WUSTL’s excellence in nanotechnology recognized by NIH

BY TONY FITZPATRICK

Washington University has chosen as a Program of Excellence in Nanotechnology (PEN) by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health.

Karen L. Wooley, Ph.D., professor of chemistry in Arts & Sciences, is principal investigator of the program, which the NHLBI is funding at $12.5 million over five years. Wooley and the others PENs also will be established.

WUSTL will serve as the administrative center for this initiative.

Collaborators with Wooley include 13 faculty members from Arts & Sciences and the School of Medicine, plus one from each of the University of California campuses at Berkeley and Santa Barbara.

"Nanotechnology involves the making of materials, devices and systems of extremely small sizes, generally 1-100 nanometers. One nanometer is one-thousandth the diameter of a micron. A single strand of human hair is 50,000 nanometers, so a nanometer is 50,000 times smaller than a human hair. Nanotechnology involves researchers to take advantage of the unique properties and surface areas to create faster, more efficient chips, sensors, pumps, gears, faster, new materials and drug-delivery systems."

According to Wooley, the prime focus of WUSTL’s PEN is the development capability to link agents that can be assembled, labeled, targeted, functionalized and evaluated for eventual diagnosis and treatment of various diseases relevant to the NHLBI.

"Having this program is vital because it will bring to the forefront the significance of nanotechnology because it brings together people with diverse skills and expertise, allowing them to cooperate with each other," Wooley said. "This will allow nanotechnology to coalesce into real devices that are greater than the individual contributions alone."

"The initiative we’ll undertake will provide the leadership for nanoscience and nanotechnology developments that can have clinical applications through this center.

Elizabeth G. Nabel, M.D., director of the NHLBI said the PENs represent "a vitally important research effort that will spur the development of novel technologies to diagnose and treat heart, lung and blood diseases."

"Washington University has a rich and long tradition of scholars who have been recognized nationally and globally for their contributions to science and the humanities," Chancellor Mark S. Wrighton said. "Professors Heuser, Roediger and Schofield join an elite group honored by the American Academy of Arts and Sciences, and we are all proud of their accomplishments and grateful for their continued association with our community."

The academy’s membership of over 4,500 includes more than 150 Nobel laureates and 54 Pulitzer Prize winners. Fellows are selected through a highly competitive process that recognizes individuals who have made pre-eminent contributions to their disciplines and to society at large.

This year’s new fellows and foreign honorees will be welcomed during an Oct. 8 induction ceremony at the academy’s headquarters in Cambridge, Mass.

Heuser created quick-freeze deep-earth electron microscopy, a pioneering technique that lets biologists see detailed pictures of fleeting events inside living cells.

For decades, Heuser has used this technique to study, on the molecular level, the way the heart works. His work has the advantage of not prompting an immune response that would destroy the experimental tissue.

"Heuser has dedicated his life to his science and to society," Wrighton said. "Professors Heuser, Roediger and Schofield are among an elite group honored by the American Academy of Arts and Sciences, and we are all proud of their accomplishments and grateful for their continued association with our community."

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Parking permits prices to increase

By Andy Clinehenderson

This summer, all University parking permits will be up for renewal. In addition to the walk-in renewal and mail-in renewal options offered in the past, parking services is now offering a convenient online renewal to help simplify the process. The online renewal is fast and easy. Thousands have purchased permits using this option since last fall, and when using parking services first added the feature. The renewal will run on June 30, including the three-year permits issued in 2002. Sometime in late May, current faculty and staff parking-permit holders will receive a renewal letter in campusmail providing complete instructions for permit renewal.

Permit holders who go through the permit process should expect to receive their new permits around the middle of June. Fees will increase effective July 1. The daily pass fee is also scheduled to increase on July 1, to $3.50 per day. The daily pass had not increased since 2001. In addition, parking services will introduce a revised fine structure on July 1. There have been no increases in the current fine structure in the past 10 years, and now the structure is being adjusted to more effectively serve as a deterrent for some violations. The new structure includes increases to certain fines, which will be announced online. It is intended to enhance a program designed to protect parking privileges of the permit-holder. The Park & Transportation Advisory Committee has reviewed and approved all increases. For more information, go online to parking.wustl.edu.
Oxygen near lens linked to cataracts

BY JIM DETRICK

"It's fairly well-accepted in the field that anyone over 50 who has vitreous surgery will develop cataract within two years. But if we could understand this process and prevent it, patients would be better off." — NANCY M. HOLEKAMP

Researchers may be a step closer to understanding what causes cataracts and what may help prevent them.

