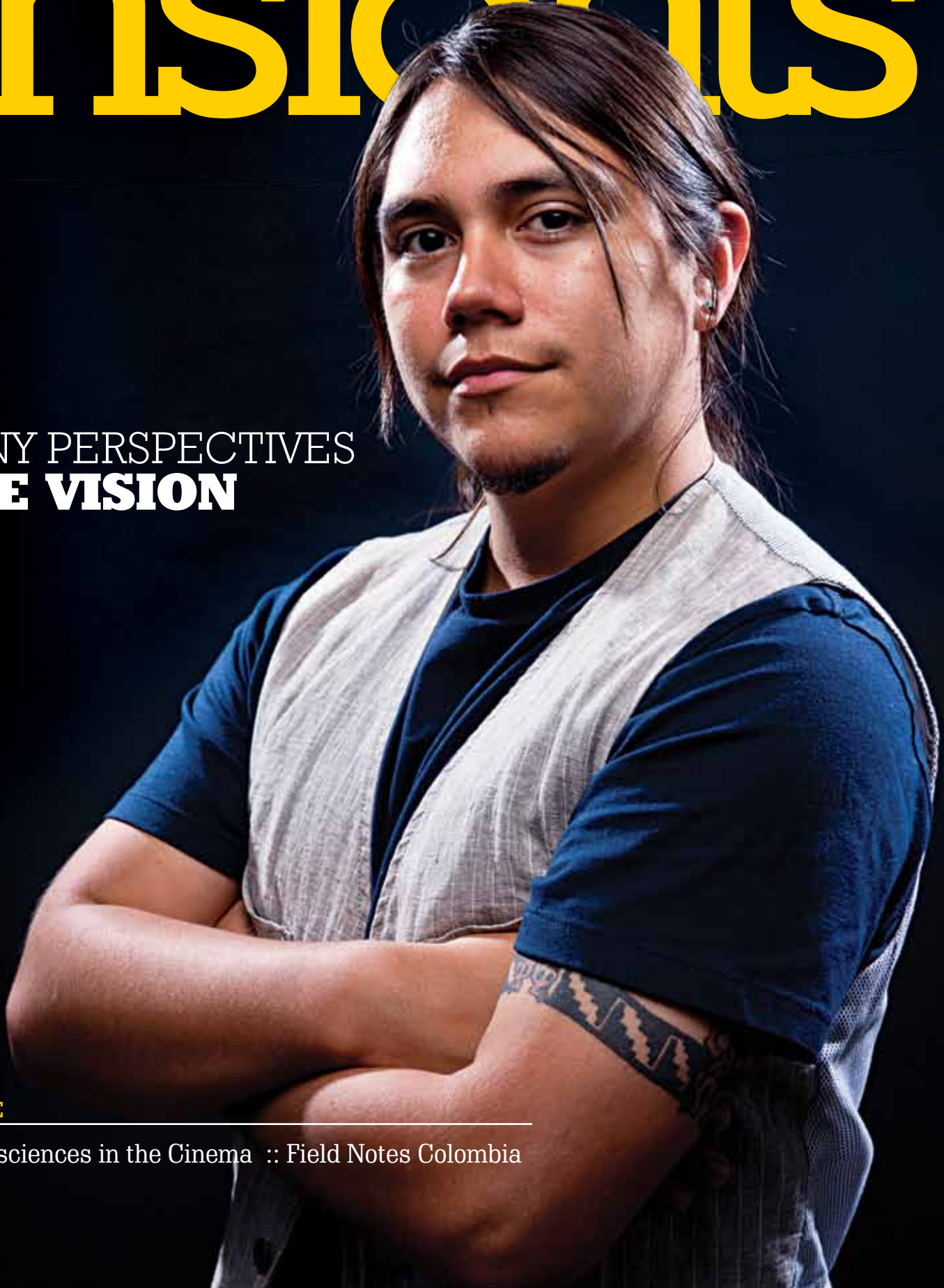


insights

—
MANY PERSPECTIVES
ONE VISION



INSIDE

:: Geosciences in the Cinema :: Field Notes Colombia



PURDUE
UNIVERSITY

GREETINGS,

When undergraduate Ravindran Rajesvaran was considering colleges from his hometown of Kuala Lumpur, he settled on Purdue's College of Science because of the reputation of our actuarial science program and the University's large Malaysian community.

It is that combination of academic prowess and diverse community that for decades has drawn students and faculty from around Indiana, across the country and around the world to Purdue, and helps us in our quest to use globally informed teams to solve world challenges.

In this issue of *Insights*, we take a look at diversity in the College of Science through the lens of photographer Steven Yang. We let the faces and voices of our students — undergraduates and graduate students from down the road and across the hemisphere, and from America's pueblos to rural Colombia — tell the story of our wonderfully mixed community. Many of them are a long way from home, but all say they have found a family here at Purdue and have benefitted from a learning environment in which being a part of diverse classroom and laboratory teams has expanded their horizons and become an expected norm.

You'll also meet faculty members Chris Andronicos, professor of earth, atmospheric, and planetary sciences, and a national leader of the Society for Advancement of Chicanos and Native Americans in Science (SACNAS), and Edray Goins, a math professor. Both are committed to drawing greater numbers of underrepresented students into the sciences.

And you'll hear from a mother-and-son team who came to Purdue from India decades apart, each to pursue scientific excellence — Manju Sharma, president and executive director of the Indian Institute of Advanced Research and principal advisor to the Department of Science and Technology, and her son biological sciences alum Amit Prakash Sharma, recent winner of India's coveted Shanti Swarup Bhatnagar Prize for Science and Technology. Another bio student, Zenephia Evans, tells the story of growing up to make a living ensuring diversity as director of Multicultural Science Programs at Purdue.

This issue of *Insights* also celebrates the 50th anniversary of our Department of Computer Science, the first such department in the country when it was established in 1962.

In June, Indiana Governor Mitch Daniels was named as the University's next president. He will begin his term in January. Currently serving as interim president is Timothy Sands, Purdue's provost. The College of Science looks forward to the innovations and ideas the new administration will bring to the University.

JEFFREY T. ROBERTS

Frederick L. Hovde Dean of the College of Science

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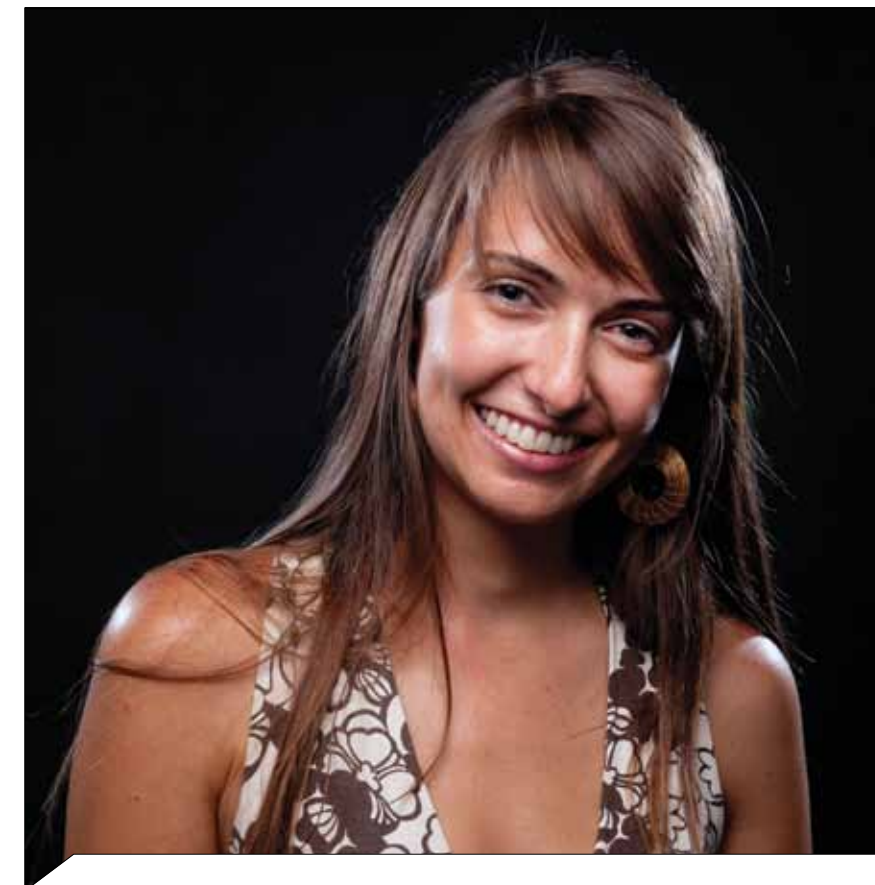
33 LAST WORD

CORRECTION

LEAD is the acronym for Learning through Experience and Awareness in Diversity (LEAD), a program overseen by Purdue's Diversity Resource Office. The name of the program was incorrect in the spring issue of *Insights*.

CoS LOGO

Represented in each of the radiating arms of this logo are the seven departments of the College of Science. The stability of the inner sphere symbolizes the knowledge and objectivity of science, while the implied movement of the outer configuration suggests the exploratory and interdisciplinary nature of the field.



