



## From the Department Chair...

Many important changes occurred in the Department of Biochemistry and Molecular Biology (BMB) in 2012.

A sense of renewal and growth came from the appointment of three new assistant professors. The hires were the result of a joint search with the Department of Chemistry for people studying membrane proteins. In August, Heedeok Hong (75 percent chemistry, 25 percent BMB) arrived, and he has already become a valued member on committees and at faculty member meetings. In December, Kristin Parent (100 percent BMB) joined us. Among other things, she makes use of cryo-electron microscopy, which required a major upgrade of university facilities to accommodate her research. The third person hired was Jian Hu (75 percent BMB and 25 percent chemistry), who starts his BMB appointment in August 2013. Working closely with the Department of Chemistry on this search was made easy by committee co-chairs Shelagh Ferguson-Miller (BMB) and David Weliky (chemistry).

In addition to these hires, we also welcomed Danny Ducat in December as an assistant professor in the Plant Research Laboratory, whose faculty members can have their academic homes in BMB.

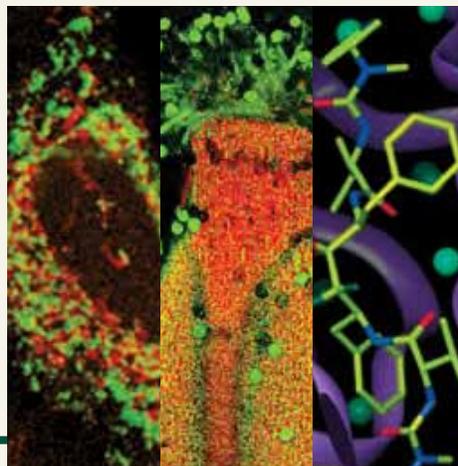
The counterpoint to this new growth is loss. Pam Fraker retired in May, but the good news is that she will continue in several advisory roles. Rawle Hollingsworth, 55, who died Feb. 29, 2012, was memorialized Nov. 5 with the dedication of a tree along the walkway between the Biochemistry and Chemistry buildings, just outside of my research office. The department was



*Thomas D. Sharkey, Ph.D.  
Chair, Department  
of Biochemistry and  
Molecular Biology*

also saddened by the death of Charles (Chuck) Sweeley, who died on Sept. 21, 2012, at the age of 82, and by the passing of his wife, Marilyn, less than two days later. Chuck, a former BMB chairperson and university distinguished professor emeritus, is a major reason why BMB is world-renowned for excellence in mass spectrometry.

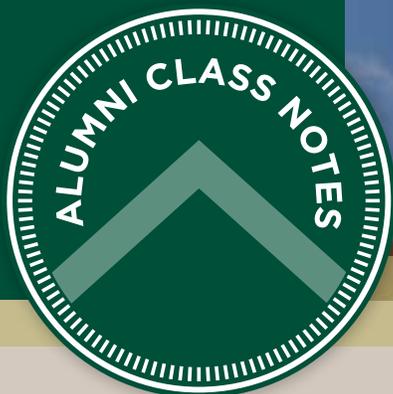
Professors in BMB organized two important on-campus meetings in 2012. Laurie Kaguni headed up the Summer School on Mitochondrial Science, held in June at Michigan State University (MSU) under the auspices of the American Society of Biochemistry and Molecular Biology. Christoph Benning was a lead organizer for the inaugural Plant Biotechnology for Health and Sustainability Symposium held in October at the new MSU Molecular Plant Sciences Building.



A major change in medical school teaching was initiated in 2012 with the splitting of the curriculum of the College of Osteopathic Medicine and the College of Human Medicine at MSU. Over the past five years, enrollment in the two medical schools has increased from 200 students to 500. Further, in addition to the instruction provided on the East Lansing campus, basic science instruction is now delivered in Detroit, Macomb County and Grand Rapids. Both medical schools have taken these changes as a good reason to re-examine their teaching. A new curriculum was introduced in the College of Osteopathic Medicine this past fall, and the College of Human Medicine is currently developing innovative approaches that would give medical students clinical experience earlier in their schooling and provide basic sciences instruction (such as biochemistry) over more years to give these subject areas added context.