In a study published in the American Journal of Ophthalmology, School of Medicine researchers determined that the culprit may be oxygen.

The researchers measured oxygen concentrations in the eyes of patients undergoing retinal surgery. When a person has retinal surgery, standard practice calls for removal of the vitreous gel, a clear, jelly-like structure in the center of the eye. This removal, called a vitrectomy, makes it easier for surgeons to repair the damaged retina.

After vitrectomy surgery, the surgeon replaces the vitreous gel with fluid. But not long after, the eye begins to develop the clearing of the lens known as a nuclear cataract.

"Nuclear cataracts are fairly well-accepted in the field that anyone over 50 who has vitreous surgery will develop a cataract within two years," said Nancy M. Holckamp, M.D., the study's lead author. "But if we could understand this process and prevent it, patients would be better off.

Just before surgery, Holckamp, an associate professor of clinical ophthalmology and visual science, measured oxygen levels adjacent to the lens and near the center of the eye in the vitreous gel.

Before retinal surgery, oxygen concentrations were very similar in both places. After surgery, oxygen levels in these locations were about eight times higher than normal.

According to the retina has many blood vessels and high oxygen levels, and oxygen levels closely correlated with the eye's vitreous gel.

"It seems one of the important factors is that oxygen can migrate toward the lens because the replacement vitreous gel doesn't prevent that migration," the way the natural gel does.

"Oxygen near lens linked to cataracts" said Holckamp when we remove the gel, we remove that protective mechanism."

Even after the vitreous gel has been removed, Holckamp said it may take several months to lower the amount of oxygen near the lens by lowering the oxygen level in the fluid that is pumped into the eye.

"We're proposing that we deoxygenate the fluid used to replace the vitreous gel," she said. "Then there's no reason to infuse such a highly oxygenated fluid into the eye. If we want to get form surgery under more natural conditions, we should remove the oxygen from that fluid."

A co-investigator, David C. Beebe, Ph.D., the Janet and Bernard Becker Professor of Ophthalmology and Visual Science, and professor of cell biology and physiology, believes the same kind of mechanism may contribute to cataracts that form as people age.

The difference is that in age-related cataracts, the gel breaks down over several years. For type patients, the gel disappears all at once.

Beebe and his colleague Ying-Shuo Shui, M.D., Ph.D., a staff scientist in ophthalmology, have demonstrated a statistical relationship between breaks in the vitreous gel and the risk for cataract surgery.

They believe that when the gel separates from the retina or begins to break down and liquefy, it allows fluid to flow over the surface of the oxygen-rich retina and carry that oxygen to the lens. That's true whether a person's vitreous gel has been liquefied with oxygen or not.

"It seems one of the important factors is that oxygen can migrate toward the lens because the replacement vitreous gel doesn't prevent that migration," the way the natural gel does.

"It's fairly well-accepted in the field that anyone over 50 who has vitreous surgery will develop cataract within two years. But if we could understand this process and prevent it, patients would be better off." — NANCY M. HOLEKAMP

Morris receives prize for Alzheimer's research

BY Michael C. Perry

The American Academy of Neurology has awarded the 2005 Potamkin Prize for Research in Pick’s Alzheimer’s and Related Diseases to John C. Morris, M.D., professor of neurology, director of the Alzheimer’s Disease Research Center (ADRC) in the School of Medicine.

The annual prize honors scientists for outstanding contributions to the understanding and treatment of Alzheimer’s disease and related disorders. It is regarded as one of the most prestigious prizes in Alzheimer’s research.

Ronald Petersen, M.D., Ph.D., of the Alzheimer’s Disease Research Center at the Mayo Clinic College of Medicine, was also awarded the prize this year.

Morris and Petersen were recognized for their pioneering efforts in early diagnosis of Alzheimer’s disease.