COVER STORY | 06

Purdue's science students like Native American Kyle Bemis (on the cover) and Mariana Smit Vega Garcia of Brazil (above) come from down the road and across the hemisphere. Each brings personal experience and perspective to a learning environment in which being a part of diverse classroom and laboratory teams helps move Purdue forward in its quest to find globally informed solutions to world challenges.

PHOTOGRAPHY BY STEVEN YANG



IT WAS THE BEGINNING OF FALL SEMESTER 2011 ...

Science students packed an auditorium for that day's lesson in a favorite course, Geosciences in the Cinema. The projector hanging from the ceiling started shaking and the image on the wall began to quiver. No IMAX theater. The class, in which students watch and then discuss movies such as *Twister* and *The Day After Tomorrow*, was experiencing a real-life earthquake centered in Virginia.

"I could not have planned it better," says Andy Freed, associate professor of earth, atmospheric, and planetary sciences, who created the class in 2005 with colleague Noah Diffenbaugh, who now teaches at Stanford University.

Geosciences in the Cinema is popular with science majors and nonmajors alike. Since its first semester, the class of 150 students has often had a waiting list. The course was cited as one of Purdue's top-three "coolest" classes at Purdue in a recent issue of the student newspaper, *The Exponent*.

Freed, who now teams with colleague Matt Huber, uses movie and YouTube clips and full-length features to help educate students on global warming, volcanoes, severe weather and, yes, earthquakes.

"I taught an earthquakes and volcanoes class when I first came to Purdue and it was for nonmajors," Freed recalls. "I struggled a bit connecting with the students. A lot of the nonmajors fear the natural sciences, and I didn't want the class to be dry. So, I started showing some clips from movies to demonstrate some of the processes. I show them some tsunamis and some volcanic eruptions. Students seem to pay more attention and ask more questions after they view some clips. A lot of the questions are 'Is that real? Does that really happen?'"

This fall, the class meets Tuesdays and Thursdays with an optional movie on Wednesday evenings. The quality of the films varies, on purpose. Some are blockbusters like *2012* and *The Day After Tomorrow* where the computer-generated imagery (CGI) stuns and the writing has viewers on the edges of their seats. Others include lesser-known, straight-to-DVD releases. One of the lesser-knowns is *Aftershock*, a gripping drama from China centering on life after a massive earthquake. One of the highlights this fall is the 2003 disaster film, *The Core*, starring Aaron Eckhart and Hilary Swank, to help illustrate what goes on inside our planet.

STUDENTS SEEM TO PAY MORE ATTENTION AND ASK MORE QUESTIONS AFTER THEY VIEW SOME CLIPS. A LOT OF THE QUESTIONS ARE 'IS THAT REAL? DOES THAT REALLY HAPPEN?'"

- ANDY FREED

The top criterion for the movies is that the science must be highly evident but it doesn't always have to be 100 percent correct. Movies that fudge the science can offer up some of the best class discussion, Freed says.

"Even the ones that are bizarre or completely incorrect get them thinking. Those are especially powerful because they are so unbelievable that students have to ask if they are true," Freed says. "Of course, there are some very real processes that are pretty unbelievable, too."

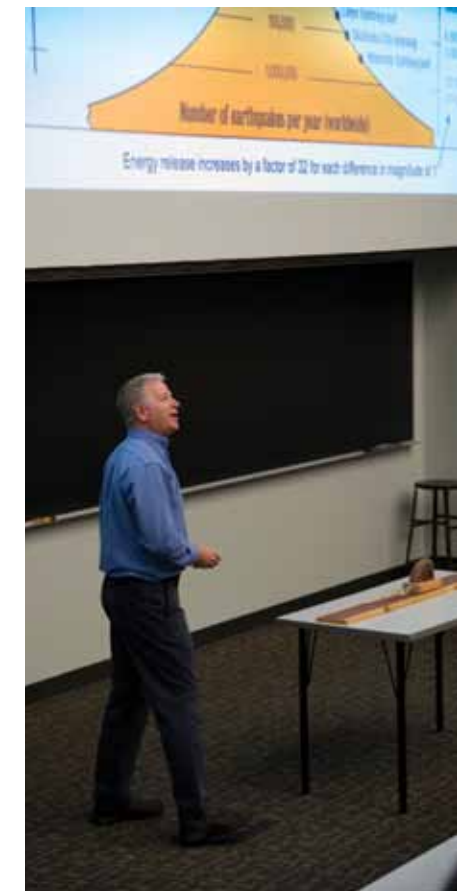
Freed's research expertise is in earthquakes and planetary science. One of his favorite titles to show in class is a 2005 made-for-TV movie called *Supervolcano*.

"The tagline is 'It's a true story. It just hasn't happened yet,'" Freed says. "The movie looks at Yellowstone Park and the fact that it is a super volcano. It's had three super eruptions in the last 2 million years. Its last was 600,000 years ago, and we're coming due. This movie is about what happens if a super eruption happens today. The science is just spot on."

Sean Harmison, a senior studying industrial distribution in the College of Technology, is one of the many non-science majors in the class. Friends recommended the class to him, and he is finding the use of films and clips to learn geoscience concepts to be working already.

"It's a nice way to change things up instead of PowerPointing you to death," Harmison says.

Tim Brouk



Andy Freed

FALL 2012 MOVIES

- *The Core*
- *2012*
- *Tsunami: The Wave That Shook the World*
- *Evolution*
- *Jurassic Park*
- *Ice Age*
- *Dante's Peak*
- *Supervolcano*
- *Deep Impact*
- *The Day After Tomorrow*
- *Twister*
- *The Perfect Storm*

MANY PERSPECTIVES **ONE VISION**

BOILERMAKERS KNOW THAT BETTER-INFORMED SOLUTIONS ARE THE RESULT OF MULTIPLE PERSPECTIVES, UNIQUE EXPERIENCES AND FULLY OPTIMIZED KNOWLEDGE CENTERS. WE DRAW FROM THE WEALTH OF OUR DIVERSE SCIENTIFIC COMMUNITY TO BUILD A UNIVERSITY THAT IS PREPARED TO CONTRIBUTE INNOVATIVE SOLUTIONS FOR TODAY'S GLOBAL CHALLENGES. MEET PURDUE'S GLOBAL SCIENTISTS.

BY LINDA THOMAS TERHUNE
PHOTOGRAPHY BY STEVEN YANG

RAVINDRAN **RAJESVARAN**

“

WORKING WITH PEOPLE FROM DIFFERENT BACKGROUNDS CAN BE INTERESTING, BECAUSE YOU GET EXPOSED TO DIFFERENT WAYS OF THINKING AND SKILLS THAT ARE REQUIRED TO APPROACH A PROBLEM.”

KUALA LUMPUR, MALAYSIA | Actuarial Science and Mathematical Statistics | Senior

RESEARCH FOCUS: Estimation of the Agency for Healthcare Research and Quality (AHRQ)'s Prevention Quality Indicator for Uncontrolled Diabetes (PQI14) for various population demographics in Indiana and the United States. Conducted statistical significance tests to determine the differences in the PQI14 estimates between various populations and developed a logistic regression model that identified significant predictors for the indicator. Hopes to pursue graduate study in quantitative finance, statistics or economics.

MARIANA SMIT VEGA GARCIA

“

WHEN MY MOM SEES PHOTOS OF MY FRIENDS, SHE JOKES THAT IT'S LIKE A U.N. MEETING. INTERACTING WITH SO MANY PEOPLE FROM DIFFERENT PLACES AND DIFFERENT BACKGROUNDS, HABITS AND PERSPECTIVES ON LIFE HAS BEEN INCREDIBLY ENRICHING FOR ME. THIS EXPERIENCE BROADENS OUR HORIZONS AND TEACHES US HOW TO APPROACH THINGS FROM A DIFFERENT SIDE, WHICH IS SO IMPORTANT IN ACADEMIA AND IN LIFE IN GENERAL.”

SÃO PAULO, BRAZIL | Mathematics | Doctoral candidate

RESEARCH FOCUS: Partial differential equations. Plans to become a professor.

HELIN CAO

“

DIVERSITY HAS MANY FORMS, NOT ONLY DIFFERENCES OF GENDER, ETHNICITY AND CULTURE, BUT ALSO GAPS IN EXPERTISE AND PERSPECTIVES. DURING THE PROBLEM-SOLVING PROCESS, PEOPLE WHO HAVE DIFFERENT BACKGROUNDS, SKILLS AND KNOWLEDGE WILL CONTRIBUTE MORE IDEAS THAN GROUPS WITH A SINGLE ORIENTATION.”

TIANJIN, CHINA | Physics | Doctoral candidate

RESEARCH FOCUS: Condensed matter physics. Currently exploring electronic transport properties in low-dimensional electron systems.

A portrait of Kyle Bemis, a young man with long dark hair, wearing a dark blue t-shirt and a light-colored vest. He is looking slightly to the left of the camera with a neutral expression.

KYLE BEMIS

“

WITH AN ABUNDANCE OF CULTURES AND BACKGROUNDS, WE WILL ALWAYS HAVE NEW WAYS TO LOOK AT THE WORLD AND DISCOVER SOMETHING AMAZING. IF WE CAN'T COMMUNICATE ACROSS THE CULTURES OF DIFFERENT RACIAL AND ETHNIC BACKGROUNDS, HOW CAN WE POSSIBLY HOPE TO COMMUNICATE BETWEEN DISCIPLINES? NOW MORE THAN EVER, WITH THE SCIENCES BECOMING INCREASINGLY INTERDISCIPLINARY, DIVERSITY IS NOT JUST IMPORTANT, BUT A NECESSITY.”

