

The Taste of Others

Milky Way

Coming Up Empty

UMaine Today

CREATIVITY AND ACHIEVEMENT AT THE UNIVERSITY OF MAINE

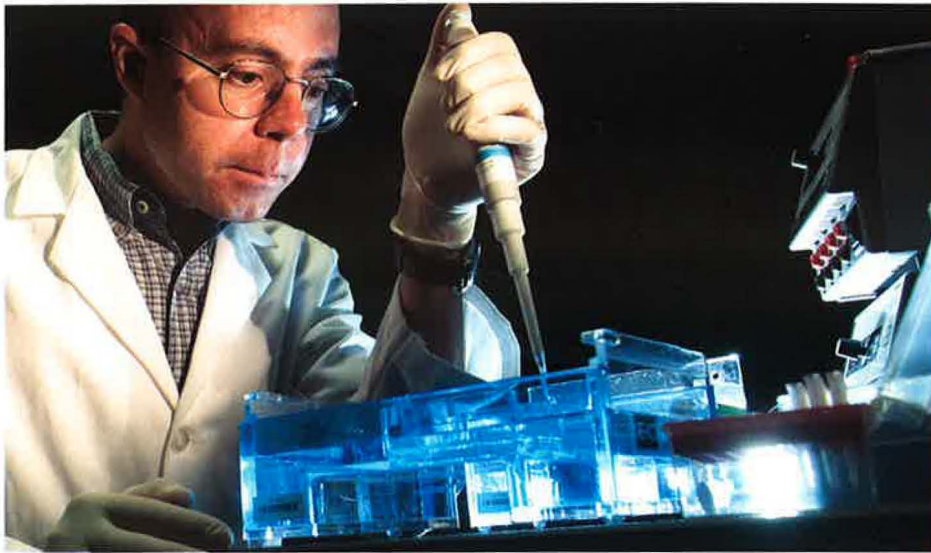
WINTER 2009

Both sides now

**A whole-brain approach that
engineers student innovation**



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The Taste of Others

At first glance, food movies seem to depict issues surrounding multiculturalism and American identity through a critical lens. But according to Laura Lindenfeld, when issues of ethnicity, race, gender and social class are paired with food, they become one more thing for dominant culture to undermine.

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The Milky Way

UMAD COWS, the student-operated dairy cooperative that began a decade ago, offers an intense, hands-on experience with large animals and management of a dairy herd that has bonded generations of students and their bovine teachers.

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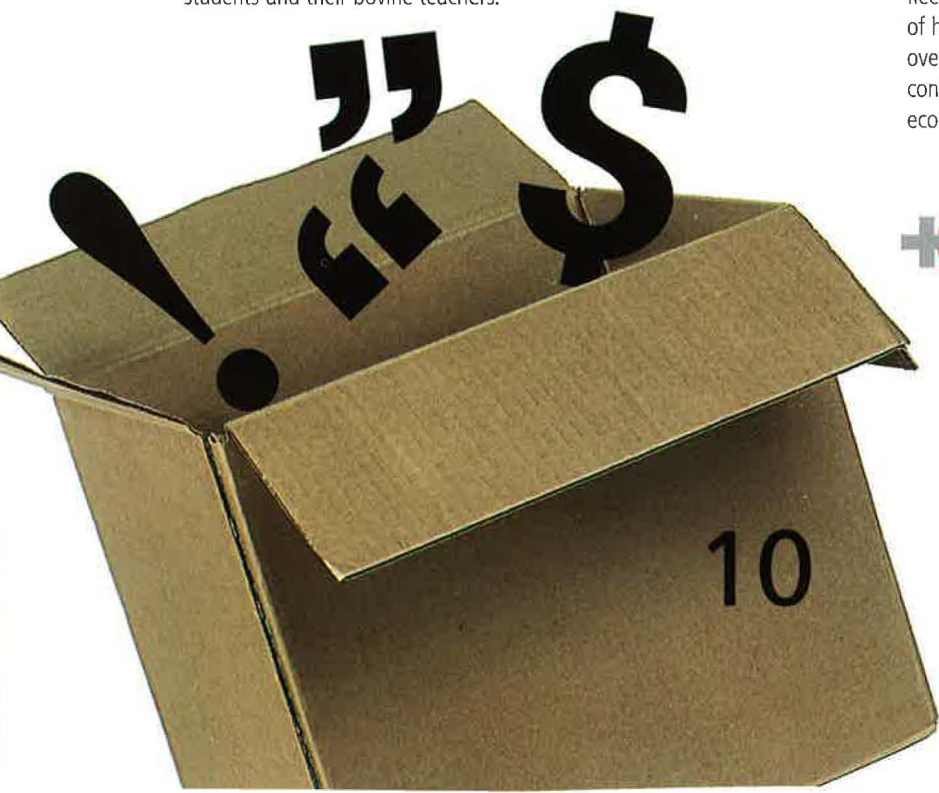
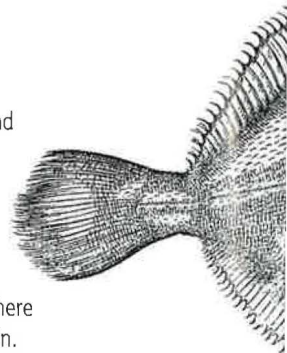
Why and How of Human Disease

Seven of Maine's leading research institutions take a biological approach to some of today's toughest medical questions, and that's also where the state is training its next generation of biomedical scientists. Entering its fifth year, the Graduate School of Biomedical Sciences is committed to improving the state's public health, and creating research and development capacity.

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Coming Up Empty

In the Gulf of Maine, crustaceans are plentiful and the lobstering industry is thriving, while groundfish stocks are at all-time lows and the fleets are on the verge of extinction. The effect of humans on the marine resources — from overfishing to policymaking — is undeniable, controversial and little understood. And that's where economic anthropologist James Acheson comes in.



+Online umainetoday.umaine.edu

In *UMaine Today* magazine, +Online indicates the availability of additional content — Web-exclusive stories, video and audio clips, photo galleries, full-length

In the Know

Kathryn Hopkins on maple syrup.

Gordon Hamilton on climate change research in Greenland.

Photo gallery

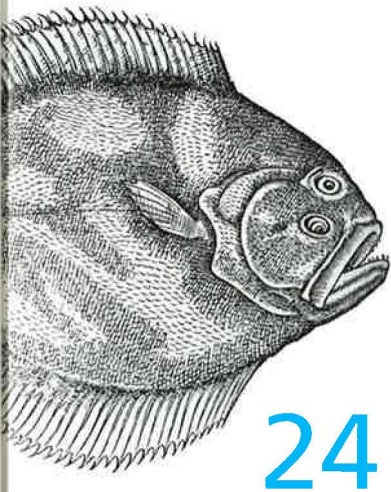
Art and Tradition Maine Indian basketry and art forms.



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Always Thinking

Third-generation UMaine alumnus Doug Hall took up residency at his alma mater this fall with one mission: to help make Maine the No. 1 state in the nation for innovation-driven economic development.



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versions of articles and a comprehensive editorial archive. More online stories will be added monthly, including answers to questions posed to our In the Know experts.

Video features

The Milky Way UMAD COWS dairy cooperative.

Big-Picture Guy Alumnus and award-winning Hollywood producer Lawrence Bender on his career.

The Buzz Frank Drummond, professor of insect ecology, on the health and welfare of bees.

President's Message

I HOPE YOU ENJOY the *UMaine Today* cover story about our focus on fostering innovation among our students, faculty and staff members. We are remarkably fortunate that UMaine graduate Doug Hall is so committed to helping his alma mater develop a state-of-the-art innovation program. Having Doug teach in our Innovation Engineering program is a bit like having Bill Gates teaching computer science or, to use an example close to home, having Stephen King teaching creative writing.



Doug has a remarkable ability to express complex concepts in effective, succinct and memorable ways. His lessons, expressed through his books and the work of his company, Eureka! Ranch, are full of practical but highly insightful advice on developing ideas and taking them to market. His recommendations for ways Maine can move toward greater prosperity through innovation are worth heeding, and they are getting the attention of business, government and education leaders throughout our state and nationwide.

These ideas are especially exciting as they relate to the University of Maine and its future. As we more fully embrace the notion that innovation — on scales both small and large — is perhaps the most critical component of our state's economic and cultural development, we must also recognize the vital role of Maine's flagship university in leading the way. UMaine is ahead of the curve when it comes to innovation as a key element of our mission, thanks in large part to the influence of Doug Hall and those inspired by his example.

Robert A. Kennedy
 Robert A. Kennedy
 President



ON THE COVER: There are left-brain and right-brain modes of thinking, but when it comes to inventing, the whole brain is best, according to innovation guru Doug Hall. Teaching students to take a whole-brain approach to Innovation Engineering was his focus at the University of Maine this fall. See related story on page 10.

THE TASTE OF OTHERS



Laura Lindenfeld

**Examining the growing appetite for
consuming culture through food films**

By Kristen Andresen



ON THE SURFACE, *Big Night* is a movie about a struggling Italian restaurant. *Tortilla Soup* tells of a brilliant cook who loses his sense of taste but finds romance. In *Woman on Top*, a sexy Brazilian chef gets her groove back after running out on her philandering husband. Murder and mayhem are on the menu at the Italian restaurant in *Dinner Rush*.

That's what the viewer sees. Well, that and a smorgasbord of luscious food.

But it's what audiences don't see — or don't really think about — that intrigues Laura Lindenfeld, a University of Maine mass communication professor whose research centers on food media, film in particular.

