NELSON WATTS, MD, an internationally known endocrinologist and chair of the Food and Drug Administration’s Endocrine and Metabolic Drugs Advisory Committee, credits much of his successful career to “unanticipated blessings.”

Although he always wanted to be a doctor, endocrinology wasn’t his first choice of specialties. While working part-time with a leading liver researcher, Watts says he was also chosen for a fellowship in clinical endocrinology.

After realizing that endocrinology was “for him,” the doctor—who’s most known for osteoporosis research and clinical care—says even his foray into bone health was somewhat accidental.

His work on a clinical trial testing an osteoporosis medication led to his involvement in trials for nearly all medications currently on the market or in development for the treatment of this disease.

Watts was the first endocrinologist in western North Carolina and spent 11 years in private practice there and 18 years at Emory University School of Medicine. He just happened to be seated next to UC gynecologist Margery Gass, MD, at a meeting when she asked if he would be interested in coming to Cincinnati.

That was five years ago. Watts now leads UC’s Bone Health and Osteoporosis Center, where he sees patients and is one of UC’s highest-funded clinical investigators.
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Noted........

**UC JOINS CHINA IN URBAN RESEARCH**

Defining the new urban research university—one of the central goals of UC’s academic strategic plan, UC|21—is not just a local idea, it turns out.

Both UC and China’s Shandong University are in major urban centers and have many issues in common. In addition, the tremendous pace of economic development in China is exacerbating urbanization, planning and public health problems.

During visits to Shandong over the last year, UC leaders identified a common commitment to the urban agenda and to development of a substantive research plan across all colleges.

In the fall, UC hosted a delegation from Shandong, and the two universities signed an agreement to create a Joint Center for Urban Research. The new center will serve as a catalyst for collaborative research and funded projects.

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**Predicting Heart Disease**

UC nursing researchers say more could be done to prevent or diagnose cardiovascular disease in people with diabetes.

Professors Yin Xu, PhD, and Kyra Whitmer, PhD, both registered nurses, collaborated on a literature review to focus on the relationships between C-reactive protein, heart disease and diabetes.

C-reactive protein (CRP) is produced by the liver in response to inflammation and has been linked to more than 70 different infectious and noninfectious inflammation disorders.

During their review, Xu and Whitmer found substantial evidence that elevated levels of CRP in people with diabetes may predict cardiovascular disease.

Diabetes patients are already at higher risk than healthy people for developing cardiovascular disease. Screening these patients for elevated levels of CRP could lead to improved prevention, diagnosis and treatment, the researchers say.

The review appeared in the August 2006 issue of the *American Journal of Nursing.*
Topical Twofer Would Prevent and Treat Skin Cancer

A research team led by UC scientists has received $1 million from the National Cancer Institute to develop a new topical treatment that would not only increase skin pigmentation to block harmful ultraviolet (UV) rays, but also repair damage that can lead to skin cancer.

The team, led by Zalfa Abdel-Malek, PhD, will work to determine whether a chemically modified hormone called alpha-melanocyte-stimulating hormone (alpha-MSH), and synthesized versions of it, can reduce DNA damage in melanocytes that have been exposed to UV radiation in the lab.

Known to increase skin pigmentation—the “tan” that reduces dangerous UV ray penetration—alpha-MSH has also been found to repair precancerous damage that UV rays do to skin cell DNA, the genetic material within cells.

UC HAS DEVELOPED A FASTER WAY of informing consumers online when the Food and Drug Administration (FDA) withdraws a medication.

The new approach works with NetWellness.org, a commercial-free, consumer-health Web site produced by Ohio’s three medical research universities—UC, Case Western Reserve and Ohio State.

When the FDA announces a drug withdrawal, the NetWellness team receives an alert and immediately checks the site’s database for instances of the drug name, including trade and generic names. References are then hyperlinked using an automated find-and-replace function built into the site’s content management system.

Simultaneously, pages containing these references receive a hyperlinked warning box indicating the availability of important information about the withdrawn drug.

All hyperlinks point directly to a new NetWellness “warning” page containing information about the FDA alert and to additional links to either the FDA or the drug manufacturer’s Web site.
Entering the Fourth Dimension

The movement or “flow” of fluid and cells inside the body has become an important topic for scientists. It provides clues to organ function and development and can also offer details about disease formation.

But studying flow inside biological systems—especially systems so small that a microscope is needed to get a good look—has challenged researchers.

UC physiologist Jay Hove, PhD, was awarded a four-year, $1.53 million grant from the National Center for Research Resources of the National Institutes of Health to create a tool, a laser-illuminated “4-D camera,” that he hopes will provide scientists with a better way to study cell and fluid movement in three dimensions plus—the fourth D—real time. •
Old Time Religion

Ultrasound tests done in a doctor’s office may be more sensitive in detecting recurrence of the two most common types of thyroid cancer than the standard whole-body radioiodine scans and serum thyroglobulin tests, followed by CT scans and MRIs, according to UC researchers. The findings were presented in October at the American Thyroid Association’s 77th annual meeting.

UC associate professor David Steward, MD, says that unlike CT (computed tomography) scans and MRIs (magnetic resonance imaging), which diagnose on the basis of size alone, ultrasound can detect cancer by identifying certain signs of it in lymph nodes.

EXCAVATION AT AN ANCIENT SITE IN ALBANIA last fall “far exceeded expectations” and continues to produce evidence of religious activity earlier than researchers had believed. That’s the news from a UC classics department team.

Digging in September 2006 exposed more evidence of a massive temple near the ancient Greek colony of Apollonia, at a site known today as Bonjaket. New excavations in what would have been the center of the temple revealed the most significant finds yet from three seasons of work at the site. They include bronze, iron and glass objects that help tell the story of the role religion played in the lives of the Greeks who moved to this region as early as 650 B.C.
Ours Is a Nice House, Ours Is

University of Cincinnati students are in a heated race against their counterparts at schools throughout the United States, Canada, Germany and Spain to build the best solar house in the world.

UC is one of 20 international competitors participating in the Solar Decathlon, a contest among the world’s best design, engineering and business programs to envision, build and then finally display a fully functioning, completely solar-powered house. The final collection of homes will be exhibited on the National Mall in Washington, D.C., in October.

‘Club Drug’ Clue for Parkinson’s Prevention

New UC research suggests that the widely abused club drug “ecstasy” (methyleneoxymethamphetamine or MDMA) can increase the survival of dopamine cells in the brain during fetal development.

Because these cells are critical in the regulation of voluntary movement, the researchers say their findings may lead to better therapies for neurological diseases like Parkinson’s.