INDIANAPOLIS, INDIANA (member of Zuni Tribe) | Statistics | Doctoral candidate

RESEARCH FOCUS: Developing statistical and computational methods for the analysis of DESI imaging mass spectrometry data.

A portrait of Robert Ness, a man with a shaved head and a short beard, wearing a blue and white checkered button-down shirt. He is smiling slightly and looking towards the camera.

ROBERT NESS

“

SCIENCE PROGRAMS OFTEN HAVE STUDENTS WITH A NARROW RANGE OF PAST EXPERIENCES AND FUTURE PLANS. MORE STUDENT DIVERSITY MEANS MORE ALUMNI DOING DIFFERENT THINGS WITH THEIR DEGREES AND HENCE MORE CAREER OPPORTUNITIES FOR ALL STUDENTS.”

HARRISBURG, PENNSYLVANIA | Statistics | Doctoral candidate

RESEARCH FOCUS: Big data, with focus on network biology.



ROBY
DOUILLY

“

DIVERSE COMMUNITIES ARE ABLE TO COME UP WITH INNOVATIVE IDEAS AND APPLY THEM TO SPECIFIC OBJECTIVES. THIS REALLY ENRICHES RESEARCH.”

PORT-AU-PRINCE, HAITI | Geophysics | Doctoral candidate

RESEARCH FOCUS: Earthquake seismology and kinematic/dynamic fault modeling. The study will help scientists understand the physics behind the rupture propagation from one active fault to another in the 2010 Haiti earthquake.



DARRYL
REANO

“

ALLOWING UNDERREPRESENTED POPULATIONS TO EXPRESS THEIR VIEWPOINTS ALLOWS NEW IDEAS TO GAIN EXTRA DIMENSIONS AND DEVELOP A WIDER FOUNDATION THAT CAN SUPPORT INTERNATIONAL GROWTH. IT ALSO HELPS TO LESSEN THE EXCLUSIONARY ATTITUDE THAT WESTERN SCIENCE HAS MAINTAINED FOR MANY YEARS.”

ACOMA PUEBLO, NEW MEXICO | Earth, Atmospheric, and Planetary Sciences | Master's candidate

RESEARCH FOCUS: Geology — Detrital zircon geochronology, focusing on the provenance of sediments in the distal Cordilleran foreland basin. Also, he hopes to run a diversity center on a university campus.

BRITTANY VACCHIANO

“

COMING FROM AN ALL-FEMALE HIGH SCHOOL, WITH NO COMPUTER COURSES, I KNOW FIRSTHAND THE DIFFICULTIES FEMALES FACE WHEN ATTEMPTING TO ATTAIN A TECHNOLOGY-RELATED DEGREE. I WANT TO TEACH YOUNG WOMEN THAT A COLLEGE DEGREE IN TECHNOLOGY IS NOT IMPOSSIBLE. KEEPING FEMALES IN THE FIELD HELPS ENRICH IT BY BREAKING THE BARRIER THAT SOCIETY HAS PLACED ON IT IN STATING THAT THE FIELD IS ONLY FOR NERDY MEN.”

CHICAGO, ILLINOIS | Computer Science | Sophomore

GOALS: Travel the world, spend a few years in industry, then settle into a career at an all-female high school teaching young women about computer science, programming and information technology.

NADYA ORTIZ

“

DIVERSITY ENRICHES THE COMMUNITY BY BRINGING DIFFERENT PERSPECTIVES TO A RESEARCH PROJECT. THE VOICE NOT ONLY REPRESENTS A SINGLE INDIVIDUAL, BUT IS THE VOICE OF MANY OTHERS.”

IBAGUE, COLOMBIA | Computer Science | Master's candidate

RESEARCH FOCUS: Data mining.

A portrait of Tim Johnson, a Black man with long dreadlocks, wearing a dark brown polo shirt. He is looking directly at the camera with a neutral expression.

TIM JOHNSON

“

PEOPLE FROM DIFFERENT
BACKGROUNDS BRING DIFFERENT
PERSPECTIVES, WHICH ALLOWS
FOR DIFFERENT WAYS TO
APPROACH A PROBLEM AND,
SOMETIMES, EVEN BETTER
ANSWERS AND BETTER
SOLUTIONS TO THE PROBLEM.”

INDIANAPOLIS, INDIANA | Chemistry | Senior

RESEARCH EXPERIENCE: Cell cycles and the ways in which cancer proliferates, and quantum chemistry and quantum computing — exploring new ways of factoring prime numbers.

A portrait of Soon Cheong Kwan, an Asian man with glasses, wearing a white button-down shirt over a striped shirt. He is smiling broadly at the camera.

SOON CHEONG KWAN

“

UNDERREPRESENTED
POPULATIONS OFTEN
HAVE UNIQUE EXPERIENCES
TO SHARE WITH OTHERS.
MULTIPLE PERSPECTIVES,
SOCIAL BACKGROUNDS
AND CULTURAL
DIFFERENCES DO
GIVE MORE COLORS
TO OUR SOCIETY.”

KUALA LUMPUR, MALAYSIA | Chemistry | Senior

RESEARCH FOCUS: Inorganic/organic chemistry and alternative energy. Hoping to help solve the energy crisis.

REFLECTION: **FACULTY AND DIVERSITY**



EDRAY GOINS, a math professor, grew up in South Central Los Angeles with one dream — to attend Caltech. In 1994, he did just that when he enrolled as a freshman to study math and physics. He was one of 25 African-American students on a campus of 2,500 students that had no black faculty. Goins set about creating a community for the African-American students by establishing the Caltech chapter of the National Society of Black Engineers — an organization that, coincidentally, was founded at Purdue.

“At the time, there were so few of us, and there was a history of many black students not making it through the program, that we had to look out for each other,” Goins recalls. “We had study groups, meetings, scholarship information sessions, and more. I had no mentoring as an undergraduate and spent a lot of time wondering why not. I made it a point when I returned to Caltech as a postdoc to take on several students so they didn’t fall through the cracks.” In addition to mentoring students and taking them to conferences, he recently organized a lecture series featuring women of color in mathematics.

“I hope students, undergraduate and graduate, see as many people as possible,” he says. “Let’s be exposed to as diverse a background as possible.”

CHRIS ANDRONICOS, associate professor of earth, atmospheric, and planetary sciences, grew up in Albuquerque, New Mexico; his father was the governor of Sandia Pueblo and his mother was an Indian artist. He spent his undergraduate years at the University of New Mexico, then went on to Princeton for a doctorate and took a faculty position at the University of Texas at El Paso and, later, Cornell. Andronicos joined the Purdue faculty in January 2012, and, although far from his homeland, he has never forgotten his Native American roots or the multicultural childhood community that colored his worldview.

“It is very important to have a lot of different perspectives in decision making, because if you look at mistakes people make, they often involve not being aware of something, be it scientific process, philosophy, cultural issues or taboos,” Andronicos says.

As interim president of the national Society for the Advancement of Chicanos and Native Americans in Science (SACNAS), he is committed to bringing students of diverse backgrounds into science.

BREAKTHROUGHS

PURDUE PHYSICISTS PART OF DISCOVERY OF NEW PARTICLE THAT COULD BE HIGGS BOSON



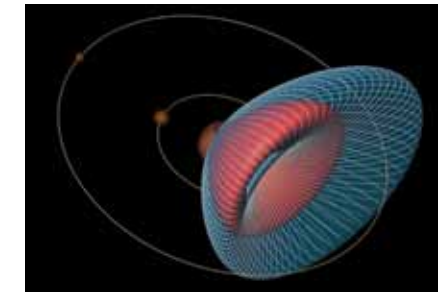
Physicists Daniela Bortoletto and Ian Shipsey were part of a historical event in July as scientists working on the biggest international experiment in particle physics history announced the discovery of a new particle that may be the long-sought Higgs boson.

Purdue’s particle physics group has been a part of the more than two-decade search for the elusive particle, which could confirm the Standard Model of physics and provide insight into how the universe formed.

Bortoletto, the Edward Purcell Distinguished Professor of Physics, and Shipsey, the Julian Schwinger Distinguished Professor of Physics, attended the announcement on July 4 at the European Organization for Nuclear Research, or CERN, laboratory in Geneva, Switzerland.

“On a day where fireworks lit up skies across America, the world of science unveiled explosive news concerning the longtime elusive Higgs boson particle,” says Shipsey, who also is the co-coordinator of the Large Hadron Collider Physics Center at Fermilab, near Chicago, and was recently elected chair of the Compact Muon Solenoid Collaboration Board at CERN. “More data are needed to establish whether this new particle has all the properties of the Standard Model Higgs boson or whether some do not match, which would imply new physics beyond the Standard Model. Either way we’ve discovered one more key to unlock the mysteries of the universe.”

EVIDENCE OF LIFE ON MARS COULD COME FROM MARTIAN MOON



A mission to a Martian moon could return with alien life, according to experts at Purdue, but don’t expect the invasion scenario presented by summer blockbusters like *Men in Black 3* or *Prometheus*.