At first glance, food movies seem to depict issues surrounding multiculturalism and American identity through a critical lens. Dig your fork a little deeper, though, and many food films actually subvert the very messages they appear to promote.

Lindenfeld says romanticized portrayals of diversity only reinforce “liberal, multiculturalist, Eurocentric discourse.” When issues of ethnicity, race, gender and social class are paired with food, they become one more thing for dominant culture to undermine.

“These films are very pleasurable, they're sublime, they're beautiful,” says Lindenfeld, whose research in media and cultural studies focuses on the relationship among food, media, identity and cultural citizenship. “They erase all the other things we don't want to think about when it comes to food and how we treat each other.”

In the end, she says, “it's about who gets power and who doesn't. It's part of the fabric of this mainstream U.S. media culture to cover up these gaps.”

Take, for instance, a movie such as *Tortilla Soup*. Non-Latino viewers may leave the theater feeling like they truly understand the Mexican-American experience. Maybe they learned a few Spanish phrases along the way. Certainly, the foods they saw — tortilla soup, cactus salad — made them hungry for “authentic” Mexican cuisine.

And since food is universal, it brings us all together, right?

Not so fast.

“There's a vicarious consumption not just of food but of otherness,” Lindenfeld says. “You can watch a film like *Tortilla Soup* and have a touristic experience in the home of a Mexican-American family without having to leave your living room. I think we find comfort in believing things are OK. I believe these films are a way of convincing ourselves that everything is fine. I find myself screaming, ‘No, it's not that easy!’”

FOR LINDENFELD, food is more than sustenance — and a scholarly pursuit. It's a way of being in the world, a way of connecting with people around her. She is deeply involved in supporting and promoting local, sustainable agriculture and foodways. She and her husband, Roger Sher, belong to a cooking club whose members prepare and study foods from around the globe. She cares about the labor that goes into producing and manufacturing what she eats.

In the face of rising energy costs and environmental concerns that relate to commercial agriculture, Lindenfeld is encouraged to see documentaries such as

THE TASTE OF OTHERS

Food, Inc. and *King Corn*. But it really bothers her when food media gloss over exploitation of people or the landscape, and there are power struggles and socioeconomic issues at play behind the scenes. When it comes to the things we eat, the stakes are high.

“Food films really underscore how closely woven our consumption is with our belonging in this nation,” says Lindenfeld,

who has a joint appointment in the Department of Communication and Journalism, and UMaine’s Margaret Chase Smith Policy Center, where her research focuses on issues of disenfranchisement, marginalization and community engagement. “These films that, on the surface, present a fair representation of otherness — whether through sexuality, race, class or gender — always somehow capitulate. That makes me concerned and sad, and that also keeps me coming back to this as a research topic.”

FOOD FILM AS A GENRE is relatively new, and Lindenfeld is one of a handful of researchers worldwide studying the subject in-depth, as well as, to a lesser extent, food television. Though many scholars write about food and culture, Lindenfeld goes a step further, examining the politics and ideology. Her research has been published in scholarly journals and the popular press, and she’s at work on a book, *Feasting Our Eyes: Food Films, Cultural Citizenship and American Identity*.

In recent years, food media have broken out of their niche market and into the mainstream. August 2009 saw the highest viewership in the Food Network’s history. Movies such as *Ratatouille* and *Julie and Julia* marked the transition from small-budget art-house film to big-budget box-office



appeal. Magazines such as *Bon Appetit* give those films plenty of ink. Now, more than ever, food is entertainment. Food media shape the way we eat and, Lindenfeld argues, the way we see the world.

But there's a liability in that.

"For many of us, a lot of the way we experience otherness and difference comes through media," Lindenfeld says. "If the media have a narrow focus, as many of these food films do, there's a danger of creating new ideas that are derogatory, inflammatory or even just limiting. What's so problematic about these films is that they're not overtly racist, in the way you usually think of racism. They even look progressive, but they're not."

Lindenfeld's research centers on food films made between 1992 and 2007. In these films, food is a main character, with its own stylists, lighting designers and, in some cases, its own musical score. It's all very lovely and delicious. It has the sheen of authenticity. It looks — and feels — good enough to eat.

These are, for the most part, smaller-budget, art-house movies that tended to attract a small, well-educated, foodie crowd. According to Lindenfeld, that audience thinks of itself as having progressive values, but, in the end, many of the films in her study serve up a less-than-progressive view of race, gender, ethnicity and sexuality. It's just packaged in a slightly different way.

THOUGH CULTURAL IDENTITY and otherness are overarching themes in Lindenfeld's research, they're not the only facets of food and film that intrigue her.

DIG YOUR FORK A LITTLE DEEPER AND YOU'LL FIND MANY FOOD FILMS SUBVERT THE MESSAGES THEY APPEAR TO PROMOTE.

Marketing and the inner workings of Hollywood play a huge part in how movies are made. Lindenfeld argues that a lot of great, complex, thoughtful scripts never see the light of day because they're not marketable. And some films that start with great promise become victims of their own success.

That was the case with *Big Night*. The 1996 film, a relatively small-budget production directed by Stanley Tucci and Campbell Scott, tells the tale of Primo and Secondo, brothers who run Paradise restaurant. Primo, the chef, uses time-honored family recipes that take ages to prepare. Secondo, a businessman tired of seeing would-be customers flock to a subpar eatery nearby, urges his brother to compromise his standards and make Americanized Italian

dishes. When their competitor offers to send his good friend, the musician Louis Prima, to dine at Paradise next time he's in town, the brothers see a way to save their restaurant. They plan an elaborate meal in Prima's honor and invite droves of people. Though Prima never shows, the crowd has the meal of a lifetime.

According to Lindenfeld, *Big Night* was the first American food film to gain any real prominence. It also provided a springboard for discussion about heavy topics — the immigrant experience in America, infidelity, family values, staying true to your roots — without resorting to oversimplified stereotypes. But in the end, that was overshadowed by the "Hollywood machine."

"What troubled me is that *Big Night* seems to make the argument that art should exist for art's sake, but then the film started to get interest outside small art-house theaters," Lindenfeld says. "All of a sudden, there's a novelization of the movie and cookbooks. You see all these marketing tie-ins that you'd see for a major Hollywood film. I think the film collapses on itself because it succumbs to corporate marketing culture."

Big Night marked a turning point. And as the public's appetite for food films and food media grows, Lindenfeld sees more opportunities to research — and, she hopes, shape — the impact they have on our decisions, our eating habits and our worldview.

"I see my role moving more into advocacy, to help people make more responsible choices about how they produce and consume food," Lindenfeld says. "I would like people to think about what's on the plate, where it came from, whose labor produced it, what subsidies came from the U.S. government, what countries were put into precarious development as a result of the foods we eat." ■

Maine's primary research institutions collaborate to train the next generation of biomedical scientists

Why and how of human

By Aimee Dolloff

GSBS 101

Molecular and Cellular Biology — understanding how cells work, including the interactions between DNA and RNA in living things.

Neuroscience — focusing on the structure, function and evolution of the nervous system.

Biomedical Engineering — shaping the future of biomedical research by developing new technologies.

Toxicology — examining the effects of chemicals on living organisms.

Functional Genomics — researching how genes work and interact through an interdisciplinary course of study.

UNDERSTANDING HOW cancerous tumors grow. Learning why some people feel pain more acutely than others. Searching for ways to cure vascular diseases.

In biomedicine, the focus is on the basic underlying processes — how our bodies work. Greater understanding of disease through biomedical sciences research holds the promise of better treatment tools and improved approaches to prevention, as well as the potential for the ultimate outcome: a cure.

That biological approach to tackling some of today's toughest medical questions is occurring at seven of Maine's leading research institutions. That's also where the state is training its next generation of biomedical scientists.

Entering its fifth year, the University of Maine's Graduate School of Biomedical Sciences (GSBS) grew out of a commitment to improve the state's public health, and create research and development capacity for Maine. Currently, there are five tracks — molecular and cellular biology, neuroscience, biomedical engineering, toxicology and functional genomics — with others under development.

Students collaborate with more than 80 world-class researchers from UMaine and six partners — The Jackson Laboratory, Bar Harbor; Mount Desert Island Biological Laboratory, Salisbury Cove; Maine Medical Center Research Institute, Scarborough; University of New England, Biddeford and Portland; Maine Institute of Human Genetics & Health, Brewer and Bangor; and University of Southern Maine, Portland.

disease

“What we’re hoping is that this pool of Ph.D. scientists can stay in the state, have jobs in the state, and develop new companies, contributing to the economy in Maine,” says GSBS Director Carol Kim, a microbiologist whose research focuses on molecular virology and host response to infectious disease. “We want to increase the visibility of biomedical research throughout the state.”

The springboard for GSBS was a research triangle — UMaine, The Jackson Laboratory and Maine Medical Center Research Institute — that offered the state’s first Functional Genomics Ph.D. Program, funded in 2002 by a \$2.6 million National Science Foundation IGERT (Integrative Graduate Education and Research Traineeship) grant. In 2006, four more research tracks and four research facility partners were added to establish the graduate school.

Initial funding for GSBS student support came from the Maine legislature using scholarship funding from the new racino revenues. That was followed by two years of funding by UMaine through the Maine Economic Improvement Fund.

Funding for the next two years was appropriated by the legislature as a result of the enhanced Federal Medical Assistance Percentage provided in the 2009 American Recovery and Reinvestment Act.