Finally, 2012 marks my fifth year as BMB chair. A review is currently underway and, if it is positive, I have agreed to stay on as chair for a while longer. However, I think that it's a strength of BMB that the leadership turns over regularly—no chair has served as long as 10 years. I intend to honor this legacy and am pleased to see leadership within the department that will ensure a strong future long after I leave the chair's office in 210 Biochemistry. I enjoy serving the department as chairperson but also look forward to having more time to devote to the study of biochemistry and to interact with students in my laboratory.

I hope that you find this year's newsletter informative and enjoyable. And thank you, as always, for your continued support of our programs and students; it plays a tremendous role in the success of our alumni. ♡



**Walt Haney**, biochemistry, '68, retired as a professor of education at Boston College and lives in Westminister, Mass., with his wife, Kristine, also retired.

**Daniel Lichtstein**, biochemistry, '70, a professor of medicine and regional dean for medical education at the University of Miami Miller School of Medicine in Florida, recently published his second book, *If I Were a Patient... The Path to Becoming an Empowered Patient*, and has been elected a master of the American College of Physicians.

**Diane Husic**, Ph.D., biochemistry, '86, is a newly appointed steering committee member of the research and independent non-governmental organization (RINGO) constituency group within the U.N. Framework Convention on Climate Change.

**Kimberley Dille**, biochemistry, '93, is an assistant professor of pediatrics and a course director for medical decision making at Northwestern University Feinberg School of Medicine, and director of the pediatric cancer survivor program at the Ann & Robert H. Lurie Children's Hospital of Chicago.

**Paul Sanschagrin**, biochemistry, '96; Ph.D., biochemistry, '01, is a senior research systems administrator for the structural biology grid headed by Piotr Sliz at Harvard Medical School, Boston, Mass.

**Jeremiah Frueauf**, M.S., biochemistry, '01, is an associate at Sterne, Kessler, Goldstein & Fox in Washington, D.C., where he counsels clients on biotechnology patent law. He and his wife have had two children since Jeremiah left BMB.

**Samuel Molina**, biochemistry and molecular biology and biotechnology, '05, recently received his Ph.D. in biochemistry and took a postdoctoral fellowship at the Emory School of Medicine in Atlanta, Ga., to work on lung epithelial diseases.

**James Moore**, biochemistry and molecular biology, '05, is a family medicine chief resident at the University of California-Davis. Following graduation in June, he will stay on as a staff physician at the UC-Davis primary care network in Sacramento, Calif.

**Travis Reed**, biochemistry and molecular biology, '05; microbiology, '05; D.V.M., '09, accepted a position as a resident in small animal surgery in Annapolis, Md.

**Judith Murphy**, biochemistry and molecular biology, '06, a Ph.D. candidate at Weill Cornell Graduate School of Medical Sciences in New York, N.Y., received the Research Scholar Award from the Joanna M. Nicolay Melanoma Foundation in 2012.

**Ashwin Thiagaraj**, biochemistry and molecular biology and biotechnology, '07, is finishing medical school at The Ohio State University, Columbus, Ohio, and plans to pursue internal and cardiovascular medicine.

**Rita Grantner**, biochemistry and molecular biology, '08, is a biochemist/enzymologist focusing on cancer metabolism targets in the biochemistry and primary screening group at Pfizer in LaJolla, Calif.

**June Liu**, biochemistry, '08, is an account manager at Bio-Rad Laboratories, Inc., Houston, Texas.

**Bradley Olson**, Ph.D., biochemistry and molecular biology, '08, was appointed assistant professor at Kansas State University, where he has started a research group to study how multicellular organisms evolved. ♡

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### **In Memoriam: Charles Sweeley**

**Charles (Chuck) Sweeley, Jr.**, former chairperson of the MSU Department of Biochemistry and university distinguished professor emeritus, died on Sept. 21, 2012, at the age of 82.