Led by Jack Lipton, PhD, professor of psychiatry, the study was funded by the National Institute on Drug Abuse and presented as an abstract at the Society for Neuroscience annual meeting in Atlanta.

Researchers know that a loss of dopamine cells in the brain leads to the development of Parkinson’s disease and possibly other movement disorders. Preventing dopamine cells from dying or aiding in the replacement of those cells is key to finding lasting therapies.

MDMA itself isn’t likely to be an appropriate therapy for neurodegenerative diseases, Lipton stresses, but it may provide insights for developing new drugs with similar properties.
Rationale for Research

New approaches to old problems, new understanding of the world we live in and the people who share it with us, new products and new services.

These are some of the “whys” behind the “what” of scientific inquiry covered in this edition of UC Research.

So what are we doing?

Learning to understand our neighbors better.

Making technology more efficient and easier to use. Helping develop emission standards that will protect the health of future generations.

And we’re sharing this knowledge.

Among other stories you will read how sociologist Rhys Williams, PhD, became interested in the hijab, the head covering worn by many Muslim women that’s becoming a disputatious issue in some parts of the Western World. What Williams learned will hopefully clear up misconceptions.

Mary Beth Privitera parlayed her master’s degree from the College of Design, Architecture, Art, and Planning into an engineering job. Now she’s not only leading a College of Engineering medical design and innovation program that’s developing better surgical and medical devices, she’s turned some of her own designs into commercial products.

Grace LeMasters, PhD, frequently crops up in the international news, thanks to her spearheading the Cincinnati Childhood Allergy and Air Pollution Study (CCAAPS). She and her team have published a succession of wake-up studies on diesel exhaust, stop-and-go traffic and secondhand smoke that are making environmental policy makers sit up and listen.

And just as your local physician might send tissue to an out-of-town lab for analysis, researchers across the country ship their mouse models to UC for an expert opinion. Patrick Tso, PhD, leads the Mouse Metabolic Phenotyping Center at the Genome Research Institute, which investigates what’s really going on in genetically altered animal models.

This special edition of UC Research also includes our newly published 2006 Report on Research, which, accompanied by plenty of eye-catching images of the people doing the work, puts our endeavors into perspective—the down-to-earth dollars-and-cents kind.

We welcome your comments and questions about the stories you find in this edition of UC Research.
PADDLE CONCEPT

USING ULTRASOUND (REAL-TIME IMAGING)

PRODUCE 2 SIDES/INSTRUMENTS

WHICH "MEET IN THE MIDDLE"

MEEU @ MITRAL VALVE

ONLY TOURISTICALLY APPLY ENERGY
Don’t go in with an empty stomach, and try not to lock your knees.”

When it comes to getting through class, that’s not exactly the type of advice business, design and engineering students are used to hearing from their professors. Then again, most such students don’t find themselves viewing live surgical procedures.

For students in the medical device innovation and entrepreneurship program at the University of Cincinnati, however, watching an operation at UC’s Academic Health Center is all part of the process for moving an idea from the design studio to the operating room. The unique undergraduate program, offered through the College of Engineering, draws together seniors from biomedical engineering, industrial design and the business honors program into multidisciplinary teams to identify innovative solutions to real-world clinical needs.

By John Bach
Photos by Andrew Higley
“This isn’t a theoretical exercise where the projects get shelved somewhere,” says William Ball, MD, head of UC’s biomedical engineering department. “The students are actually working with local industry and physician researchers to do projects that could eventually turn into products.”

Each team partners with a physician and is assigned an existing medical problem to investigate, which then leads to a year-long innovation process in which they develop concepts, build working prototypes and, eventually, pursue a business plan to commercialize the device, and perhaps protect the concept as intellectual property.

The process is extremely familiar to program cofounder Mary Beth Privitera, assistant professor of biomedical engineering, who has spent 17 years in the field designing and consulting for medical device companies. She has been involved in dozens of new medical device product releases. A 1995 graduate of the College of Design, Architecture, Art, and Planning’s industrial design master’s program, Privitera received a rare appointment (as a non-PhD) within the College of Engineering in 2004 to spearhead the medical device program.

“We are uniquely situated to have very strong programs in business, industrial design and biomedical engineering all collaborating with the College of Medicine,” she says. “The doctors are integral to the student teams and meet with them throughout the quarter, which is fantastic. That’s something not a lot of other campuses can claim.”

In addition to watching live surgeries, students are often present as surgeons sharpen their technique using medical devices in both animal and cadaver labs.

“I didn’t see my first surgical procedure until I was employed full-time,” Privitera points out. “These learning opportunities are phenomenal training for an undergraduate.”

Ball says Privitera’s private-sector experience has been crucial to the program. Her connections to firms that have a real interest in the students’ results have yielded funding that makes the program possible. Once a company is on board to support a team project, it becomes the client and expects routine and professional presentations of the group’s progress.

“Mary Beth has actively solicited real-world projects from industry and from physician researchers within the UC community,” Ball says. “Instead of working on fairytale projects, they are actually doing things that hopefully physicians might eventually move on to utilize.”
Many of those projects originate in UC’s Center for Surgical Innovation (CSI), a state-of-the-art teaching and research facility. Considering the CSI’s mission is also to focus on addressing unmet medical needs, pairing with the medical device innovation program across campus is an ideal fit.

“Surgeons have great ideas, but oftentimes they never take them to the next level because they don’t have the time,” says Chuck Doarn, CSI executive director. “The idea behind the relationship is that the surgeons have ideas, and the teams have potential solutions. And where the two can come together, you have discovery and innovation. Then you go to the next level.”

For Privitera, the most rewarding days are those she spends with her students testing a prototype in the lab—the times when she sees “the light bulb go on.” One such time was last year, when a team’s medical device ended up collapsing the atria of a heart during an animal lab.

“Here were all these great students, and they felt like they had failed,” she says. “When asked what they would do differently, they agreed they would interact with the doctor more and explore the geometry of the anatomy more.

“They didn’t fail. That knowledge is a great lesson. In medical device design, you never get it the first time out. You get close and you learn, and you do it again until you hit it on the mark.”
ONE OF THE PROJECTS developed by students in the medical device program at UC was a haptic-feedback (or sense-of-touch) system for physicians doing robotic surgery. For the project, the student team interviewed several UC doctors who use UC’s da Vinci robotic surgical system. The da Vinci allows surgeons to operate inside the abdomen using robotic arms and specialized instruments inserted through half-inch incisions. The surgeon controls the arms from behind a computer console several feet away, and the robot essentially becomes an extension of the surgeon’s own hands.

