Students Teach Underserved Children to Read—in Addition to Providing Medical Care for the Parents

Few would disagree that studying and training to be a doctor make for one tough job.

That's what makes so remarkable the feat of an extraordinarily committed dozen students from Jefferson Medical College and the Jefferson College of Health Professions. Every week during the academic year, members of the group break from their studies to spend time teaching young underprivileged children at a North Philadelphia homeless shelter how to read.

"We saw the need for a literacy program as soon as we went to the shelter. We wanted to provide the kids with constructive activities while their mothers attended JeffHOPE's health clinic," explains Amy Zalcmann '02, who got the program going during her junior and senior years of medical school. It's one component of JeffHOPE for Kids, which in turn is a sister organization of JeffHOPE, the volunteer organization that students founded a decade ago to provide medical care to the underserved in Philadelphia.

In 2002-03 the literacy effort was led by Joshua Pahys '04 and Pete Vande Kappelle '03. Amy modestly admits: "I started the literacy program, but Josh and Pete grew it."

Focused yet unassuming, Amy was the only student reading to children during the academic year 2000-01. Gradually, other JMC and JCHP students joined, making about a dozen for 2001-02. Fortunately, the program complies with federal guidelines for work-study funding, so that it can be part of students' financial aid packages.

Every Monday evening, several students traveled to the Acts of the Apostles Church at 28th and Master Streets to teach children from ages two to 15 in the church basement—the site of a homeless shelter for about 160 women, men, and children who stay about nine months.

On a typical Monday, the Jefferson students spent some time in games with the children, then gradually peeled off in small groups or pairs for reading or word drills.

A one-on-one focus, the students have found, works best. After taking a half-hour to settle down a five-year-old who had thrown a tantrum, Caroline Weston '04 remarked, "These kids don't normally have a lot of one-on-one attention. So if you pay attention and show interest in them as individuals, they respond." After calming down, the boy quietly asked Ms. Weston, "Can we read now?"

Mr. Pahys echoed this experience. "Unfortunately, these children don't have a lot of focus or structure in their lives. We found that by separating them from the group, one or two will focus on one of us as they read or play a game with us. Out of the group, which can sometimes be chaotic, they are incredibly interested. They often literally cling to our legs, arms, or backs because they don't want to let go of us."

At the end, both tutors and pupils reluctantly turned to the task of cleaning up. Amy told the children, "We gotta go now. We've got to go and do our own reading."

Three days after receiving her MD degree at Jefferson's 178th Commencement in June 2002, Dr. Zalcmann was looking forward to her residency in pediatric neurology at the Children's Hospital of Philadelphia. "There is a definite connection," she says. "I've always been interested in the neurological side of child development. The shelter experience taught me things I could not have learned elsewhere."

This past year the program has grown even stronger, with many students involved—following in the tradition of JeffHOPE, which every

Below, Amy and Josh sort through donated books.

photos by Don Walker

year sparks enormous participation rates among JMC students.

"We're continuing to send students out each week to two or three of the shelters," Josh reports. "The students at the Village shelter in North Philadelphia are usually older and we have been able to help them with some SAT prep work, as well as tutoring in other school subjects. We have two students on staff who previously were employed by the Kaplan company which offers SAT prep courses, so they're working with the older students at the Village to help them prepare for that test.

"The ACTS shelter kids are mostly elementary school age, and our focus is reading and writing. We have had programs such as the book challenge (read a certain number of books, give a report, and a party is thrown at the end of the year with prizes given out to students who achieve their goals), a host of reading and writing games, and word Bingo for the younger kids. We also just completed a successful book drive for our little library at the ACTS shelter, which provided some much needed new material for the kids."

—adapted in part from a story by Vince Walsh

Keen Will Lead the College of Graduate Studies

Cell biologist James H. Keen PhD, Professor of Microbiology and Immunology and Associate Director of Jefferson's Kimmel Cancer Center, has been named Dean of the Jefferson College of Graduate Studies of Thomas Jefferson University. Dr. Keen succeeds Jussi Saukkonen MD, who is retiring.


Med. Media Serv.

Dr. Keen brings a stellar record of both research and academic experience to this position. His research has focused on the biochemistry and cell biology of membrane trafficking, a field that describes how materials are internalized by cells and targeted to specific intracellular destinations. The work has had direct impact on our understanding of the molecular mechanisms underlying diseases as diverse as atherosclerosis, cancer, and neurological dysfunctions. His laboratory currently is supported by three grants from the National Institutes of Health, which has continually funded his work since 1980. He will continue his research activities in addition to assuming the administrative responsibilities of the dean's office.

Among his many posts, Dr. Keen has been chair of predoctoral and postdoctoral training programs at the Kimmel Cancer Center since 1991, and director of the PhD graduate program in molecular pharmacology and structural biology in the College of Graduate Studies from 1991 to 1998.

On the national level, he has served on study sections for the NIH and the American Cancer Society, and has been a member of the NIH Board of Scientific Counselors on multiple occasions. He has been an editorial reviewer for such peer reviewed journals as *Cell, Science,* and *Nature*.

His articles have appeared in *Nature*, the *Proceedings of the National Academy of Sciences*, the *Journal of Cell Biology,* and *Cancer Research*. His work was featured as the cover article of the inaugural issue of the journal *Nature Cell Biology* in 1999.

Dr. Keen earned both his bachelor's degree and a PhD in biochemistry from Cornell University. He was a postdoctoral fellow at the NIH from 1977 to 1980.

McKenzie Named VP for Science Policy and Technology Transfer

Steven E. McKenzie MD PhD has been named to the newly created senior officer position of Vice President for Science Policy and Technology Transfer at Thomas Jefferson University. His appointment was announced by University President Paul C. Brucker MD.