“For a research institution like us, it’s important to be involved in high-quality graduate programs,” says Doug Spicer, a principal investigator in the Center for Molecular Medicine at the Maine Medical Center Research Institute. Biotech is one of seven sectors driving the state’s economy, he says, and until the formation of GSBS, “we really haven’t had a way for students to get a biomedical degree in Maine.”



SARAH STERLING

Hometown: Maine, N.Y.

Undergrad: Chemistry, Russell Sage College, Troy, N.Y.

GSBS Concentration: Biomedical Engineering, UMaine

Adviser: UMaine Associate Professor of Chemical Engineering David Neivandt

Research: Using a complex laser spectrometer, Sterling is looking at how proteins move across cell membranes. These proteins help blood vessels grow at tumor sites by stimulating growth of cells required to form blood vessels. Understanding how these proteins are transported could lead to information about how tumors are formed, how blood vessels become restricted, and how new blood vessels grow from already existing vessels, a process called angiogenesis.

In her words: “Many groups are doing biomedical research now, so hopefully I can bring a different insight with my chemistry background, from both the engineering and analytical side.”



JILL RECLA

Hometown: Kingsford, Mich.

Undergrad: Bioinformatics, Michigan Technological University, Houghton, Mich.

GSBS Concentration: Functional Genomics, The Jackson Laboratory

Advisers: Carol Bult and Gary Churchill, The Jackson Laboratory

Research: Recla is working to identify genes that influence an individual’s susceptibility to chronic pain, particularly after an injury. She’s using large-scale computational and lab techniques to study chronic pain susceptibility in diverse sets of lab mice to understand how two people can suffer the same injury, but have different pain outcomes.

In her words: “We’re currently establishing collaborative research projects with the Veterans Affairs Medical Center in Togus, Maine, to apply the results of this research in a clinical setting. It’s my hope that my work will lead to improved methods of individualized chronic pain treatment and prevention for all people, particularly our veteran population.”

“The advantage of the GSBS program is that, as far as recruiting biotech companies into Maine, you’re actually producing biomedical graduates in all different parts of the state,” Spicer says. “It’s already a good program and it’s only going to get better.”

The graduate school’s first class had 12 Ph.D. students, nine with Maine roots. Since then, the program has grown to include more than 35 students, with applications beginning to come not just from Maine or New England, but from throughout the world.

“I think it has certainly met our expectations,” says Keith Hutchison, a UMaine professor of biochemistry who helped found GSBS and served as its first director. “I’m impressed as each year goes by with the quality of students coming in.”

Coursework is offered via videoconference to accommodate the students at their research venues across the state. They also are required to complete three rotations at a minimum of two of the seven participating research facilities before selecting their ultimate research track and faculty adviser.

The program provides up to two years of financial support for students, including \$23,000 stipends, tuition and fees, and health insurance. After their first two years in the program, students complete their education and research at UMaine or a partner institution. The final years are typically supported by external grants from agencies such as NSF or the National Institutes of Health.

“It allows you to find a really good fit. You really get to discover what’s right for you,” says GSBS student Kira Young of Dedham, Maine, who is currently involved in functional genomics research at Maine Medical Center Research Institute.

The program also has proved beneficial to faculty and researchers throughout the state who previously hadn’t connected.

“As a scientist, I’m excited about the new opportunities for collaboration that this graduate program is creating,” says Kim. “With GSBS in place, the students are a conduit for researchers to work together, start new projects and generate new ideas.”

Graduates of the program are continuing the mission to improve public health and boost research efforts around some of today’s toughest health issues. Karen Fancher did her thesis research at The Jackson Lab, where she now is employed in the Center for Genome Dynamics. Andrew Doyle works for GE Healthcare, and Yong Woo was awarded a prestigious postdoctoral position at the University of Chicago.

“GSBS is already providing high-quality graduate education and training in the biomedical sciences,” Kim says. “We expect that this program will continue to foster important inter-institutional collaborations and enhance biomedical research in Maine.” ■



CHRISTOPHER McCARTY

Hometown: Bangor, Maine

Undergrad: Biology, UMaine

GSBS Concentration:

Molecular and Cellular Biology, Mount Desert Island Biological Laboratory

Adviser: James Coffman, Mount Desert Island Biological Lab

Research: McCarty studies sea urchins as a model for developmental biology. His focus is on the cyclin D gene and how its sequence regulates when and where it is switched on and off during development. The gene is known to misexpress in a large variety of cancers.

In his words: “You have to find out how something works normally before you can understand how something goes wrong. In addition to furthering knowledge of basic developmental biology, this could have implications for better understanding the development of cancers where cyclin D is misregulated, and neurodegenerative diseases where this gene is misregulated.”



KIRA YOUNG

Hometown: Dedham, Maine

Undergrad: Chemical Engineering, UMaine

GSBS Concentration:

Functional Genomics, Maine Medical Center Research Institute

Adviser: Calvin Vary, Maine Medical Center Research Institute

Research: Young is trying to understand how endoglin, a receptor associated with a transmembrane protein, regulates the process of angiogenesis and the occurrence of vascular pathology. In humans, mutations in the genes encoding endoglin can cause the vascular disease hereditary hemorrhagic telangiectasia (HHT). Young wants to figure out endoglin’s role in the disease so a treatment can be found.

In her words: “Understanding the details of endoglin’s function will lead to mechanistic insights into the processes of cell adhesion, migration and invasion, and will advance our understanding of a variety of complex biological processes, including vascular development, vascular disease and cancer progression.”

Photo by Joel Page

oh baby

Realizing the healthy, cost-saving benefits of homemade first foods

THINK OF GREEN BABY FOOD and pureed peas or string beans come to mind. But when Kate Yerxa was asked how people could save money by making their own baby food, the green she saw was dollars.

Yerxa, the statewide educator for nutrition and physical activity at University of Maine Cooperative Extension, and her colleagues found significant savings when they computed unit prices per pound for premade food and compared them with the cost of fresh organic or canned ingredients for homemade baby food.

For example, parents who prepare their own green beans for baby food rather than buy the jarred variety save an average of \$60 in six months. Those who make meat-based baby food save even more.

A fact sheet on the subject is one of UMaine Extension's most popular publications. This fall, Yerxa introduced a Make Your Own Baby Food class in Bangor, Maine. She hopes to expand the educational effort statewide to respond to an increased demand for information. But price isn't the only reason why people want to make their own baby food. It also can be healthier.

"Because you're making your own baby food, you'll know exactly what's going into it," Yerxa says. "Some commercially prepared baby foods have a lot of fillers."

UMaine Extension's recipes call for

healthy thickeners and thinners, including breast milk, formula and water. Pureeing can be done with a blender, fork, strainer or food mill/grinder.

Though new parents may feel overwhelmed by the idea of adding yet another task to their already busy schedules, an hour is all it takes to make enough food to last a month, if frozen.

Yerxa's classes and UMaine Extension's *Making Your Own Baby Food* publication also cover safe storage techniques and when it's appropriate to introduce new foods to infants, including pureed versions of the same meals their parents eat.



Doug Hall



THIS FALL, third-generation University of Maine alumnus Doug Hall took a sabbatical from his job as CEO of Eureka! Ranch, headquartered in Cincinnati, Ohio, and took up residency at his alma mater. His mission: Help make Maine the No. 1 state in the nation for innovation-driven economic development. (Currently, Maine is ranked 28th by the Kauffman Foundation.) Since August, Hall has been teaching three of UMaine's courses in Innovation Engineering®, a new program he helped launch in 2005 at UMaine's Bion and Dorain Foster Student Innovation Center. The Innovation Engineering course offerings, open to all students interested in learning a systematic approach to creativity, are designed to help develop, refine, communicate and successfully implement new ideas. Hall calls Innovation Engineering "the career accelerator," emphasizing to UMaine students that, no matter their degree, career or passion, they can learn to create, communicate and commercialize meaningfully unique ideas. And as if teaching capacity-enrollment undergraduate and graduate courses weren't enough this semester, Hall has been making public appearances statewide, championing the importance of innovation as a catalyst for economic development. By mid-semester, he also was in Washington, D.C., where the talk was about helping companies leverage innovation, and the potential of students steeped in a "whole-brain approach" to engineer innovation, starting with six new internships funded by the Department of Commerce and the National Institute of Standards and Technology. We asked Doug Hall to talk about his vision of innovation-driven economic development, and where UMaine fits into that picture.

The method: It's a three-part strategy that consists of helping Maine companies use innovation to grow and thrive by gathering and connecting their innovation needs and wishes with new innovation offers from across the state; teaching students and business leaders how to successfully leverage innovation using Innovation Engineering tools and principles; and providing coaching in how to accelerate innovation through field experts, such as University of Maine Cooperative Extension, the Small Business

Administration's development centers and Maine Manufacturing Extension Partnership.

Innovation matters: I tell clients and students, "If you're not meaningfully unique, you better be cheap." If you want to make more money for your company — or yourself when looking for a job — you must be unique. Innovation is no longer an option; it's a necessity if we're going to have University of Maine graduates and Maine

residents win in today's global economy.

Engineering innovation: The goal of UMaine's Innovation Engineering® program is to give students the knowledge, tools and confidence to create, communicate and commercialize meaningfully unique ideas. This program ignites students' ability to apply their education and make a significant impact in the real world. It brings an engineering discipline to innovation with curriculum focused on the three C's.