Earlier this year, Morris received another prestigious research prize in the field of Medical Foundation Award for Medical Research in Alzheimer’s Disease.

Among other accomplishments, Morris’ research team refined the Clinical Dementia Rating (CDR) system, which was first developed by the founding director of the ADRC, Leonard Berg, M.D., professor emeritus of neurology.

Cataract Research Center in the School of Medicine. They plan to study both the amount of molecular gel that reaches the lens, and that turns out to protect against nuclear cataracts in either human patients or animals, I think it will make a very strong case for oxygen being the culprit,” he said.

Beebe, Holckamp and Ying-Bo Shui are launching a Clinical Cataract Research Center in the School of Medicine. They plan to study both the amount of molecular gel that reaches the lens, and that turns out to protect against nuclear cataracts in either human patients or animals, I think it will make a very strong case for oxygen being the culprit,” he said.

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University Events

Memorial Drive * The Passing Zone * Foundations of Business Strategy

Monday, May 16


11:30 a.m.-12:30 p.m. "On the Application of Information Technology to the Teaching Process." "Happy Teaching." Cost: $2,800 group rate for 7-hour away, reduced fee available to CAE member organizations. For information and to register: 935-4646.

Friday, May 13


University Events

Conservation offers another alternative to recycling

BY ANDY CLENDENEN

Gas prices are soaring. Natural resources are getting pricier. The costs of conservation are increasing every day.

Yet, you can actually conserve in a cost-effective way. It's always better to fill the blue bins with unwanted paper than it is to throw that paper into the trash can. The same is true for conserving water in your office and home due to the most important factors: conservation and water.

The benefits to conservation are two-fold. Environmental benefits are a natural win for conservation and water.

The conservation process helps to conserve energy and money by improving lighting. A quick run-down of a checklist shows several very simple steps. This is just one of many advantages and should be considered a priority.

1. Turn off all lights not in use;
2. Use baths of lowest water levels;
3. Use natural sunlight when possible;
4. Focus light on your task;
5. Use fluorescent lights wherever possible.

1. Conservation can help you conserve energy and water.
2. By conserving energy, you will save money and help the environment.
3. Conservation can help you conserve energy and water.

Environmental benefits to conserving materials:
1. When washing dishes, fill the sink and let the dishes soak before rinsing, instead of using continuously running water.
2. Heating and cooling is another area prone to waste resources. Some easy tips and their solutions include using natural sunlight when possible;
3. Before recycling your office paper, make sure you fully used it. Print draft documents on the back side of no-longer-needed documents. Use the duplex feature on your photocopier, making copies on the front and back sides of paper.
4. Use the designated bins on the campuses to recycle paper, aluminum cans and other recyclables, and maintain those same waste streams with other trash.

Also, the University’s environmental health and safety office can be contacted to help recycle several items that people might not know how to recycle. The University does not have "mandatory waste disposal" items that must be handled through the EHS office.

The items include:
1. Freon, solvents from white goods, such as refrigerators, and oil from automobile and truck engines.
2. Hazardous metals such as lithium, mercury, silver, nickel, cadmium and lead from many specialty batteries.
3. Mercury, lead, phosphor, glass and aluminum from fluorescent lamps.

For more information, go online to ehs.wustl.edu.

For a complete list of materials that can be recycled, including used office furniture, go online to https://ehs.wustl.edu/conservation/hazardous_areas.html.

Monday, May 17


Wednesday, May 18

7:30 a.m.-9:45 a.m. Internal Medicine Course "Acute Kidney Injury." "Acute Kidney Injury." Cost: $2,800 group rate for 7-hour away, reduced fee available to CAE member organizations. For information and to register: 935-4646.

Tuesday, May 12

9:30 a.m.-11:30 a.m. "On the Application of Information Technology to the Teaching Process." "Happy Teaching." Cost: $2,800 group rate for 7-hour away, reduced fee available to CAE member organizations. For information and to register: 935-4646.

Monday, May 15


Saturday, May 7


For more information, go online to ehs.wustl.edu.html.

March 19, 2004


On Stage

Sports

Friday, May 6

8 p.m. Ovation Series. "The Passing Zone." Also 8 p.m. in May 7. Cost: $22 for adults, $10 for students and children. Go online to register.