Dr. McKenzie, Professor of Medicine and Pediatrics at Jefferson Medical College, currently is Director of Jefferson's Cardeza Foundation for Hematologic Research and the Division of Hematology, a position he has held since 2000. He was formerly based at the duPont Hospital for Children in Wilmington, where he was the laboratory head of hematology/oncology research and director of the molecular imaging core facility. He has been an attending physician in hematology at Thomas Jefferson University Hospital since 1996.

Dr. McKenzie has been an investigator on National Institutes of Health grants in which scientists use state-of-the-art microarray technology to watch patterns of gene expression, hoping to uncover the molecular signatures of how cancer and other diseases begin. He is supported by the National Heart, Lung, and Blood Institute for studies of platelet and blood clotting disorders. He and his group created the first authentic mouse models of major human blood platelet diseases.

Dr. McKenzie will continue his clinical and research activities at the Cardeza Foundation where his work includes collaboration with several faculty members to focus on bleeding and clotting disorders as well as vascular biology.

He has been a member of review committees for the National Cancer Institute and the National Heart, Lung, and Blood Institute. In addition to authoring numerous articles himself, he has been a reviewer for many journals, including *Proceedings of the National Academy of Sciences, Nature Biotechnology, The Journal of Clinical Investigation,* and *Blood*.

A Princeton graduate who earned his MD and his PhD in bioengineering from the University of Pennsylvania, Dr. McKenzie remains an Adjunct Professor of Chemical and Biomolecular Engineering at Penn. His training in hematology/oncology was at Children's Hospital of Philadelphia, and he was a faculty member at Penn before joining Jefferson as an Associate Professor in 1996.

Gerard Berry '75 Appointed Vice Dean for Research at the Medical College

Gerard T. Berry '75 has been appointed Vice Dean for Research at Jefferson Medical College, announced Dean Thomas Nasca '75.

Dr. Berry joins Jefferson from the Center for Genetic Research at the Children's National Medical Center in Washington, DC, where he was Chief of the Division of Metabolism and directed the Biochemical Genetics and Molecular Diagnostic Laboratory. He was also Professor of Pediatrics at George Washington University School of Medicine and Health Sciences.

"Dr. Berry has made seminal discoveries in disorders affecting children with disordered metabolism," Dr. Nasca notes. "He brings experience and insight that will benefit our faculty in basic research, as well as clinical studies that translate into direct benefit to patients."

After graduating in the same medical college class as Dr. Nasca, Dr. Berry completed a residency in pediatrics at Thomas Jefferson University Hospital, and clinical and research fellowships with the divisions of Biochemical Development and Molecular Diseases, and Endocrinology and Diabetes at the Children's Hospital of Philadelphia in 1981.

Prior to joining Children's National Medical Center in 2001, Dr. Berry was senior physician in the divisions of Endocrinology and Diabetes, and Human Genetics and Molecular Diseases at Children's Hospital. He was also Professor of Pediatrics at the University of Pennsylvania School of Medicine.

From 1995 to 2001, Dr. Berry served in the Division of Medical Genetics, Department of Medicine, at the Hospital of the University of Pennsylvania, and was a member of the Cell and Molecular Biology Graduate Group at the University of Pennsylvania.

Dr. Berry has been principal investigator for numerous National Institutes of Health and other research grants in pediatric metabolism, genetics, and diabetes. He is a member of the National Newborn Screening and Genetics Resource Center of the Genetics Advisory Committee. International societies in which he is active include the Society for the Study of Inborn Errors of Metabolism, for which he is the corresponding member for the United States, and the Society for Inherited Metabolic Disorders, of which he chairs the Newborn Screening Committee and is a member of the board of directors.

The author of numerous original papers, abstracts, and book chapters, Dr. Berry is also an ad hoc reviewer for numerous journals including the *Journal of Biological Chemistry, Journal of Clinical Investigation, Journal of Neurochemistry, Pediatrics, Annals of Neurology, Journal of the American Medical Association,* and *New England Journal of Medicine.* He is also Associate Editor of *Diabetes.*

Flomenberg to Direct the Division of Medical Oncology

Neal Flomenberg '76 has been appointed Director of the Division of Medical Oncology of the Department of Medicine, announced Arthur M. Feldman MD PhD, Magee Professor and Chair of the department. A Professor of Medicine at Jefferson, Dr. Flomenberg has been Acting Director of the division for more than a year.

The selection of Dr. Flomenberg culminates a year long national search, conducted with a professional search firm and an external advisor. Feldman said the national search had established several criteria for candidates: expertise in the field; an outstanding pedigree in terms of training; documented leadership experience; documented accomplishments in basic, translational, or clinical research; and a record of interdisciplinary collaboration.

"The search committee was able to identify a number of candidates who fit these criteria, and one individual stood out," said Dr. Feldman. "An AOA graduate of Jefferson who received his internal medicine training at Albert Einstein College of Medicine and his hematology/oncology training at Memorial Sloan-Kettering in New York; an accomplished investigator with over 100 publications; an outstanding track record of NCI funding; superb administrative experience with documented success in program building; and outstanding clinical and teaching skills. Fortunately for us, that individual was right here on campus—Dr. Neal Flomenberg.

"Although Dr. Flomenberg has much work ahead of him, the search committee and I are confident that Neal will help place Jefferson among the top clinical oncology programs in the nation," Dr. Feldman concluded.

Brucker to Retire After 14 Years as University President

At the annual meeting of the Board of Trustees in July, Paul C. Brucker MD, President of Thomas Jefferson University since 1990, announced his intention to retire, effective June 30, 2004. Announcing his decision now, Dr. Brucker noted, will allow the board to begin a deliberate and systematic search for a new president, and provide for an orderly transition.

