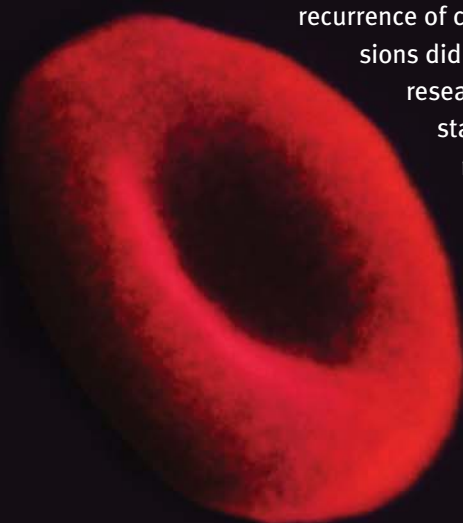
For three decades, scientific evidence that blood transfusion suppresses the body's immune system has grown, which bolsters support for the use of bloodless techniques. In the *Canadian Journal of Surgery* (44 (5) [2001] 355–358), orthopaedists reported on a retrospective study of 1,206 primary total hip replacement patients; 312 received homologous transfusions of packed red blood cells and 11 were given autologous transfusions. The remaining patients did not receive any transfusion. The researchers reviewed hospital records for indications of post-surgical urinary tract infection, sepsis, wound infection, pneumonia, cellulitis, bacterial enteritis or infected implant. Of the non-transfused patients, 8.4 percent developed infections, while among those who received homologous transfusion, 14 percent developed infections.

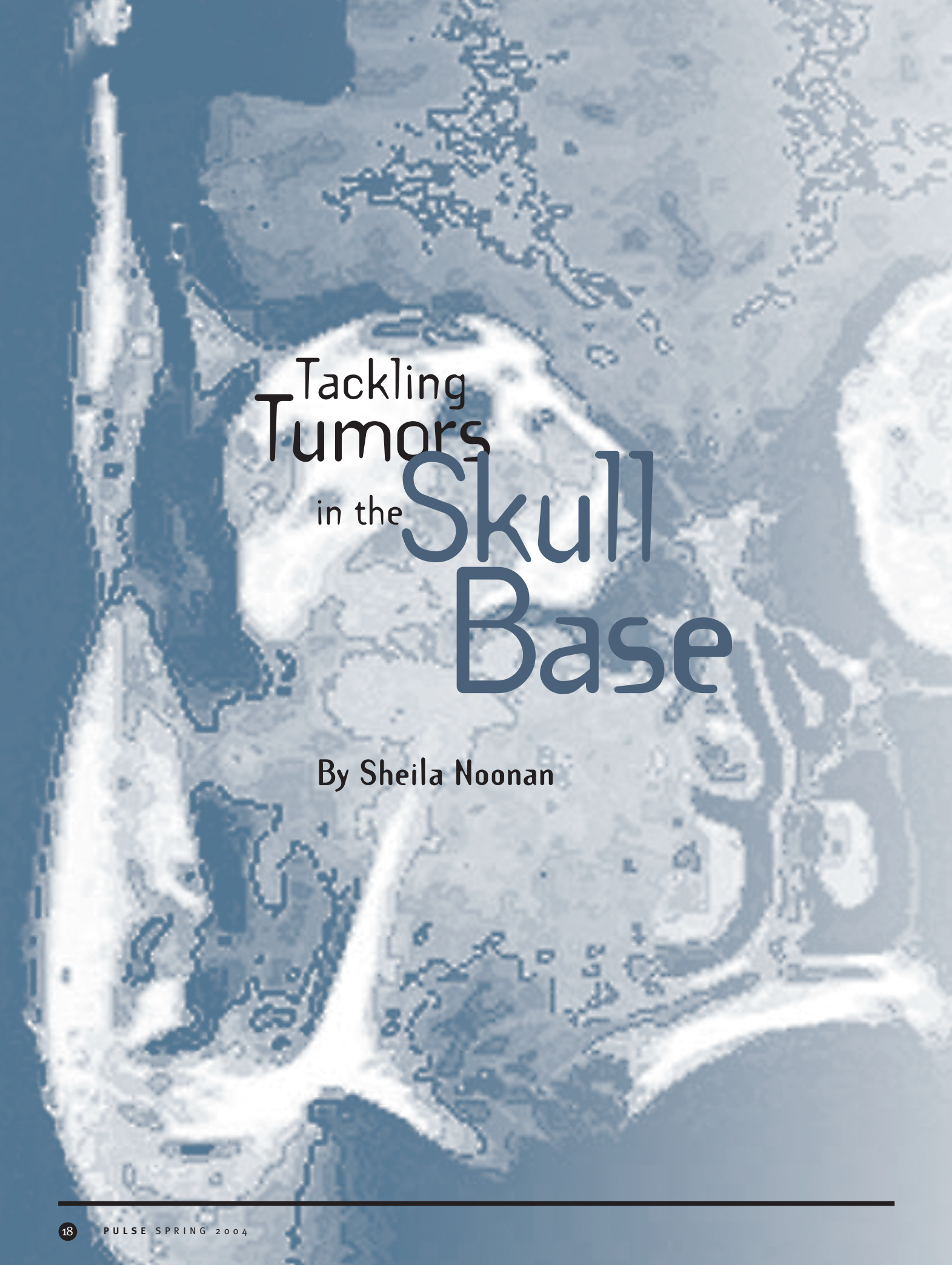
Some researchers believe that a suppressed immune system can lead not only to infection, but also to the recurrence of cancer. An Italian team found that stage 1 lung cancer patients who had blood transfusions did not fare as well as non-transfused patients. In *Chest* (124 [2003] 102–107), the researchers described their study of 281 patients who had undergone a lobectomy for stage 1 lung cancer: 73 months following the surgery, 53 percent of the patients who received transfusions were disease-free, as compared to 78 percent of patients who had not been transfused.

Research studies about blood transfusions and bloodless practices are ongoing. It's apparent that blood transfusions still have an important role in medicine, but one that has diminished for a variety of reasons. "In trauma cases where there's massive hemorrhage, blood transfusions can make a vast difference," says Thomas. "In many other areas of medicine, however, substantial evidence supporting bloodless procedures plus the chronic blood shortage in the United States add up to a new approach to the use of blood." —*Sheila Noonan*




Michelle Thomas, RNC, BSN





Tackling
Tumors
in the Skull
Base

By Sheila Noonan



DANIELLE WEEDO OF BELLEVILLE, NJ, was diagnosed with a schwannoma of the skull base at age 20. Like her mother, sister and 11 other relatives, she has neurofibromatosis, an autosomal dominant genetic condition that causes tumors to develop along the body's nerves. Although her tumor was benign, it had grown quite large. The tumor replaced much of her right maxilla, and extended to the posterior orbit, sphenoid sinus, infratemporal fossa and temporal lobe. She had a noticeable bulging of the right side of her face.

Among the 100,000 or so brain tumors diagnosed in the United States each year, about 5,000 fall into the category of skull-base tumors. Acoustic neuromas, meningiomas, pituitary adenomas, craniopharyngiomas and schwannomas are among the most common ones. While these tumors are generally benign and slow growing, they can become sizable, impinge on vital areas and sometimes cause significant problems, necessitating surgery.

The “geography” of the skull base, upon which the brain’s undersurface rests, consists of three main regions. Located above the eyes and the nose, the anterior region includes the olfactory bulbs, and cranial nerves that control movement of the eyeballs. The internal carotid artery and the cranial nerves involved with chewing and facial sensation, travel through the middle region; it is also where the cavernous sinus, an extremely difficult structure from which to remove tumors, is located. The posterior region is where the auditory canal and the lower cranial nerve are located; the jugular vein also passes through this region.

Every nerve carrying signals to and from the brain and every blood vessel carrying blood to and from the brain crosses the skull base. Until recently, tumors within this complex, bony region were difficult for surgeons to access safely, and the prognosis for patients was poor. But advances in technology and microsurgical and endoscopic techniques have dramatically increased the capacity to safely remove many of these tumors.

Intraoperative capabilities, whether image-guided surgery or intraoperative MRI, offer valuable information to the surgeon

in “real time” and can ensure that surgical goals are reached. “Being able to create three-dimensional, computer-generated images of the brain and map the patient’s brain and its ‘eloquent’ areas with functional MRI have revolutionized the way these surgeries are approached,” says Michael Schulder, MD, associate professor and vice chair of neurological surgery at New Jersey Medical School, and director of Image-Guided Neurosurgery at University Hospital.

In addition to new technology and techniques, the concept of a multidisciplinary surgical team to plan and perform these procedures has enhanced the success rate. “Skull-base surgery necessitates collaboration among otolaryngologists, neurosurgeons, ophthalmologists and plastic surgeons to remove the tumor, as well as preserve function and structural integrity,” says Soly Baredes, MD, chief of the division of otolaryngology-head and neck surgery at UH and associate professor of surgery at NJMS. The team also includes interventional radiologists, radiation oncologists, oral and maxillofacial surgeons, pathologists and other specialists.

Breaking Down Barriers

The team approach eliminates some of the barriers that specialists working individually face when treating skull-base tumors. The composition of the team varies, depending upon the nature and location of the tumor.