“We are talking little green microbes, not little green men,” says Jay Melosh, a distinguished professor of earth, atmospheric and planetary sciences and physics and aerospace engineering at Purdue. “A sample from the moon Phobos, which is much easier to reach than the Red Planet itself, would almost surely contain Martian material blasted off from large asteroid impacts. If life on Mars exists or existed within the last 10 million years, a mission to Phobos could yield our first evidence of life beyond Earth.”

Melosh led a team chosen by NASA’s Planetary Protection Office to evaluate if a sample from Phobos could contain enough recent material from Mars to include viable Martian organisms. The study was commissioned to prepare for the failed 2011 Russian Phobos-Grunt mission, but there is continued international interest in a Phobos mission, he says. It will likely be a recurring topic as NASA reformulates its Mars Exploration Program.

Breakthroughs are condensed from news reports by Purdue science writers Elizabeth Gardner, Emil Venere and Judith Barra Austin.

SUPERCONDUCTOR ‘FLAWS’ COULD BE KEY TO ITS ABILITIES



Many researchers studying superconductivity strive to create a clean, pure, perfect sample, but a team of physicists found that some flaws might hold the key to a material’s unique abilities.

Erica Carlson, associate professor of physics, led a team that mapped seemingly random, four-atom-wide dark lines of electrons seen on the surface of copper-oxygen based superconducting crystals. The team uncovered a pattern in these flawed lines, which are separate from the expected structure of the material, and discovered that they exist throughout the crystal. The findings suggest the lines could play a role in the material’s superconductivity at much higher temperatures than others.

“This material is ceramic, like your dinner plates, and it has no business conducting electricity, but under the right conditions it conducts electricity perfectly with zero energy loss,” Carlson says. “A better understanding of how and why this superconductor works could help us design better ones. If we can create a superconductor that works at high enough temperatures, it could transform how we use and generate energy.”

HOLE IN ONE

Purdue Scores Top Mind in Atomic, Molecular and Optical Physics

By Tim Brouk

As Chris Greene's knowledge in atomic theoretical physics increased, so did his passion for golf.

A natural at the sport since his teenage years, Greene pursued golf throughout his schooling as a physics and math major at the University of Nebraska and into his teaching years — graduate studies at the University of Chicago, postdoctoral work at Stanford University, his first faculty position at Louisiana State University for eight years and a 22-year stint at the University of Colorado.

"I was trying to make this hard decision between physics and golf. Until about 12 years ago, I had to have a golf club in my hand every day in the summer," says Greene, a native Nebraskan. "I decided to go for physics and that was the best decision I've made in my life."

Today, Greene has left his former 2 handicap behind and brought his expertise in atomic, molecular and optical physics (AMO) and the physics of ultra cold atoms to Purdue. He was hired over the summer as a professor of physics and will start teaching graduate-level classes in the spring semester.

Greene is renowned in atomic, molecular and optical physics, a field that studies matter-matter and light-matter interactions. He believes this field is growing quickly and that he fills a niche in Purdue's already impressive physics program.

"I think the department decided it was interested in a new thrust in this area and asked if I could spearhead this new thrust," Greene

says. "It sounded like it could be a real opportunity not only for myself but the field. It's a field I love and a field that should be growing in the U.S. At Colorado, I had a similar role in trying to build up the program."

Greene was a professor in Boulder, Colorado, when he visited Purdue in April 2011 as part of the Department of Physics Colloquium series. His presentation, "The Biggest Little Molecules in Nature," on unusual classes of ultra-long-range molecules — the Rydberg molecule — and another talk on ground state atoms with resonant interactions during the Efimov effect drew many, including physics department head Nick Giordano.

"He impressed the entire department with the breadth and depth of his work," Giordano says. "We have a few people doing related things but his recruitment gives us a chance to build a group with him as the nucleus. He's someone internationally known and famous and could attract others to come to Purdue."

Though the first part of his colloquium on the prediction of those weird long-range molecules was a "sideline" project, Greene expects to work more with ground state atoms in his classes and research at Purdue. Those atoms are viewed in "ultra cold temperatures, a billionth of a degree above absolute zero."

"Those sorts of temperatures get into very deep quantum mechanical phenomena, which are very counterintuitive and fascinating to me," Greene says. "Studies of few-body quantum phenomena will be a big thrust in the coming years as well."

"I'm pretty sure in the next year or so I will be teaching a course that will develop this topic. I think the experimental students are hungry for more theoretical teaching in this area. I'm hoping I can provide that."

Greene explains that his field of ultra-cold is the exact opposite of high-energy physics, which houses the Higgs boson realm.

Greene did not enter the theoretical side of physics until his graduate studies at Chicago. He became a protégé of Ugo Fano, a renowned theoretical physicist and former student of quantum mechanics propagator Enrico Persico and nuclear reactor developer Enrico Fermi. Greene took well to the theory side of physics, taking a look at properties of few-electron atoms and electron correlation. Ultra cold physics was still about a decade away when laser cooling started being able to freeze atoms down to about a millionth of a degree above absolute zero.

Upon moving to Colorado, Greene discovered ultra cold physics at the JILA scientific institute on the Boulder campus. JILA was home to two of the ultra cold collision physics field's first three Nobel Prize winners in Eric Cornell and Carl Wieman.

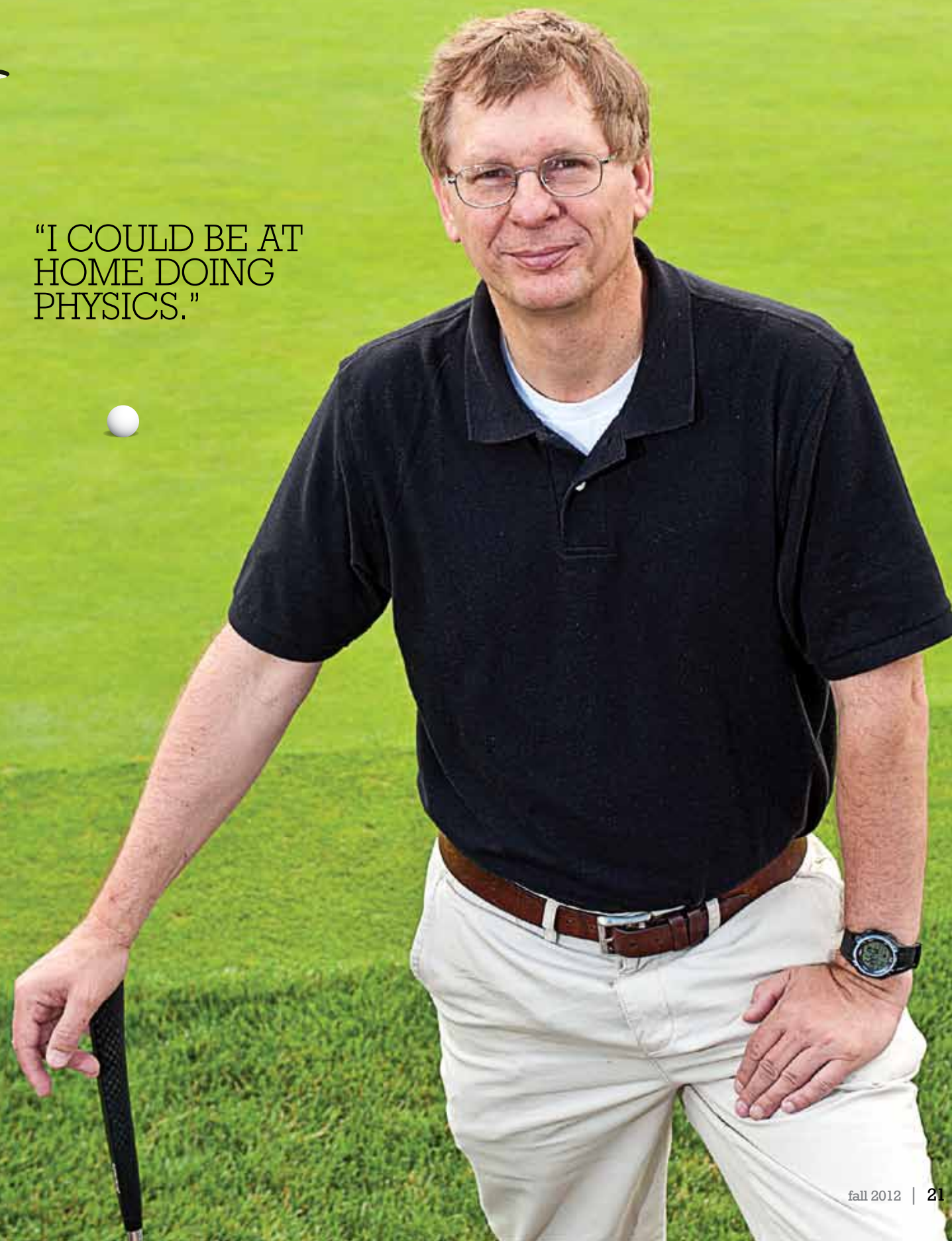
Today, Greene's expertise is in both ultra cold with AMO physics. He hopes these fields will interest Purdue students.