Saturday, May 7

Noon. Softball vs. McKendree College. WUSTL Field. 935-4105.

And more...

May 16, 2004

5-7 p.m. Kranzberg Illustrated Book Weekend. "Sculpture, the Naked Art." "Sculpture, the Naked Art." Go online to register.

Monday, May 16

11 a.m.-3 p.m. Bone Marrow Drive. Sponsored by the program in anatomy and communication sciences. Central Institute for the Deaf, Chancellor 6000. Clayton Ave. For information and to register: 747-4914.

Monday, May 16


Thursday, May 19


On Stage

Sports

Saturday, May 7

Neon. Softball vs. McKendree College. WUSTL Field. 935-4105.

And more...

May 16, 2004

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Researchers use molecular approach to identify pool's bacterial pathogen

By TONY FITZPATRICK

A team of researchers led by Lars Angenent, Ph.D., associate professor of chemical engineering, and his colleagues from San Diego State University and the University of Colorado took what is known as a molecular survey of a common gene found in all life forms, 16S rRNA (DNA) gene, by doing the different techniques of sequencing and making evolutionary-distance tree, or phylogenetic tree.

They then used it to match the gene sequence of the bacterium Mycobacterium avium to the same bacterium found in the lungs of nine leukopenia patients who had become ill with a hypervirulent condition resembling the illness that mimics pneumonia.

The therapeutic pool was unlike regular swimming pools — it was kept at a temperature that the water is always above 92-94 degrees Fahrenheit.

During the summer, including the six-week period for the summer session, there will still be several places for hungry students to find food, including:

- Mallinckrodt Food Court
  - Mallinckrodt, as well as a
  - Whispers Cafe
  - Wohl Center, the Mallinckrodt
  - Whispers Cafe
  - Bistro

Beginning May 12:

- Whispers Cafe
  - Beginning May 12:
  - Bistro
  - Beginning June 6:
  - Whispers Cafe

Beginning June 6:

- Mallinckrodt Food Court
  - Mallinckrodt

Summer hours for Hilltop Campus dining

<table>
<thead>
<tr>
<th>Location</th>
<th>Summer Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallinckrodt</td>
<td><strong>M-Th: 10 a.m.-7 p.m.</strong></td>
</tr>
<tr>
<td>Bistro</td>
<td><strong>M-Th: 11 a.m.-4 p.m.</strong></td>
</tr>
<tr>
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</tr>
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</tbody>
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Food Court

The pool had many bubbles in it because of the addition of hydrogen peroxide. Whenever the bubble bursts, bacteria can become airborne.

Mycobacterium avium is a gram-positive bacterium, known to be resistant to disinfection in large part because of a strong, waxy cell wall. In this particular hospital environment, the bacteria had even more freedom to grow because the hydrogen peroxide was killed off nearly all its competitors.

"If you used conventional tools, you would have a problem like this would sample the air, capture the cells and grow them on an agar plate and count colonies of species, but this approach miss ways too many airborne bacteria, which are difficult to grow in a laboratory environment."

The approach he and his colleagues took enabled them to survey more than 1,500 DNA genes from the different bacteria and fungi found in the air and pool water, giving them a total of 620 unique sequences, the most common being Mycobacterium avium, which was found in the ill people's lungs.

The study results show that molecular surveys are much better tools to gain knowledge of pathogens in the environment compared with conventional approaches. Angenent said. "If you used conventional tools, you might think there is no problem when you really have a problem."

The study was published in the March issue of the Proceeding of the National Academy of Sciences.

"The pool was closed down for a short while, then re-opened," he said. "If there were no reported cases of anyone else becoming ill from exposure, the pool would have been safe for healthy people, as long as they were not in the environment for long stretches of time."

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The study then was able to match the genetic sequence of the bacteria from air filters he and his co-workers removed a large percentage of bacteria from air. The pool has experienced a shutdown of water and dining places will be closed completely, according to Paul Schimmel, assistant to the director of operations.

Also, Wohl Student Center will be undergoing significant plumbing upgrades, which will result in a shutdown of water and dining services from May 24-June 3. Because of renovations at Wohl Center, the Mallinckrodt Food Court will be offering all the usual summer items," Schimmel said.