“Tumors in the skull-base region certainly don’t respect a specialist’s turf,” says Baredes. “We encounter a broad gamut of lesions, such as squamous cell carcinomas, salivary gland tumors, or even large skin tumors that work their way deep into the nose, that are best handled by surgeons from multiple disciplines.” From an otolaryngologist’s perspective, tumors within the skull base can affect critical sensory and motor nerves, and impact the ability to breathe through the nose, speak or swallow. The preservation of nerves and vital blood vessels that traverse the skull base is crucial to ensuring a successful outcome.

A high percentage of skull-base tumors also involve the eye. In fact, a change in vision is frequently the reason such patients seek treatment. The input of neuro-ophthalmologist and orbital surgeon Roger Turbin, MD, and Paul Langer, MD, who specializes in ophthalmic plastic surgery and orbital surgery, is pivotal. Both are assistant professors of ophthalmology at NJMS.

“Although we aren’t involved in every skull-base procedure, ophthalmology has an important role in the medical decision-making that occurs in these cases,” points out Turbin. “There are many important visual components that travel through the skull base, controlling sensory vision and eye movement.”

“Skull-base patients often need some type of ocular reconstructive surgery, such as repair to the eyelids or the tear ducts,

or reconstruction of the bones of the orbit,” adds Langer. “We try to do as much reconstructive work as we can at the time of the tumor removal, but sometimes further surgery is needed. Whenever possible, we perform these procedures with aesthetic considerations, placing incisions in non-obvious places.”

Another member of the skull-base team, Ramazi O. Datiashvili, MD, an assistant professor of surgery at NJMS, specializes in free-flap reconstruction, an intricate, microvascular technique that aids healing. “Once a tumor has been removed from the skull base, deep wounds remain that expose vital structures such as the brain, the sinuses, soft tissues, bones and muscles,” he explains. “To be protected, these structures need to be covered with well-vascularized tissues.”

During free-flap reconstruction, the plastic surgeon takes tissue from another part of the patient’s body, typically the back, abdomen, or forearm, and connects tiny vessels, providing blood supply to those tissues in the area left open by the tumor’s removal. Connecting tiny, often fragile blood vessels under a microscope and working through tissue that in some cases is inflamed due to previous radiation therapy requires meticulous work. And while these surgeries are lifesaving in nature, Datiashvili, like other members of the team, is dually focused on the patient’s quality of life.

“My number one goal is to help the patient to have a satisfactory life, and part of that is covering the wound and protecting vital structures,” he says. “Another part is making surgical decisions that, to the best of my ability, preserve the patient’s appearance.”

Axial and coronal MRI views showing trigeminal skull-base schwannoma involving the maxilla, orbit and infratemporal fossa, and extending intracranially.





Some members of the skull-base surgery team at University Hospital; left to right: Ramazi O. Datiashvili, MD, Soly Baredes, MD, Michael Schulder, MD, Paul Langer, MD, and Roger Turbin, MD.

A New Concept

Just as the concept of a skull-base team has evolved over the past two decades, so has the physicians' philosophy toward removing tumors and how such procedures affect a patient's ability to function. Surgeons are less willing to sacrifice the patient's speech and swallowing abilities, vision or other important functions for the goal of complete tumor removal. Other options, such as stereotactic radiosurgery and chemotherapy, are used to pursue remnants of tumors that cannot be safely accessed.

The desire to preserve function in skull-base patients raises questions that weren't necessarily asked 20 years ago. "Consider the patient who has a benign tumor in the cavernous sinus," says Turbin. "Without surgery, there's a chance that the tumor could cause double vision. With the surgery, double vision is almost certain. What's the best choice? If I were the patient, I'd want the tumor to be watched and retain my normal vision for as long as possible."

The Power of Teamwork

Danielle Weedo's tumor was evaluated by several members of the skull-base team. They believed that the tumor could be removed. However, one of the major risks was facial paralysis. It was a risk she was willing to take.

From a preoperative MRI, the surgical group determined that arterial embolization, a non-invasive method of blocking arteries, would be needed to help control bleeding during the surgery. Jeffrey Farkas, MD, chief of Interventional Neuroradiology at UH and an assistant professor of radiology at NJMS, compares embolization to "shutting off the water before repairing a leaky pipe."

"Embolization can be necessary for two main reasons," Farkas explains. "These tumors can be very vascular, with numerous tiny, fragile vessels leading into them. Or there can be a major blood vessel leading to the brain that is surrounded by or feeding into the tumor. Even a small amount of blood, when magnified 50 or 60 times, can be a big problem for a surgeon, and the last thing he needs is to stop the tumor resection to control bleeding."

Not every skull-base surgery patient needs embolization. For those who do, Farkas wants to ensure that these patients can withstand having blood vessels blocked off. One of the worst-case scenarios for a skull-base team is that the patient can't withstand the blockage during the operation, throws a blood clot



"Tumors in the skull-base region

certainly don't respect a specialist's turf. We encounter a broad gamut of lesions that are best handled by surgeons from multiple disciplines."

—Soly Baredes, MD

and has a stroke. So, under carefully monitored conditions prior to embolization, Farkas temporarily blocks blood flow with a balloon and gauges the patient's physiological response.

The day after Weedo's embolization, she underwent an 18-hour operation to remove the tumor. Schulder lifted Weedo's brain to access the right side of her face, and Baredes used what's known as a facial degloving approach—an incision under the lip and nose—to gain access to the tumor, combined with an infratemporal approach. "This technique helped preserve facial nerve function and did not require a facial incision," says Baredes. The tumor had also invaded the orbit, destroying the entire bone underneath Weedo's right eye. Langer removed this extension of the tumor, then reconstructed the entire floor of the right orbit to support the eye, preventing it from falling below the level of her other, normal eye.

The outcome was successful, with no facial paralysis, scarring or damage to her appearance. Weedo had lost some vision in her right eye due to the tumor, but the surgical procedure caused no further impairment.

Unfortunately, Weedo's condition is not curable. She has been diagnosed with several additional tumors since removal of the first, and underwent surgery to remove a meningioma in September 2003. She will require removal of two acoustic neuromas in the near future. For now, these are being monitored as they are not affecting her hearing or balance. However, she is able to live a near-normal life—due to a winning team's bold and expert initiatives. ●

THE SKULL-BASE SURGERY PROGRAM is an extension of the head and neck cancer program at UH, which is the largest such program in the state. Head and neck malignancies, including those found in the voice box, throat, mouth, salivary glands and sinuses, account for about 5 percent of all cancers nationwide, and 15 to 17 percent of all malignancies treated at UH.

NEW SCIENCE OF BLOOD

continued from page 16

Platelet science has also changed. Twenty years ago, a single transfusion of platelets (given to help blood clotting) was drawn from 10 different donors as platelet concentrates and pooled before transfusion in standard concentrations of 10. “You needed five to six platelet concentrates to make one adult therapeutic dose. Now we use only single donor platelets, so the patient is only exposed to one donor, not multiple. We don’t even carry concentrates of platelets any more.” On the near horizon, Koshy also sees an era of instant electronic cross-matching.

An End to Routine Transfusions

Second-guessing the necessity of every transfusion is logical because the procedure itself is no longer accepted as a routine life-saver. While you may not be in danger of getting HIV, transfusion reactions can include fever, chills and higher incidence of infection afterward, possibly brought on by leukocytes or perhaps your own antibodies responding to unknown antigens in donor blood. What researchers are also finding dangerous is a long-term suppression of the immune system, which appears to make multiply transfused patients more susceptible to subsequent illness, including cancer. It’s been demonstrated that tumors are more likely to grow back after blood transfusions. As more studies examine the body’s inflammation process and the complex molecular activity of cytokines (those immunoregulatory substances secreted by cells of the immune system), it turns out that a restrictive transfusion strategy is the safest route. Demanding that your blood accept numerous onslaughts of strange hemoglobin obviously calls for more than simple blood chemistry arithmetic or a matter of balancing types and factors. Myriad subgroups of as yet unidentified antigens in blood, combined with our natural response to fight foreign invasions, can create a complicated biochemical avalanche no one really wants.

To avoid unnecessary transfusions, UH is one of the few medical centers with a Center for Bloodless Surgery and

Medicine, supported by physicians in more than 30 specialties and under Deitch’s leadership. (See sidebar on page 17.)

Risky Business

Pulling out a chart on “The Evolution of Transfusion Risks,” Koshy runs her finger down the updated list, which underscores how times have changed for blood banks in the last decade. Among the high risks now is something that makes sense: bacterial contamination of platelets, an issue that also perfectly illustrates the dynamics of the risky balancing act of blood science. Consider these facts:

- Platelets lose their function quickly, after five days, even under optimum circumstances.
- Those optimum conditions? Storage at room temperature! No refrigeration. (Even a brown bag lunch might be in danger of growing bacteria in a similar situation.)
- Here’s the latest problem: the U.S. Food and Drug Administration (FDA) has just mandated that all platelets be tested for this bacterial contamination possibility, and only after being found free of contamination, can they be released for use.
- But testing can require a 24- to 48-hour cell culture step. So, by the time the product—which may have a three-day shelf life—is actually ready for release, it may have exceeded the five-day limit deemed safe by virtue of blood banking rules.
- A waste? Sure, and a costly one at that.