The students went to work developing a system for the robot that would restore some of the tactile sensation that surgeons experience with hands-on surgery. In the end, they derived a way to measure the clamping force at the end of the robotic instruments, and then reproduced that force inside thimble-like devices that fit over the surgeon’s fingers while he or she operates the robot. The thimbles were designed with bladders or tiny balloons that fill with water and create pressure against the surgeon’s thumb and forefinger mimicking pressure being applied by the robotic instruments inside the patient.

The students’ work has since been filed by the university as intellectual property. The hope, as with any intellectual property, is that it will one day be developed further by an interested company.

A Robot With a Human Touch

Anne Chasser, UC’s associate vice president for technology transfer and commercialization, says the cross-collaborative nature of the medical device course holds promise for discoveries as well as future funding, considering both the National Institutes of Health and the National Science Foundation are focusing on interdisciplinary collaboration as a major criterion for awarding grants. “It’s this cross collaboration that’s driving innovation at UC. The growth of this type of research and discovery is really the big story. Plus, it really prepares our students for the work environment where everyone brings something unique and distinct to the table.”
MARY BETH PRIVITERA’S FASCINATION
with medicine started early in life—around age 3.

It was then that her mom, who brought little
Mary Beth to class while she attended nursing school
in the early 1970s, suggested she pass the time with
pencil and paper.

“I would look at her anatomy and nursing books,
and I would sit and draw through her classes,” the
assistant professor grins. “That’s what I did.”

Perhaps further contributing to the future medi-
cal device designer’s career, Privitera’s parents consis-
tently encouraged their children to be creative.

“They would buy me any material to make any-
thing I wanted,” Privitera says. If she needed googly
eyes for her pom-pom animals, she would call Dad,
who would stop at the fabric store on his way home
from work at the barbershop. They knew him well
there.

“I was a very messy child,” she says of her youth
in Monroe, Ohio (a small town midway between
Cincinnati and Dayton), where she once accented her bedroom carpet
with sky-blue oil paints.

Throughout her adolescence, Privitera clung to her interests in art,
science and medicine. In high school she took anatomy, physiology,
physics and chemistry for fun.

“I would draw elaborate pictures during the tests,” she says. “When
they would ask us to describe some type of system, I would just draw
the system, because that’s how I would remember it, and that’s how I
would communicate it.”

Naturally, given her range of talents and interests, settling on a single
discipline when she began college presented a predicament. “I loved to
draw, but I also loved science,” she says. “And something in a medically
related field was also on the table.”

The artist in her eventually won out, and she chose UC’s indus-
trial design program at the College of Design, Architecture, Art, and
Planning (DAAP). The talented student’s career choice became increas-
ingly clear as she started her first co-op at Ethicon Endo-Surgery, a
global company headquartered in Cincinnati that develops and markets
advanced medical devices.

“At Ethicon, I learned about science and I learned about surgical
techniques, which was vastly intriguing to me,” she says.

During her next co-op, Privitera worked for Bresslergroup, a

“I loved to draw, but I
also loved science. And
something in a medically
related field was also on
the table.”
Philadelphia product design firm, where she first learned about applying human factors to product design. Privitera was enthralled with finding answers to questions like how much force the human hand can produce.

After completing her bachelor’s, the 1990 DAAP graduate took a full-time job with Ethicon Endo-Surgery. And although adjusting to the corporate environment was difficult for Privitera, she loved the challenge that came with solving clinical problems. Soon she began designing medical devices. Her first start-to-finish design, which still hangs on her office wall in the Engineering Research Center, was an apparatus used to clip off the vessels around the gallbladder. It remains on the market today.

In 1993, Privitera refocused on her education and returned to UC as a full-time grad student. She also began working as a consultant in the medical device field, which she continues today as principal of Mad Design USA, a firm she cofounded.

Privitera has been involved in dozens of new medical device product

“I would draw elaborate pictures during the tests [in high school]. When they would ask us to describe some type of system, I would just draw the system, because that’s how I would remember it, and that’s how I would communicate it.”
releases, either as a designer or as a consultant. Most of them she can’t
discuss due to nondisclosure agreements. She is coholder of four pat-
ents, one involving a new grip she helped develop for a line of products
at Atricure Inc., a local medical device firm. Privitera suggested alter-
ing a device used to clip scar tissue on the heart from a pistol grip to a
syringe grip. The change was a hit because it reduced interference with
the abdomen—which was precisely Privitera’s hypothesis, considering
patients with cardiovascular issues are also often obese.

One of the biggest
challenges for medi-
cal device designers,
she says, is learning
to understand “doctor
speak” and not being
intimidated by physi-
cians’ knowledge.

“Physicians don’t
talk to you in lay
terms,” she explains.
“They talk to you as if
they’re speaking to a
colleague. So whatever
I didn’t know, I’d ask
or look up. A lot was
on-the-job reading
and research. I also
observed tons of sur-
geries and just dove
right in asking ‘what’s this?’ and ‘what’s
that?’ and ‘why?’”

Privitera received her appointment to
UC’s department of biomedical engineer-
ing in 2004, but she was no stranger to
teaching at UC, since she had spent years
as an adjunct at DAAP.

“I love teaching,” she says. “I try to
be as available to the students and mentor
them as much as I possibly can. I
want them to have success and be confi-
dent when they finish the program. We
ask a lot of our students. We are pretty
demanding in the program. And they
need to have that mentorship in order to
be successful. Otherwise we are setting
them up for failure.”

“I love teaching. I try
to be as available to the
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“PRIVITERA EXPECTS
HER STUDENTS TO TAKE
CHANCES and be creative,
just as her parents instilled in
her. And she now repeats
those principles to her
three daughters (8-year-old
twins and a 10-year-old).

“We have a full shop at
home,” she says. “So we can
build anything we want to build.
The kids know how to use a
drill. They know how to use a
wrench. And we try to encour-
age them to branch out.”
finding one place in two worlds

Uncovering the headscarf that for second-generation Muslim women in America both connects them to their past and opens up their future

By Dawn Fuller
Photos by Lisa Ventre
The topic was unavoidable.

Though sociology professor Rhys Williams, PhD, was in Chicago to conduct a massive study of college-age students and their involvement in religious organizations, he became fascinated with a far more specific sociological issue.

A member of UC's sociology department in the McMicken College of Arts and Sciences, Williams found himself studying the importance of a piece of clothing, the head covering worn by Muslim women called a hijab. He wanted to know, or rather, his participants wanted to share, how second-generation Muslim women were using the headscarf to stay connected to the traditions and values of their parents, while carving out their own niche in the Western World.