"That will include a wrap station, philly station, pasta, pizza, soup, salad, and a carryout selection."

Because of the renovations at Wohl Center, breakfast and dinner will not be included at Mallinckrodt, as well as a "House-style" carryout station, Schimmel said.

Several new options will be available at the Hilltop Bakery during the summer, including soups, pastries, donuts, and hot dogs.

"When the (Mallinckrodt) Food Court returns to normal summer operations after the Wohl renovation, it will offer its normal lunch fare as listed above," Schimmel said. For more information, go online to dining.service.wustl.edu.
Trust me! A group of fraternity and sorority pledges participate in a recent trust-building game on the lawn outside Olin Library. More than 450 students attended the team-building event, facilitated by the Olin Libraries of the Ozarks and sponsored by the Office of Greek Life.

Therapy

Researchers worked with newborn animals from Page 1

For their own safety, hemo-

Gupta and his wife, Sunita, and

Gupta has repeatedly received recognition from the community for his contributions to the Olin School. Students have given him the Roe Foundation Teaching Award seven times since 2001.

Gupta grew up in India, where he attended Bombay University and earned a bache-

for gene therapy to work in hu-

because in other attempts the results in large ani-

Red alert.

• Police are warning of a

in the adult animal.

The animals in this study have not formed inhibitors against the factor VIII protein after more than a year of follow-up. Ultimately, the ultimate goal is for gene therapy to work in hu-

Second, newborn mice and
dogs have a less-mature immune system than do adults, making it less likely they will raise an im-
mune response to the introduced factor VIII. The immune reaction, known as inhibitor formation, diminishes the activity of the ddef-
ing factor and has caused failure in previous attempts to correct hemophilia in mice using gene therapy.

No flowers are still growing. So genes integrated into a liver cell will be reexpressed with each new generation of cells, increasing the number of cells containing functional clotting fac-
tor genes in the adult animal. Gene therapy for hemophilia A has been especially challenging because the gene for factor VIII is quite large and therefore hard to fit into viral vectors, which serve as the gene delivery vehicle. The researchers eliminated parts of the factor VIII gene and other genetic components to minimize the material needed and used a larger viral vector called gamma retroviral expression systems. The viral vector carrying fac-
tor VIII genes was injected into newborn mice, made sure the new gene got inside and used a mouse model to see if we can prevent inhibitor formation.

Campus Watch

The following incidents were reported to University Police April 27-30. Residents with information that might assist in investigating these incidents are urged to call 935-5050. This information is provided as a public service to promote safety awareness and is avail-

The police department offers

If you hear a vehicle alarm, con-
tact police immediately.

• Do not leave expensive property such as TVs, purses, watch detec-
tors, cell phones and portable stereo systems in plain view in your vehi-
cle. Lock them in your trunk or take them with you.

• Lock your vehicle.

April 27

9:49 p.m. — A Illinois license

plate tab was stolen from a vehi-
cle parked in the Snow Way Ga-

tage sometime between 8 p.m. April 23-9:30 a.m. April 25. There are no suspects or witnesses.

Crime alert

University Police issued the fol-

lowing on April 28.

April 27

• Several vehicles leaders from parking lots on cam-

pus were the past week. In particu-

lar, Dodge Ram 1500 pick-up trucks have been targeted. These thefts appear to fit a pattern of similar incidents in communities surrounding the campus.

• Reporting suspicious persons or activity immediately to University Police at 5-5555 or go to the nearest emergency telephone.

Gupta

Published in business and medical journals — from Page 1

For their own safety, hemo-

Gupta's work is not confined to

the business school. For two years, he was on the University's Center for Aging committee.

Gupta repeatedly has received recog-

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his contributions to the Olin School. Students have given him the Roe Foundation Teaching Award seven times since 2001.

Gupta grew up in India, where he attended Bombay University and earned a bache-

lor's degree in statistics and eco-

nomics. He went on to receive a master's in industrial administra-

tion from Carnegie Mellon Uni-

versity.

Before pursuing an academic career, he held various administra-

tive positions at companies in India.