"Having a school with a philosophy, unified approach and style to imbue a new generation of theorists with the style of doing physics, to me is really exciting and I'm very enthusiastic about that," Greene says.

Though Greene has driven away from serious golf aspirations, he does like to get out on the links occasionally. Does Greene see a correlation between golf and physics? Does his knowledge of physics help him with his stroke or lining up putts?

"I used to delude myself into thinking that knowing all of this physics could make me a better golfer," Greene says. "Eventually I've come to the conclusion that I play my best golf when I go out there and just whack it — sort of a John Daly frame of mind works better for me, I think, instead of trying to think what kind of spin on the ball and where my wrist has to be. I'm sort of a once a year golfer now. I stopped deluding myself. I'd be hitting the ball in the water, in the sand and out of bounds and I would think to myself 'I could be at home doing physics.'"

"I COULD BE AT HOME DOING PHYSICS."



PURDUE'S DEPARTMENT OF COMPUTER SCIENCE CELEBRATES 50 YEARS



Samuel Conte

OCT. 1962

Department of Computer Science is created — the first in the nation. Samuel Conte is founding head. It is a division of mathematical sciences along with the departments of Mathematics and Statistics, and is located in the Engineering Administration Building.

5 faculty members (not all full-time); 20 courses; 24 master's and doctoral students.

1963

First master's degree in computer science is awarded.

1966

First PhD in computer science is awarded.



1967

The department moves to the Mathematical Sciences Building. The Computer Sciences Center occupied the two floors below ground. The department occupied the fourth floor.

1967

First bachelor's degree in computer science is awarded.

1970-74

80-100 freshmen enroll annually.

1975-77

150 freshmen enroll annually.



1978

The department installs a VAX 11/780 computer system running UNIX, the first at a university. ASCII terminals go into faculty offices and email is sent via uucp to ihnp4. Signal lights installed to indicate system status.

200 freshmen enroll.

1979

Peter Denning becomes the second head of the department.

1981

Over 500 new freshmen enter the program, resulting in greatly increased class sizes and corresponding shortage of faculty, space and computing facilities.

The department is part of the original consortium of universities that create the Computer Science Network (CSNET).

1982

The Xinu operating system is developed and used for instruction and research.

1983

John Rice becomes the third head of the department.



1985

The department moves its headquarters to the newly renovated Memorial Gymnasium (now known as Felix Haas Hall), while also retaining space in the Math, Physics and Recitation buildings.

The department introduces the first supervised computing and teaching laboratories at Purdue.

The Software Engineering Research Center (SERC), part of the National Science Foundation's Industry-University Cooperative Research Program, is established at Purdue with connections to other universities.

1992

Purdue establishes a chapter of Upsilon Pi Epsilon (UPE), the International Honor Society for the Computing Sciences.

1997

Ahmed Sameh becomes the fourth head of the department.

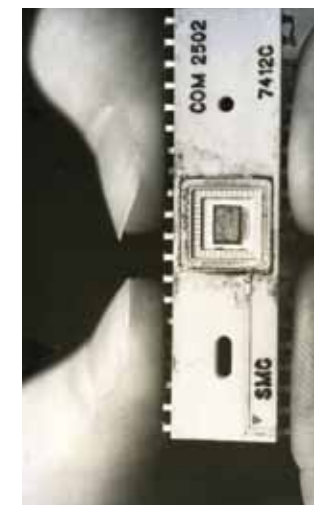


1998

The Center for Education and Research in Information Assurance and Security (CERIAS) is formed at Purdue from the COAST lab and is one of world's leading centers for research and education in areas of information security.

2002

Susanne Hambrusch becomes the fifth head of the department.



2006

The department moves into the Lawson Computer Science Building, which is named for Richard (MS '68, HDR '06) and Patricia Lawson.

2007

Aditya Mathur becomes the sixth head of the department.

2010

Sunil Prabhakar serves as interim head of the department. He is named permanent head in 2012.

The Center for the Science of Information is established at Purdue as an NSF Science and Technology Center.

FALL 2012

787 undergraduates

245 graduate students

50 faculty members



Photo provided

SILVER LINING A Life of Finance and Farming

By Linda Thomas Terhune

City girl leaves Steel Town to attend college in farmland. Returns to city life for a job in the automobile industry. Leaves city once again to buy and run a farm. This is the story of Lisa Hodson-Walker, a 1986 Purdue math graduate who now operates 100-acre Silverwood Organic Farm just outside Boston.

Hodson-Walker's agri-journey began in Pittsburgh, Pennsylvania, where she grew up swimming, lifeguarding, playing kickball, and on the drums in the high school marching band. She loved math and was so excited when she got her Purdue acceptance

letter that she announced the news to her parents by plastering the stairwell in the family home with information sheets from the packet.

"When I saw Purdue for the first time, it was love at first sight," she recalls. Last spring, while accepting a Distinguished Alumni Award from the College of Science, she looked back on the 25 years since she left campus: "Unchanged is the solid foundation that the mathematics degree from Purdue has provided me and the great sense of pride that I experience when I tell someone I majored in mathematics at Purdue University."

After receiving her degree in applied math and secondary math education, she studied at Indiana University's Kelley School of Business. There, she received an MBA in finance and met her husband, Jonathan, a British citizen studying on a Fulbright Scholarship (his family had farmed for a century in England, but more on farming

later). She was then hired by Ford Motor Co. and assigned to its Louisville Assembly Plant to oversee the financial side of the transition from the Ford Bronco to the brand-new Ford Explorer model. Her role was to put together a financial tracking system to measure the cost of the launch, and she was tasked with transitioning the analytical models from Lotus 123 to Excel. This was followed by two years with Ford's operations in England, where she worked with product development to price new vehicles. Part of the job involved test driving not only Ford cars, but all of the competitors' vehicles as well.

"I had never driven a stick shift, let alone with my other hand and on the wrong side of the road," she says, laughing. For a woman who counts the electric guitar as a hobby, this wasn't too much.

In 1992, the Hodson-Walkers decided to return to the United States, but weren't sure how or where. Each made a list of top-two

"WHEN I SAW PURDUE
FOR THE FIRST
TIME, IT WAS LOVE
AT FIRST SIGHT."

destinations and then they explored their options. Boston eventually won out and Lisa landed a marketing job with Staples.

As vice president of marketing for Staples, Hodson-Walker had a marketing statistical group reporting to her, using a complicated regression model to analyze customer behavior. She used that information to make decisions on how to spend the company's multimillion-dollar marketing budget.

"The role of mathematics in the business world has changed significantly over the years," she says. "When I graduated from Purdue, there was a relatively narrow range of job opportunities for math majors. Now, with the vast amount of data and information available in the workplace, career opportunities for those with strong analytical skills have increased dramatically."

One day, while returning from a mall outside Boston, Hodson-Walker got lost. She was in the far western suburbs of the city, in a bucolic town named Sherborn. She fell in love with the place and the couple soon moved out of the city and to a historic New England farm. They also began having children.

When the second child was born – they now have four, ages 6 to 13 – Lisa left full-time corporate life to help her husband start Silverwood Partners, an investment banking firm. Something, though, was missing.

"I was ready to do something different," Lisa recalls. For years, they hayed their farmland and sold the hay to a local horse farm. That wasn't quite enough. The couple also had a large family garden, which was getting closer to being different enough. "It was a dream to bring the historic farmland back into production. So, we decided to do what we know and love and try an organic vegetable farm," she says.

First planted in 2009 — with her husband on an antique John Deere pulling a water wheel planter upon which their four children perched and transplanted seedlings — their community-supported agriculture (CSA) venture, Silverwood Organic Farm (www.silverwood-organicfarm.com), launched with 20 members. Three years later, membership has grown to more than 300 with a farm manager hired to help out. "My husband and I love to say it was a hobby run 'a-muck,'" Hodson-Walker says.

CSAs, especially popular in the Boston area, are farms in which members buy a share of the crop that is paid for up front – usually about \$500 per 20-week growing season.

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The farm uses the money to cover expenses. The members, in exchange, get produce on a weekly basis throughout the growing season. The Silverwood bounty includes standards like lettuce and onions but ranges also to arugula, eggplant, tomatillos, herbs, watermelon and heirloom tomatoes. Members get some 70 pounds of tomatoes over the course of a season.

The Hodson-Walkers are constantly tweaking their operation, and have recently partnered with other organic farmers in the area including a poultry farm and an apiary. They also started a farm-to-hospital initiative for employees at two local hospitals and low-income pediatric patients. In addition, they donate more than 1,000 pounds of fresh produce to local food pantries and shelters.

Looking back at a life that has taken her from city to farmland to corporate life, and now a return to farmland — albeit it not too far from a city — Hodson-Walker sees math behind her moves.

"Just as in any business, running a farm is a numbers game — budgets, investment decisions, analyzing market initiatives — not to mention the logistics of crop plans. As co-founder of a certified organic farm, I draw upon the solid problem-solving background that I gained at Purdue to address issues associated with a business venture such as analyzing growth opportunities, financing requirements, marketing needs and business performance," she says. "In business, as in many aspects of life, math is fundamental to all that we do."



Q&A WITH AMIT PRAKASH SHARMA (SON)

I was deeply enamored with their passion for research in structural biology. I was also fascinated with their commitment and enthusiasm — which eventually infected me. After Purdue, I earned a doctorate in protein crystallography from Northwestern University.