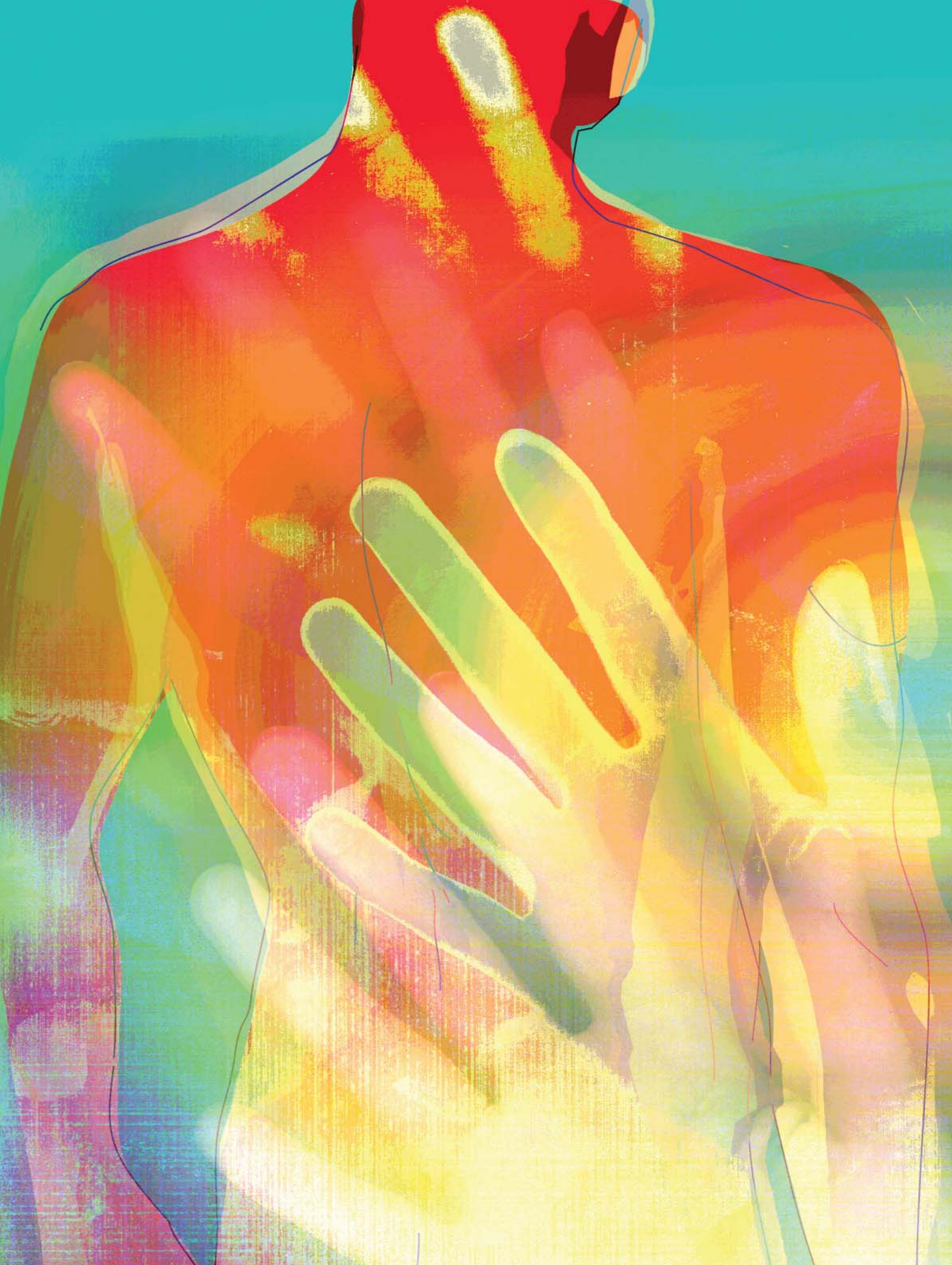
“This is a real struggle,” Koshy says. With each new required regulatory procedure to safeguard blood, each new biochemical screening process, every breakthrough or novel blood product designed to save lives, and every dramatic research finding about what is really in our blood, there are complicated questions and costs. RBCs can go from \$200 to \$1,000 a unit in some places.

To make matters worse, in New Jersey last winter, some blood banks operated with only one day’s supply on hand in a world where there are still situations when nothing but a blood transfusion will rescue a life. In the new science of blood, old rules may still apply: a single unit of your blood may save more than one life. Alas, as Koshy says, “This is just not like a McDonald’s restaurant where someone can place an order and the blood bank will always be able to fill it right away.” ●

Give Blood

THE UH BLOOD BANK NEEDS YOUR BLOOD.

“There should be no excuses,” says director Ranie Koshy, MD. Blood drives feature extended hours for busy staff and can even honor appointments to decrease waiting time. Yet, Koshy says, “Currently, we collect from less than one percent of UMDNJ employees and this would be even less if it weren’t for participation from medical and dental students.” Watch for signs on campus announcing the next drive and give blood.



by EVE JACOBS

Getting

THE AVERAGE ADULT HAS 18 TO 20 SQUARE FEET OF IT, weighing in at roughly six pounds. Covering the body much like a plate of armor, its importance to human health and well-being is irrefutable. Skin. Simplistically stated, it keeps germs and toxins out, organs and moisture in, and the body's temperature fairly constant.

The challenge of delivering medication across and through this shield without causing it irreversible damage is one that keeps more than a handful of scientists up at night. Bypassing the traditional route taken by pills and elixirs as they travel through the liver, gastrointestinal tract and stomach to ultimately arrive at a targeted site—often much diluted and weakened along the way—has enormous potential. Re-routing a majority of those medications through the skin seems to make a lot of sense.

Well, how about the tried and true route of injection, you might ask. According to drug delivery experts, “shots” are not going away soon, but the method is painful and cumbersome compared with other, newer modes of drug delivery. Patches, gels, creams, ointments, lotions and implants placed just under the skin will most likely take up the majority of shelf space in the medical arsenal of the near future. And that's where the talents and skills of NJMS investigator Bozena Michniak, PhD, come in. She is in the business of “better” drug delivery—greater potency, more directly delivered to the targeted site, quicker action, and less discomfort and pain.



Bozena Michniak, PhD (right), and an NJMS student examine a sample of laboratory grown human skin product.

Ask her how she ended up in this field, and she'll tell you that science has been a major interest since her earliest years growing up in England. Her vision of a career combining research and treating patients led her to first become a registered pharmacist, then matriculate in a doctoral program in pharmacology, where she was introduced to the world of clinical trials. During the three years of her PhD program, she participated in several human trials of antiperspirants—applied to the skin via patches—for Beecham Ltd, a division of Proctor and Gamble, and became fascinated with the intricacies of human skin and its reactions to chemicals.

After receiving her degree, she was recruited to work with Nicholas Bodor, PhD, professor of medicinal chemistry at the Center for Drug Discovery at the University of Florida at Gainesville, and Michniak's career took off. Bodor, a pioneer in the development of new methodologies for targeted drug delivery, has gained worldwide attention for his work devising “chemical disguises” for molecules usually denied entry to the brain. (The blood brain barrier successfully screens out chemical intruders, but also sets up a blockade against potentially beneficial medicines.) While there, Michniak became even more fascinated with the chemistry of dispatching medications through the skin to specific sites, and conducted research on how steroids could be modified to ease their entry into skin.

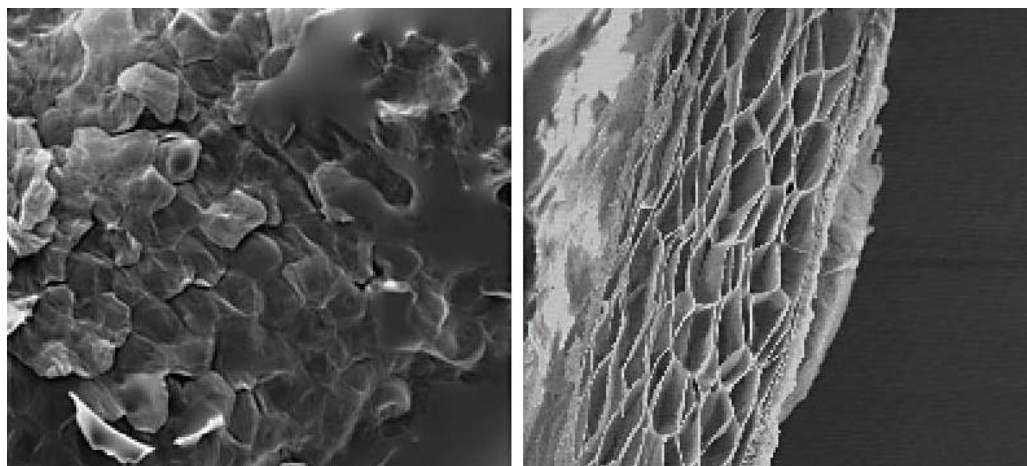
Michniak then returned to England for a number of years to work with Brian Barry, PhD, of the University of

Bradford, whose research and more than 350 publications are dedicated to *in vitro* and *in vivo* methods to measure, enhance and control the permeation of skin by drugs, and on water absorption and loss by the skin. She returned to the U.S. in 1986—this time to the University of South Carolina to head up the Transdermal/Topical Drug Delivery Laboratory—and concentrated on the development of a new artificial skin product. She was on the faculty of the College of Pharmacy for 14 years. In 2000, she was recruited to the home of the pharmaceutical industry—New Jersey—where she would be better positioned to move her research findings from “bench to bedside.”