By Doug Hall

always thinking

A whole-brain approach to Innovation Engineering

In the beginning (INV 280: Create): To create ideas, students are taught how to leverage stimulus mining and diversity of thought as tools for maximizing idea generation results, and how to minimize fear that results will fail. Just like a catalyst in a chemical reaction, stimulus is used to accelerate the generation of new ideas, insights and innovations. Using stimulus as an idea spark has been shown to triple the number of meaningfully unique ideas discovered. Stimulus mining methods include mining for trends and technologies, customer insights and benchmarking. At its simplest, diversity of thought is about learning how to appreciate and learn from others. It creates an exponential impact on the number of high-quality ideas generated. The teaching of diversity of thought starts with an understanding of the four innovation thinking styles quantified by Ned Hermann. Then, students learn how to cross-train their brains to appreciate others and to become more “whole brain.” Lastly, they are taught how to drive out fear from the innovation process. This is done by confronting and verbalizing their fears, leveraging an intrinsic motivation to “do the right thing” and using “plan, do, study, act” cycles of learning, a system originally developed by W. Edwards Deming.

Tell it on the mountain (INV 282: Communicate): Ideas start to become real when they are articulated in written form that can be easily understood by others. Communication teaching starts with an understanding that for ideas to become real, they must offer a meaningful difference. Meaningfulness is about communicating to customers, partners, co-workers and bosses the answer to their top question: “Why should I care?” Students are challenged to translate technical features into benefits, to quantify their overt benefit promises, and to

write with such clarity that a 12-year-old can understand them. Innovation Engineering students learn how to create what we call “real reason to believe,” providing the credibility necessary to help them “close the sale” with customers. They learn to tell in simple language how it is that they are able to actually deliver on the benefit promise



Innovation is no longer an option; it's a necessity if we're going to have UMaine graduates and Maine residents win in today's global economy."

Doug Hall

they're making. Students also learn how to leverage testimonials, and test results, pedigree, sensory feedback and guarantees to support benefit promises.

Build it and they will come (INV 292: Commercialize): The core of Innovation Engineering courses is to teach students how to “start up like a start-up.” They are taught to reduce risk and increase success rates with innovation using the tools and methods that drive small businesses’ success rates with innovations — success rates that are 10 times greater than for large corporations. Four of the commercialization principles are: simultaneous engineering of product, promise and profit, in which


students are taught to accelerate success and reduce risk by optimizing the trade-offs between the product reality, customer promise and profit formula; fail-fast, fail-cheap learning cycles, in which students are taught a bias for action and experimentation, instead of using planning, meetings and more planning to drive out risk; open innovation collaboration, with students learning to reduce risk by borrowing, partnering and collaborating, rather than “doing it all themselves”; and data-driven innovation, in which students are taught how to do early-stage sales forecasts and assessments to identify odds of success, and key “death threats” and risks early in the innovation process, when there is still the time, energy and money to do something about them. Students’ learning is made real through real-world case studies. For example, they are provided a real invention and challenged to do a patent search and write a provisional patent application. They also help entrepreneurs and inventors translate their ideas into business opportunities, complete with a sales forecast, estimates of time and cost to first sale, and a fail-fast, fail-cheap action plan.

Leading innovation: UMaine is dedicated to helping alumni and Maine residents generate jobs and wealth through innovation. Today, there are two new ways for alumni to participate in the Innovation Engineering program and get involved in the strategy to improve Maine’s rankings in innovation-led economic development. The first is the Innovation Engineering Leadership Institute, a special opportunity for alumni and Maine residents to attend an intense program based on the accelerated graduate curriculum in Innovation Engineering. (Registration information is online: www2.umaine.edu/innovation) Through interactive case studies, you learn an inno-

vation leadership “tool kit.” In addition, you reinforce learning by directly applying it to your business, government or nonprofit organization. At these institutes, I will teach you how to realize an order of magnitude improvement in your ability to lead the creation, communication and commercialization of meaningfully unique ideas for more profitable products and services.

An innovation market: To accelerate success, UMaine also founded the Maine Innovation Marketplace (Maineinnovation-marketplace.org), part of the USA National Innovation Marketplace announced by Vice President Joe Biden earlier this year. Maine is one of four states leading the rollout of this U.S. Department of Commerce initiative. The Maine Marketplace is where innovation business opportunities can be found, understood and valued in two minutes or less. Alumni and Maine residents get the extra support of the university to help them make connections. Here’s how it works: Go to the Maine Innovation Marketplace Web site and list the innovations your company needs and wishes to survive and grow. Foster Student Innovation Center students and staff will then mine the marketplace and UMaine experts for ideas, inventions and innovations that could help fulfill your needs and wishes, and connect you to possible solutions. Using these services and getting help is free. It’s then up to you to commercialize what is found. Note that the program is just getting started; we can’t guarantee we’ll find solutions for you. I can, however, guarantee that we’ll make our best efforts to do so. And if you’re an alumnus or Maine resident with an invention and you’re looking for a buyer, investor, manufacturer or distributor, go to the Maine Innovation Marketplace to learn how the innovation center can help you translate your invention into a business opportunity. ■

THE STORIES OF PAST STUDENT ENTREPRENEURS — their success, as well as their needs — inspired the establishment the University of Maine’s Foster Student Innovation Center in 2005. Those young inventors include UMaine communication major Gary Clegg who, as a freshman in 1998, wasn’t the kind of student who just lounged around. Well, maybe at times he was, but he used his lounging to his advantage and, as a result, is now right up there in UMaine’s list of successful entrepreneurs. Clegg was in his Kennebec Hall dorm room one cold night when he couldn’t get his TV remote to work from under his blankets. That’s when he came up with the idea for the Slanket — a blanket with sleeves. With help from his family, including his business partner and brother Jeff Clegg, he founded SlanketLoungin LLC, in Denver, Colo., which generates an average \$10 million in annual sales. Today, the Slanket is available in more than 30 countries. It is sold in stores and catalogs, online and through the QVC home shopping network.



“By word of mouth, the quality and functionality of the product spread. We knew then it had some potential. That was 2002. Since then, we’ve sold more than 1 million units, with annual sales of \$10 million. This year probably \$15 million. I always dreamed of working for myself, putting my own thoughts, passion and creativity behind something that could put food on the plate and help me pursue everything this world has to offer.”

Gary Clegg

Slanket statement



THEY TALK ABOUT that little voice inside them. That kernel of an idea they've long harbored and not known exactly how to bring to fruition. That thirst to do what they've only dreamed.

If only.

Today at the University of Maine, students are given the knowledge, skills and inspiration they need to act on their ideas and become innovators, entrepreneurs and "intrapreneurs" in business, education, government and nonprofits. From classes offered through the Innovation Engineering program, how-to workshops and talks by inventors (many of whom are alums) to business and project development services and incubator office space, the Foster Student Innovation Center serves as a one-stop resource hub for students pursuing ways to grow their ideas, from concept to reality.

Students who minor in Innovation Engineering take three core courses: Create, Communicate and Commercialize. They then complete a "case study" course, gaining deeper confidence in their ability to apply all three disciplines. The minor concludes with two independent study courses where students are challenged to apply the Innovation Engineering learning to their fields of study or areas of personal passion.

In addition, since 2008, residential students have the option of living with other like-minded peers in the Innovation Living Learning Community in Knox Hall.

Today, the entrepreneurs at UMaine include ecology and environmental sciences graduate student Anya Rose, who tapped the center for one-on-one advising on how to launch her video production company. The center helped business partners Charles Drew and Calvin Bishop with the accounting, publicity and marketing needed to keep up with the growing success of Market My Menu, an online content management system for restaurants.

Like Drew and Bishop, computer science graduate student Hasan Adil heard about the innovation center and stopped in one day to talk about his hopes for a new computer desktop manage-

Ready for her close-up

UNIVERSITY OF MAINE ecology and environmental sciences graduate student Anya Rose of Philadelphia, Pa., plans to combine her lifelong love of filmmaking and her interest in science to launch a video production company. "I want to make films about science," she says, fulfilling the needs of researchers to document their work while making science accessible to the public. "In a multidisciplinary world, I enjoy making connections between subjects." When she was a high school senior, Rose's 8-minute animated version of *Hamlet* garnered top awards. It has been shown at film festivals worldwide and aired nationwide on public television. She has just produced a 45-minute documentary on animal tracking for use by outdoor enthusiasts, nature educators and scientists.

ment system. That's how his business, LabelTop, came to share office space in the center with Market My Menu and other UMaine student businesses.

As a bonus, this semester Adil was able to run his plans for his new software by UMaine alumnus and entrepreneur Doug Hall, who in his career has been a consultant for such big-name companies as Disney, Nike and Nestle, and was a lead inventor for Procter & Gamble.