During his tenure at MSU (1968-1992), Sweeley led the way in bringing technical advances in instrumentation to bear on important biochemical and medical questions. He founded the MSU-National Institutes of Health Mass Spectrometry Facility and co-founded Meridian Instruments, a company based in Okemos, Mich., that specializes in confocal laser microscopy systems. Once retired, Sweeley remained actively engaged in promoting biomedical research and was instrumental in forming the Michigan Institute for Stem Cell Research, a nonprofit entity created

to foster the application of stem cells for treating human diseases such as multiple sclerosis, ALS, and Parkinson's and Alzheimer's.



His honors were numerous, including receipt of the Anachem Award from the Federation of Analytical Chemistry and Spectroscopy Societies, being named Michigan Scientist of the Year, and being designated as an MSU distinguished faculty member and university distinguished professor. Sweeley is survived by his two children and five grandchildren.



## BMB professor Pam Fraker retires

Pamela J. Fraker, MSU university distinguished professor of biochemistry and molecular biology, retired in May 2012 after 39 years in BMB.



*Pam Fraker*

Fraker's lab has been a pioneer in the area of nutritional immunology. Her research has focused on the interaction between zinc nutrition and immunology, together with interests in obesity, diabetes and other metabolic diseases on the immune system.

"Professor Fraker's work was instrumental in helping recognize the critical importance of zinc nutrition in human health and the relationships between several aspects of nutrition and immune response," said Thomas Sharkey, BMB chairperson.

Although she is officially retired, Fraker continues to advise in the Molecular and Metabolic Disease Program, helping young investigators with proposals and papers.

Fraker received her Ph.D. from the University of Illinois. She joined MSU in 1973 and is the only female faculty member at the university to be named to the National Academy of Sciences.

## Three BMB faculty members receive 2012 CNS awards

Kathleen M. Foley, A. Daniel Jones and Jon R. Stoltzfus received College of Natural Science (CNS) awards during the annual State of the College meeting this past fall.

Foley, a biochemistry instructor, received a CNS Teaching Excellence Award for teaching excellence in the classroom; Jones, a BMB and chemistry professor, and director of the Mass Spectrometry Facility, received the CNS Distinguished Faculty Award for outstanding service to the university; and Stoltzfus, a biochemistry instructor, received the James D. Hoeschele Endowed Teaching Award for teaching excellence in science to non-science majors.

## Two BMB faculty members among first to occupy Molecular Plant Sciences Building

BMB Professors Christoph Benning and Dean DellaPenna were among the first faculty members to call the new Molecular Plant Sciences Building "home" when they moved into the space in the spring of 2012.

The construction of this four-story, 90,000-square-foot building, which connects the plant biology laboratories and the Plant and Soil Sciences Building, reinforces the university's commitment to the plant sciences.

"MSU is world-renowned for its plant biology research at all levels—from molecular to ecosystems," DellaPenna said. "We have one of the largest concentrations of plant biology faculty members in the country."

"This new building is a portal for plant sciences," Benning added. "It's designed for interaction and interdisciplinary research."

The first floor of the building includes a teaching auditorium, an atrium and a bioinformatics suite, while the lower level features increased space for state-of-the-art growth chambers, allowing for year-round plant growing. The top three floors contain offices, conference rooms and flexible



*Christoph Benning and Dean DellaPenna*

laboratory space that will support as many as 18 research groups.

Benning and DellaPenna each have a research group that consists of 14-18 people, including undergraduate and graduate students, post-docs and lab technicians.

DellaPenna anticipates that the close proximity of the various research groups within the open lab spaces will increase the number of collaborative research efforts between the diverse groups of plant scientists.

In addition, Benning's and DellaPenna's move from the Biochemistry Building has opened up extra space there, allowing for additional growth in that location. 🌱

## Sharkey completes five years as BMB head

Feb. 16, 2012, marked the completion of Thomas D. Sharkey's five years as BMB chairperson.

"During my five years as chair, the department hired 13 new faculty, including 11 in the tenure stream," Sharkey said. "These dynamic, mostly early-career assistant professors, are already beginning to land major research grants and make a noticeable difference in our teaching."