In a twist of the traditional scientific method, it was his subjects—not Williams himself—who identified this as an issue to be studied more in depth.

“There are two basic ways that sociologists go about defining their research questions,” explains Williams. “One is that they get a very clear idea of what it is they want to research, they come up with a hypothesis, and they go out and test it. Another way is ethnographic—they define their research ideas by focusing on what is important or meaningful to the people in the study. They let the specific research topic come to them. In general, I'd say I'm more of the latter school.”

During interviews and observations with young Muslims in Chicago as part of the larger Youth and Religion Project, Williams says the young adults consistently raised the issue of the hijab. The women wanted to promote understanding about why they would wear a garment that's sometimes viewed as oppressive by American society. Out of the 30 or so Muslim women interviewed, many said their mothers didn’t wear the hijab, yet it was taking off as a trend for the second generation.

“Wearing the hijab is something that American Muslim women have to deal with, because it’s such a visible way of standing out from non-Muslim Americans,” Williams says. “It makes someone so clearly and visibly a member of a minority in the same way the hats and clothing worn by Orthodox Jews do.

“This is an issue that's clearly on the minds of Muslim women, and it's something they have to negotiate regularly,” he says. “I would ask questions, but it was impressed on me that this was something they
wanted me to understand in the way that they understood it.”

Studying the hijab was not in his plans, but Williams says the topic was unavoidable. So he and colleague Gira Vashi, then a research assistant at the University of Illinois-Chicago, set out to learn more.

The two discovered why the Muslim women were not hesitant to stand out. They learned that the distinctive covering helps the women to show their families that they haven't lost their traditions and religious values.

And, Williams says, many Muslims reported that the hijab symbolizes modesty and moral purity in an American culture perceived to overemphasize materialism, individualism and sexual openness.

He says that while the Muslim women he talked to were set on keeping to their traditions, they embrace American culture. They are often enjoying lives that their mothers never would have dreamed of—attending college, driving cars, consulting their Palm Pilots and Blackberries and planning successful careers.

But as the research project evolved, Williams says that the Muslims and a group of Hindus he interviewed were fashioning a religious identity as a way to keep a foot in both their traditional and their American worlds.

“I think that when they wear the hijab, they’re signaling to their parents and friends that they haven’t lost themselves, that they haven’t

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Rhys Williams, PhD, was two years into his research examining religion and identity among young people when the Sept. 11 terrorist attacks generated suspicious scrutiny of American-Muslim communities.

Because of fears of retaliation against these communities, Williams and his colleague chose not to actively pursue research on young Muslims in the days and weeks following the attacks.

“I do know that some women, at least for a while after the attacks, were not wearing the hijab,” says Williams. “They did not want to stand out, and they weren’t going out as much either.”

Despite that, Williams believes Muslims continue to make progress in becoming a part of the American religious and social fabric, just like many groups before them.

“If I were doing this research 150 years ago, I’d be studying Catholics and finding similarities to what American Muslims are facing today,” he says. “There were events that really interrupted the progress of Catholics assimilating into this country. But ultimately, in a long, historic sweep, Catholics became part of the American landscape.”
Rhys Williams’ interest in religion and its impact on society can be traced back to his freshman year of college, when he told his mother he’d never take another sociology course—a statement the sociology professor says he continues to be heckled about.

In fact, Williams actually dropped out of college after his first year, not quite sure what direction his future path would take.

His parents—his father a professor of educational psychology and his mother a history and social studies teacher—had strong ties to the Presbyterian Church, through which he made connections to work for a church-sponsored social service agency in New Mexico.

That experience triggered his interest in how churches and religion play a role in social change, which led him back to the field of sociology, where he has become one of the nation’s prominent researchers. He earned his bachelor’s degree, magna cum laude, in sociology/political science from the University of New Mexico, Albuquerque, and his master’s and PhD in sociology from the University of Massachusetts, Amherst. He currently serves as editor for the Journal for the Scientific Study of Religion and is associate editor of the Journal of Contemporary Ethnography.

His discussions with young, second-generation Muslims and Hindus during the Youth and Religion Project led to new immigration-related humanities research that earned him one of the first fellowships at the newly created Charles Phelps Taft Research Center at UC.
become too ’Westernized,” Williams says. “And in some ways I think it gives them the freedom to be quite autonomous, because it signals their piety.

“It’s a way of keeping a fidelity and faithfulness to their family and to their family’s traditions and their faith, but at the same time working with that faith as a way of fitting in here in the United States. It’s interesting to see how often the decision to wear the hijab is represented as their free choice.”

Williams and Vashi presented results of their Chicago study in a paper at the 101st meeting of the American Sociological Association. In their paper, they report that many Muslim respondents addressed the concept of oppression by emphasizing that “In Islam, men and women have equal rights,” or “men and women are different, but that does not mean unequal.”

The women they interviewed reported that Muslim men should also wear modest dress, though nothing as obvious as the hijab.

The authors wrote, “Hijab is becoming the catch-all symbol for Muslim identity, and for issues related to Islam’s place in America.”

Rima Dabdoub, a Sycamore High School graduate now in her third year as a middle childhood education major at UC, says she and her twin sister, Noura, both started wearing the hijab when they were in the eighth grade.
“For me,” Dabdoub says, “aside from the fact that it’s my religion and a command from God to wear it, I think it’s protection, and it identifies to everyone else that I’m Muslim.

“In general, yes, I think a lot of people believe it’s oppressive, or they think my parents made me wear it. But once they ask about it, and once I explain it to them, I really do think they understand it.”

Alaa Minkara, president of the Muslim American Society at the University of Cincinnati, says she was in the sixth grade when she started asking her parents if she could wear the hijab, but had to wait until seventh grade until her parents thought it was a suitable time.

“When you see someone like me, someone dressed like me, you automatically know that she’s Muslim,” says Minkara, a Saudi Arabian–born pre-pharmacy major.

Minkara says wearing the hijab is the best way to protect and guide herself in the right direction.

“It’s not just protection from men,” she says. “It’s another way of showing modesty. It’s respect. It’s a way of showing your Muslim identity. It’s the way that pleases Allah, our God, and I think that’s the most important part of it.

“Practically everything I do is related to my religion,” she says. “It means everything to me.”
In 1999, Rhys Williams, PhD, partnered with R. Stephen Warner of the University of Illinois-Chicago to launch the massive Youth and Religion Project. The two set out to observe college-age students around Chicago and their involvement in religious organizations.