As head of the Laboratory for Drug Delivery at the New Jersey Center for Biomaterials, Michniak points out that her interest in how to move medications effectively into the body paired with the Center's focus on developing new materials make for an excellent marriage. “For me, this is the right place to be,” she says. The Center's scientists team-up to develop the next generation of biomaterials and biomedical products for tissue repair and replacement, and the delivery of drugs. UMDNJ, Rutgers and NJIT are the major players in the research enterprise, with Stevens Institute of Technology and Princeton playing supporting roles. Michniak also heads up the Center's Industrial Membership program—there are 26 in-state and out-of-state members—which includes Avon Products, Inc.;

Electron Microscope Images of Human Skin

Left: Skin surface/5% oleic acid for 3 hours and iontophoresis for 24 hours. *Right:* Epidermis/5% oleic acid and iontophoresis for 24 hours.



Boston Scientific Corporation; Cordis, a Johnson & Johnson Company; DuPont Central Research and Development; Ethicon Worldwide; Integra LifeSciences Corporation; Medtronic, Inc.; and Merck & Company, Inc. The investigator is also chair of the Industrial Advisory Board of the Center for Military Biomaterials Research.

Artificial skin. Mimicking the human kind has long been a focus of science, but generally for burn repair and wound healing. Michniak's laboratory-grown human skin product (called Human Skin Equivalent or HSE-1) has potential uses for both wound healing, and for testing the ability of a particular drug to enter and be absorbed by the skin and its likelihood to cause irritation. The investigator, who is also an associate professor of pharmacology at New Jersey Medical School (NJMS) and a faculty member of Rutgers School of Pharmacy, says this bioengineered skin—which consists of a dermal layer containing human fibroblasts dispersed in a collagen matrix and an epidermal layer of “differentiated and stratified human keratinocytes”—has well-differentiated layers and a thickness much like human skin (10 to 15 microns), which makes it similar in permeability to human cadaver skin. The lab-grown product is used to test how well specific drugs enter it and what barriers exist to their entry, as well as for testing potential toxicity and inflammation.

“We are able to see how drugs permeate the skin without sacrificing animals—a huge benefit,” Michniak comments.

She says initial testing was done using hydrocortisones as a model drug, combined with several “dermal penetration enhancers,” agents that decrease barriers, thereby increasing the drug's absorption. Since initial testing, she says the product itself has been modified and improved and additional drugs have been used in testing: caffeine, 5-fluorouracil and triamcinolone acetonide, among others.

All skin is not equal, of course. It changes with age, with the individual and the area of the body, along with other factors. But with Michniak's bioengineered “equivalent” used as a model to screen how well a particular formulation permeates the skin and what barriers exist to its being absorbed, the natural correlative is to devise more effective formulations and methods to optimize absorption.

Michniak's lab has tested dozens of “chemical enhancers,” alone and in combination, which modify how drugs enter the skin. The enhancers can, in some cases, multiply a particular drug's penetration more than 100 times. Among the enhancers designed and tested by her team are “iminosulfuranes, pyrrolidinones and Azone (laurocapram analogues).” The group also



Students from NJMS, NJIT and Rutgers are part of the research team in the Laboratory for Drug Delivery at the N.J. Center for Biomaterials.

examines novel drug carriers such as liposomes and lipid complexes and polymeric micelles (unimolecular). Among her laboratory's recent major projects has been the development of a novel topical formulation for an antisense oligonucleotide developed by Isis Pharmaceuticals, Inc. for the treatment of psoriasis, which is now in clinical trials. The cream offers local treatment, which patients like, and the drug is safe and non-toxic to the body, she says. Her team's relationship with Isis “spanned eight to nine years, and was highly successful,” she comments.

Two other recent projects have focused on effective delivery of an anesthetic by patch and a vaginal cream for human papilloma virus (HPV) treatment.

So what's on the drawing board for the team? Certainly making drug delivery via the skin more effectual. High on their list is work for the U.S. Department of Defense. “The army is very interested in new biomaterials, drug and neutraceutical delivery and wound healing—areas where I have expertise,” says Michniak, who also places teaching the next generation of biomaterials scientists among her priorities. Her team includes students from NJMS, Rutgers and NJIT.

Transdermal and buccal patch development for quicker, more controlled drug delivery could certainly play a major role in keeping military personnel healthier, more alert and ultimately safer, she explains. And there's no doubt that discovering better ways to deliver medications to targeted spots in the human body has widespread applicability in peace time, too.

Asked what she hopes the future holds for her, Michniak says that she wants to do “more of what I'm now doing successfully.” She sees this “heartland of the pharmaceutical industry” offering a plethora of opportunities, and hopes that her laboratory will develop stronger ties with local drug companies. “My challenge,” she concludes, “is to figure out how to merge the best of our science and the state's industry in order to optimize the benefits New Jersey offers.” ●



Jeanne M. Ferrante, MD

The Atkins Diet Has Its Time Come?



IN THE UNITED STATES, 65 percent of adults are overweight (body mass index [BMI] > 25) with 31 percent obese (BMI > 30) and 5 percent severely obese (BMI > 40). Dieting is rampant in the United States, and diet books, especially ones touting low-carbohydrate diets, have sold more than 12 million copies in the past five years.

The most popular and most extreme of the low-carbohydrate diets is the Atkins diet, which limits all carbohydrates. Other popular ones, such as Sugar Busters, The Zone and the South Beach diet, are more moderate and focus on limiting the “bad” carbohydrates, or ones with a high glycemic index. These are carbohydrates that are absorbed quickly into the bloodstream after ingestion, causing high blood glucose levels and insulin responses. Examples of these are sweets and starchy foods, including white bread, white rice, corn flakes and potatoes.

First developed in 1972 by the late Dr. Robert Atkins, the Atkins diet is

very appealing to consumers because it permits them to eat unlimited amounts of meat, fish, eggs and some cheeses as long as they don't exceed the daily carbohydrate restriction (20 grams of carbohydrates per day for at least the first two weeks). Its premise is that carbohydrates stimulate the release of high levels of insulin, which leads to hunger, overeating, high triglycerides and obesity. Atkins claimed that when carbohydrate content is low, the fat takes a different metabolic pathway and burns fatty acids for fuel. This depletion of glycogen stores and release of ketones cause loss of water, reduced appetite and rapid weight loss in the first week.

However, the ketosis can also cause headaches, dizziness, fatigue, nausea and bad breath. Because of the large intake of proteins and fats in this diet, critics point to the potential long-term complications such as atherosclerosis and heart disease, development of kidney stones, progression of chronic renal insufficiency, development of osteoporosis from chronic metabolic acidosis, and increase in cancer risk from inadequate fiber, fruits and vegetables.

Long maligned by the medical establishment, the popularity of the Atkins diet and recent research on its efficacy and safety have forced physicians to reconsider. Three randomized clinical trials published in 2003 compared the efficacy of very low-carbohydrate diets to low-fat, calorie-restricted diets (conventional diets recommended by most medical organizations). Two studies followed participants for six months. The first one included only healthy obese women, while the second study included severely obese men and women with high prevalence of diabetes or metabolic syndrome (obesity, dyslipidemia, hypertension and glucose intolerance). In both studies, subjects in the low-

carbohydrate group lost more weight over the six-month period than those in the low-fat, calorie-restricted diet (about a nine pound difference). The third study followed obese healthy men and women for one year.

Like the first two studies, subjects on the low-carb diet lost significantly more weight than those on the low-calorie, low-fat diet at six months (an absolute difference of about eight pounds). However, by 12 months there was no significant difference, due to greater regain in the low-carb group. Importantly, there was no significant difference in blood pressure, total cholesterol or LDL between the low-carbohydrate group and low-fat group in these trials. Two studies reported improved triglycerides in the low-carbohydrate group, one reported an increase in HDL, and one reported improved glucose levels and insulin sensitivity in the low-carbohydrate group. Whether this translates to decreased cardiovascular disease is not yet known.

Diets high in protein are known to deteriorate renal function in patients with severe kidney disease, but little is known about its effect on normal kidneys. None of the above trials assessed kidney function. A recent observational study analyzing data from the Nurse's Health Study evaluated the effect of a high-protein diet on renal function over 11 years. While renal function remained stable in women with normal kidney function and high-protein (87–164 g/day) consumption, women with mild renal insufficiency on high-protein diets were more than three times as likely to have a 20 percent decline in kidney function compared with those on low-protein diets. There is also concern that



Long maligned by the medical establishment, the popularity of the Atkins diet and recent research on its efficacy and safety have forced physicians to reconsider.

ketogenic diets may confer increased risk of kidney stones due to increased urine citrate and urine calcium levels. Children on ketogenic diets for the prevention of seizures have had increased rates of kidney stones. Whether this risk occurs in adults has not yet been shown. Other unanswered questions are the long-term effect of ketogenic diets on bone mineral density or cancer risk.