HOW DID YOU ARRIVE AT YOUR FOCUS ON MALARIA PARASITES?

My training in structural biology could have been used to study many different biological problems. However, when I decided to establish my laboratory I was clear that I wanted to contribute to basic research towards alleviating human suffering from diseases like malaria and asthma. Once my laboratory was running, I realized that dealing with malaria alone was challenging enough. For the past 12 years, my laboratory has been working on malaria parasite proteins in terms of understanding their potential for developing newer drugs. And still we have a long way to go.

WHAT IMPACT DO YOU HOPE YOUR RESEARCH WILL HAVE?

I hope my research operation will be fruitful from many parameters. Firstly, I hope that my laboratory will remain a good training ground for future generations of scientists. This is a very important part of my operation, as I wish that most if not all students from my laboratory eventually start their own research cells. Secondly, I hope that our studies will contribute to the pool of knowledge about life and

its biological engines. This knowledge base belongs to all of humanity, and in my own little way I hope to keep adding to it. Finally, I hope that my efforts will allow greater understanding of diseases like malaria.

WHAT DRAWS YOU TO EVOLUTION AND GLOBAL WARMING?

My research ideas are inherently driven by my awe and fascination for Darwinian facts of biological evolution. Interestingly, Darwin himself was influenced and guided by the famous geologist Charles Lyell and ideas of uniformitarianism at the time. I was deeply impressed by the lucid scientific beauty of the terrific link between evolution of Earth (and its climate) on one hand and evolution of life on the other hand. These ideas dovetail with my view of humans on earth (an evolved species on temporary residence permit, and in all likelihood to be outlived by insects, bacteria, etc.). This academic conditioning also propels me to use buzzwords of science (investigation, observation, evidence, data, hypothesis, awareness, rationality) to alert us to potential environmental catastrophe.

WHAT DO YOU DO AFTER HOURS?

I retain a deep passion for photography, reading and cricket. Like many other scientists, I have a special fondness for arts, cinema, music, and may be considered epicurean at times. ■

NAME

Amit Prakash Sharma

DEGREES

(BS '90, Biological Sciences)

TITLE

Group Leader of Structural Biology, ICGB

HOMETOWN

New Delhi, India

WHY DID YOU CHOOSE TO STUDY BIOLOGICAL SCIENCES?

I was keen at some point to go into medicine but then changed my mind and decided to go into research (via biology major). Since childhood, I was fascinated with the molecular basis of life and had decided early to contribute knowledge that addresses the chemical origins of life (as opposed to vitalism).

HOW DID YOU DECIDE ON YOUR RESEARCH FOCUS?

At Purdue, I was introduced to two people who profoundly determined my future — professors Janet Smith and Jeff Bolin.

Q&A WITH MANJU SHARMA (MOTHER)

WHEN YOU WERE AN UNDERGRADUATE IN THE 1960S, WAS IT UNUSUAL FOR WOMEN IN INDIA TO PURSUE HIGHER EDUCATION, ESPECIALLY IN SCIENCE?

There were many challenges that I faced as a female student. These included security and having to work harder to achieve the same goals as male students. Today, the atmosphere has changed and things have improved a lot for women. There are many more opportunities and facilities. India has done very well in promoting the cause of women's education. There are today large numbers of young women joining science. To some extent, I have also contributed to this and started many new initiatives and schemes to involve more women in science.

WHY DID YOU CHOOSE TO FOCUS ON BIOSCIENCE AND TECHNOLOGY?

Bioscience and technology are the areas of science closest to the requirements of humankind, specially to meet the basic needs of food, health, environment and security. I thought that by pursuing bioscience, I would be able to contribute towards human welfare.

HOW DID YOU GET INVOLVED IN WORKING WITH THE INDIAN GOVERNMENT?

After coming back from the U.S., I started a new line of research, science administration and management. It was a promotion of science using a strong scientific knowledge base that was very helpful in the government system. I was involved in developing many policy papers, which even today are being used.

YOU HAVE PLAYED A PIVOTAL ROLE IN SHAPING THE FUTURE OF SCIENCE IN INDIA AND THE IMPACT IT CAN HAVE ON THE WORLD. HOW DO YOU VIEW YOUR RESPONSIBILITIES IN THIS AREA?

I tried my best to fulfill my responsibilities and promoted, developed and supported the field of biotechnology in my country and in many other countries. Several new institutions for advanced research were established and nurtured. New areas were developed and this resulted in a strong, viable base of biotechnology and modern biology in the country. I tried to involve the senior and younger scientific community in consultation, implementation and monitoring of the programs. Regional imbalances were also addressed. My concern, even today, is to see many more peaks of excellence, application, new products and technologies, and fast bio-industrial development in my country.

WHAT WAYS HAS THE SCIENTIFIC WORLD CHANGED SINCE YOU FIRST ENTERED IT, AND WHAT DO YOU SEE OF ITS FUTURE?

Science has progressed with spectacular speed globally and it is the most powerful vehicle of societal change. The future is bright and full of hopes for the younger generation to do more innovation, publish, patent and commercialize wherever possible. Science can generate knowledge and also contribute towards national economies. Instrumentation has advanced significantly and it has contributed to the rapid growth of many areas of science. Information technology certainly is the very basis of cutting-edge research in biosciences. ■



NAME

Manju Sharma

- Purdue postdoctoral fellow in biology, 1967
- Former secretary to the Government of India, Department of Biotechnology
- President and executive director of the Indian Institute of Advanced Research and principal advisor to the Department of Science and Technology
- Distinguished woman scientist chair, National Academy of Sciences, India
- Board member UNU-IAS Institute of Advanced Studies, Japan



FIELD NOTES FROM COLOMBIA

A Purdue Partner for Developing and Sustaining Biodiversity

MORRIS LEVY: *Professor of Biological Sciences*

Colombia is a remarkable place for anyone interested in the life and physical sciences. Though containing only 0.4 percent of Earth's land area (about twice the acreage of Texas), Colombia is home to more than 40 percent of known plant and animal species. It also harbors a wealth of microbial diversity yet to be identified. The inventory, characterization, commercial development and sustainability of Colombian diversity have become a major research focus in a recent initiative called the Colombia-Purdue Institute for Advanced Scientific Research (CPIASR).

Colombian biodiversity research is being pursued via collaborations among colleagues at several Colombian universities and research consortia with Purdue faculty in the colleges of Science, Agriculture and Engineering, and at Purdue's Discovery Park.

Biodiversity in Chocó

Among the least developed but biodiversity-rich areas of Colombia is the Pacific coastal region in the state of Chocó. Located in Chocó's capital city, Quibdó, is the Universidad Tecnológica del Chocó

(UTCh), the region's primary facility for higher education. With the support of Dean Jeffrey Roberts, I visited UTCh and toured the Quibdó region, accompanied by Thomas Sors (center project manager for Bindley Bioscience Center) and Maria M. Levy (visiting research scientist) in December 2011. We consulted on UTCh's plans to build a new research facility called Bioinnova devoted to developing biodiversity in Chocó. We also began discussing collaborations on upgrading science education in this region, especially regarding the study and sustainable use of biodiversity.

In April, the rector (president) of UTCh, Eduardo A. Garcia Vega, and a contingent of Bioinnova scientists visited Purdue to see our facilities and continue our collaborative planning. A highlight of this visit was a letter of intent, signed by the rector and our dean, to promote our continuing academic cooperation in education and research via faculty and student exchanges as well as joint research projects.

Use of aromatic and medicinal plants

One such project is emerging because of CPIASR efforts to foster collaborations between scientists in Chocó and elsewhere in Colombia. Professor Elena Stashenko is a renowned plant natural product chemist who leads a Colombian Center of Excellence, called CENIVAM. This facility is focused on chemical characterization and use of aromatic and medicinal plants. It is located at the Universidad Industrial de Santander (UIS) in the northern city of Bucaramanga.

CENIVAM has established an active collaboration with a UTCh scientist for analyzing essential oils from plants endemic to Chocó and testing their use as insect repellents and ingredients in cosmetics, soaps and other cleansing agents.

In May, I stood in the botanical garden surrounding the CENIVAM facility, which contains the plants they have previously analyzed. There were virtually no mosquitoes present at this garden, though these pests are common throughout Colombia.



The author and Colombian professor Elena Stashenko in the botanical garden at CENIVAM surrounded by native Colombian aromatic plants.



Espeletia grandiflora: a panoramic view of plants in the Páramo habitat.

Purdue's direct involvement in the project will begin in 2013, when Stashenko and her students will collaborate with Bindley Bioscience Center researchers to expand both the chemical characterization and broad-spectrum bioactivity tests of the compounds they have isolated.

Another UIS professor, Jorge Fuentes, will be a sabbatical visitor with us in 2013. His research will characterize the microbial diversity associated with coal and petroleum deposits in Colombia and the potential use of these microbes for bioremediation or biofuel production. A third researcher, Cesar Segura, from the Medical School of the Universidad de Antioquia, is planning a research visit to Bindley Bioscience Center to study clinical proteomics in Colombian Plasmodium species, agents of malaria with complex life cycles. Sors is Purdue's lead for this project.