“We know a lot about what young people believe,” Williams says. “We know much less about how young people practice their religion in organizational settings. So, we were quite purposeful in wanting to study their involvement in religious organizations and the ways in which that was shaping identity.”

Williams’ research took him to the dining room table for Sunday dinner, to the living room for Bible study, to Lake Geneva, Wis., to watch traditional Hindu dance and to the mosque to observe prayer.

He joined Christian, Muslim and Hindu college students as they met their friends at church or temple, or, if they were locals, celebrated religion at home with family. He met, observed and interviewed European-Americans, African-Americans, Latinos, Arabs, Indians and Pakistanis in his pursuit of how students identify with organized religion.

Williams noticed “striking differences” in the way white and black Christian, college-age students discuss their involvement with churches and religious organizations. He says the majority of white students revealed that decisions to join or leave religious organizations were based on how the institution was meeting their religious and spiritual needs—disclosing what Williams refers to as their “organizational biographies.”

On the other hand, black students often described being called to a particular organization, almost as if the decision to join was beyond their control. They spoke strongly of being part of a community—of seeking a “church home” away from home that felt like their family’s “home church.”

“They would describe members of the congregation as if they were family,” Williams says. “One student described the church organist as her auntie, which she wasn’t, biologically.”

However, Williams says, the organist relates to the student as if she were her aunt.

That relationship, Williams says, would include a certain amount of deference and authority and monitoring. For example, the organist would check on the student to see if she was doing her homework.

“In our studies of white and black students and their involvement in religious organizations, we found they had different orientations to the organizations,” adds Williams. “The white students had an orientation of choice, almost like shopping for the right fit, and the black students had an orientation of fictive kin and obligation and community.”
They make us sneeze
Allergies—to both the things we take into our bodies and the substances in the environment around us—have reached an epidemic level in the United States and across the globe. Recent nationwide studies show that more than 54 percent of Americans are allergic to at least one environmental or food allergen.

And the problem is not limited to adults. Allergic disorders affect more than 40 million infants and children, resulting in 2 million sick days among school-age kids and increased public health costs.

We're only just beginning to understand how exposure as infants and toddlers to certain environmental allergens—such as dust, pollen, toxic fumes and cigarette smoke—can permanently affect the way we breathe.

Grace LeMasters, PhD, an epidemiologist specializing in childhood health, became concerned about this growing problem many years ago. “We have an epidemic of childhood allergy and asthma in the United States,” says LeMasters, a professor of environmental health at UC, “and there are multiple
factors causing this phenomenon—including environmental agents that can be addressed through personal lifestyle choices and changes in public policy.

Research has demonstrated that diesel exhaust may contribute to hay fever and asthma symptoms. Diesel exhaust is generated from trucks and buses, and in Cincinnati, LeMasters says, up to 20,000 of these vehicles travel on each interstate highway daily.

According to the Ohio Environmental Council, 23 percent of Cincinnati residents live in areas of elevated diesel exhaust exposure, deemed “hot spots.”

In October 2001, LeMasters launched the Cincinnati Childhood Allergy and Air Pollution Study (CCAAPS) to take a closer look at environmental and genetic factors contributing to the development of childhood allergies.

This six-year study, funded by the National Institute of Environmental Health Sciences, examines the effects of environmental pollution on childhood respiratory health and allergy and asthma development in an effort to better understand and develop ways to combat the early onset of childhood allergies.

“Epidemiologic studies give answers to questions about human populations that can’t be studied as well in other species in a laboratory,” explains LeMasters.

“Humans aren’t exposed to just one agent at a time,” she adds. “We’re constantly encountering a complex mixture of agents that may affect our health. Lifestyle choices, such as diet, smoking and living environment, can also play a role.”

UC’s childhood allergy study was designed with two priorities in mind. The first was to measure diesel exhaust exposure levels and indoor/outdoor environmental allergens to determine if children with higher levels of exposure were at increased risk for allergies, which is a primary risk factor for childhood asthma. The second, led by UC pediatrics associate professor Gurjit Khurana Hershey, MD, PhD, was to determine if those effects were magnified in a genetically at-risk population.

Staffed by a 17-member team of young investigators and seasoned scientists, the study enrolled about 750 infants and their parents living either within a quarter mile or more than 1.5 miles from major interstate highways. LeMasters hypothesized that children living closer to interstate highways were being exposed to higher levels of diesel exhaust from truck and bus emissions and therefore would have more respiratory disorders.

Once the families were recruited, the UC team began asking them questions that would provide important clues about what makes certain children more susceptible to developing allergies later in life.
LeMasters’ childhood allergy study revealed several important findings that have already begun to change the public’s perception of the role that environmental pollutants play in health.

Experts from UC and Cincinnati Children’s Hospital Medical Center conducted clinical health exams of the families, coordinated home visits to assess allergens and set up 24 air pollution monitoring stations at strategic locations across Greater Cincinnati.

LeMasters’ childhood allergy study, which is in its sixth year, revealed several important findings that have already begun to change the public’s perception of the role that environmental pollutants—such as diesel emissions and secondhand tobacco smoke—play in health.

In August 2005, the UC team reported in the Journal of Allergy and Clinical Immunology that the type of traffic and distance from it—not just traffic volume—are associated with infant wheezing.

They found that infants living within 100 meters of “stop and go” truck and bus traffic wheezed three times more often than those living 1,500 meters or more from interstates.

These results were used by U.S. Sen. George Voinovich to help direct his efforts to introduce the Diesel Emission Reduction Act of 2005, which was successfully incorporated into the U.S. Energy Policy Act of 2005.

“That during the first year of life, an infant’s lungs and immune system are still developing, so overexposure to harmful particulates such as diesel exhaust may play a role in the development of allergic conditions,” LeMasters says.

In the June 2006 edition of Pediatric Allergy and Immunology, the research team dispelled a long-held notion about mold when they reported that it was environmental tobacco smoke—

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**ASKING QUESTIONS**

is one of the things Grace LeMasters does very, very well.

Since her childhood days devouring Nancy Drew novels, LeMasters has always loved a good mystery. To her, that’s exactly what epidemiologic research is about: Asking the important questions. Putting the pieces of the puzzle together. Solving the mystery.

Before she became an epidemiologist, LeMasters was a nurse caring for families on the frontlines at a public health clinic in Indianapolis. Just 21 years old and fresh out of nursing school at Indiana University, she became acutely aware of how lifestyle choices—and the environment that we live in—can affect overall health. As a clinical nurse specialist, she developed a specific interest in reproductive and fetal health and how what we put in our bodies can affect children’s future well-being.