Advocates claim that people on the Atkins diet lose weight more quickly in the initial stages of the ketogenic diet, and that gives them incentive to continue to diet. Most initial weight reduction from low-carbohydrate diets is from water loss rather than fat. People who remain on these diets also lose weight

because the diet restricts carbohydrate calories such as fruits, vegetables, breads, cereals and legumes. By eliminating so many foods from the diet, caloric intake is reduced, resulting in a negative calorie balance and weight loss. However, it is very difficult to maintain a very restricted high-protein, low-carbohydrate diet long-term. In the randomized clinical trials, dropout rates were as high as 40 percent. Most people “cheat,” modify their diets, and gain back the weight they have lost, as shown in the trial that lasted 12 months. The Atkins diet is also deficient in the recommended daily intakes of fiber, vitamins and minerals.

The low-carbohydrate diet appears effective for weight loss over six months and safe in regard to lipid levels over 12 months, but longer term studies, especially ones evaluating the effect of these diets on cardiovascular disease, renal function, osteoporosis and cancer are lacking. It is also very difficult to maintain the very restricted high-protein, low-carbohydrate Atkins diet long-term. It may be more prudent to recommend the more moderate low-carbohydrate diets that may be easier to adhere to long-term. The best diet to recommend for health is probably the Mediterranean diet, which is low in saturated fat and simple carbohydrates, and high in vegetables, whole grains, legumes, fruits, nuts, fish and olive oil. There is no magic combination of carbohydrates versus protein versus fat for weight loss. Effective weight loss requires the combination of motivation, physical activity and restriction of calories with lifelong adherence. ●

Jeanne Ferrante, MD, is associate professor of family medicine at NJMS.



Francis R. Patterson, MD

Assistant Professor, Department of Orthopaedic Surgery, Division of Musculoskeletal Oncology



Evaluation and Management of Soft Tissue Masses

A CHALLENGE TO ALL PHYSICIANS is keeping current in an environment of constant change. There is more information available, but less time to read it. So, to ease the burden, each issue of *NJMS Pulse* will offer a CME module by a notable NJMS specialist/researcher.

If you would like credit for this course, or just want to finish reading the article, go to the online address on the bottom of page 31. The purpose of this program is to review how primary care physicians and specialists can collaborate to identify soft tissue masses and determine appropriate treatment.

Overall Learning Objectives

- ▶ To learn how to properly evaluate patients with soft tissue masses of the extremities and proximal limb girdles;
- ▶ To identify masses clinically that may be aggressive or malignant neoplasms requiring further imaging and possibly biopsy;
- ▶ To describe masses that are unlikely to be aggressive or malignant neoplasms and may require clinical surveillance only;
- ▶ To learn to recognize the clinical characteristics of masses that should be referred to sarcoma specialists for evaluation and proper treatment.

Accreditation The UMDNJ–Center for Continuing and Outreach Education (UMDNJ–CCOE) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education (CME) for physicians.

Disclosure In accordance with the disclosure policies of UMDNJ and to conform with ACCME and FDA guidelines, all program faculty are required to disclose to the activity participants;

1) the existence of any financial interest or other relationship with the manufacturer of any commercial product or provider of commercial services that relates to the content of their presentation material; or commercial contributors of this activity that could be perceived as a real or apparent conflict of interest.

2) the identification of a commercial product that is unlabeled to use or an investigational use of a product or device that is not yet approved.

Francis R. Patterson, MD, reported no significant relationships. ●

Physicians frequently encounter patients complaining of a “lump” or mass of the extremities or trunk. Although soft tissue malignancies are rare, these complaints should not be minimized by physicians with promises to “keep an eye on it” or with attempts to placate the patient with reassurances that “it’s probably benign.” The evaluation of soft tissue masses, instead, should follow a logical and persistent course to provide appropriate treatment for these patients and to prevent delayed and missed diagnoses that can lead to worsened outcomes and medical-legal issues. The guidelines for evaluation are relatively straightforward and should be followed for all soft tissue masses.

“Soft tissue tumors” are defined as those tumors that arise from mesenchymal extra-skeletal tissue of the extremities and trunk (Fig. 1a, 1b). By definition, this group includes tumors of skeletal muscle, fat, fibrous tissue, and the blood vessels supplying these tissues. Nerve sheath tumors, although they arise from a different embryological origin, are often included in this group

since they have a similar presentation and anatomic distribution and their treatment follows similar principles.

EMBRYOLOGY

The human body and its tissues are derived from three embryological layers; the endoderm, mesoderm and ectoderm. While carcinomas arise from solid organs (endoderm) or skin (ectoderm), most benign soft tissue tumors and most sarcomas arise from the mesoderm. This accounts for their location in the extremities and for the varied tissue types from which they arise. They include benign tumors from adipose tissue (lipomas) or from vascular tissue (hemangiomas), as well as malignant tumors of skeletal muscle (rhabdomyosarcoma) and poorly-differentiated mesenchymal tumors that are difficult to categorize.

CLASSIFICATION

Soft tissue tumors are classified by their histo-genetic origin, typically evident by the adult tissue that they most closely resemble. Extensive classification tables have arisen that include sub-categories of tumors of fibrous tissue, fibro-histiocytic tumors, adipose tissue, muscle tissue, tumors of blood vessels, synovial tissue, mesothelial tissue, peripheral nerve tissue, autonomic ganglia tissue and even soft tissue cartilage and bone tumors. Attempts at defining the behavior of each as benign or malignant are also made. Benign tumors are those that are felt to be slow-growing and minimally invasive and are not capable of regional or distant metastases. Malignant soft tissue tumors (sarcomas), conversely, are locally infiltrative and destructive, and are capable of metastasis, usually leading to death. There are, however, tumors that are of uncertain

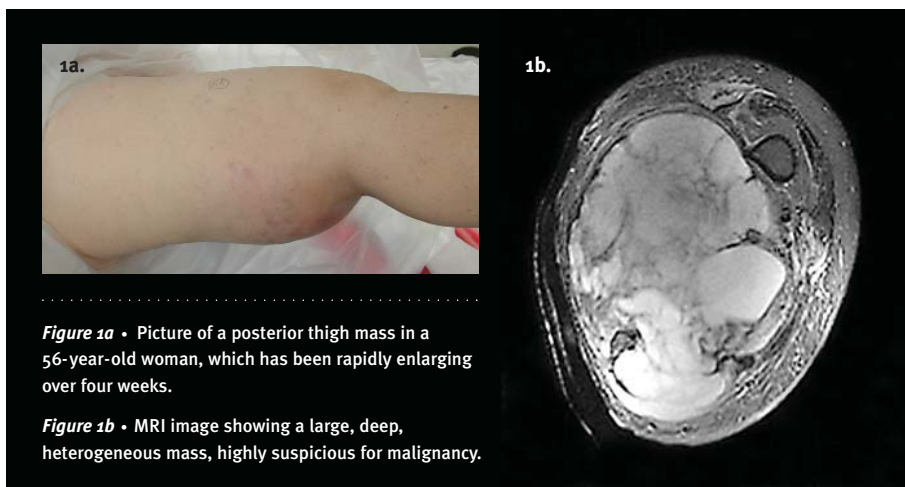


Figure 1a • Picture of a posterior thigh mass in a 56-year-old woman, which has been rapidly enlarging over four weeks.

Figure 1b • MRI image showing a large, deep, heterogeneous mass, highly suspicious for malignancy.

histologic origin as well as those whose biological activity blurs the line of distinction between benign and malignant.

EPIDEMIOLOGY

The true incidence of soft tissue tumors is difficult to determine since most benign masses are rarely brought to medical attention. It is felt that benign tumors outnumber malignant tumors by approximately 100 to 1. Soft tissue sarcomas are rare and are estimated at 6,000–7,000 annually in the United States compared to >150,000 cases of lung cancer or breast cancer annually. Extremity sarcomas account for approximately half of all sarcomas, with the rest occurring in the trunk, abdomen, retroperitoneum, and head and neck. The thigh is by far the most common site.

ETIOLOGY

Relatively little is known regarding the pathogenesis of soft tissue tumors. The minority of these tumors can be attributed to such genetic conditions as the autosomal dominant neurofibromatosis or polyposis coli. The Li-Fraumeni family cancer syndrome is a rare pattern in which there is an increased incidence of sarcomas, carcinomas and other neoplasms characterized by a particularly

high frequency of breast cancer in the mothers of children with sarcomas. There are also a number of benign soft tissue tumors, including lipomas, that can occur in unusually high frequency in families, though the exact etiology or pattern of inheritance for most of these has not been determined.

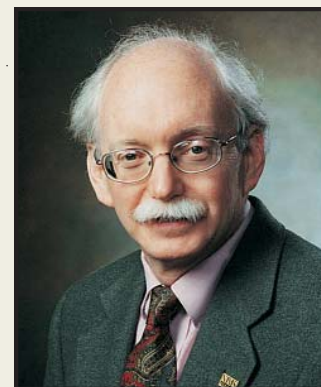
Post-radiation sarcomas have been well documented, most commonly after the treatment of Hodgkin's disease or breast carcinoma, though the incidence of these sarcomas in soft tissues is less than that of bone. Chronic lymphedema has been shown to be a risk factor for the development of lymphangiosarcoma. Rarely, certain chemical exposures have been related to the development of soft tissue sarcomas. The incidence of a trauma to the region as a risk factor for the later development of a tumor is an often suggested concept, but there currently exists little evidence to support this hypothesis. Individual reports of sarcomas developing in previous scars or burns exist, but for the most part, the vast majority of benign tumors and sarcomas occur sporadically and without any currently explainable reason.