Chairman of the Board of Trustees Douglas J. MacMaster Esq. stated that the board accepted Dr. Brucker's resignation with regret and that "the trustees are deeply appreciative for all that Dr. Brucker has accomplished academically, administratively, and financially to strengthen the university. TJU has prospered under his leadership, and we are fortunate that Dr. Brucker has agreed to serve as President Emeritus, so that the Jefferson community can draw upon his expertise and experience."

Also at the board's annual meeting, Mr. MacMaster announced his intention to step down as chair at the end of his term on December 31, 2003. The trustees nominated and enthusiastically elected Ben Burke Howell Esq. as Chair-elect to take office on January 1, 2004.

Dr. Brucker stated, "Since I began serving as President in 1990, I have been honored to have worked with an exceptional Board of Trustees, students, faculty, administrators, and alumni who have shared their talents and energy, particularly during an extremely critical and challenging period of Jefferson's history.

"I am proud of our efforts to reaffirm the university's mission," he continued, "and I have every confidence in the strength of my administrative colleagues, the dedication of our faculty and alumni, and the strong leadership and clear vision of our trustees that Thomas Jefferson University will continue its exceptional legacy."

Dr. Brucker came to Jefferson in 1973 as the first Alumni Professor and Chair of the Department of Family Medicine. His devotion to the Jefferson family and his desire to work collaboratively with members of the university community to build upon its long history and strong traditions encouraged him to pursue the presidency in 1990. "I thank all of my colleagues who have made this a most rewarding experience," Dr. Brucker said.

A search committee is being formed to review the responsibilities of the president, and create a timeline for a nationwide search.

Brucker and Asbell Honored by the Philadelphia County Medical Society

Paul C. Brucker MD, President of Thomas Jefferson University, received the Strittmatter Award, the highest honor of the Philadelphia County Medical Society, at its annual gala in June. Also honored was Sucha O. Asbell RO'71, who is Chair of Radiation Oncology at Albert Einstein Medical Center (a member of the Jefferson Health System). Dr. Asbell received the society's other major annual prize, the Cristol Award, which is given to a physician who has made a significant contribution to the society, furthering and enhancing its educational, scientific, and charitable goals, as well as the purposes of organized medicine.

Dr. Asbell did her internship and residency in radiation oncology at Thomas Jefferson University Hospital. She joined the Einstein staff 28 years ago, and has held the position of Chair of Radiation Oncology at Einstein for the last eight years. She has authored or coauthored more than 100 articles.

Dr. Asbell has been active in the Philadelphia County Medical Society since 1972, serving as chair of several committees including cancer control, public health, and medical studies. She has served on the PCMS Executive Committee and been a Delegate to the Pennsylvania Medical Society.

In addition, Dr. Asbell has served as Secretary of the American Society for Therapeutic Radiology and Oncology, and President of the Philadelphia Roentgen Ray Society. She was elected to be a delegate from the Pennsylvania Radiology Society to the national meetings of the American College of Radiology. She also serves on the Executive Committee of the Radiation Therapy Oncology Group (a national research group) and has done so for eight years. Locally, she served as President of the Philadelphia branch of the American Women's Medical Association and has served on the Cancer Regional Studies Review Committee of the National Caner Institute, Division of Extramural Activities, from 1983 to 1986. Dr. Asbell has received awards from the American Cancer Society, the Medical College of Pennsylvania, and the Women's Division of Israeli Bonds. Recently she won the American Association for Women Radiologists President's Award and the J. Stanley and Helene M. Cohen Research Award.

Combining Two Types of Radiation Therapy Improves the Treatment of Brain Cancer

Adding stereotactic radiosurgery after whole brain radiation therapy helps certain patients with cancer that has spread to the brain live longer, says a new study.

In as many as one-third of all patients with lung and breast cancers, the disease spreads to the brain, leaving few good options. The disease causes neurological problems, and many patients live only about four months. Chemotherapy has been relatively ineffective in shrinking tumors and improving quality of life. “It’s a substantial problem and progress in their management has been quite slow,” says Walter Curran Jr. MD, Professor and Chair of Radiation Oncology, and Clinical Director of Jefferson’s Kimmel Cancer Center. On the national level, Dr. Curran chairs the Radiation Therapy Oncology Group, a federally funded cancer clinical trials group which carries out multidisciplinary research nationwide and which conducted the study.

The standard treatment is two to three weeks of whole brain radiation, which helps improve neurological function and quality of life. Between 1996 and 2001, researchers at Jefferson Medical College and elsewhere randomly assigned 333 patients to receive either whole brain radiation therapy alone, or whole brain radiation therapy followed by stereotactic radiosurgery. The latter, used to treat benign tumors, entails delivering radiation to specific areas of the brain while sparing healthy tissue.

They found that patients with a single brain metastases who received radiosurgery immediately after whole brain radiation lived on average one to two months longer. Those with two or three brain metastases who had “good performance status” had some improvement in survival as well, says Dr. Curran. Those without a “good activity level” didn’t do as well. His team presented its results at the annual meeting of the American Society for Therapeutic Radiology and Oncology.

“It’s the first time any trial using nonoperative therapy has shown a survival advantage in these patients,” notes Dr. Curran. “We had no evidence whether or not using it at the time of diagnosis would be beneficial. The only time we’ve shown survival advantage before was surgical removal. Now, for the first time, something that is not an operation makes a difference.

“Intuitively, it makes sense,” he says. “Because this has been such a difficult group for which to change survival, we found it gratifying that we could show a positive result.” The researchers hope to be able to add medications to the treatment program to further improve survival.