"Our goal is to help Maine be more innovative and entrepreneurial by giving students the confidence that they can create their own opportunities here rather than having to leave the state," says Renee Kelly, director of economic development initiatives and co-director of the Foster Student Innovation Center. [+Online](#)

Finding the keys to success at the Foster Student Innovation Center

Brea



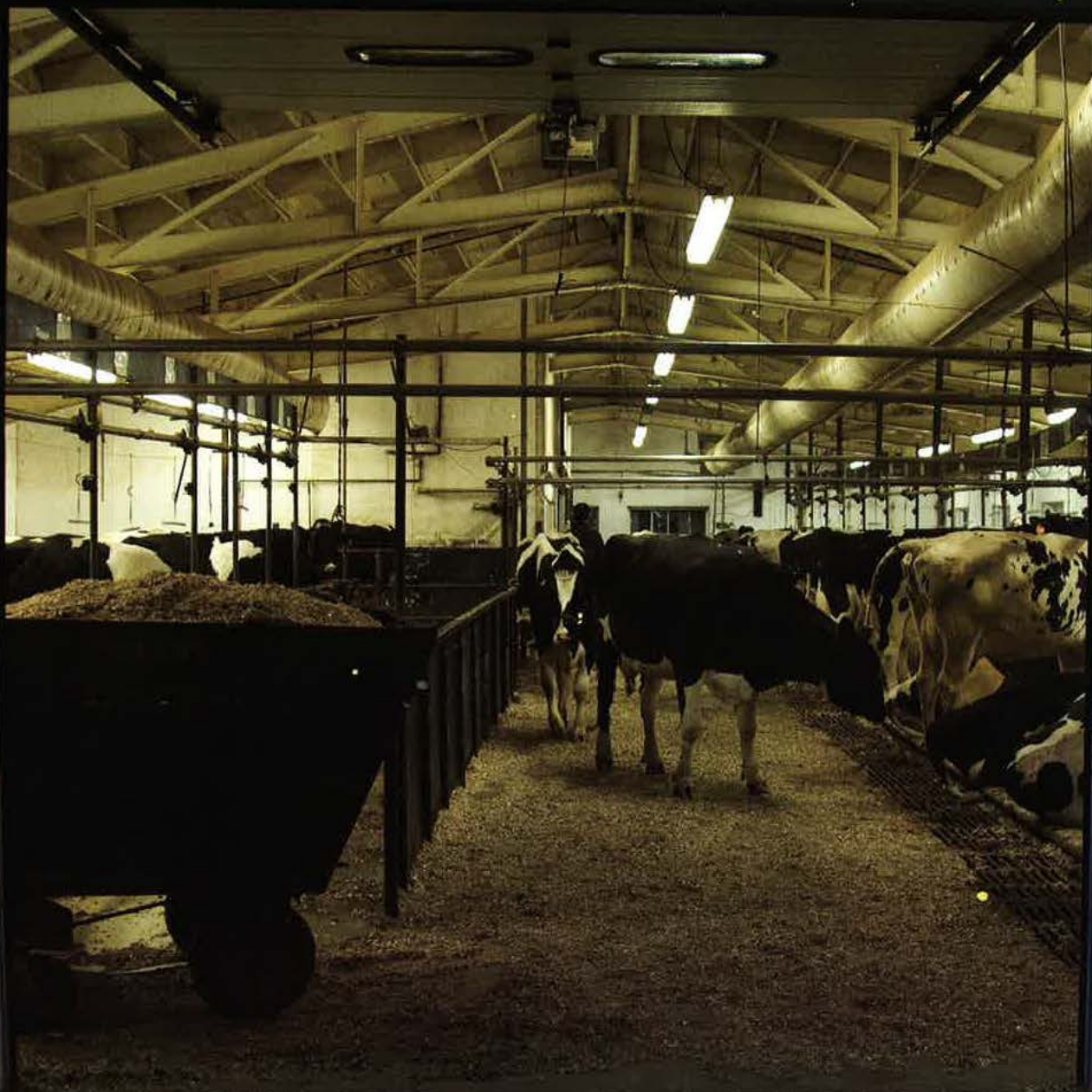
Today's special

TWO YEARS AGO, Charles Drew, pictured above, left, of Medford, Mass., came to the University of Maine as a first-year business student with ideas for a Web design company. In a programming class, he met Calvin Bishop, an Iraq War veteran from New Limerick, Maine, who was completing his degree in computer science. Together, they formed Toucan Media Group, specializing in custom Web apps and e-commerce. But while developing and managing high-end Web sites for businesses, Bishop and Drew increasingly fielded requests from restaurant owners who wanted to update their menus, specials and events online. A year ago, the pair launched Market My Menu, providing restaurant owners that user-friendly management capability and more. "It's important that restaurants know we're going to help them stay at the forefront of Internet marketing with the newest technologies and methods," Drew says.

Label maker

IF YOUR COMPUTER desktop is a mosaic of files and folders, Hasan Adil may have a remedy. It's called LabelTop. "It's a problem for every computer user. People end up with hundreds of folders; files get lost and are difficult to find. The idea is to make it easy to store and access data, and the key to doing that is labeling — the tag you apply to the file," says Adil, a second-year master's student in computer science at the University of Maine who is from Karachi, Pakistan. The computer file management system developed by Adil for Mac and PC is designed to improve organization of folders and files. The software, which will be in version 3.0 by year's end, provides ubiquitous labeling of local files and folders, programs and Internet services, such as Google documents, Box.net documents and, in the future, Facebook posts.

king out



In UMaine's student-run dairy cooperative, the learning is large

The milky

IT'S 4 O'CLOCK on a frigid March morning as blue-black as ink when Nile McGhie and Claire Dugan finish their half-hour of prep work. Bathed in the golden glow provided by banks of overhead fluorescent lights, the two are ready to face 35 of their teachers, who, between the strains of *Jumpin' Jack Flash* and *Crocodile Rock* blaring from the radio, are expressing their anticipation and impatience with their own

rising cacophony of coughing, stomping and heavy breathing.

They include Daisy, who smells nothing like a flower. There's Raven, who can't fly, and Dutchess, a native of Orono, not York. And while they've had no schooling themselves, the lessons they teach have the potential to shape the lives of students.

At the University of Maine's J.F. Witter Teaching and Research Center, this trio and

the rest of the dairy herd provide invaluable learning opportunities for undergraduates such as McGhie and Dugan.

"Normally, I would just be getting to bed at 2:30 a.m. after doing homework for hours," says McGhie, an animal and veterinary sciences senior with a pre-vet concentration from Cutler, Maine. "Now I have to force myself to sleep at 9 or 10 p.m. in order to be ready to get up (and) milk."

Last semester, McGhie was one of 16 students working in UMaine's dairy program, UMAD COWS (the University of Maine Applied Dairy Cooperative of Organized Working Students) as a two-credit lab of AVS 346, a three-credit course in dairy cattle technology. The student-operated dairy cooperative that began a decade ago offers hands-on experience with large animals and management of a dairy herd. Students also learn lessons in business, teamwork, time management and communication.

For their part, the cows have each been named and "profiled" by previous UMAD COW members to help newbie co-op workers. Each student is assigned two cows to care for — from monitoring of health and safety to regular brushings.

This year, 33 calves (16 heifers) were born on the farm. The students are on call to assist when their cows give birth.

"(The dairy program) was a big reason why I came to UMaine," says Jon Myers of Bristol, Conn., an animal and veterinary sciences major with a pre-vet concentration. "The Witter Center has got to be one of the best large-animal programs for its size in New England."

UMAD COWS, modeled after the University of Vermont's CREAM program (Cooperative for Real Education in Agricultural Management), has grown into a \$150,000-a-year operation, with a 35-head herd daily producing about 1 ton of milk



Claire Dugan, a senior in animal and veterinary sciences from Framington, Conn., in the midst of a 4 a.m. milking at the University of Maine's J.F. Witter Teaching and Research Center. Dugan hopes to become a certified veterinary technician.

way

By Aimee Dolloff

Personality plus

In UMAD COWS, two Holsteins are assigned to each student, who is then responsible for the animals' health and wellness throughout the semester. As a result, students come to intimately know the cows, including their quirks, habits and often larger-than-life personalities.

The screenshot shows a web browser window with the address bar displaying 'http://www.facebarn.com/profile'. The browser's search bar contains 'Google'. The page header for 'facebarn' includes navigation links for Home, Profile, Friends, and Inbox, along with Settings, Logout, and a search field. The profile is for a user named 'Rebel'. On the left sidebar, there is a profile picture of a cow, a bio stating 'I know how to take the bull by the horns.', and sections for 'Information' (University of Maine), 'Friends' (10 Friends, including Reese, Nessie, and Skyler), and 'Videos' (1 video). The main content area shows a status update: 'What's on your mind? Feeling like a troublemaker today, but what's new? Watch out or I'll steal the napkins out of your back pocket when you try to milk me.' Below this are three posts from other cows: 'Coffee Cake' (4 hours ago), 'Nessie' (3 hours ago), and 'Reese' (about an hour ago). At the bottom, there are three circular buttons: 'EAT MORE CHICKEN!', 'Cow-abunga', and 'Moovin' and Shakin' Got Milk?'. The browser's taskbar at the bottom shows the system clock as 10:10 AM on 11/11/11.

that is sold to Garelick Farms through the Agri-Mark co-op. UMaine consistently receives awards from the cooperative for milk quality, placing in the top 10 percent of dairy herds in Maine. Proceeds from UMAD COWS milk sales help pay for the farm's operation.

For the past few years, the dairy co-op has participated in an organic feed trial. The cows are fed a special organic diet, and data are gathered to see how it impacts milk production and quality, as well as financial aspects. The trial is set to wrap up this year.

"Without the dairy co-op students, we wouldn't have a farm," says David Marcinkowski, UMaine associate professor of animal and veterinary sciences, and a Cooperative Extension dairy specialist.

"This program teaches students that a farm doesn't run itself. A dairy farm operates 24-7, 365 days a year."

NO MATTER THE SEASON, early mornings on the farm evoke a simple beauty. Across the 300 acres of open and fenced pastures surrounding the Witter Center, moonshine dances off fresh blankets of snow and, in summer, mist rises from the standing hay. In the barn, the setting is nearly as romantic when the two rows of Holsteins stand stanchioned, waiting.

But as any dairy farmer will tell you, the work is arduous, dirty and regular as clockwork. And rewarding.

Each semester, about a dozen students, some of whom have no prior experience



The dairy barn at the J.F. Witter Teaching and Research Center is a living laboratory for AVS 346, a three-credit course in dairy cattle technology, led by Associate Professor of Animal and Veterinary Sciences David Marcinkowski. Pictured above are two of the many tools UMAD COW students are expected to use throughout the semester — teat dip cups for sanitation and the herd book that keeps everyone at the farm on the same page when it comes to responsibility and safety.