To finish reading the article and/or take the test, log on to http://ccoe.umdj.edu/ccoe/online_learning.html

John Katz, MD'75

A Message to Alumni



ON BEHALF OF THE ALUMNI ASSOCIATION, I extend a heartfelt thank you to all NJMS alumni who have so generously supported the Annual Fund. Their gifts have been of great help in supporting our future physicians.

Spring is the usual time to draw the year's academic activities to a close. It is also the time to look back at the achievements of NJMS students and review their applications for scholarships. The Scholarship Committee painstakingly reviews all applicants to determine who meets the criteria for an Alumni Association scholarship. Academic standing, financial need and involvement in school and community activities are all considered.

This year, the Alumni Association was proud to award more than \$154,000 to 119 deserving students! In addition, five students received summer research stipends and five others participated in international health electives. ●

These New Jersey Medical School Endowed Scholarship donors have shown their support of the future physicians of New Jersey Medical School by donating \$25,000 to ensure that their scholarships will be awarded in perpetuity:

Elizabeth Alger, MD'64
Anonymous
David Dines, MD'74
Joseph V. DiTrolio, MD'79
Gerard Hansen, MD'62
George F. Heinrich, MD'72
Marc Maiatico, MD'76
Gerard Malanga, MD'87
Patrick McGovern, Jr., MD'78
Susan Hagen Morrison, MD'81
Dennis G. O'Neill, MD'79
Richard Pozen, MD'74
Ida Ellen Schwab, MD'76
The New Jersey Medical School Alumni Association
Richard H. Wong, MD'79

Alumni and friends are invited to add their names to this growing list.

News of special interest to NJMS graduates



1



2



3



4



5



6



7



8

SCHOLARSHIP AWARDS DINNER, OCTOBER 21, 2003

1. The Scholarship in Honor of Professor A.K. Bhattacharya was presented to Neha Madhok'04 by A.K. Bhattacharya, MD'90.
2. Joseph A. Cannaliato, MD'63 presents the Vincent and Margaret Cannaliato Memorial Scholarship to Joseph P. Corallo, Jr.'04.
3. Robin S. Schroeder, MD'86 (top right) with family members and scholarship recipient Heather Jeney'05 (next to Dr. Schroeder).
4. Class Scholarship recipients, flanked by George F. Heinrich, MD'72 (left) and John W. Katz, MD'75 (right).
5. Courtney Smith'04 received the Joseph V. DiTrollo, Jr. Memorial Scholarship from Mrs. Marie DiTrollo and her son, Joseph V. DiTrollo, MD'79.
6. Named Scholarship recipients. At far left, Drs. Heinrich and Katz.
7. Pascale Jean-Louis'04 received the Dr. Rosemary Gellene'60 Memorial Scholarship from John W. Katz, MD'75 on behalf of the Alumni Association of NJMS.
8. Susan Hagen Morrison, MD'81 presents the Mary Ladanyi Hagen Memorial Scholarship to Sharen Galabi'04.

Susan Hagen Morrison, MD'81

From Newark to Haiti... and Back

by Mary Ann Littell



SUSAN MORRISON INHERITED TWO CHARACTERISTICS FROM HER MOTHER: an adventurous spirit and a commitment to helping others. Throughout her life, she has followed in her mother's footsteps, and it's led her in some pretty interesting directions.

Morrison's mother was a nurse and Navy officer. "She might have been a doctor, but in her time, girls didn't go to medical school," says Morrison. Her father, a Marine, fought at Iwo Jima. Her parents met in the service, and settled in New Jersey when their tour of duty was over. Morrison's mother worked in various Newark hospitals or as a private duty nurse, and raised her seven children. "I was always so

impressed by my mother's dedication and energy," she says. "She was a great role model."

The physician, a pediatrician who specializes in allergy, asthma and infectious diseases, did not set out to become a doctor. Following her mother's example, she went to nursing school at St. Vincent's Hospital in Greenwich Village. She later enrolled in New York University to get her PhD in psycholo-

gy, but soon realized it wasn't what she wanted. So she enrolled at NJMS.

Morrison received her medical degree in 1981, and did her residency at University Hospital, where she became interested in pediatrics. Her mentors were Drs. Richard Rapkin, Anthony Minnefor and James Oleske. "The dream team," she says with a laugh. "What great training I received!"

She later did a fellowship in infectious diseases at the hospital. It was the early 1980s, the dawn of the HIV epidemic. Oleske was one of the first pediatricians to recognize that the HIV epidemic was claiming infant lives. He says, "Sue Morrison was on the front lines of treating children with HIV. It was hard for her, and for all of us, to understand this disease that was killing so many children. Sue was devoted to



cares for these children. Remember, she was a nurse, with the tremendous skills that a nurse has.”

He adds that she was also a thoughtful researcher who understood the importance of clinical trials: “Before AZT came another antiretroviral drug, Ribavirin. It was not very effective, but it was all we had. Sue took on the responsibility of putting the initial group of children into the clinical trial.”

Morrison maintains a busy practice in Belleville, not far from where she grew up. But don’t get the impression she doesn’t venture far from home. Once a year, she organizes a medical mission and travels to Haiti to provide health-care to those who need it. The group, which includes physicians, nurses, and other volunteers, sets up a clinic in a rural part of the impoverished island.

The physician became involved with the plight of poor Haitians nine years ago, when a former priest from the island, Normand Vaieur, spoke to parishioners at St. Catherine’s, her church in Mountain Lakes. As a result of his moving message, her church and a church in the small village of Dame Marie formed a close bond, and a mission was launched. Since then, the trips have been an annual event.

Oleske points out that Morrison’s interest in helping the underserved in Haiti is no mere coincidence. “Outside of sub-Saharan Africa, Haiti has the worst epidemic of HIV in the western world. And it’s very close to us, right here in our own backyard.”

As a result of her frequent visits, Morrison has become well informed about the political situation in Haiti. Her trip this year coincided with a great deal of unrest, even talk of revolution. Americans in Haiti were advised to leave immediately, but that did not stop

“The real weapons of mass destruction are poverty, starvation and lack of opportunity,” Morrison says.
“So we try to do whatever we can to help.”

Morrison from going anyway, and even taking her 20-year-old daughter along. She says they weren’t frightened: “We knew the people we work with would look after us, and they did.”

Travel to Dame Marie is slow at best. The volunteers fly into Port au Prince, staying overnight. The next day, a small plane carries them to the town of Jereme, where they travel by jeep to Dame Marie.

Working from 7 in the morning until darkness sets in, they provide basic medical services to anyone in need. “People look forward to our arrival, and some travel very long distances for treatment,” says Morrison. Many patients are children who need vaccinations, deworming medications, vitamins and other basics taken for granted in the U.S. Others

have more serious health problems. For three years, a volunteer ophthalmologist from Utah, Dr. Philip Hale, came to Haiti and performed several procedures, including cataract surgery. Occasionally, patients are brought back to the U.S. for complex surgery that is beyond the scope of the volunteers.

“The real weapons of mass destruction are poverty, starvation and lack of opportunity,” she says. “So we try to do whatever we can to help.”

Conditions at the temporary clinic are far from optimal. For years the volunteers worked with no electricity or running water, but now they have electricity for a few hours each day. “Diagnostically, stethoscopes and

continued on page 37



Young Haitian patients with volunteers.

Career Night at NJMS



ON TUESDAY EVENING, MARCH 2, some 40 physicians in a myriad of specialties met informally with more than 100 students. It was a wonderful opportunity for students to speak with alumni and faculty about their professional experiences. The doctors discussed their residency programs, practice, chosen specialty and the changes they foresee in the practice of those specialties.