Comprehensive Epilepsy Center Begins Landmark Study of Early Surgery

Jefferson's Comprehensive Epilepsy Center is currently enrolling participants in a landmark clinical research study of two standard therapies for treating epilepsy. It compare the ability of each to eliminate seizures and side effects as soon as possible, and to improve quality of life, for patients with mesial temporal lobe epilepsy, the most common form of epilepsy.

The Early Randomized Surgical Epilepsy Trial (ERSET), a nationwide study sponsored by the National Institute of Neurological Disorders and Stroke, will compare treatment with medications or surgery shortly after seizures become uncontrolled, to determine which is more effective. Jefferson is one of 19 centers participating in the study.

"It has been argued that early surgery for this syndrome may prevent the development of irreversible adverse psychological and social consequences and rescue patients from a lifetime of disability," explains Michael Sperling MD, Professor of Neurology and Director of the Comprehensive Epilepsy Center.

"But as early surgery has not been proven, this concept must now be put to the test. If proven to be true, it would have a profound impact on the treatment of a disorder that accounts for one-quarter to one-half of the burden of epilepsy in the United States," Dr. Sperling explains.

More than 2.3 million Americans have epilepsy, and it frequently affects children and young adults in the most critical years of their development. Medication is the most common treatment option, and surgery is often considered a last resort.

But at least 30 percent of individuals with epilepsy experience seizures that do not respond to medication. There are more than 20 antiepileptic medications, and specific therapies often depend on a patient’s seizure type and how long they have been having seizures. Surgery is typically offered to people who have had uncontrolled seizures for two years or more.

Many clinicians remain uncertain about when to offer surgery. The most current data available, which are from 1990, show that only 2,000 of the 100,000 eligible patients actually underwent the procedure despite the failure of medications to control their seizures. Surgery for mesial temporal lobe epilepsy involves the removal of a small amount of brain tissue that is the source of the person’s seizures. There have been reports, including one published in the August 2, 2001, issue of *The New England Journal of Medicine,* that claim that surgery is superior to the medical treatment of longstanding MTLE.

If determined eligible, participants in the new study will be randomly assigned to treatment by surgery with medication, or by medication only, and all will receive antiepileptic medications based on the best possible plan designed by epilepsy experts. After two years of follow-up, participants who received medication only will have the option to undergo surgery if they still experience seizures. Visit www.jefferson-hospital.org/epilepsy for more information.

Jefferson Educators Seek to Improve Physician Empathy

Medical education researchers at Jefferson are looking to educate physicians who can better relate to their patients and their experiences. Evidence indicates that a doctor's interpersonal skills and empathy are important factors in how well a patient fares.

To try to better understand patients' experiences and find ways to improve empathy among physicians, they have developed the Jefferson Scale of Physician Empathy. The scale asks students and physicians to rate their agreement or disagreement on a number of issues. For example, one item says: "Empathy is a therapeutic skill without which success in treatment is limited." Another one goes on: "It is difficult for me to view things from my patients' perspectives." The scale is the first to be developed to specifically measure empathy among medical students, physicians, and other health professionals in patient care situations.

Empathy, historically, has been difficult to measure, says Mohammadreza Hojat PhD, Research Professor of Psychiatry and Human Behavior, who helped develop the scale.

While knowledge and clinical skills are important, the personal qualities of the physician count for much as well, he says, particularly in evaluating overall physician performance. "Professionalism in medicine includes compassionate care, and physicians should be trained to provide such care," Dr. Hojat says. "One component is empathy. It should be measured to find out which physicians may need more of it, and how to improve it among medical students and physicians."

Dr. Hojat and his colleagues have already published several studies in which the scale was used in samples of medical students, residents, practicing physicians, nurse practitioners, and registered nurses. They summarized their research findings in May in the inaugural issue of *Seminars in Integrative Medicine.* The group found, among other things, a drop in empathy among third year medical students at the end of the academic year when compared to the beginning.

Co-author Sal Mangione MD, Clinical Associate Professor of Medicine, suggests a number of reasons, none of which may explain fully why such a drop was seen.

"There is a general awareness that something makes us jaded—maybe from a combination of a need to shield ourselves from pain and suffering to the nature and intensity of medical training, which is sometimes dehumanizing," says Dr. Mangione.

Still, losing some sense of empathy may not necessarily be a bad thing. It may allow students and physicians to better cope with some situations they may encounter, notes co-author Joseph S. Gonnella MD, Emeritus Dean and Distinguished Professor of Medicine at Jefferson Medical College.

Dr. Mangione isn't sure that teaching empathy—if indeed empathy can be "taught"—is necessarily neglected in medical schools. He says that the medical system itself is what has gone awry. It's difficult today to be a physician with sufficient autonomy, given the restrictions placed by insurance companies.

"Physicians aren't dealing with patients, but rather, with a system that is between the patient and the doctor," he says. "There's less of a direct relationship now. Doctors spend less time with patients than they have in the past." As a result, "some people may perceive us as not caring."

Many medical school programs around the country are trying to develop ways to teach empathy, he says. The most successful ways seem to involve student role-playing to get a better feel for what the patient is experiencing.

"It's clear that empathy is an extremely important issue to address in medical education," notes co-author Thomas J. Nasca '75, Dean of Jefferson Medical College and Senior Vice President of Thomas Jefferson University. "Further, with effective measurement tools, we will eventually be able to evaluate this important humanistic attribute with a goal of enhancement of physician effectiveness."

But just how much empathy is enough? "We're trying, in our research, to find out the essential level [of empathy] that needs to be maintained for many physicians," says Dr. Gonnella. "We think the scale we've developed will be a useful tool in helping provide us with some insights."