She realized that before she could do something about the problem, she must first understand the intricacies of conducting human population research. Pregnant with her second child, she enrolled in UC’s epidemiology and biostatistics doctoral program.

“My experiences as a public health nurse, going to graduate school and my own pregnancy came together somewhat serendipitously to spark my passion for studying reproductive and early childhood health,” recalls LeMasters.

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every day—can make young children more susceptible to developing multiple allergies later in life. This study showed a relationship between specific airborne fungal spores (basidiospores, penicillium/aspergillus and alternaria) and an increased risk for multiple allergies in children.

And research reported in the October 2006 edition of the Journal of Pediatrics showed that 28 percent of infants born to parents with confirmed allergies tested positive to allergies by age 1, and that number increased to 39 percent by age 2.

“Our findings have had broad implications for medical practice...

not the suspected visible mold—that drastically increased an infant’s risk for developing allergic rhinitis by age 1.

“We found that infants who were exposed to 20 or more cigarettes a day were three times more likely to develop allergic rhinitis by their first birthday than those who were not exposed,” says LeMasters.

“What most people don’t realize,” she adds, “is that a shockingly high number of children—about 43 percent—are exposed to environmental tobacco smoke right in their homes,” says LeMasters.

In 2006, she also became the first female scientist ever to receive the Professional Accomplishment in Academia Scientists Award from the Cincinnati Engineers and Scientists Association. She was selected for her contributions to science as an independent researcher, industry adviser and mentor for environmental health students.

LeMasters has received several distinguished honors for her epidemiologic research, but the one she is most proud of is the U.S. Department of Defense Silver Medal Award, which she received in 2003 for more than a decade of research related to occupational exposures and health among soldiers. The award is the second highest given to private citizens for superior accomplishments and contributions.

“Another key study finding was that exposure to a certain group of fungal spores—abundant in the air we breathe every day—can make young children more susceptible to developing multiple allergies later in life. This study showed a relationship between specific airborne fungal spores (basidiospores, penicillium/aspergillus and alternaria) and an increased risk for multiple allergies in children.

And research reported in the October 2006 edition of the Journal of Pediatrics showed that 28 percent of infants born to parents with confirmed allergies tested positive to allergies by age 1, and that number increased to 39 percent by age 2.

“Our findings have had broad implications for medical practice...
and suggest the need for earlier allergy evaluations and monitoring of young, at-risk children—especially those born to parents with allergies,” says LeMasters.

Like most research, LeMasters’ work requires tenacity, perseverance and determination, taking a minimum of four to five years to complete one study. Focusing on the “big picture” at all times keeps her motivated to solve the puzzle and ask the next question.

“I can get excited with each stage of research, but contact with the families is what makes it all real for me,” she says. “That’s what is so great about epidemiology and environmental health research—you become immediately and directly immersed in real-world situations.”

But “real-world” research brings into sharp contrast the challenges of studying everyday people and the various complexities of their day-to-day lives. As LeMasters says, “you have to be able to deal with a certain level of uncertainty.

“The biggest challenge of epidemiologic research is teasing out one effect—for example, air pollution or cigarette smoke—while controlling for the life going on around it.”

Only after we account for all the other factors, she says, can we point a finger at the environment. “
That’s what is so great about epidemiology and environmental health research—you become **immediately and directly immersed in real-world situations.**

Like last fall when LeMasters and colleague James Lockey, MD, published findings showing firefighters to be at a **significantly higher risk** for developing four different types of cancer than workers in other fields. The research, they say, shows a critical and immediate need for additional protective equipment to help firefighters avoid inhalation and skin exposures to known and suspected occupational carcinogens. And, they say, simple changes like spending more time removing soot and other residues from the skin could also reduce exposure to dangerous chemicals.

Work like this is why LeMasters says her passion lies in research, but her true joy is teaching. She tells her students that research is all about fitting together the pieces of the puzzle. You have to love the mystery of the question to develop the passion needed to answer it, she says. Without passion, it would be tough to get through the ups and downs of conducting research—mentally or emotionally.

As a woman in a still very much male-dominated field, LeMasters also recognizes the stark importance of her role as a mentor for female students and junior faculty members.

Doctoral student Jocelyn Biagini, 27, says having LeMasters as a mentor has been a “source of continuing guidance and support.” Like LeMasters, Biagini, who served as part of the childhood allergy study, considered training in nursing but felt drawn to research.

LeMasters offered her a position in the molecular epidemiology in children’s environmental health training program, and Biagini knew she had found her niche.

“As a mentor, Dr. LeMasters has given me invaluable skills and knowledge about the field of epidemiology that I couldn’t have learned in a classroom,” she says. “I wouldn’t be as confident in my work as I am now without her constructive criticism and motivation to always strive to do the very best I can.”

LeMasters believes wholeheartedly that stepping outside your figurative “box” is necessary to calm your mind so the answers can emerge. “Many of my most thoughtful and creative ideas have come when I was out in nature and my mind had some quiet,” she recalls. “Sometimes you have to extricate yourself from the hustle-bustle of e-mail, student questions and a ringing telephone to form a single coherent thought.”
Understanding the science behind childhood allergies is vital. But what is even more important is **ENSURING THAT THE NEXT GENERATION UNDERSTANDS** the dangers of environmental pollution and how to prevent it.

Teaching Kids About Pollution

In October, UC researchers teamed up with the Ohio Environmental Protection Agency and ImagineNation to educate nearly 500 young children and their families about air pollution at the fifth annual Cincinnati Childhood Allergy and Air Pollution Study family picnic, held at the Cincinnati Zoo.

Larger-than-life puppets topping out at 15 feet animatedly bobbed around stage delivering kid-friendly messages about the causes and reduction of air pollution. The goal: teach kids where pollution comes from, how it affects people and how everyone—even kids—can help reduce it.

LeMasters summarized recent study findings and why they mattered in daily life, then offered practical advice to parents for minimizing children’s exposure risk.

“Finding answers through research doesn’t mean anything if we can’t apply that knowledge to make life better for people,” says LeMasters. “We want to teach kids very early about how environmental pollution can affect their health and what they can do to minimize it.”
RESEARCHERS WORLDWIDE spend enormous resources creating “knock-out” or genetically altered rodents to study disease. In fact, it’s thanks to man-made animal models that scientists have been able to unravel some of society’s most pressing health problems.

It’s always disappointing when the altered gene doesn’t do what the researcher wants. Paradoxically, there’s usually a big question when it does.

As in, what next?

Patrick Tso, PhD, would argue that what you do then is send your promising model to a phenotyping center.