Career Night 2004 Volunteers

Hani Abujudeh, MD • *Radiology*
 Thomas Agesen, MD'97 • *Physical Medicine and Rehabilitation*
 S. Sultan Ahmed, MD • *Cardiology*
 David Alland, MD • *Infectious Diseases*
 Michelle Antonowicz, MD'96 • *Emergency Medicine*
 Joseph Apuzzio, MD'73 • *OB/GYN*
 John Bach, MD'76 • *Physical Medicine and Rehabilitation*
 Michael Banker, MD • *Cardiothoracic Surgery*
 Vincent Barba, MD'93 • *Internal Medicine/Hospitalist*
 Theodore Barrett, MD • *OB/GYN*
 Jacqueline Bartlett, MD • *Child Psychiatry and Pediatrics*
 Joseph Benevenia, MD'84 • *Orthopaedic Surgery*
 Katherine Benevenia, MD'84 • *Pediatric Emergency Medicine*
 Wayne Berberian, MD • *Orthopaedic Surgery—Foot and Ankle*
 Ashish Bhattacharya, MD'90 • *Plastic and Reconstructive Surgery*
 David Bleman, MD • *Director of Residency Training, Psychiatry*
 Barbara-Ann Britten, MD'97 • *Internal Medicine*
 Stephanie Brown, MD • *Medicine/Pediatrics*
 Joseph Cannaliato, MD'63 • *Pediatrics*
 S. Chokhavatia, MD • *Gastroenterology*
 Zaza Cohen, MD • *Pulmonary Medicine and Critical Care*
 Joseph V. DiTrolino, MD'79 • *Urology*
 Barry Esrig, MD • *Cardiothoracic Surgery*
 Patrick M. Foye, MD'89 • *Physical Medicine and Rehabilitation*
 Kathleen Francis, MD'89 • *Physical Medicine and Rehabilitation*
 Melissa Frederikse, MD • *Acute Hospital Settings*
 Sue Guo, MD • *Ophthalmology*
 Debra Heller, MD • *Anatomic Pathology*
 Michael Jaker, MD • *Internal Medicine*
 John W. Katz, MD'75 • *Anesthesiology*
 Steven Keller, PhD • *Psychiatry and Pathology*
 Cheryl Kennedy, MD • *Psychiatry*
 Kenneth Klein, MD • *Pathology*
 Paul Langer, MD • *Ophthalmic Plastic, Reconstructive and Orbital Surgery*

Steven Marcus, MD • *Pediatrics/Toxicology*
 Leonard Meggs, MD • *Nephrology*
 Eileen Moser, MD'87 • *Internal Medicine*
 James Oleske, MD'71 • *Pediatrics—HIV/AIDS*
 Ana Natale-Pereira, MD'96 • *Internal Medicine*
 Peter Pappas, MD • *Vascular Surgery*
 Sam Pappas, MD • *Internal Medicine*
 Richard Pelosi, MD'61 • *Neurological Surgery*
 Martin Polinsky, MD'74 • *Pediatrics*
 Huma Quraishi, MD • *Pediatric ENT*
 Maya Raghuvanshi, MD • *Endocrinology*
 Elizabeth Ramos, MD'96 • *Family Medicine*
 JoAnn Reteguiz, MD'83 • *Internal Medicine*
 Louis Rizio, MD'94 • *Orthopaedic Surgery—Sports*
 Natalie Roche, MD • *OB/GYN*
 Debbie Salas-Lopez, MD'96 • *Medicine*
 Robin Schroeder, MD'86 • *Alternate Careers—Assoc. Dean of Student Affairs*
 Ida Ellen Schwab, MD'76 • *OB/GYN*
 Keerti Sharma, MD • *Geriatrics*
 Mark Sterling, MD • *Gastroenterology*
 Steven Sun, MD'96 • *Alternate Careers—Pharmaceuticals*
 Kenneth Swan, MD • *Surgery*
 Shobhana Vora, MD • *Student Mental Health*
 Peter Wenger, MD'89 • *Preventive Medicine and Community Health, Epidemiology and Pediatric Infectious Diseases*
 Gerson Weiss, MD • *Chair, OB/GYN*
 Marco Zarbin, MD • *Chair, Ophthalmology*

Call for Photos

NJMS is celebrating its 50th anniversary. We are looking for photos and memorabilia dating from 1954 to the present to be loaned to the medical school for possible inclusion in a display or for publication. Please email or phone Carol Stavraka at stavraca@umdnj.edu or 973-972-4564.



Alumni Profile

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otoscopes are pretty much all we use,” says Morrison. “It’s medicine at its most basic.” While she does not speak French, her husband, an associate professor of biology at Rutgers, is fluent. He has traveled to Haiti as a volunteer on several missions. Their 23-year-old son has been on two missions, and their daughter, a college senior and pre-med major, on seven.

For the 51 weeks a year she’s not in Haiti, Morrison maintains her practice in Belleville and a satellite office in Denville. She does not practice general pediatrics. The majority of her patients are children and adults suffering from infectious diseases, allergies and asthma. “I start out seeing the children and end up treating the entire family,” she says.

Morrison attributes her success to the education she received at NJMS. Ten years ago, she showed her appreciation by endowing a scholarship in her mother’s name. Each October, the Mary

Ladanyi Hagen Scholarship is awarded to a female student who exemplifies scholarship and commitment. Last year it was awarded to Sharen Galabi’04.

An endowed scholarship requires a lump sum donation of \$25,000. The act of giving proved so gratifying that Morrison is now in the process of endowing another scholarship, this time in the name of a colleague, Giacomo

(Jack) Adessa (NJMS’71), who passed away in January at the age of 57. “He was a wonderful physician and friend,” she says. This scholarship will be awarded to a male student.

While Morrison started the fund, anyone can contribute to it. Alumni who want to make a donation can contact the NJMS Alumni Office at 973-972-6864 or njmsalum@umdnj.edu. ●

In My Opinion

By Joseph V. DiTrollo, MD’79

THESE TWO WORDS—GLOBALIZATION AND PRODUCTIVITY—don’t seem to go well together, but they are the two facts of life that define our future.

Globalization through modern technology has allowed countries with a lower cost of living to redefine work values here in the U.S. With the Internet, bank services, architecture, engineering and even medical services are a click away. Companies driven to compete and deliver a profit have been forced to reduce their largest expense, their employees. The cost of maintaining a work force in the U.S. has made it impossible to remain competitive. Between government regulations and union demands, most manufacturers have decided to produce abroad where environmental concerns don’t exist and human rights aren’t discussed.

One would think that greedy companies in search of profits were to blame, but in reality most executives would prefer to stay safe at home and not deal with long distance logistics. No, the driving force is the American consumer, who insists on paying the lowest possible prices, even if his neighbor has lost his job because of it. Those who remain employed are forced to compete by increasing productivity. It sounds innocent enough, until one looks at the toll it has taken on our lives and values. Working harder and longer for less money seems to be a way of life for most physicians and nobody seemed to care over the past 20 years. Now it has hit the financial world and the out-sourcing has been labeled the jobless recovery. There are no shortages of new jobs; it is just that none of them exist in the U.S.

At the time, buying a foreign car didn’t seem to affect anyone. And even today, imported medication at half the cost seems to be our right. Every time we remove another productive American from the payroll we slowly eat away the foundation of our economy. As a society, we have to provide a more employer-friendly environment. The drive for productivity can only do so much, and then something has to give, either emotionally or financially. This motivation has made us more competitive, but as physicians we are asked to pick up the pieces and put patients back together so they can continue to compete in a world in which fewer have the skills needed to succeed. Our standard of living will be impossible to maintain in the future unless there is a dramatic decrease in hard asset values. Time will tell. ●



THE 1960s

Vincent Oriente, MD'66, now retired for 11 years, lives on the Big Island of Hawaii during the winter.

James (Jay) Phelan, MD'68 will complete his recent stint on active duty with the Navy when he retires in January 2005, after 12 years.

THE 1970s

Frank H. Fish, MD'70, board-certified in internal medicine and cardiology, was recently honored with Virtua Health's Physician Recognition Award. It is presented to emerging physician leaders who demonstrate excellence in practicing medicine and have made significant contributions to Virtua Health, the largest healthcare provider in south Jersey, and the communities it serves.

Albert L. Ray, MD'70 is the Medical Director of Pain Medicine Solutions, LLC, in Pinecrest, FL.

Daniel Tartaglia, MD'71 retired in October 2003. He is currently in New Zealand working as a geriatric consultant.

Arthur J. Torre, MD'71 was honored as a "Lung Champion" at the American Lung Association's (ALA) "Breath of Spring Ball" in Bridgewater, NJ on March 20, 2004. Dr. Torre serves on the Board of Directors for the Northern Region ALA and is chairman of its Asthma Committee. He is also chairman of the Pediatric /Adult Asthma Coalition of NJ.

Paul P. Cusano, MD'72 was elected Distinguished Fellow, American Psychiatric Association. He is medical director of the Vantage Health Clinic in Englewood, NJ.

John Dove, son of Diane H. Landauer, MD'86



Michael (left) and Natalie Galan, children of Elizabeth Galan, MD'98



Thomas Dayspring, MD'72 addressed the Baylor College of Medicine Annual Conference on Women's Health in November 2003. His lecture topic was "The Effect of Gender on Lipoprotein and Vascular Pathology."

David M. Dines, MD'74 has been named president-elect of the American Shoulder and Elbow Society 2004. For the past few years he has also been the team physician for the United States Davis Cup Tennis Team and the US Open Tennis Tournament.

Carlyle A. Stewart, MD'77, MPH, was recently nominated and accepted as Fellow of the American College of Physicians.

Suzanne Atkin, MD'79 has been re-elected president of the UMDNJ-University Hospital (UH) medical staff. She was also awarded a \$61,000 grant from the Healthcare Foundation of NJ, Aventis Pharmaceuticals and the North Ward Center of Newark to support the Safe and Sound Sexual Awareness and Domestic Violence Center at UH. Her son Brian attends Emory University in Atlanta.

Andrew Freedman, MD'79, board-certified in sleep, internal and pulmonary medicine, has opened his second sleep lab in Somerset, NJ.

THE 1980s

Maria L. Soto-Greene, MD'80 was honored with the Charles L. Brown Award at the Annual Alumni Reunion Dinner on April 3 at the Sheraton Hotel in Parsippany, NJ. This award, established in memory of the first NJMS dean, is presented for outstanding contributions to the school and demonstration of high ideals traditional to the medical profession.