The department has also seen significant improvement to infrastructure, Sharkey said.

"This continues the efforts that were in place prior to my arrival," he said. "One example is the improvements made to our cooling tower, which is needed to maintain our 'cold' rooms. In my first months as chair, the cooling tower failed frequently (almost always at night or on the weekend), resulting in ruined experiments. After a number of changes

and physical improvements, the cooling tower has not failed for years and now has additional capacity if we need to add new equipment."

Sharkey said that changes in the field over the past five years have been largely incremental, as investments in large data sets have begun to identify promising targets for research that were found only very slowly before the present era—often called the 'omics' era (genomics, proteomics, metabolomics and others).

"The importance of epigenetics has grown as well," he added. "The regulation of gene expression through histone modulation, small RNAs and transcription factors, to name a few, are now at the forefront of research in the department. I anticipate that these trends will continue and I also hope that we will make biophysics more visible within the department."

# BMB's Feig wins protein structure prediction competition

**M**ichael Feig, BMB associate professor, placed first—by a large margin—in a biennial competition to predict protein structures.

Every two years since 1994, CASP—Critical Assessment of techniques for protein Structure Prediction—has held a communitywide, worldwide experiment for protein structure prediction. The experiment challenges computational scientists to determine protein structures using only the sequence of amino acids of newly experimentally determined but, as yet, unpublished structures.

More than 200 research groups from universities around the world participated in the 2012 competition and the results were announced in December during CASP10, a scientific meeting held in Gaeta, Italy.

“We’re going in the right direction.”

“Michael Feig is a leading member of the section of the department studying protein structure and molecular biophysics,” said Thomas Sharkey, BMB chairperson. “Predicting and refining protein structure is important for drug design and for many other purposes. The department is thrilled that Michael and his group have made a substantial step forward in this critical area and that their

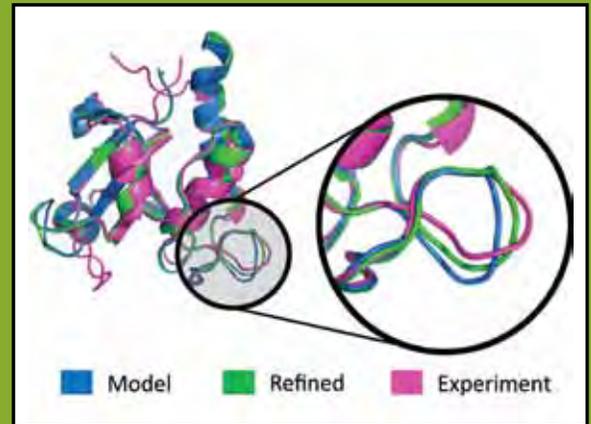
success has been recognized in this international competition.”

“We came out the clear winner in the increasingly important protein structure refinement category,” Feig said. “Structural refinement seems to be the key now to take good approximate protein models to structures that are competitive with experimentally determined protein structures, which has been the holy grail of protein structure prediction for decades.

“We want to see in detail what these proteins look like, so we can better understand the functions,” he explained. “Usually you would use experimental techniques to do that, but the techniques are tedious, expensive, time consuming and sometimes not possible. So there have been longstanding efforts to predict these structures using computational tools. These methods have been used for the past 20 years or so and they have become increasingly better, but there has been a bit of a slowdown in the rate of progress over the past five or six years.”

Feig said that the focus now has shifted a bit from just generating a prediction to taking predictions that are good and making excellent models out of them.

“That’s called structure refinement,” he said. “That’s what we focused on. And that’s where we made the big progress. For the first time, these refined structures are now actually close enough that they can be used as models to help with the experimental structure determination.



*Computational structure refinement of protein models toward experimental structures.*

“Winning the competition was a bit of a surprise,” Feig added, “but we are obviously happy about it after working hard on this for most of the year.”

Working in the lab along with Feig are Ph.D. student Vahid Mirjalili and Keenan Noyes, a professorial assistant undergraduate student in chemistry.

Using the models that Feig’s research group has developed could result in a significant reduction of protein structure prediction time—from six months to one or two months.