And he might just suggest you send it to his phenotyping center at UC.

FINDING THE RIGHT TYPE
By Dama Kimmon

Photos by Dan Davenport
n animal’s phenotype, or its observable characteristics, can provide scientists with a lot of information about how genes work—or don’t work—on the path to disease formation.

Once disease models are created, scientists are often limited in their phenotyping capabilities. They aren’t equipped to go beyond their initial assessment of what a specific gene deletion might have done.

It’s that extra investigative step—particularly in studying metabolic disorders like obesity and diabetes—that’s the focus of UC’s Mouse Metabolic Phenotyping Center.

One of only three of its kind in the United States funded by the National Institutes of Health (NIH), UC’s phenotyping center delivers crucial data not only to Cincinnati scientists, but also to researchers across the country.

“In the past, without intense phenotyping, not noticing an immediate change could have meant you needed to rethink your whole theory,” Tso says. “The center really works to keep scientists on track. And it often gives them the proof they
The center really works to keep scientists on track. And it often gives them the proof they need to move forward, or clues about where to head next.”

And UC’s center must be good at doing just that. It opened in 2001 with a $5 million grant from the NIH and was just refunded for another $5 million through 2011.

The phenotyping center comprises six core facilities: administrative, animal care, lipid, lipoprotein and glucose metabolism, cardiovascular and renal functions, energy balance regulation, and pilot and feasibility.

Tso leads the administrative core, where he completes initial assessments of mice being sent to the center. He then decides which core director to send them to.

While the main infrastructure for the center is at the Genome
Research Institute, experts and key facilities are located all across UC’s Academic Health Center campus. In fact, the cores are directed or codirected by faculty in five different College of Medicine departments, including environmental health, molecular and cellular physiology, pathology and psychiatry.

The center is equipped with high-tech tools for monitoring everything from heart and kidney function to sleep patterns and movement.

For example, sophisticated new technology helps what is known as the energy balance regulation core—led by Randy Seeley, PhD, Randall Sakai, PhD, and Matthias Tschöp, MD, all of UC’s psychiatry department and Obesity Research Center—to measure energy intake and expenditure.

Both measurements provide important clues about metabolic disorders like obesity and diabetes—the key focus of the phenotyping center.

“We know that if weight is to stay constant, then energy intake—the stuff we eat—must equal the energy we put out through exercise or internal body processes,” says Seeley.

Measuring energy intake isn’t all that tough. But measuring how much energy is used can be tricky.

“The body expends quite a bit of energy just trying to keep warm—a phenomenon called thermogenesis,” says Seeley. “But it also uses energy to perform everyday tasks or during exercise.”

To measure one aspect of energy expenditure, the researchers use what they call indirect calorimetry. By placing a mouse in a special chamber, they can gauge the amount of oxygen and carbon dioxide being exchanged in the chamber air, which gives them nice calculations about the energy being used inside the mouse’s body.

On the outside, visible changes in activity levels can provide a lot of clues about weight gain, and the UC scientists have a good way to measure those changes too. And it’s not by counting turns around a running wheel.

The same high-tech machine used to measure indirect calorimetry—custom built shortly after Tschöp arrived at UC in 2003 from the German Institute of Human Nutrition—also uses infrared laser beams to record where the mouse is in space at any given time. Output from
MOST LABORATORY RESEARCH IS DONE in the rat because of its larger size, says Patrick Tso, PhD. But the phenotyping center uses mice as their model. Why not just create a rat phenotyping center?
Tso says that the genetic make-up of a mouse is much better known, making it much easier to create transgenic or “knock-out” models.
“But,” he says, “the mouse isn’t just a small rat.”
So the team needs a way to work around this rodent difference. To do so, they have created a pilot and feasibility core. Led by obesity researcher Stephen Woods, PhD, the core works to miniaturize the work done in rats to fit the mouse model used at the center.
“You literally have to retool when working with a mouse, compared with a rat,” says Tso. “And by doing this work, the center and this core really have the capability of producing translatable research.”
For example, Tso and pathology colleague Ron Jandacek, PhD, have come up with a new way to measure fat absorption in the mouse—which has been adjusted to both rats and humans.
“In the good old days,” says Tso, “you had to collect a day’s worth of stool samples in order to measure fat absorption. You can imagine this was not only awkward for the patient, but also for the person analyzing it.”
Tso and Jandacek, using the pilot feasibility core, came up with a way to inject a special diet that would allow fat absorption to be measured in just one or two small stool samples. Their work has eliminated unnecessary sample collection, while also speeding up the measurement process.
The pilot and feasibility core is also responsible for funding new projects. The core’s group of grant reviewers from around the country has chosen to fund projects at Ohio State University, Ohio University and the City College of New York, among others.
the lasers can measure precise changes in movement, not just linearly, but no matter what gymnastics the animal gets up to.

Extensive phenotyping using UC’s elegant technology is providing short- and long-term clues about behaviors that result from genetic alterations, clues that are spurring new ideas and projects.

One project in particular, Tso says, really explains how phenotyping can direct research.

The gene cholecystokinin produces a gut hormone that contracts the gallbladder. It also promotes enzyme secretion in the pancreas. Both processes are critically important for fat absorption and nutrient digestion.

University of Michigan researcher Linda Samuelson, hoping to learn more about the actions of this gene, generated a mouse with its cholecystokinin gene knocked out.

“Presumably, one would expect that without this gene, the mouse would have trouble absorbing nutrients,” says Tso, “or that it might eat less.

“Thank you very much; it had no problem at all,” he says grinning.

So Samuelson sent her uncooperative model to UC’s phenotyping center to learn more.

Tso’s group found that although the total daily food intake did not change, the feeding pattern did.

But even more interesting, says Tso, is that they saw real “character” changes in the mouse.

“This particular mouse was less willing to explore, more anxious, not as competitive or aggressive—almost less confident,” he says.

Perhaps all good explanations for why the animal didn’t eat during the day when others were feeding.

The knocked-out mouse’s phenotype may sound like a bad online-dating profile, but observations at the center can really tell scientists a lot about how genes work.

Just because one gene is knocked out, Tso says, and the trait that was supposed to change looks the same on the outside, doesn’t mean that gene isn’t doing what was hoped for inside.

“Many times the genes we’re focusing on do exactly what we think they might do,” says Tso. “But sometimes other genes jump in and take over. There’s a real balance between what’s lost and what’s then ‘upregulated.’