Linda M. Rimkunos, MD'81 was recently re-inducted as a Fellow of the American College of Emergency Physicians. In addition to doing clinical work and peer reviews for several journals, she is vice president of the Russell Sage College Alumni Association.

Luis Ernesto Rios, Jr., MD'82 writes that he is one-third finished with his MPH in Bioterrorism / Surveillance.

Daniel Smiley, MD'82, specializing in gastroenterology, is building an ambulatory surgical center for outpatient endoscopy. He has recently welcomed Dr. Salam Zakko, founder of the CT Gastroenterology Institute and professor at the University of Connecticut, to his practice.

IN MEMORIAM

The Alumni Association extends deepest sympathy to the families and friends of all our alumni who have passed away.

Giacomo Adessa, MD'71, passed away on January 17, 2004. He practiced pediatrics in Nutley, NJ, and is survived by his wife Lois.

Ignatius Bertola, MD'61, passed away on January 14, 2004.

Kenyon Brown Field, MD'74 passed away on February 6, 2004. He was a nephrologist in Jersey City, serving on the staffs of St. Francis Hospital and Christ Hospital.

Morris Green, MD'79 passed away on January 6 at his home in Montclair, NJ. Dr. Green was president of Geriatric Health Consultants and medical director at the Daughters of Miriam Center for the Aged in Clifton, NJ.

Anthony B. Minnefor, Sr., MD'63, of Morris Plains, NJ, passed away on December 5, 2003. He was chief of pediatrics and chairman of the Department of Pediatrics at St. Barnabas Medical Center, Livingston, former director of infectious diseases at St. Joseph's Hospital in Paterson and former director of medical education at St. Michael's Medical Center in Newark.



Paul Weissman, MD'82 is the director of the gastroenterology department at Jersey City Medical Center.

Diane H. Landauer, MD'86 sent a kindergarten class photo of her son John Dove (see p. 38). Dr. Landauer lives in North Garden, VA, and practices at Prompt Care in Charlottesville.

Philip Chaikin, PharmD, MD'87 is executive vice president for drug development at Kyowa Pharmaceuticals in Princeton, NJ.

Pamela M. Antoniuk, MD'88 has practiced as a plastic surgeon for eight years in Providence, RI, where she lives with her husband Stephen and two sons: Joseph, 6, and Jacob, 3.

THE 1990s

Minda Gold, MD'91 has opened a family medicine practice in Damariscotta, ME with two other family practitioners who also practice obstetrics.

Michele S. Grove, MD'95 and her husband Timothy Grove happily announce the arrival of their second child, Owen Thomas, born on September 5, 2003. They reside in Flemington, NJ, with Owen's big brother Connor.

Rohit Keswani, MD'96 has opened a new physical medicine and rehabilitation practice with fellow NJMS classmate Richard Bach, MD'96 (799 Bloomfield Ave., Suite 303, Verona, NJ).

Debbie Salas-Lopez, MD'96 was appointed chief of the Division of Academic Medicine, Geriatrics and Community Programs at NJMS and UMDNJ—University Hospital. She serves on the New Jersey Office of Minority and Multicultural Health Advisory Commission, the Governor's Hispanic Advisory Council and Senator Jon S. Corzine's Healthcare Taskforce. Her research interest is in access to healthcare for Latinos and other underserved minorities.

Homayoon M. Akbari, MD'97, PhD, a colorectal surgeon, has joined the Department of Surgery at Thomas Jefferson University Hospital in Philadelphia. He recently completed a fellowship at St. Luke's Roosevelt Hospital Center/Columbia University, NY. His research interests include studying the effects of hormone replacement therapy on anal sphincter function and transrectal and transanal ultrasound. His clinical interests include pelvic floor disease, laparoscopic colon surgery and fecal incontinence.

Debbie Salas-Lopez, MD'96



Homayoon M. Akbari, MD'97, PhD



Stay in Touch!

We'd like to hear from you. Mail this form to: Alumni Association of New Jersey Medical School, 185 S. Orange Avenue, P.O. Box 1709, MSB-B504, Newark, NJ 07101-1709. Photos are welcome. You can also send your news via e-mail to: njmsalum@umdnj.edu or fax us at (973) 972-2251.

Name		Graduation Year
Home Phone	Office	Fax
E-Mail Address		
Mailing Address		
What I Have Been Doing (enclose photos)		

I would like to be a representative for my class.

Please join the Alumni Association of New Jersey Medical School.

General Dues	\$50.00
Resident in Training	\$15.00
Lifetime Membership	\$1,000.00

Visit <http://njms.umdnj.edu/>, click on Alumni and Alumni Association and then Online Dues Payment to pay your dues online.

The Lifetime Membership is now being offered to our alumni as a means to perpetuate the goals of the Alumni Association and enable its members to sustain their support in a more meaningful way. All categories of membership will afford you the opportunity to keep connected with us. You will continue to receive all membership benefits, including *NJMS Pulse* magazine, information about upcoming events and reunions, and library privileges.

Elizabeth B. Galan, MD'98

resides in Torrington, CT, with husband Rob, son Michael, 4, and daughter Natalie, 2 (see p. 38).

Gregory Steinmetz, MD'98 plans to open a private family practice in Cranston, RI.

week international elective in Costa Rica. She will begin a cardiology fellowship in July 2004 at Emory University Hospital.

William Schafrank, MD'01 and wife Ludmila announce the birth of their first child, a son, Seraphim, on October 9, 2003.

THE 2000s

Gautam Malhotra, MD'01 is in the PMR residency program at NJMS and still continues to perform at the NJMS follies.

Julie Ramos, MD'01 is a third-year internal medicine resident at NYPH-Cornell Medical Center. In fall 2003 she worked in a low-income clinic and took a tropical medicine course as part of a six-

Justin Skripak, MD'01 will begin an allergy and immunology fellowship at Johns Hopkins Medical Center in July 2005.

Nicole L. Simone, MD'03 was awarded the Stanley S. Bergen, Jr., MD, Award of Excellence from NJMS. She has begun a residency in radiation oncology at the National Institutes of Health, Washington, D.C.

A Champion Off the Ice

SCOTT NADLER, DO, born, raised, and educated in the Garden State, and more recently launched into the international competitive figure skating arena, says he's a happy man. His wonderful smile confirms it—he loves what he does and wouldn't choose to do anything else.

A physiatrist and sports medicine director at New Jersey Medical School and University Hospital, a lifelong sports enthusiast and former wrestler, he's definitely got some winning strategies. On April 12, he was presented with the first Excellence in Sports Science and Medicine Award at the 2004 World Championships U.S. Team dinner in Dortmund, Germany, by U.S. Men's National Champion Johnny Weir.

It's a far jump from the world of academic medicine to that of competitive skating, but Nadler pulls it off flawlessly. He says that his research on low back pain in athletes was a natural bridge to his work with skaters.



"It's a common problem for skaters," he says. "They do a lot of jumping, bending backwards and extensions, and experience a lot of falls."

Five years ago, his assessment of the skaters' training programs turned up some major deficiencies, which he and the trainers worked to correct. Their ongoing fitness programs were not aimed at skater-specific activities, he explains. "We needed to focus on the strength of abdominal musculature and back muscles, balance and control, reproducing maneuvers in the gym setting that skaters do on the ice. We also wanted the skaters to work on overall body strength, since there is a correlation between total

Left: Skaters Judy Holmes, Michelle Kwan and Sasha Cohen with Scott Nadler

Right: Michelle Kwan with Scott Nadler



fitness and performance. And we want them to be more aware of their symptoms, so they can report them earlier."

In this "volunteer job," he treats skaters' injuries and illnesses during competitions, and assesses their ongoing problems and injuries. When he attended the Four Continents Championship in Beijing in February 2003, he recalls that medical facilities in China were marginal. But Nadler carries a 50-pound bag filled with all accepted medications, suture kits, the works, and is on the job from early morning until late at night.

When someone gets hurt during a competition, "it's always spur of the moment," he says. "You have to know when to back off and when to intervene. There's a lot of anxiety surrounding an injury—you always need to present a calm demeanor to an athlete."

Asked about the most common problems, he says "cuts that need immediate suturing, musculoskeletal injuries, fractures, asthma and other respiratory symptoms, and gastrointestinal problems such as food poisoning."

"To work with the highest level of athletes in a marquis sport is what I've always wanted to do. For me, to have achieved that goal is the greatest thing," Nadler says. "And to receive the award—to know that you've meant so much to an organization—is very humbling." ● —Eve Jacobs



Keep in Touch

Our faculty welcome your comments, suggestions and observations. We have provided email addresses for faculty members featured in this issue and have included patient referral contact information where appropriate. We look forward to hearing from you.

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Patient Referrals

Otolaryngology/Head and Neck Surgery: 973-226-3444

Orthopaedic Oncology: 973-972-2153

Physical Medicine and Rehabilitation/Sports Medicine: 973-972-2802

The University Center for Bloodless Surgery and Medicine: 888-253-5377

The Intraoperative Hyperthermic Peritoneal Perfusion (IHPP) Program: 973-972-5583

Institute of Ophthalmology and Visual Science: 973-972-2065

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Convocation 2004