According to Dr. Hojat, interpersonal skills and empathy play a role in the patient's outcome. "Physicians who can understand the illness from the patient's point of view can render better care," he says. "A basic human need is fulfilled when an empathic relationship is formed between a physician and his or her patient. When the patient feels the physician can understand him, that in itself seems to have a therapeutic effect."

The scale could be used in several ways. It might help, for example, in evaluating an educational program for its value in training physicians. And if, as some believe, students become cynical as time goes on, particularly after they've begun clinical training, the scale could help empirically test this as well.

Dr. Hojat and his colleagues have some suggestions for developing greater empathy. "One of the factors that can contribute to more empathy is to have physicians read literature, to be aware of human suffering," he says.

Physician education might also focus on improving interpersonal skills. "We need a formal, targeted educational program to improve empathy in medical students," he says. "This attribute could be improved if targeted education was given appropriately."

The scale has proven popular. The group has received a large number of requests for permission to use the scale, and it has been translated into Spanish, Italian, and Hebrew.

Mike Magee MD, senior medical advisor and director of the Division of Medical Humanities Initiative at Pfizer, Incorporated of New York, was also a co-author. JMC

Genetically Engineering the Tobacco Plant to Produce Antibodies Against Rabies

Researchers at the Biotechnology Foundation at Jefferson have genetically engineered tobacco plants to produce human proteins—antibodies—against rabies.

Scientists led by Hilary Koprowski MD, Professor of Microbiology and Immunology and Director of the Biotechnology Foundation Laboratories, and Kisung Ko PhD, research associate at the foundation, have inserted DNA coding for an antibody against the rabies virus into tobacco plants. The plants, in turn, become factories churning out antibody. The report appeared in the *Proceedings of the National Academy of Sciences*.

According to Dr. Koprowski, who created the vaccine currently used against rabies internationally, there is a worldwide shortage of antibodies against rabies. They are expensive to obtain from humans, and antibodies derived from horse blood carry unwanted side effects.

The researchers first showed that the antibody could neutralize rabies virus and prevent infection in mice. Using plant antibody, Chuck Rupprecht DVM, chief of rabies at the Centers for Disease Control and Prevention in Atlanta, was able to prevent rabies in hamsters inoculated with a lethal dose of "street" virus.

"The antibody produced in tobacco is as good as the antibody produced in animal cells," says Dr. Koprowski, noting that tobacco-derived human rabies antibody should be safer and less expensive to produce.

Rabies, which is fatal and incurable, is usually acquired through the bite of an infected animal. If treatment with antibody and vaccine is given as soon as possible after exposure to the virus, it may prevent rabies.

Dr. Koprowski points out that an antibody would be used in cases of severe animal bites. "A vaccine might be too late to develop antibodies," he says. "The recommendation is to first inject the antibody serum, then give the vaccine," which in turn elicits the production of antibodies for long term protection.

Dr. Koprowski stresses the need for a commercially available antibody against rabies. Up to 50,000 cases of human rabies occur annually in Asia (40 percent in children), and 7.5 million people receive the treatment after exposure. JMC

Scientists Uncover HIV Escape Route from Drugs and Vaccines

Virologists at Jefferson Medical College may have discovered a new way by which HIV, the AIDS virus, can evade both anti-viral drugs and vaccines.

Researchers had reported last summer that a protein called CEM15 is a natural inhibitor of HIV, acting as a brake on HIV's replication. They also showed that an HIV-encoded protein, Vif, or Virion infectivity factor, counteracts CEM15. Vif, in effect, is a shield to protect HIV from a host cell's defenses.

But how CEM15 worked was something of a mystery. Now, Hui Zhang MD PhD, Bin Yang PhD, and their colleagues at Jefferson have found that CEM15 renders HIV essentially dead by altering newly made HIV DNA, causing mutations and preventing replication.

At the same, the researchers showed that HIV and Vif can subvert this system, enabling the virus to instead make myriad mutations of itself. The major obstacle to creating anti-HIV drugs and vaccines is the virus's propensity to mutate quickly and often. The researchers reported their findings in the journal *Nature*.

"This is an important finding because it may be a reason why HIV can escape from vaccines and develop resistance to antiviral drugs," says virologist Roger J. Pomerantz MD, Professor and Director of Jefferson's Center for Human Virology and Biodefense, and a co-author on the *Nature* paper.

According to Dr. Zhang, who is an Associate Professor, Vif is a regulatory protein needed for the virus to grow and make infectious viruses from certain cells. CEM15 is relative newcomer to the known array of host defense systems.

But little was known about how CEM15 inhibited viral replication. In the *Nature* paper, he and his colleagues describe results from work in their laboratory showing that CEM15 attacks newly synthesized viral DNA. CEM15 works by either biochemically degrading such DNA or, alternatively, causing a "lethal hypermutation" and killing the virus.

In the process of replicating, HIV mutates at a rate 1,000 times higher than normal cells. This high rate of mutation during replication, Dr. Zhang says, has been thought to be the driving force behind viral genetic variation, and the reason it has been so difficult to create treatments against—or to prevent—HIV infection.

"No one knew the entire reason why HIV makes a hypermutation," he says, explaining that during a process called reverse transcription (RT) that occurs in replication, the HIV mutation rate greatly increases. "This paper shows that hypermutations aren't only caused by HIV RT, but are also made by CEM15, a host defense system.

"HIV is smart," he says. "The virus sees that CEM15 is going to use hypermutation as a way to defeat and kill it. The virus uses a shield,

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Vif, to protect itself. At the same time, the virus hijacks the antiviral defense system and uses a 'non-lethal' hypermutation process to make more mutations. It turns it into its own weapon."