Doctoral research of national relevance

A primary objective of the CPIASR mission is to recruit excellent Colombian students for Purdue doctoral programs where their research projects are relevant to applications in Colombia as well as beneficial for their Purdue mentors. This strategy provides impetus to the careers of our graduates when they return to Colombia as well as improving possibilities of collaborative research funding. In Fall 2012, the Department of Biological Sciences welcomed two new Colombian doctoral students, Alejandro Salazar Villegas and Luis Ernesto Beltrán Forero. Salazar's research interest concerns the impact of climate change on soil microbial diversity; he is mentored by Professor Jeffrey Dukes. Beltrán's research interest concerns the sustainability of a unique Colombian ecosystem called the Páramo, a high mountain, cold and humid ecosystem but with severe, daily fluctuations in temperature; he is mentored by me. Páramo areas in Colombia frequently are the principal sources for fresh water in their regions and are under great pressure from

both climate change and human activities (e.g., grazing, agriculture and deforestation). Beltrán is studying an index plant, *Espeletia grandiflora*, to monitor the dynamics of this ecosystem in the watershed area that serves the Colombian capital, Bogotá.

CPIASR-based collaborations on Colombian biodiversity research also involve Purdue faculty and students from the colleges of Engineering and Agriculture. Research topics include bio-nanomaterials, renewable bio-energy production, food security and nutritional improvement, bio-prospecting for pharmaceuticals and related commercialization.

The partnership between Purdue University and the research and education community of Colombia is ramping up. This year, 40 Colombian students applied to the Colombian government for funding support specifically for Purdue doctoral programs. Fifteen of these applicants were funded and we expect to see many of them here in fall 2013, to join those that arrived this semester. The Fulbright Commission of Colombia is actively assisting the CPIASR for graduate recruitment. Faculty and administrators from more than 20 of the top Colombian universities have participated in joint seminars and workshops with Purdue faculty, held both at Purdue and in Colombia. Sabbatical research exchanges have already begun and more are being scheduled. We are now working on developing research and international-distance learning communities using Purdue's HubU computer facilities to further expand these interactions. With thanks to the many colleagues who have made this initiative possible, the future of our partnership with Colombia is filled with great opportunities.

For those interested in joining the CPIASR initiative, visit:

<http://engineering.purdue.edu/cpiasr>

2012 Class Notes

CORRECTION:

Randy A. Peppler (BS '80, MS '82, Earth and Atmospheric Sciences), Norman, OK, is an associate director at the University of Oklahoma Cooperative Institute for Mesoscale Meteorological Studies. He recently completed a dissertation titled "Knowing Which Way the Wind Blows: Weather Observation, Belief and Practice in Native Oklahoma."

In the spring 2012 Class Notes listing, his name was misspelled as Rand.

1930

C. Ann (Cromer) Parks (BS '38, Actuarial Science; MS '40, Home Economics), Sister Bay, WI, has moved to Door County, Wisconsin. She is enjoying the new community, church and classes from The Clearing.

1940

Simon D. Vinopoll (BS '47, Science), Rye Brook, NY, retired from Sy Vinopoll Inc., a fashion photography company, in 2007. He enjoys singing at senior nursing homes and spending time with his 13 grandchildren.

1950

Chester C. McCabe (PhD '55, Physics), West Grove, PA, retired from DuPont after having worked there for 35 years in the High Polymers Research & Development area. He also retired from township government after serving there, as well, for 35 years.

1960

Michael P. Dunkle (BS '64, Chemistry), Towanda, PA, is recovering from a car accident and a monthlong coma.

Marilyn (Meyer) Richardson (MS '64, Molecular Biology), Union, KY, is a criminalist instructor at Xavier University in Cincinnati, OH. She and her husband, John, enjoy their five children and eight grandchildren.

Allen J. Campbell (PhD '69, Organic Chemistry), Evansville, IN, retired after 28 years in various research, quality assurance and process development roles within General Electric. After retirement, he has spent time consulting, selling insurance and preparing taxes. He serves as the treasurer for a condo association.

Andris Zoltners (MS '69, Mathematics), Evanston, IL, received the 2012 Pharmaceutical Management Science Association Lifetime Achievement Award, recognizing pioneering and paradigm-shifting contributions to the management analytics field in the pharmaceutical and biotech industry.

1970

William H. Myers (BS '71, Mathematics), Belmont, NC, received a Distinguished Service Award from the Consortium for Computing Sciences in Colleges, in recognition of more than 20 years of service. Myers was membership secretary (1990-97), and treasurer (1997-present).

Susan M. Scott (BS '72, Biological Sciences), Albuquerque, NM, graduated in May from the University of New Mexico School of Law, three years after retiring with 25 years on faculty at the University of

New Mexico School of Medicine. She retired as a professor of pediatrics and served the last five years as senior associate dean for academic affairs. She plans to work in health policy.

Timothy Lane (BS '73, Computer Science), Louisville, KY, is recovering from pulmonary edema.

Michael S. McCoy (BS '73, Mathematics), Greensburg, IN, retired from his position as vice president of lending at MainSource Bank.

Scott L. Ksander (BS '74, Mathematics), West Lafayette, IN, has joined Purdue Federal Credit Union as vice president for information technology. He retired from Purdue University after 25 years working in PUC (Purdue University Computing Center) and ITaP on networking, security, and computer forensic projects. He also was recently named a member of the American Academy of Forensic Sciences.

Roger Quillen (MS '77, Mathematics), Atlanta, GA, was elected by Fisher Phillips LLP to another three-year term on the firm's management committee. Quillen has served continuously on the committee since 1997. He was named one of the Top 100 Most Powerful Employment Attorneys by Human Resource Executive magazine.

1980

Randy A. Peppler (BS '80, MS '82, Earth, Atmospheric, and Planetary Sciences), Norman, OK, earned a PhD in geography at the University of Oklahoma in December 2011.

Madeline A. Danny (BS '82, Biological Sciences), South Bend, IN, began her two-year term as president of the Montgomery County Medical Society at the organization's annual meeting in June.

LaJoyce (Henderson) Debro (PhD '86, Biological Sciences), Birmingham, AL, won the 2012 William A. Hinton Research Training Award. Debro was honored for being an outstanding educator and mentor for students for more than 45 years. She is a biology professor at Jacksonville State University.

1990

Jeremy Partin (MS '91, Applied Statistics), North Little Rock, AR, has been playing bass for the Arkansas-based death metal band, VORE, since 2004. The group recently signed a record deal with AFM records, and released a CD, *Gravehammer*.

Rene R. (Ketterer) Irvine (BS '92, AS '89, Computer Science), Lafayette, IN, is a UNIX systems administrator at Purdue. She recently married Rick Irvine, who also works at Purdue.

Brian Nagurski (BS '96, Biology; MA '12, Education), Glendale Heights, IL, owns Nagurski Fitness & Health. He has worked for paleontologist Paul Sereno as medical personnel and took part in an African archaeological expedition with National Geographic Society.

Margaret E. Brown Marsden (PhD '97, Biological Sciences), Irving, TX, was recently appointed associate dean of Constantin College of Liberal Arts and Science at the University of Dallas.

Roland J. Thorpe (MS '97, Statistics, PhD '04 Vet Med), Owings Mills, MD, was named a fellow of the Gerontological Society of America in acknowledgement of outstanding and continuing work in the field of gerontology.

2000

Emily Bacon (BS '01, Biological Sciences), Charleston, WV, is a children's librarian and visual literacy coordinator at the Kanawha County Public Library.

Matthew Henkler (BS '02, MS '04, Computer Science), Chicago, IL, is director of information technology at TCA Holdings.

Ben Burkel (BS '04, Earth and Atmospheric Science), Bend, OR, was awarded the American Meteorological Society's Certified Broadcast Meteorologist Seal, a professional recognition of the quality of his weather broadcasts. It is one of the highest awards given to broadcast meteorologists.

Ionut Florescu (PhD '04, MS '01, Statistics), Hoboken, NJ, has been appointed the Hanlon Financial Systems Laboratory Director at Stevens Institute of Technology.

David Stites (BS '07, Computer Science), Santa Clara, CA, has accepted a position as a privacy engineer for Apple Inc.

Andrew Murphy (BS '11, Computer Science), Downers Grove, IL, is a product developer and testing gatekeeper for Infogix.

Marriages

Brent Eager (BS '11, Computer Science) and Elizabeth Harlan, Jessup, MS, met in a class as sophomores at Purdue. The couple married in August at Saint Tom's and enjoyed a reception at the Purdue Memorial Union.

Births

Julie (Byrne) Fischer (BS '03, Physics) and husband, Patrick Robert Fischer, Ashburn, VA, welcomed their first child, Ethan Robert, on Feb. 20.

Jonathan (BS '04, Computer Science) and Julie Presley, Martinsville, IN, are proud to announce the birth of daughter, Mya Rose, on Apr. 12.

In Memoriam

1930

E.C. Young Knott (BS '37, Science), West Lafayette, IN, Mar. 31.

R. Wayne Byrd (BS '38, Science), West Lafayette, IN, Feb. 20.

1940

Mary L. (Nourse) Armstrong (BS '40, Science) Osterville, MA, Apr. 11.