The milky way



Calves and young visitors have a special affinity at the Witter Center, where public education is considered an important part of the farm's mission.



with large animals, are scheduled to undertake the daily milkings and chores at 3:30–7 a.m. and 3–5:30 p.m. In addition, the students are responsible for such activities as keeping the herd book, feedings, and barn mucking and cleaning. The dairy cattle technology class taught by Marcinkowski meets weekly for discussions in a room at the Witter Center and for demonstrations in the barn that blend theory and practice.

The students have to know their way around cows and dairy production, and they take their responsibility for the animals and

their peers seriously. Scheduled for the morning milking and don't show up? That means you've left your milking partner flying solo — a very unpleasant task when 35 cows wait anxiously to be milked. Show up too late and you'll also face a barn full of agitated, uncomfortable bovine.

Typically, the pair of students assigned to morning chores begins by checking the milking system, readying the sanitizers and generally cleaning up. Any given morning can come with its share of surprises, including new calves delivered overnight.

Weekly, one student is named productions herds person, another named heifer herds person, with responsibilities for monitoring vaccinations and heat checks, and cleaning the maternity pens.

MARCINKOWSKI, WHO GREW UP on a dairy farm in northern New York, drives home the importance of safety for both the animals and the students. Students are required to pass several training courses, including farm safety, and operating procedures for equipment and machinery. He also talks about some of the harsh realities.

"We're going to handle drugs in this class," Marcinkowski tells them early on in the course. "Stuff happens; you're holding onto a cow with one hand and trying to inject it with the other. If you get stuck, report it.

"Somebody will pick up ringworm this semester. The good news is, once you have it, you're immune to it for a while."



Senior animal and veterinary sciences major Jennifer McGintee, foreground, of Windham, Maine, herd supervisor in the spring 2009 semester, is up front when addressing issues affecting the day-to-day operation of the student-run dairy cooperative.

Marcinkowski also talks about biosecurity issues and urges students working on this and other farms to keep a separate change of clothes for each facility to prevent contamination.

Marcinkowski admits that having a group of greenhorns in a barn isn't an ideal way to run a dairy. "It's really difficult," he says. "It's quite a bit easier with a small farm with only a couple of people milking. With 14 or 15 students milking the cows every week, it's hard to find consistency."

But then, as it happens each semester, the students hit their stride. And the co-op hums.

"It's a kick to just watch students come in at the beginning and be absolutely terrified of cows because they've never had a pet over 20 pounds. Eventually they learn that they're just big fuzzy puppy dogs," Marcinkowski says.

Those puppies each weigh in at around three-quarters of a ton and have even bigger

personalities. The students can't get enough of them.

Jennifer McGintee of Windham, Maine, an animal and veterinary sciences major with a pre-vet concentration who graduated in May, introduces a visitor to Coffee Cake, standing in a pen segregated from the rest.

"She's not ready to calve," says McGintee. "She's just huge and kind of a dope."

Rebel likes to steal paper towels from the back pockets of those trying to milk her. Nessie loves attention and frequently plays "queen of the hill" on the snowbanks. And Skylar, "she likes to kick," says McGintee.

THE OVERALL UMAD COWS experience is so labor-intensive and fraught with responsibilities and challenges that it can't help but strengthen students' team-building and communication skills, and knowledge of animal husbandry. Through the years, the program has springboarded several students into veterinary careers, many with large

animals. For all, the experience bonds them through their UMaine years — and beyond.

Today, it's not uncommon to see co-op alumni roaming the barn, looking for descendants of the cows they were assigned as students. And reminiscing with the newest UMAD COW participants.


For alumnus and Maine large animal veterinarian Simon Alexander, it was a Holstein named Louine and the hands-on experience he got at UMaine that solidified his career choice.

"The University of Maine by far is the best value in the state, and probably all of New England," says Alexander, a native of Easton, Maine. "It set me up very well to excel in vet school."

In 1998, UMAD COWS started as a two-semester, eight-credit program with 35 Holsteins and a dozen students, led by Alexander as vice president and Erin Emmans as president. After that first year, Alexander continued to volunteer in the dairy cooperative until he graduated in 2000 and went to vet school. When he returned to Maine to work first in a veterinary clinic in Dover-Foxcroft before starting his own practice in Bangor, he was once again a regular at Witter. One of those first farm calls was about Loucille, Louine's offspring. He had to put her down.

"I still have her ear tag in my pickup at home," he says.

Some students who participate in UMAD COWS are glad for the experience because they learn they don't want to pursue this area of animal sciences. However, many more discover their calling.

"I never thought that I would enjoy cows and now I love them," says McGintee, the herd supervisor during the spring 2009 semester. "Being here in this curriculum, I definitely want to be involved with large animals in some way." ■ 



UMaine alumnus and large animal veterinarian Simon Alexander was one of the founding members of UMAD COWS. He enjoys returning to the farm and sharing memories and advice with current students.

Alumnus blends creativity and problem solving in his award-winning film career

The Bronx native graduated from UMaine in 1979 with a degree in civil engineering and a passion to pursue a career in dance. He launched his Hollywood career six years later.

CHANCES ARE you know his films, but haven't heard of him. That's the plight of the Hollywood film producer, even one who is on the A-list, who has an Academy Award for producing former Vice President Al Gore's global-warming documentary, An Inconvenient Truth, and whose three dozen films have grossed more than \$1 billion at the worldwide box office. Those films include the Academy Award-winning Good Will Hunting with Robin Williams, Matt Damon and Ben Affleck, as well as The Mexican with Julia Roberts and Brad Pitt, Anna and the King with Jodie Foster and Chow Yun-Fat and, most significantly, nearly every film directed by Quentin Tarantino, from the groundbreaking Reservoir Dogs and Pulp Fiction to the Kill Bill series and the recent Inglourious Basterds, also with Pitt. The producer? Lawrence Bender, who graduated from the University of Maine in 1979 with a degree in civil engineering. His other focus at UMaine? Naturally, dance.

How did studying civil engineering and dance at the University of Maine help to shape your career as a producer?

A degree in civil engineering trains you to be a problem solver. That's one part of the brain. The other side is creative. In my case, I found dance at UMaine. Dance is this amazing thing that fills you up and expands you creatively. So, when it comes to producing, you're creating an art form that requires an enormous amount of practical problem solving. In a funny kind of way, you would never say, "OK, I want to become a producer. I'll get a degree in civil engineering, become a dancer, and then become a producer." Um, no. However, I happened to have managed those two things and they are exactly what producing requires. It's to be able to creatively tell a story and, at the same time, to solve all of the problems in order to tell that story.

A black and white portrait of Lawrence Bender, a man with dark hair and a slight smile, wearing a dark sweater over a white collared shirt. The portrait is positioned on the left side of the page, partially overlapping the large title text.

Big-picture guy

You won the Academy Award for *An Inconvenient Truth*. You've also been an activist for years. What did winning the award for that particular film mean to you and how do you think it will shape what you do going forward?

Let me back up a few years. We screened *Good Will Hunting* at Camp David in 1998 for President Clinton, Mrs. Clinton, Madeleine Albright, Sandy Berger, Senator Daschle and many others. At that point, I had been producing for a few years and was starting to feel as if there was something missing in my life: It was making a difference in the world. Even though as a filmmaker you can make a difference in the way we think and maybe feel, these people around me were actively making a difference in the way we live. That's what I felt I needed to do. What was missing for me was to find a way to take what I do and leverage it to help make a difference in the world. So, I started doing that. When I saw Al Gore give his presentation on global warming, like everybody in that crowd, I had a visceral reaction. Being a filmmaker, I had this nutty idea to approach Al Gore and make a movie. I feel like making *An Inconvenient Truth* was the culmination of everything I was training for in my life — making movies and trying to make a difference. Obviously, winning the Academy Award is the dream of a filmmaker, but as a filmmaker, you don't dream about things like the Noble Peace Prize. Still, there I found myself in Oslo with Al Gore, watching him receive it. It was probably as much a highlight in my life as any.

In your opinion, how did environmental issues fare under the Bush Administration? And under the current administration?

To be quite frank, the Bush Administration was a disaster for the environment in many, many ways. It's a shame. You know, we had an IPCC (Intergovernmental Panel on Climate Change) report come out during the Bush Administration that involved 2,500 scientists and 130 countries, all agreeing with 90 percent certainty that global warming is occurring, that man is accelerating and helping create it, and that we have a very short amount of time to do something about it. Since then, the curves in the graphs have shown that we have surpassed the worst-case scenario for the IPCC report. The last eight years were a terrible, terrible thing for global warming. The only question is whether we can stop the dangers from becoming catastrophic. And that's hopefully what is happening with the current administration. Most people are focused on the economy right now,




which we should be. But what people don't understand is that if you look at *The Economics of Climate Change: The Stern Review* that came out of London a couple of years ago, this economic problem that we're having pales in comparison to what's going to happen to the economy 20, 30 years from now, when the massive effects of global warming hit. The good news is that the solutions are abundant and usually involve jobs.

With so many of the world's issues being overlooked today, which issue is most deserving of a documentary now?