Accumulating such non-lethal hypermutations means HIV is essentially "using CEM15 to drive genetic variation," Dr. Zhang says. "These are preliminary data, but it is a beginning. It opens the door for more research. People have to think about the fact that host defense-caused hypermutation may play a role in genetic variation. It could be a key to know how HIV resists drugs and escapes from immunosurveillance and vaccines."

The researchers are now trying to understand better how HIV Vif fights back against CEM15. JMC

GIFT OF HEALTH

Alumni Trust Supports Medical School Scholars

Fifteen Jefferson Medical College students were the recipients of Dr. James D. and Jennie M. Beach Memorial Scholarships for the 2002-2003 academic year. This scholarship fund, which has benefited selected JMC students for a decade, was initiated by the Beaches' son, who established the Edward P. Beach Charitable Trust to honor his father, Dr. Beach '1895, and mother.

Robert Neroni

Six of the 15 recipients of the Dr. James D. and Jennie M. Beach Memorial Scholarships for 2002-2003 are pictured with Clara A. Callahan PD'82 (back row, left), Vice Dean for Academic Affairs; Rosemary McCollum (back row, second from left), Vice President, Deutsche Bank Trust Company, New York, administrator of the Edward P. Beach Charitable Trust; Susan Batchelor (back row, second from right), University Director of Financial Aid; and Charles A. Pohl '87 (back row, right), Associate Dean of Student Affairs and Career Counseling. The Beach Scholars shown are (front row, left to right) Rituparna Das '03; Andrew Burchard '03; Margarita M. Scott '04; (back row, third from left to right) Paul Leibrandt '03; Esa Bloedon '03; Sidney Jacoby '03.

The Dr. James D. and Jennie M. Beach Memorial Scholarship Fund is an example of how a son's determination to memorialize his parents and pay tribute to his father's loyalty to Jefferson continues to assist JMC students in financing their studies. It also allows Jefferson to identify talented and highly motivated students and provide support for their educations. The Beach Scholars are encouraged to excel through this generosity, thereby continuing an inspiring legacy.

In a challenging economy, JMC students and their families face a rapidly escalating cost for their medical education. The majority of Jefferson students receive financial aid, and this is available for many of them through private scholarship and loan funds established by faculty, alumni, their families and friends. This philanthropy not only allows students to benefit from the excellence of a Jefferson education, but it is also acknowledges these benefactors' appreciation for what Jefferson offers its students.

Edward P. Beach, the son of JMC graduate James D. Beach, is an excellent example. His career as a broker with C. J. Lawrence was very successful. When he died in 1991, at the age of 93, Mr. Beach was a widower with no children. Before his death, he established a charitable trust in his will, with the instructions that the funds be "as a memorial to Jennie M. Beach, my mother, and to Dr. James D. Beach, my father, who graduated from Jefferson Medical College. Dr. Beach practiced for over 50 years and my mother aided and abetted his every effort and her son now gives her his full measure of devotion."

To date, the Edward P. Beach Charitable Trust has provided the Beach Memorial Scholarship Fund with more than one million dollars in support. During 2002-2003, scholarships totaling $201,748 supported students from several current classes, fulfilling Mr. Beach's commitment to honoring his parents. This bequest gift continues to demonstrate the special esteem that both Mr. Beach and his parents held for Dr. Beach's alma mater by assisting future generations of Jefferson physicians.

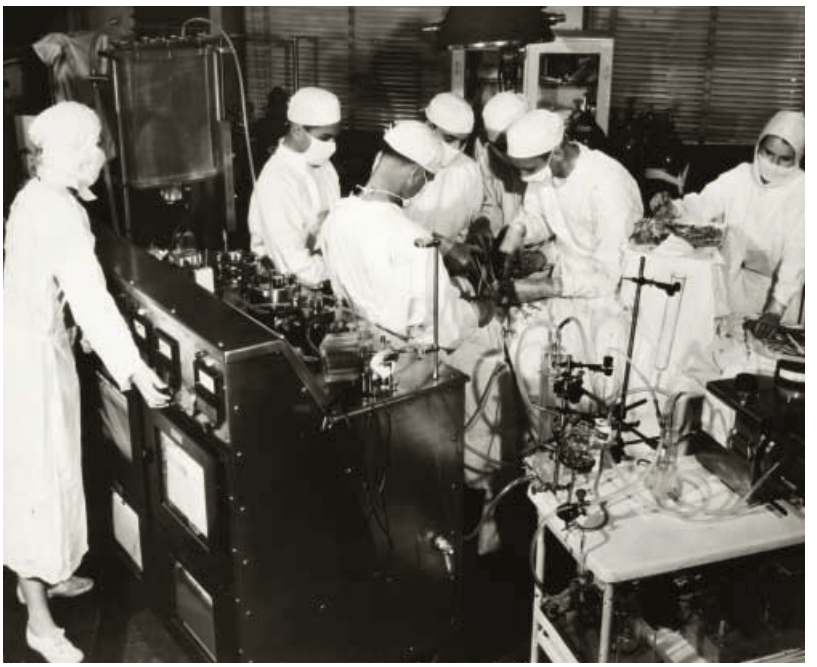
Visit the Jefferson Office of Institutional Advancement at www.tju.edu/jeffgiving

More on the Heart-Lung Machine

The heart-lung machine, which was developed at Jefferson 50 years ago, is regarded worldwide as the key to the modern era of open heart surgery. Following the articles in the March and June *Bulletins,* alumni sent us additional details on the important events at Jefferson in 1953, which were led by John H. Gibbon Jr. '27.

Victor Greco '51 tells us that he was a member of the team in the photo which (as noted in the March *Bulletin)* shows an animal experiment in 1952 using the machine—one of the preparatory trials prior to use with human patients. The world's first successful open heart surgery on a human using a heart-lung machine was performed at Jefferson on May 6, 1953. Dr. Greco, who was involved in the operation of the machine on that occasion, notes that "very few, if any pictures were taken during that procedure."