“We’re going in the right direction,” Feig said. “We’re not quite there yet, but we know which path to take; we know the road now. And that’s the key.”

A scientific publication summarizing the complete results of the competition is expected to be published within the year. 🌟

## New BMB hires in protein structure research

**T**hree faculty members specializing in protein structure research joined BMB.

**Heedeok Hong**, assistant professor, with a joint appointment in chemistry, specializes in folding and stability of membrane proteins, chaperone-assisted membrane protein folding and controlled degradation of membrane proteins. He received his Ph.D. in 2006 from the

University of Virginia. Prior to joining MSU, he was a postdoctoral fellow at the University of California, Los Angeles.

**Jian Hu**, assistant professor, is a structural biologist, working in the area of membrane protein structure-function. He received his Ph.D. in 2004 from Peking University in Beijing, China. Currently an associate research scientist in the Yale School of Medicine, Hu will join BMB this August.

**Kristin N. Parent**, assistant professor, focuses on biochemical, biophysical and structural biology methods applied toward an understanding of virus assembly, maturation and infection processes. She received her Ph.D. in 2007 from the University of Connecticut, Storrs. Before joining MSU, she was a postdoctoral fellow at the University of California, San Diego.



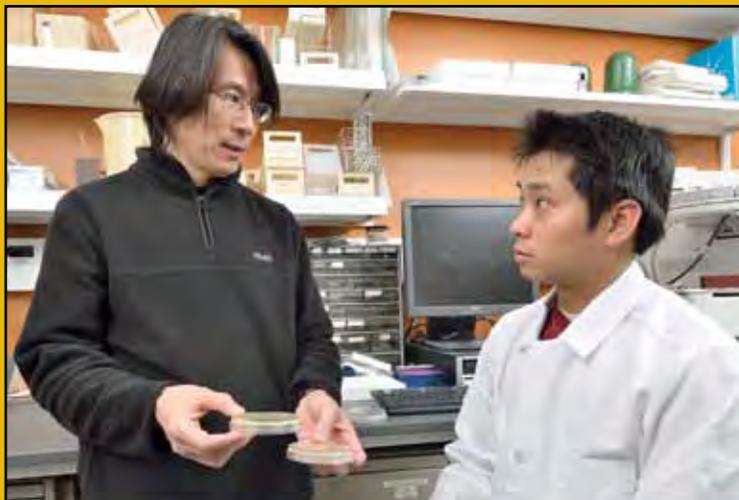
## Collaborating to increase biofuel production in model organisms

The recent collaborative work of Min-Hao Kuo, BMB associate professor, and Christoph Benning, BMB professor, is testament to the strong sense of collaboration in the department.

The two research groups are working to increase oil production using model organisms. Specifically, they are engineering optimized algal strains for the production of biofuel feedstocks.

Kuo's lab has expertise and experience in yeast genetics, biochemistry and molecular biology. They are depending on the expertise in Benning's lab, which focuses on the biochemistry and control of metabolism in plants, algae and photosynthetic bacteria. Together, they try to identify a means of increasing the lipid content of *Chlamydomonas* and *Nannochloropsis*, a new model alga.

"There are two ways to increase oil production inside a cell," Kuo said. "You increase the production of the lipids, which can be used as feedstock for biofuel. That's what Dr. Benning is doing.



*Min-Hao Kuo (left), BMB associate professor, and Witawas Handee, Ph.D. student, compare the life spans of common lab strains of yeast with wild strains.*

Or you can work on the prevention of lipid hydrolysis, or degradation, inside the cell, to enhance oil content."

"The idea is to identify factors that control oil biosynthesis in algae," Benning said.

"Our job is to try to identify the enzyme called lipases, made by cells to degrade or hydrolyze stored lipids," Kuo said. "Coupled with what Dr. Benning finds in increased production, we are going to get a much better yield for lipid production for biofuels.

"This project manifests very well the collegial atmosphere and the synergistic way that we promote science," Kuo continued. "It really puts two heads together."