There are a lot of important issues facing us. Access to clean water is a massive problem. AIDS, poverty, overfishing of the oceans. When we elected Bush, it seemed that everything was great. We had President Clinton, economic expansion, no real wars — overall, things were pretty good. Now, we see what eight years can do to the planet. I'm working on a documentary about nuclear proliferation because I and many others feel that we're in the worst time — worse than even in the Cold War. If things continue in

the pace that they're going, we could destroy the Earth with nuclear weapons. But again, with Barack Obama and the new administration, it does seem as if we can reverse things. I feel like this is an incredibly important issue. And a lot of the Cold War warriors, the hawks, have reversed their position and are coming out from a legacy point of view. So, it's not just the peaceniks who are saying, "no nukes." That gives me hope.

You've produced every one of Quentin Tarantino's major films. What has he learned from you?

That's a good question. I feel like Quentin and I are great partners in the sense that we trust each other quite a bit, and in trust, you are able to expand. I think one of the things that Quentin probably gets from me is that he knows that I am there 100 percent for him. We just made *Inglourious Basterds*. Big movie, very short amount of time to get it up and running; obviously there were a lot of big creative decisions, but there were a lot of little creative things that happened along the way that he just couldn't do. Quentin gave me the rudder of the ship and basically said, "get me to Cannes," and he trusted that I was going to do that in a way that was going to allow him to make his best picture. I think some of the best work comes out of producer/director teams, where the director and the producer work really well together. This movie allowed for that. 

A close-up photograph of a fishing hook and line. The hook is dark and curved, with a sharp point. The line is light-colored and knotted. The background is a plain, light color. The text 'Coming UP Empty' is overlaid on the image.

Coming UP Empty

By Aimee Dolloff

A UMaine economic anthropologist examines the human toll on New England's troubled groundfish industry

IN THE GULF OF MAINE WATERS, the contrast couldn't be more striking. Crustaceans are plentiful and the lobstering industry is thriving, while groundfish stocks are at all-time lows and the fleets are on the verge of extinction.

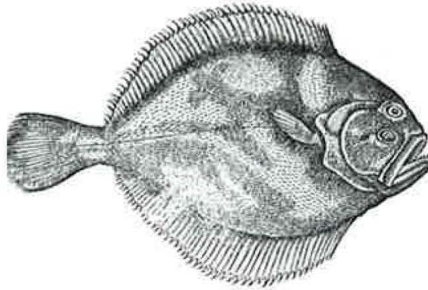
The effect of humans on the marine resources — from overfishing to policymaking — is undeniable, controversial and little-understood. And that's where economic anthropologist James Acheson comes in.

In a two-year National Science Foundation-funded project, Acheson is taking a closer look at where policies and practices in the groundfish industry may have gone wrong through the years. His goal is to provide insight as to what management practices are effective — and why.

For Acheson, the bottom-line question is: Why does one management plan succeed and another fail?

"We can't really implement plans if we don't know what's going on," says Acheson, a University of Maine anthropology and marine sciences professor, named the 2009 Distinguished Maine Professor for his research connecting the social, cultural and environmental components of marine policy. "The groundfishing industry is a case of scientific and institutional failure. We need to understand how it got there, and how other management practices were effectively put in place, in order to try and reverse the damage that's been done. The evolution of the lobster industry is a perfect example to compare."

For nearly 80 years, there has been a



conservation effort in the lobster industry with regulations established, often with the help of industry people, to protect and manage the resource. Efforts to manage the groundfishing industry have been far less successful, and the reasons for this difference are far from clear, Acheson says.

Further exacerbating the disparity are the stocks. While lobster numbers are at an all-time high, groundfish stocks such as cod and haddock have reached a 500-year low.

A 1978 report co-authored by Acheson, *The Fishing Ports of Maine and New Hampshire*, noted there were 343 boats groundfishing in Maine and New Hampshire. Today in Maine, there now are fewer than 25 boats, and some of those are only going out a few days a year.

Unlike the lobster industry where conservation rules were passed by Maine lawmakers in response to heavy lobbying by industry leaders, groundfishing is managed by the federal government. While Maine groundfishermen have expressed their opinions, they appear to have been disadvantaged in the industry's top-down management process that takes little note of local input.

Why have those concerned with lobster

management been able to devise effective conservation rules, while the groundfishery has not been able to do so?

The answer to this question isn't obvious, says Acheson, whose extensive research on Maine's lobster industry spans more than three decades and includes two seminal volumes, *The Lobster Gangs of Maine* and *Capturing the Commons: Devising Institutions to Manage the Maine Lobster Industry*. It can only be answered by exploring one of the most basic questions in the social sciences — namely, when and under what conditions will humans generate effective rules to constrain the behavior of individuals?

ACHESON HAS STUDIED the cultural and economic history of Maine's lobster industry that has led to its modern co-management system that involves industry people in the rule-making process of protecting and managing the resource. Understanding and appreciating how that traditional fishery evolved has implications for its use as a model for fisheries worldwide — including New England groundfishing.

"We (wanted) to get back into the 1930s and find out what happened to change the lobster industry from a pack of bandits to one of the most conservation-minded industries in the world today," Acheson says.

Proof of the success of the lobster industry's resource management model is in trying economic times like this past season, when a price squeeze left lobstermen holding a good catch, while the market value of

lobster dropped dramatically. Concurrently, bait and fuel prices reached all-time highs.

"The problems now are economic, not because of management," Acheson says, but management may be able to help.

Lobsters used to be kept in a pound and shipped to suppliers as needed, but more recently the catch has been sent to processors in Canada. One aspect of the current problem is that Canadian processors are funded by banks in Iceland. But now, with Icelandic banks in trouble, they aren't issuing the loans Canada needs to purchase lobsters.

"In a sense, it's a failure of success," Acheson says. "Successful management equals high supply."

IN A 2006 PAPER, "Lobster and Groundfish Management in the Gulf of Maine: A Rational Choice Perspective," Acheson noted that since the mid-1950s, government organizations have attempted to regulate the groundfishery without much success. Since most groundfish are caught more than 3 miles from shore, fishermen are beyond the legal authority of individual states.

The management history of this decimated stock is vital to understanding how we got to where we are today, he says.

After World War II, the International Commission for the Northwest Atlantic Fisheries attempted to manage the fisheries by imposing quotas, but this wasn't enforced. By the 1970s, stocks were so low that the foreign fleets had given up fishing in the Gulf of Maine.

In 1976, Congress passed the Fisheries Conservation and Management Act, setting up a complicated bureaucratic apparatus to manage the fisheries in offshore waters. Under the act, the United States and its territories are divided into eight zones represented by regional councils. Council members are recommended by the governors of the states, and include representa-

tives from the National Marine Fisheries Service, and the U.S. Coast Guard.

The rules established by these councils have changed numerous times, making it difficult to get a handle on the actual status of the industry, Acheson notes.

Today, groundfishermen are pessimistic about the effectiveness of federal management efforts. Although many of the regulations groundfishermen proposed in the mid-1970s now have been imposed, Acheson writes that some say it's too little too late.

"The groundfishing industry is a case of scientific and institutional failure."

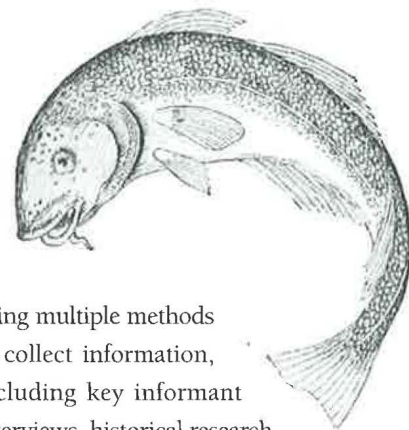
James Acheson

In 1995, a management program was implemented to restore the stocks within five years, but attempting to rebuild so quickly meant strict rules that many harvesters claim drove them out of business.

THE NSF PROJECT now under way is linked to the fisheries management research that Acheson has been doing since the 1970s. He also has done extensive work in forest management. Although it's most often biologists who control natural resource management, Acheson says there's a direct tie to anthropology.

"Regulations and rules are made by people (and) it's people who obey them," he says. "It isn't the lobsters and the clams who obey them."

In addition to Acheson, colleagues Roy Gardner at Indiana University, Dmytro Zhosan at Bates College in Lewiston, Maine, and Ann Acheson of UMaine's Margaret Chase Smith Policy Center are collaborating on the NSF project. The researchers are



using multiple methods to collect information, including key informant interviews, historical research, participant observation, and a large-scale mail survey of nearly 600 people who held groundfishing licenses in Maine in the 1970s.

In the survey, Acheson poses important questions about management practices, hoping to shed light on what regulations those in the industry believe are effective. Questions range from industry inquiries, such as the target species, fishing locations and boat size to more personal queries about levels of education and reasons for leaving the industry.

"Groundfishing management was kind of convoluted and hard to understand, and no one to this date that we know of has compiled a history of it," says recent anthropology graduate Michelle Martin who, along with junior Sarah Niemic, worked on the survey and archival portions of the project. "We got a lot of different answers."

Acheson is now compiling the data from the approximately 100 surveys returned; Martin used the preliminary findings for her honors thesis.

In the coming year, Acheson and the other researchers will continue to gather and analyze the surveys and historical data. Acheson hopes industry officials and policy-makers will use the study to make more well-informed decisions that will revive the groundfishing industry before it's too late.

"We hope it's not too late for this study to have an impact on a dying industry that's such a large part of Maine's history," says Acheson. "If we are going to improve management, we must know what has worked and what hasn't." ■



MOST STUDENTS DESCRIBE their summer vacation in one word: cool. But Brittany Gilman of South Portland, Maine, and Stephanie Allard of Woonsocket, R.I., really mean it. In August, the University of Maine Earth sciences students collected samples from the Greenland ice sheet. The undergraduate researchers are working with Climate Change Institute Director Paul Mayewski and scientists Andrei Kurbatov and Doug Introne to better understand the Younger Dryas, an abrupt climate change event that occurred roughly 12,900 years ago.