Betty A. (Blakeman) Heckman (BS '42, Mathematics), Sacto, CA, March 6.

Robert E. Maynard (BS '42, Science), Evanston, IL, May 14. He is survived by his wife, Dorothy.

Ruth E. (McClain) Jolly (BS '43, Science), La Mesa, CA, Oct. 13.

William J. Kowal (BS '43, Science), Portage MI, Nov. 26, 2011.

Joan M. (Sullivan) Domke (BS '44, Science), New Bloomfield, MO, Jan. 11.

William P. Hettinger Jr. (BS '47, Chemistry), Boca Raton, FL, Dec. 2, 2011. He is survived by his wife, Alice.

D. June (Zimmer) Ward (BS '47, Science), Whitewater, WI, Jan. 10.

Richard Kayton Meyers (MS '48, PhD '50, Chemistry), Fishkill, NY, Feb. 26.

Elizabeth M. (Mohaupt) Sibbach (BS '48, Chemistry), Schaumburg, IL, Apr. 19.

Richard B. Metzger (BS '48, Science, MS '51, Management), Marco Island, FL, Oct. 29. He is survived by his wife, Joan.

Raymond P. Klein (BS '49, Science), Easley, SC, Jun. 5.

David E. Leibson (BS '49, Science), Cincinnati, OH, Feb. 29. He is survived by his wife, Gladys.

1950

James V. Nichols (BS '50, Science), Indianapolis, IN, Jun. 19.

Richard E. Weakley (BS '50, Science), Richmond, VA, Mar. 16.

Thomas L. Wright (BS '50, Biological Sciences), Fowler, IN, Mar. 25.

Roger G. Wrigley Jr. (BS '50, Science), Dunkirk, IN, May 7.

Lionel Domash (MS '50, Science, PhD '52, Chemistry), Monroe Township, NJ, Feb. 3.

Donald I. Hamm (MS '51, Chemistry), Weatherford, OK, Feb. 3. He is survived by his wife, Jean Ann.

Joseph A. Kuc (BS '51, MS '53, PhD '55, Agriculture), Torrance, CA, Feb. 1.

Edward M. Chachko (BS '52, Science), Little Silver, NJ, March 25.

Paul R. Hill (BS '52, Science), Tucson, AZ, May 17, 2012. He is survived by his wife, Arrah Jane Hill.

Stephen Idukovich (BS '52, Chemistry), Munster, IN, Feb. 29. He is survived by his wife, Mildred.

Richard H. Bancroft Jr. (BS '53, Science), Logansport, IN, Feb. 7.

John R. Koons (BS '54, Science), New Palestine, IN, Mar. 12.

James L. Shannon Jr. (BS '54, Science), Cumming, GA, May 22.

Barbara D. (Childress) Johnson (BS '55, Science), San Diego, CA, Apr. 24.

James E. Moneyhun (BS '55, Science), Anderson, IN, Dec. 12. He is survived by his wife, Marilyn.

Robert F. Fulton (MS '58, PhD '60, Chemistry), Rocky Mount, NC, October 29, 2011.

Carolyn (Sewell) Yamaoka (BS '56, Biological Sciences), Kailua, HI, Feb. 24.

Charles R. Fleenor (MS '57, Mathematics), Augusta, GA, Jun. 11.

Robert F. Fulton (MS '58, PhD '60, Chemistry), Rocky Mount, NC, Oct. 29, 2011.

David J. Howell (BS '58, Science), Crown Point, IN, Mar. 21. He is survived by his wife, Cynthia.

William P. Wnuck (BS '58, Science), Edison, NJ, Dec. 13.

1960

Robert A. Spurgeon (BS '61, Physics, MS '66 Computer Science), Collegeville, PA, Feb. 27. He is survived by his wife, Diane (Miller) Spurgeon, and sons Stephen and Gregory Spurgeon.

Kenneth L. Stevenson (BS '61, MS '65, Chemistry), Fort Wayne, IN, Feb. 22. He is survived by his wife, Carmen.

Gerald D. Francoeur (BS '62, Science), Muncie, IN, Oct. 12, 2011.

James R. Rahfeldt (BS '62, Mathematics), Portage, MI, Feb. 20.

Ellen (Kirkpatrick) Beyerlein (BS '64, Biological Sciences), Homosassa, FL, Jan. 5.

Forrest J. Frank (PhD '64, Chemistry), Bloomington, IL, Feb. 9.

Marilyn (Maxwell) Grissom (BS '64, Biological Sciences), Indianapolis, IN, Feb. 4.

Jack R. Adair (BS '65, Biological Sciences), Edgewater, FL, Apr. 5.

Thomas J. Hathaway (MS '65, Biological Sciences), Indianapolis, IN, Apr. 22.

Reynold S. Kebo (BS '65, Physics), Los Angeles, CA, Apr. 23, 2011.

Robert E. Michel (PhD '66, Chemistry), Leland, NC, Jan. 31.

William L. Mellencamp (MA '67, Mathematics), Greenwood, IN, Feb. 4.

Juanita (Wist) Bullock (BS '69, Biological Sciences), Riverside, CA, Feb. 10. She is survived by her husband, Robert.

Maurice D. Smith (BS '69, Statistics), Indianapolis, IN, Mar. 1.

Larry Loos (MS '69, Physics, PhD '73), Cape Girardeau, MO, Feb. 20, 2009.

1970

Eugenia Tanglis (BS '72, Physics), Takoma Park, MD, Jan. 14.

George C. Casella (MS '74, PhD '77, Statistics), Gainesville, FL, Jun. 17.

Bruce A. Kirschner (BS '74, Biological Sciences), Detroit, MI, Feb. 8.

Steven Bruce Peter (MS '74, Chemistry), Kutztown, PA, Feb. 22.

Steven Douglas Miller (BS '75, Mathematics), Delaware, OH, Jun. 9.

James F. White (BS '75, Chemistry, MS P '77, PhD P '79, Pharmacy), Carlisle, MA, Feb. 3. He is survived by his wife, Linda.

Lee E. Howard (MS '78, PhD '84, Physics), Bowie, MD, Jun. 19.

Joel A. Shapiro (PhD '78, Biological Sciences), Rolling Hills, CA, Apr. 28. He is survived by his wife, Katherine.

1990

Andrew W. Garcia (PhD '91, Earth and Atmospheric Sciences), Vicksburg, MS, Nov. 16, 2011.

Katitza M. Gerdau (BS '93, Computer Science), El Paso, TX, Jan. 31. She is survived by her husband, Gregory.

Kirk A. Kortokrax (BS '94, Biological Sciences), Chattanooga, TN, Feb. 10.

Christopher Newell (MS '94, Biology), Orlando, FL, Dec. 18.

Learning and Growing from Around the World



Zenephia Evans

From the time that I was about 4 or 5 years old, I was fascinated by the different shades of skin color. As an introverted child, desperately seeking to pass time spent in public, I would walk around a room and try to categorize skin tones. The colors would range from very, very pale to a dark tone and numbered as high as 50 different shades, depending on the room population. This childhood fascination, while I was growing up in central Georgia, served a twofold purpose: it was my introduction to scientific exploration and to the roots of biases and prejudices.

The words of Dr. Martin Luther King Jr. helped shape my worldview: "I have a dream that my four little children will one day live in a nation where they will not be judged by the color of their skin, but by the content of their character." As I look at the students enrolled in the College of Science, I am excited that the faculty and staff can play a major role in helping shape their world, regardless of the color of their skin. These students will acquire skill sets that will enable them to do great things in the world. Their propensity for these skills began during childhoods in rural areas, inner cities and countries far and wide.

In the College of Science, we seek to celebrate the diverse backgrounds of our students, staff and faculty by working with each other

on many projects and stepping outside of our comfort zones to learn more about the richness of the cultures and heritages represented across the college.

I challenged myself as a doctoral student in Purdue's Department of Biological Sciences — and still do as a College of Science employee — to interact as often as I can with students whose backgrounds are different from mine. I have met some amazing people and have learned about lands that perhaps, one day, I will visit.

Global diversity is ever increasing. If young scientists are to make a true mark on the world, it is important that we train undergraduate and graduate students to value and embrace diversity and determine ways to effectively work together to enhance the scientific advances that will impact all our lives.

Although I have long since stopped trying to create a scale for labeling skin tones, I will never stop working to ensure that people of all skin tones have access to a quality education in an environment that embraces the myriad of opportunities to learn and grow from people around the world.

— Zenephia Evans, director of Multicultural Science Programs and associate director of science diversity in the College of Science

MANY PERSPECTIVES, ONE VOICE

DIVERSITY IN THE COLLEGE OF SCIENCE

UNDERGRADUATE

International students **1,032**

African Americans **83**

Women **1,200**

Hispanics **118**

Native Americans **4**

Native Hawaiian or Other Pacific Islander **2**

GRADUATE

International students **585**

African Americans **30**

Women **325**

Hispanics **27**

Native Americans **5**

Native Hawaiian or Other Pacific Islander **1**

DANA SMITH

Since her first sewing lesson in fourth grade, this creative spirit has stitched her way into a bright future. She loves sewing and fashion design, but math is her thing. She sees the two as the same, but different; both involve figuring out patterns. Meet math major Dana Smith at:

www.purdue.edu/fivestudents/danasmith.