Like the other "Rib Crackers" (as Gibbon's residents and fellows were known), Dr. Greco went on to a notable career in surgery. A resident of Drums, Pennsylvania, he also has a distinguished record of service in organized medicine.



AROUND THE CAMPUS

The New Wills Eye Building

Wills Eye Hospital, which serves as Jefferson's Department of Ophthalmology, now occupies an ultramodern new facility, located across the street from the previous Wills building, which has been converted into the home of the Jefferson Hospital for Neuroscience (as reported in the June *Bulletin*). The New Wills Eye Hospital, at Ninth and Walnut Streets, features many leading edge advances. With state-of-the-art education and conference facilities, broadband computer wiring, teleconference capabilities, a fully automated auditorium, and breakout classrooms, the facility was designed for tele-medicine potential and building-wide video links.

The new facility has eight stories and 125,000 square feet, compared to the former Wills Eye Hospital, which had 260,000 square feet. This is because advances in ophthalmology have made it almost entirely an outpatient specialty, with overnight stays only rarely required. The new building was designed to meet these changed needs.

On Walnut Street, there is a covered drop-off area. Patients enter a lobby with seating, a security desk, and elevators to the hospital. Parking is available on the lower floors of the building.

The hospital is equipped with eight operating rooms, five of which are in use and a sixth one that could be made ready in a moment's notice by installing an operating microscope. Two additional ones could be opened at a later date. Physicians have built-in capability to conduct videoconferences, unlike the previous operating rooms that required equipment to be brought into the room. Such videoconferences will aid teaching and continuing medical education efforts.

The educational area is on the eighth floor. An assembly area leads into the auditorium, which seats 200 people and is equipped with ceiling-mounted, voice-activated microphones so audience members can ask questions. The auditorium also has dual video projectors and two speakers' podiums that allow lecturers to control the projectors and other equipment. Planners chose not to install fixed seating so that the auditorium could serve many purposes. The auditorium connects directly with an outdoor terrace.

Classrooms, the residents' lounge, and the residents' wet lab are also located on this floor. Equipment for the wet lab includes state-of-the-art instrumentation and a microscope so residents can practice their surgical techniques.

On the ninth floor are the oculoplastic service, the cornea service, and the neuro-ophthalmology service; on the tenth floor are the contact lens service and retina service; on the eleventh floor is the glaucoma service; and on the twelfth floor are the pediatric ophthalmology service and the cataract and primary eye care service. The fourteenth floor includes the oncology service and the pathology service.

Also on the fourteenth floor is one of the foremost ophthalmologic research services in the world. This high-technology center is geared toward extensive database management to facilitate genetic research. Researchers will apply molecular genetics, gene identification, and gene sequencing to study ways to identify and treat diseases that cause visual impairment and blindness.

Gomella Receives National Cancer Institute Achievement Award

Chairman of Urology Leonard G. Gomella MD received the 2003 National Cancer Institute Outstanding Achievement Award at a ceremony in Chicago.

The NCI award is bestowed annually in recognition of outstanding achievement by an alumnus of the National Cancer Institute Intramural Program. Dr. Gomella, the Bernard Godwin Jr. Professor of Prostate Cancer in Jefferson's Department of Urology, and Director of Urologic Oncology for Jefferson's Kimmel Cancer Center, was a fellow at the NCI from 1986 to 1988.

"He has a remarkable record of achievement," said W. Marston Linehan MD, Chief of the Urologic Oncology Branch of the NCI, in making the presentation. "He is the highest example of the true physician scientist that the NCI is trying so hard to support and encourage. His research team developed the first clinical PCR-based test for metastasis in prostate cancer, which was a significant milestone. And he was one of the first oncologists to use laparoscopy in the management of patients with urologic malignancy in the early 1990s."

Dr. Linehan further noted that Dr. Gomella is a widely sought after speaker and has given more than 350 scientific presentations. "It is remarkable to realize that he has 30 books published or in press and has been involved in 30 funded research projects," he said. In addition, Gomella has been investigator or co-investigator on six major, funded cooperative trials. "He has been a great mentor and role model to staff, residents, medical students, and postdoctoral fellows. Dr. Gomella is continuing to build a great program since he became chair last year."

Originally from New York, Dr. Gomella completed medical school and training in general surgery and urology at the University of Kentucky in Lexington. In 1986, he began a two year urologic oncology fellowship with the Surgery Branch of the National Cancer Institute in Bethesda, Maryland. Thereafter he joined the faculty of Jefferson Medical College.

Dr. Gomella is involved in both basic science and clinical research in the development of diagnostic techniques and treatments for prostate, bladder, and kidney cancer. The Radiation Therapy Oncology Group, a national academic consortium, has appointed him its urology chairman.

Thakur Is President-elect of the Society of Nuclear Medicine

Mathew L. Thakur PhD, Professor of Radiology/Nuclear Medicine, is currently President-elect of the Society of Nuclear Medicine. He will be installed as President at SNM's annual meeting in June 2004 in Philadelphia. SNM is an international scientific and professional organization with 14,000 members.

Dr. Thakur is Director of Radiopharmaceutical and Nuclear Medicine Research at Jefferson. Over the years, he has developed several widely used radiopharmaceuticals (radioactive compounds administered for purposes of diagnosis or therapy) that have significantly improved diagnostic accuracy. In 2000 he received SNM's Georg Charles de Hevesy Nuclear Pioneer Award, which is given in recognition of outstanding lifetime contributions. It is the highest award presented by the Society of Nuclear Medicine, and is named after the "father" of the field, Georg Charles De Hevesy, winner of the 1943 Nobel Prize in chemistry.