"Synergistic interactions happen best when there is a critical mass of professors with overlapping and complementary interests," said Thomas Sharkey, BMB chairperson. "Balancing the breadth and depth of areas covered in BMB is a constant consideration and comes into focus when new hires are contemplated."

Thanks to the collaborative effort, the project has already produced an important spinoff.

"We found, unexpectedly, that fat yeast cells have much longer life spans than normal cells," Kuo said. "This is a novel discovery, a finding that could have potential applications in biotechnology or industry. Or it could be applicable to human health. We don't know yet. This demonstrates the impact that collaboration can have." 🌱

## Inaugural symposium on plant biotechnology well-received

More than 160 participants gained a broad overview of the latest in plant biotechnology research at the inaugural Symposium on Plant Biotechnology for Health and Sustainability, Oct. 5-6, 2012, on the MSU campus.

The two-day event, held in the new MSU Molecular Plant Sciences Building, included 10 presentations from industry and academia on topics ranging from metabolic pathway discovery in plants to production of biofuels and drugs in microorganisms. It also included a poster session, an evening reception and a continental breakfast.

Symposium organizers – BMB professor Christoph Benning, MSU-DOE Plant Research Laboratory professor Gregg

Howe, and Tim Whitehead, assistant professor of chemical engineering and materials science, were pleased with the response to the event.

"The idea behind holding an annual symposium was to provide students and other scientists at MSU with leading-edge knowledge about how plant biotechnology is being used to advance issues of health and sustainability," Howe said.

"This all goes in the direction of answering the question of what can we do in plant science to better support the theme of plant biotechnology for health and sustainability?" Benning added. "We're also formalizing a teaching component along with the symposium to maximize the benefit of MSU's expertise in this area."

Participants were also enthusiastic about the opportunities that the event provided.

"Having a speaker from industry in addition to those from academia provided a good overview of the current field of plant biotechnology," said J.P. Jerome, a postdoctoral research associate in MSU plant biologist Shang Yang He's laboratory.

"I particularly enjoyed hearing from the MSU professors and from my colleagues at the poster sessions," said Rebecca Roston, an MSU postdoctoral student in Benning's laboratory. "I anticipate that these events, if continued, will do more to promote collaboration than any other single event."



## MSU hosts ASBMB symposium and international summer school

For the first time, MSU co-hosted an American Society for Biochemistry and Molecular Biology (ASBMB) Symposium, combined with an international summer school on mitochondrial science.

The MSU Center for Mitochondrial Science and Medicine (MitoSci Med) and the University of Tampere, Finland, FinMIT Centre of Excellence for Research on Mitochondrial Disease and Ageing, held an inaugural symposium on mitochondrial biology—"Mitochondria: Energy, Signals and Homeostasis"—in June 2012 on the MSU campus.

The three-day symposium, typically held every two or three years, was held in conjunction with the week-long International Summer School on Mitochondrial Molecular Biology for Ph.D. students.

"This combination of the educational and symposium structures was unique," said Laurie Kaguni, BMB university distinguished professor. "This was the first time the summer school had been offered in the United States, and it was the first time it was held in conjunction with an ASBMB symposium. It was also the first time that the school reached its maximum capacity of 30 students."



Laurie Kaguni

The combined program was the brainchild of Kaguni and Academy of Finland Professor Howard T. Jacobs.

Kaguni, who also holds a Finland distinguished professorship, is the director of MitoSci Med, which was formed in 2007 and was supported in its inaugural years with a strategic partnership grant from the MSU Foundation. MitoSci Med currently integrates the research of six MSU faculty members from five departments; read more at [www.mitoscimed.msu.edu](http://www.mitoscimed.msu.edu).

Jacobs started the international summer school about 10 years ago and, for the past few summers, Kaguni and Jacobs have been co-organizing it. Up until 2012, the summer school had been held in Scandinavia, either in Finland or in Estonia.

The 2012 symposium drew 102 participants from 14 countries. The summer school hosted 30 students from 8 countries; 9 MSU students participated and also served as welcoming hosts to the visiting students and lecturers. Shelagh M. Ferguson-Miller, BMB university distinguished professor and MitoSci Med researcher, was one of the summer school presenters.