In 1986, he moved back to the United States to attend Stanford University's Graduate School of Business, where he earned a doc-

torate in 1990. He was awarded first place in the American Ac-

Gupta and his wife, Sumi, have two children, Vivek and Sumi.

of the faculty.

"As senior associate dean for two years, Mahendra has gained a deep familiarity with the Olin School, its students and its faculty," Knight added. "He is well-

positioned to transition into the dean's position and to lead the school's exciting growth in the years ahead.

"Mahendra represents the best of the Olin School's faculty, community service and preparing tomorrow's business leaders," Thakor said.

"Professor Gupta has been an integral part of the school's growth since he first joined the faculty.

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Arts & Sciences to recognize six alumni

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In 1985, he became president and CEO

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The five alumni receiving the Distingui-

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In 1996, he became executive director

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In 1985, he became president and CEO

The five alumni receiving the Distingui-

of CenterTrust Co. He joined TIAA-

and retired in 2002. He and his wife, Penelope (M.A. 1968, 

1974), established a residency in the 

years of course work at Harris State Teach-

For more information about employment at Washington University, please visit hr.wustl.edu (Hilltop Campus) or medicine.wustl.edu/wumshr (Medical Campus) to obtain complete job descriptions.
When he was young, Bruce D. Lindsay, M.D., associate professor of medicine, liked to wrestle. Back then, his opponents were scrappy kids from Haddonfield, N.J., bent on proving their worth.

Today, the stakes are higher for Lindsay, but the characteristics of a good wrestler — intelligence, action and especially perseverance — are clear in his accomplishments.

Like many high school students, academics often took a back seat to having a good time for Lindsay. "I never dreamt I'd go to medical school," he says. "I think some of my teachers would be surprised at what I'm doing now."

But once he was in college, Lindsay developed a long-term vision of where he wanted to be and stayed the course even when things weren't easy. Midway through his freshman year at Eckerd College, a liberal arts school in St. Petersburg, Fla., he decided to study medicine.

He graduated from Jefferson Medical College in 1977 and completed a residency at the University of Michigan. To pay back his scholarship obligations to the National Health Service Corps, the agency assigned him to an internal medicine practice for three years in East Jordan, Mich., a rural town in the northern part of the state.

Treating patients there showed him how little was known about arrhythmias, or abnormalities in the electrical currents that allow the heart to beat.

People with this condition experience racing hearts, and they often feel as if they're going to pass out. All arrhythmias are not life threatening, but they can greatly affect patients' lives, sparing many trips to doctors' offices and emergency departments.

"I would call the nearest cardiologist, who was about 40 miles away, but they didn't know how to treat these patients either," Lindsay says. "They weren't bad cardiology — it was just where the field stood in 1980."

Lindsay decided to pursue a fellowship in cardiology and study arrhythmias, landing at Washington University School of Medicine in 1983. Today, he is an expert on the subject.

"He is a superb clinician and highly respected at national and international levels as an authority on heart-rhythm abnormalities and their treatment. He's dedicated to his work and is someone who constantly strives for excellence." — E. Cain, M.D., the Tobias and Hortense Lewis Professor of Cardiovascular Disease in Medicine, who trained under Lindsay. "He's dedicated to his work and is someone who constantly tries to achieve excellence."

"He is a superb clinician and highly respected at national and international levels as an authority on heart-rhythm abnormalities and their treatment. He's dedicated to his work and is someone who constantly strives for excellence."

"I have worked with Bruce on a variety of new treatment strategies for atrial fibrillation," says Parsonnet, M.D., and Sanjeev Kaul, M.D., associate professor of internal medicine. "I have worked with Bruce on a variety of new treatment strategies for atrial fibrillation," he says. "I thought it was a very novel idea," Lindsay says. "But I never expected to meet the people who did the work, who I ultimately got to know, and I never expected to be putting those in patients."

During a subspecialty years later at Newark Beth Israel Hospital, Lindsay worked with Victor Parsonnet, M.D., and Sanjeev Kaul, M.D., who were studying the feasibility of implanting a defibrillator without opening a patient's chest. Their preliminary research in this area helped develop a technique used today to implant cardiac defibrillators.

"There's been a striking change in survival rates as we've had these defibrillators implanted in people," Lindsay says.