Dr. Thakur became interested in nuclear medicine and radiopharmaceuticals while a graduate student at the University of London in the late 1960s. Over the years, he and his colleagues have developed methods to produce and separate medically useful radionuclides and many radioactive compounds. Among the better known is Krypton-81m, which has significant value as an agent used in nuclear medicine for lung ventilation studies. It was available commercially in the United States and is still being used in Europe. Dr. Thakur also developed Indium-111-Bleomycin, an agent that has proven very useful for detecting and treating specific cancerous tumors, such as head and neck tumors.

Another agent he developed with his colleagues is In-111-oxine (8 hydroxyquinoline). This is predominantly used to tag white blood cells. When the patient's own white blood cells are labeled with In-111-oxine and injected back into the patient's bloodstream, physicians can easily find hidden infection in the patient's body. Although the procedure is lengthy, this technique has been used throughout the world for a quarter-century.

More recently, Dr. Thakur and his colleagues developed the 99mTc Anti-CD15 Anti-Granulocyte Antibody, the agent which is known as the LeuTech. LeuTech is manufactured by Palatin Technologies of Princeton, New Jersey, and is currently awaiting approval from the Food and Drug Administration for use in the diagnosis of equivocal appendicitis. Dr. Thakur holds several patents.

His current research involves the development of radiolabeled receptor-specific biomolecules for diagnosis and therapy. One of these agents targets vasoactive intestinal peptide (VIP) receptors expressed on cancerous and precancerous cells. Early clinical studies indicate that the agent can detect not only tumors, but also pre-cancerous lesions containing VIP receptors. In a small

clinical trial, the agent was able to reveal some tumors that no other known scintigraphic technique could detect.

Dr. Thakur is also developing radiopharmaceuticals for PET imaging. It is hoped that the agents will be used to obtain quick and reliable information about suspicious breast masses for women who have had abnormal mammography results.

Vice Chair of Psychiatry Is Selected for Leadership Program for Women

Elisabeth J. Shakin Kunkel MD, Professor of Psychiatry and Human Behavior and the department's Vice Chair of Clinical Affairs, has been accepted into a national leadership program that helps prepare women for senior administrative roles in academic medicine. Dr. Kunkel was named a fellow in the 2003-04 class of the Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) program. Established in 1995, ELAM is the only in-depth national program that focuses on preparing women faculty at U.S. and Canadian medical schools for senior leadership positions at academic health centers.

Dr. Kunkel joins 44 others in ELAM's new class. ELAM offers an intensive schedule of executive training, with coaching, networking, and mentoring opportunities, aimed at expanding the national pool of qualified women candidates for leadership in academic medicine. ELAM is a program of the Institute for Women's Health and Leadership at Drexel University College of Medicine in Philadelphia.

"Despite the greater numbers of women matriculating at schools of medicine, women are still significantly underrepresented within the topmost administrative ranks of our nation's academic health centers," Page Monahan PhD, ELAM co-director, has noted. "Yet there is a widely acknowledged need to diversify leadership in academic medicine and to improve cultural and gender sensitivity in health care training and delivery. Placing more women in positions of senior leadership will provide important new perspectives for decision making and help speed the curricular, organizational, and policy changes needed to ensure a more effective, representative, and responsive health care system."

A specialist in psycho-oncology, the treatment of the emotional aspects of cancer, Dr. Kunkel serves on the scientific advisory board of Jefferson's Kimmel Cancer Center and was instrumental in helping to develop its Buddy Program, a cancer patient support program. She is co-investigator on a $400,000 National Institutes of Health-funded group therapy program for cancer patients at Jefferson. She also serves on the academic advisory board of Jefferson's Center for Integrative Medicine. Dr. Kunkel is board certified in psychiatry and also in geriatric and addiction psychiatry. She serves as a reviewer for *Psycho-Oncology, Cancer, Annals of Internal Medicine, Academic Psychiatry,* and the *Harvard Review of Psychiatry*.

Dr. Kunkel completed her MD at McGill University in Montreal and her psychiatry residency at New York University Medical Center, where she served as Chief Resident, followed a psychiatry fellowship at Memorial Sloan-Kettering Cancer Center in New York, where she served as Chief Fellow.

DiMuzio Honored for Innovative Research in Vascular Surgery

Vascular surgeon Paul J. DiMuzio GS'95 has been named the 2003 Wylie Scholar in Academic Vascular Surgery, on the basis of his research into innovative treatments in cardiovascular medicine. DiMuzio is currently an Assistant Professor in Jefferson's Department of Surgery.

The Wylie Scholarship, awarded by the Pacific Vascular Research Foundation, recognizes surgeon-scientists in North America who are pursuing independent research projects that have the potential to revolutionize how vascular diseases are treated or cured. Each honoree receives a $150,000 multi-year grant in support of their investigations.

Dr. DiMuzio, whose grant will run until 2006, is investigating how to help patients who are in need of bypass surgery, but lack the necessary amount of natural tissue needed for the procedure. Recently, he was honored with the William Kerlin Award from the Cardiovascular Institute of Philadelphia.

Cardiovascular disease is the number one cause of death in the U.S. More specifically, one in two women over age 55 will die from vascular disease.

At Jefferson, Dr. DiMuzio serves as director of vascular research and serves on the advisory board of the Biomedical Imaging Center. He is a graduate faculty member in Cell and Tissue Engineering, and a consulting vascular surgeon at Wills Eye Hospital.

DiMuzio received his MD from the University of Pennsylvania School of Medicine, then completed a residency in general surgery at Thomas Jefferson University Hospital and a fellowship in vascular surgery at the University of California, San Francisco.