"ASBMB has already asked us to consider organizing the symposium again for an upcoming year, and there is much interest among all the participants in continuing to expand the international character of the summer school," Kaguni said. "We anticipate offering the symposium again in 2015—possibly at MSU, but perhaps alternating at a European venue."

The 2013 summer school will be held in Finland in June. To learn more, visit <http://www.biomeditech.fi/summerschool2013/>. 

## BMB participates in medical school curriculum revisions

John L. Wang, BMB professor, and Carol Wilkins, BMB assistant professor, have contributed to the planning and implementation of revised curricula in MSU's College of Human Medicine (CHM) and College of Osteopathic Medicine (COM).

"A key impetus for curriculum revision stems from the feeling within the profession that student trainees need to get clinical experience earlier in their careers and learn the basic science material in the context of clinical practice," said Wang, who has been sitting on curriculum revision task forces that determined the design of the new curricula. "Thus, basic science content will no longer be delivered as neat packages organized by disciplinary departments—biochemistry, genetics,

microbiology, physiology, pharmacology. Instead, a sizable portion of each department's contribution will be scattered throughout the curriculum."

A projected shortage of primary care physicians several years ago prompted both MSU medical schools to increase enrollment to offset that shortage.

According to Wang, each school proceeded to carry out its expansion—in number of students and in number of campuses—in deliberate steps.

Over the past five years, enrollment in the two medical schools has increased from 200 students to 500. Further, in addition to the instruction provided on the East Lansing campus, basic science instruction is now delivered in Detroit, Macomb County and Grand Rapids.

"The first-year students in CHM and COM had previously taken their basic science courses together," Wang explained. "But the large numbers of students spread across four campuses provided a sound basis for delinking the curricula of the two medical schools. This also provided the opportunity for each of the colleges to retool its curriculum."

As of fall 2012, the basic science courses were split for COM and CHM for the first time; COM and CHM students no longer attend the same basic science classes.

The new COM curriculum started to roll out during summer semester 2012, and the CHM curriculum revisions will soon be in place. Also on the horizon are proposed changes in the way national board exams for licensure are approached.



## Engineering the building block for an eco-friendly tire

Most tires are made from rubber, whose main ingredient is extracted from latex-bearing trees. This process is not considered particularly eco-friendly or sustainable. In pursuit of an alternative, a team of MSU scientists has gained some traction, particularly with the automotive industry, by exploring biotechnical ways to produce a manmade version of rubber from isoprene. Isoprene is the basic building block of rubber. It also is a gas given off by some trees, mosses and ferns.

*"It turns out that trees make a tremendous amount of isoprene."*

Tom Sharkey, BMB chairperson, has been studying the regulation and function of isoprene synthesis in leaves for decades. His lab is responsible for finding almost all of the known genes for enzymes that make isoprene.

"It turns out that trees make a tremendous amount of isoprene," he said. "It was very surprising to learn just how much. It's more than all of the unburned gasoline, etc., that enters the atmosphere."

Isoprene emitted from trees is too dilute to collect, however, so Sharkey is working to determine its genetic basis and eventually a biological source of isoprene. The search has been fueled by rising rubber prices, among several industry concerns.

"Currently, rubber is harvested from trees that are susceptible to various diseases," he said. "The trees originally came from Brazil, but rubber plantations there were destroyed by a fungus. Now the trees are mostly grown in Southeast Asia. If the fungus were to get established there, the amount of rubber we would have for making tires and all sorts of things would be in severe jeopardy. This has the rubber companies quite frightened."

Other researchers have made isoprene from petroleum, but Sharkey said automotive tire companies now want a biotechnological, renewable alternative. He is working to produce bio-isoprene using the enzymes he has cloned.

Considerable strides have been made over the past year, thanks in large part to a robot built by the research team. The machine searches the isoprene strains with remarkable speed and efficiency.

"When you look for new enzymes, you can make libraries of 10,000 or more strains that have to be searched to find one that might have the gene that you're interested in," he said. "With the robot, we can test as many as 6,000 strains per day and drink coffee."