In 2006, Patrick Tso, PhD, along with 12 other research colleagues, formed the Center for Lipid and Arteriosclerosis Research at UC. Based at the Genome Research Institute, the new center and its staff will use available technology—like that at the Mouse Metabolic Phenotyping Center—to better understand such lipid-related diseases as coronary heart disease, arteriosclerosis, diabetes, vessel stenosis, hyperlipidemia, and metabolism of xenobiotics. With nearly $6 million in research funding among them, the center’s scientists hope to attract corporate partnerships to help with the mission of decreasing the incidence of lipid-related disease.

Extensive phenotyping using UC’s elegant technology is spurring new ideas and projects.
PATRICK TSO, PHD, WAS ALWAYS FASCINATED by science and knew from a young age that he wanted to do research. He even knew he would one day be a full professor.

To get where he wanted to be, the University of Western Australia undergrad needed a mentor—a very good one.

“I wanted to work under Wilfred Simmonds,” says Tso. “I had heard he was a very tough master. I respected him, but also feared him.”

One Friday night, Tso found himself working behind the circulation desk in the science library on campus when the internationally renowned Australian physiologist and researcher walked in to check out a book.

“I knew that was my chance to approach him,” Tso says.

He recalls saying, “Professor Simmonds, I know you’re very busy, but could you take another graduate student?”

To that, Simmonds replied that he was in fact very busy, but never too busy for an outstanding student.

Tso’s career—much to the credit of Simmonds’ mentoring—took off and led him to the United States. For years Tso invited Simmonds to visit his lab, but it wasn’t until 1989 that Simmonds accepted the invitation. He spent three months with Tso, working in the lab and mentoring Tso’s graduate students. Simmonds returned to Australia in 1990, and six weeks later he died.

To Tso, those last few months with his mentor were some of the most memorable.

Over the years, Tso says, he learned many lessons from Simmonds. But he says the most important lesson was integrity.

“He taught me that you have to mean what you say;” Tso adds. “He also taught me to be conservative—to never over-interpret your data.”

But evidenced in his own lab today, Tso also learned a lot about being a teacher and mentor himself. He gives a significant amount of precious lab space to younger members of his team, and he also opens his lab during the summer to undergraduate science students interested in research.
In the beginning ... was Principles of Paleontology. For 30 years, the text—written by David Raup and Steven Stanley—has been the bible for paleontology students nationwide.

Now, a third edition has been published, written by UC geology department head Arnie Miller, PhD, with Michael Foote from the University of Chicago. This latest edition by Foote and Miller contains about 95 percent new material—which can be credited to the years of original research conducted by a generation of paleobiologists, including the two new authors.

Prior to the original Principles of Paleontology, most textbooks addressed paleontology systematically through description and classification of fossil organisms, with each chapter representing a “taxon,” or category, identifying the organisms by their biological characteristics.

Miller says Raup and Stanley broke that mold with their text—one that changed how the science was taught, and thus changed how it was practiced.

The newest version, based on the Raup/Stanley model, emphasizes the use of fossils as data for answering questions about the history of life. It’s been compared to a book on world cuisine—containing information on the spices and herbs needed to make food taste as though it comes from a particular part of the world, instead of providing exact recipes.

Miller, along with UC’s Dave Meyer, PhD, and Carl Brett, PhD, are internationally renowned invertebrate paleontologists at the heart of the paleo program at UC. Their work played a major role in the paleontology graduate program’s recent seventh-place ranking by U.S. News & World Report.
ON BLOGGING

Our students and children flock to social networking sites like MySpace and Facebook because they seek to connect with their peers. In many ways, these sites expand opportunities to connect beyond the physical confines of classrooms, libraries, student unions and dormitories. They allow students to break through the often-rigid hierarchies of school life. Student networks now stretch beyond particular schools and even to distant cities, states and countries.

Technology is fueling a similar revolution among academics. Ten years ago, faculty connected with their peers through in-person networking at conferences, symposia and organizational meetings. Information about new research, colloquia, conferences and other professional opportunities was haphazardly distributed through word-of-mouth channels. Hierarchies ruled the roost, as information traveled in a top-down fashion.

In 2004, I launched TaxProf Blog to create a virtual scholarly community for tax academics, where they could find permanent resources, links, and daily news and information of interest. The idea was to provide a gathering place for them to keep abreast of the latest developments in tax research and teaching, as well as the comings and goings of their colleagues around the world. The blog has succeeded beyond my wildest dreams, with over 2 million unique visitors in its two years’ existence.

In light of the blog’s success, we decided to replicate it in other areas of the law school curriculum. We now have 35 blogs in various areas of law, edited by law school faculty across the country—all part of our Law Professor Blogs Network.

Academic blogs are only one part of the larger technological trend flattening scholarly hierarchies. In a recent online symposium hosted by the Yale Law Journal called “The Future of Legal Scholarship,” I argued in an essay titled “The Long Tail of Legal Scholarship” that technology is revolutionizing the market for legal scholarship just as surely as it has for books (Amazon), DVD rentals (Netflix), music (iTunes), etc.

Technology has dramatically changed the production and dissemination of legal scholarship. The shift from typewriters to word processors and from physical to electronic source materials—combined with the increased emphasis on scholarship in today’s rankings-obsessed law school world—has led to an explosion in the amount of legal scholarship produced each year. In addition, various Internet tools like blogs and Google Scholar, HeinOnline, LexisNexis, Westlaw, and the Social Science Research Network have lowered the costs of accessing this torrent of scholarship and provided new tools for locating scholarship of interest. The result is that more scholarly work is finding an audience—and having an influence—than in the recent past.

The impact of technology on faculty is a story that keeps unfolding. The creation of scholarly networks through blogs and the flattening of scholarly hierarchies present enormous opportunities for faculty to shape developments in their fields.

PAUL CARON, LLM, IS CHARLES HARTSOCK PROFESSOR OF LAW AND DIRECTOR OF FACULTY PROJECTS IN UC’S COLLEGE OF LAW. TAXPROF BLOG CAN BE FOUND AT HTTP://TAXPROF.TYEPAD.COM. THE LAW PROFESSOR BLOGS NETWORK CAN BE FOUND AT WWW.LAWPROFESSORBLOGS.COM.
Biology assistant professor Elke Buschbeck, PhD, is fascinated by insect eyes—particularly the unusual ones. She studies larvae of the diving beetle *Thermonectus marmoratus*—an insect that certainly needs a “different view” when hunting for prey below the water. The elongated retina (right) and unusual position of photoreceptive regions (in red) could provide important clues about the basic principles of vision and the eye’s ability to measure distance—clues that could one day result in powerful new technologies. For her work, Buschbeck received a National Science Foundation CAREER Award.