Tom Sharkey is exploring ways to produce a manmade version of rubber from isoprene.

Before, we tested 100 per day and didn't have time to do anything else."

Sharkey, who is working with ZuvaChem, Inc., said he is committed to achieving a commercial method to consistently achieve high yields of isoprene from bacteria or yeast.

"Right now the process works fine at the laboratory scale, but there are some things we need to improve to make the process commercially viable," he said. "We've made some improvements, but I'm hopeful for a really big step forward in 2013 in the types of enzymes available." 🍀

## Memorial tree dedicated to Rawle I. Hollingsworth

On Nov. 5, 2012, Rawle Hollingsworth's wife, Saleela, and two children, Nisha and Akhill, gathered with colleagues and friends to dedicate a tree in his memory. The tree, a Shantung maple, is located along the walkway between the Biochemistry and Chemistry buildings. Hollingsworth, 55, a faculty member of both departments, died unexpectedly on Feb. 29, 2012.

Tom Sharkey, BMB chairperson, and Frank Dazzo, microbiology and molecular genetics professor, and Hollingsworth's postdoctoral mentor, each spoke of his inspiring nature, brilliant mind and contributions to science.

"He was always thinking about the next human disease for which he could design molecules that might assist in medical treatments," Sharkey said.

"Running into Rawle in the parking lot was always good for a 25-minute lesson on human medicine," Dazzo added.

Hollingsworth came to MSU as a research associate in 1983. In addition to teaching, he ran an active research lab focused on the development of synthetic strategies for compounds in medicinal chemistry. A memorial biography of Rawle can be found at <http://www.bch.msu.edu/RIH.html>.



Nisha, Saleela and Akhill Hollingsworth stand in front of the tree dedicated to Rawle.

c/o College of Natural Science  
288 Farm Lane, Room 103  
East Lansing, MI 48824-1115

## BMB supports student's attendance at national conference

Ashley Bourke, a BMB senior, attended the 2012 American Indian Science and Engineering Society (AISES) National Conference in November in Anchorage, Alaska, thanks to the support of BMB and the Honors College.

Since 1977, AISES has worked to increase the American Indian and Alaskan Native representation in science, technology, engineering, and math (STEM) fields. The AISES National Conference, held annually since 1978, is a three-day event that provides professional development, mentoring and networking opportunities for high school juniors and seniors, college undergraduate and graduate students, teachers, workforce professionals and corporate partners.

"I would not have been able to attend the conference without this funding from the BMB department and the Honors College. I am tremendously grateful for their support," Bourke said.

She currently works as an undergraduate research assistant in the MSU Aquatic Animal Health Laboratory, assisting a graduate student on a project that aims to determine the pathogenesis, transmission and latency of the epizootic epitheliotropic disease virus in lake trout.



*MSU AISES conference attendees (left to right): Ashley Bourke, BMB senior; Katy Matson, BLD senior; Larry Jacques, '12, agribusiness management graduate; and Marolyn Lecaros, College of Engineering faculty member.*

After graduation this spring, Bourke said she plans to take a year off to work and to apply to graduate school.

"I want to pursue my interest in becoming a research biochemist by entering into a doctoral program and continuing to conduct research that has clinical applications," she said. "I am applying to a one-year program at the National Institute of Mental Health, which I learned about while attending the career fair at the AISES conference."

## Save the date!

All alumni and friends are invited.

### **R. Gaurth Hansen Lecture**

Presented by Lyle Simmons  
Department of Biology,  
Massachusetts Institute of Technology  
April 11, 2013  
11:30 a.m. – 12:30 p.m.  
101 Biochemistry Building, MSU

### **Annual Department of Biochemistry & Molecular Biology Banquet**

April 11, 2013  
Spartan Club, Spartan Stadium, MSU

5:00 – 6:00 p.m. – *Cocktail and social time*

6:30 p.m. – *Dinner*

7:30 p.m. – *Program recognition and presentation of awards; recognition of the R. Gaurth Hansen Award*

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