Tell us about the work you did this summer.

SA: In order to determine the cause of the Younger Dryas, we traveled to the edge of the ice sheet near Kangerlussuaq, Greenland, and took more than 500 samples for isotope and iridium analysis. We spent about a week collecting the samples and will be analyzing them during this school year.

BG: This research project should give us some insight into what causes abrupt climate change.

What is it like to research climate change now, when it is such a hot topic in the media and in global conversations?

BG: It's really exciting to be a part of something that is so important. It's an indescribable feeling to think that what we are doing could have a large impact on the way abrupt climate change events are viewed by the scientific community.

SA: It feels really good to be contributing something to this topic, especially as an undergraduate. What we find out from this research — whatever it may be — will be important in some way. It's really awesome to imagine that the discoveries made through this project could be the basis for entirely new theories and ideas about how the climate works.



Senior Stephanie Allard (above) in "ice sheet gear," and junior Brittany Gilman setting up a flag for isotope sampling. Below, members of the UMaine research team locate the study site.



Summer on ice

Climate change research takes undergrads to the Greenland ice sheet



Sound adv

Deb Neuman airs her passion for small business

MUCH LIKE A CHAMELEON changes colors, Deb Neuman can change her voice to nearly anything you want to hear — from the deep raspy tones of an older woman to the perky, upbeat “likes” of a Valley girl.

While her voice-over work feeds her love of theater and acting, it also gives Neuman, director of the University of Maine’s Target Technology Incubator, personal satisfaction when she gets to do something to help the community.

Take a recent community project that she characterizes as one of her proudest moments.

Eastern Maine Healthcare is opening a new cancer treatment and research center in Brewer, Maine, and Blueberry Broadcasting, a media company, agreed to create 60-second public service announcements about why the facility is so critical and how people can help make it happen. Other stations in the community supported the effort by airing the spots.

“We brought in cancer survivors and family members to tell their stories. I have to say, it was the most emotional and rewarding three hours I’ve had as an interviewer,” says Neuman, who helped create the announcements. “To use what you have to be able to create something way bigger than you, that can make a difference for so many, is as good as it gets.”

Neuman, who started acting in third grade, isn’t shy in front of a microphone, a camera or an audience. She has a background in journalism and broadcast, theater and performing, and hosted her first radio show while in college. On that first show, she interviewed a

friend who had just moved to the West Coast to try to make it big in the music business. Turns out singer Richard Marx did just that.

In addition to radio and theater, Neuman has always had a passion for small businesses, and has owned several. In Maine, those included an inn and tour boat company in Bar Harbor. She also worked as a small business counselor and lender at the Washington Hancock Community Agency and Eastern Maine Development Corp.

It wasn’t until Neuman began working at UMaine’s Target Technology Incubator in 2001 that she had an “aha” moment: a radio show about small businesses, available resources, success stories, struggles and important issues.

“We have all these great resources in Maine for small business that people don’t know about, including many at UMaine, and all these great small business stories,” she says. “Radio reaches every remote area.”

Four years ago, Neuman started talking about small businesses in Maine on the George Hale-Ric Tyler radio show on WVOM. She’s been on the air there weekly ever since.

In 2006, Neuman also launched her own hourlong show called “Back to Business” on the same Augusta-based station. Each week she hosts guests and tackles business-related topics that range from mother-daughter-owned businesses

(aired in observance of Mother’s Day) and ways to thrive during a recession to how businesses can be more family friendly (case in point: a store that prohibited baby strollers).

Her goals for each show: provide useful, relevant information, tell a story and entertain.

“We have all these great resources in Maine for small business that people don’t know about, including many at UMaine, and all these great small business stories. Radio reaches every remote area.”

Deb Neuman

ice

"It's a show with a sense of humor," says Neuman, who has produced more than 150 "Back to Business" shows. "You need to have one if you are in business for yourself."

Currently, Neuman is reaching radio audiences throughout Maine and New Hampshire since expanding to 96.7 FM in Portsmouth, which also streams the show online, resulting in listeners from California to India, in addition to a podcast audience sponsored by Oxford Networks.

"It's very exciting to reach a larger audience," says Neuman. "But it also presents a challenge because the show has to be relevant to anyone anywhere."

Neuman also writes and produces one-minute business tips that have aired on radio stations throughout Maine and in the Philadelphia radio market. She provides business tips locally for WABI-TV, writes a BIZ column for *The Maine Edge*, and has been tapped as a small-business expert on other radio and television programs from Maine to Spain.

In 2007, Neuman was named Small Business Journalist of the Year for Maine and New England by the U.S. Small Business Administration. She also received a Congressional Proclamation from U.S. Sen. Olympia Snowe for the "Back to Business" program and its contribution to small businesses.


"Listeners from all over the country write to tell me how much they enjoy listening to the show and how much they learn," says Neuman. "Surprisingly, they are not all small business owners. They represent a wide range of age and experience. It's their positive feedback that keeps me going."

In 2007, Deb Neuman was named Small Business Journalist of the Year for Maine and New England by the U.S. Small Business Administration.



Improving early cancer detection


A RECENT DISCOVERY by a University of Maine engineering professor and his collaborators is expected to make it easier for doctors to find cancerous tumors and start treatment in the early stages of the disease when it can be most effective. Associate Professor of Chemical and Biological Engineering Michael Mason and his collaborator, Dr. Peter Allen at the Memorial Sloan Kettering Cancer Center in New York, have been awarded more than \$78,000 from the Maine Cancer Foundation for their project to improve cancer detection using engineered bioconjugates. The researchers are developing a new class of cancer-identifying agents to detect cancerous tumors in the pancreas and liver. The agents are based on chemically modified noble metal nanoparticles labeled with bioactive molecules. Bioactive molecules are antibodies against cancer markers found on the surface of cancer cells. These nontoxic particles can seek out and attach to cancer cells that are difficult to distinguish from healthy tissue by imaging studies, such as MRI or CT scans. Though only a few billionths of a meter across, they generate very strong X-ray contrast, effectively making the cancer cells visible to doctors. The project has the potential to vastly improve early detection of many types of cancer. In addition to improved images, these particles could replace current iodine-based contrasting agents to which many patients respond negatively, says Mason. Although the technology is still a few years away from being used by medical professionals, researchers have successfully tested the detection process in mice.



THE UNIVERSITY OF MAINE will receive up to \$8 million from the American Recovery and Reinvestment Act to lead a consortium that will design and deploy two 10-kilowatt and one 100-kilowatt floating offshore turbine prototypes. UMaine was one of three universities nationwide to receive funding for wind energy research facilities that will enhance the country's leadership role in testing and producing the most advanced and efficient wind turbines in the world. The R&D project, based at UMaine's AEWAC Advanced Structures & Composites Center, will feature several collaborating organizations representing the business, research and educational sectors. Two turbines will be located at UMaine's deepwater test site, and another at the University of New Hampshire's offshore test site near the Isle of Shoals. The consortium's research and development plan includes optimization of designs for floating platforms by evaluating options for manufacturability, deployment logistics, and more durable, lighter, hybrid composite materials.

Funding the winds of change

Wild in the Big Apple



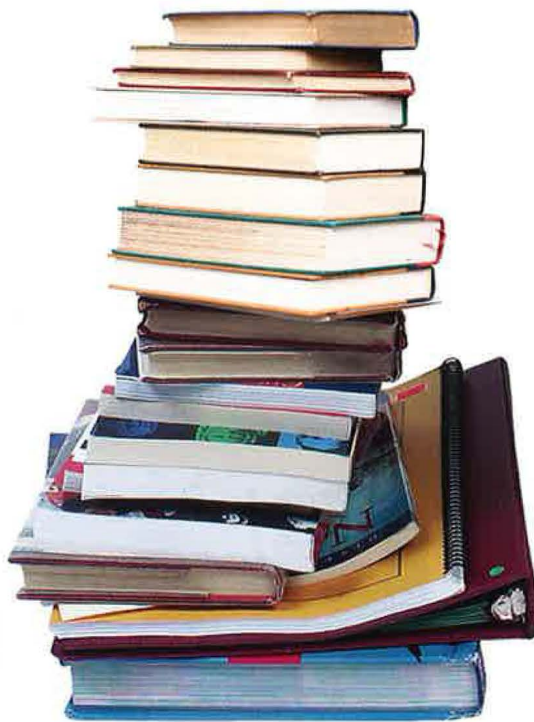
WITH URBANIZATION INCREASING worldwide, how do we better plan development to ensure that both humans and animals coexist in the best way possible? University of Maine Research Assistant Professor Catherine Burns is exploring the question in and around New York City, which is home to more than 250 bird species, raccoons, rabbits, deer, bats, foxes, mice, frogs, turtles and many other species, including 8.2 million humans. In collaboration with colleagues at the City University of New York, WildMetro (where Burns is a research affiliate) and Yale University, Burns is leading

Earthwatch-funded expeditions of citizen scientists, student interns and project staff to survey mammals, birds, amphibians and plants in the metropolitan area. The goal is to identify factors that influence the distribution and abundance of animals and plants along an urbanization gradient ranging from protected areas in downtown Manhattan to those up to 100 miles away in pristine northeastern hardwood forests. The study also will assess threshold levels of urbanization beyond which particular species cannot persist, and identify common rules that govern patterns of biodiversity across taxonomic groups living in urban regions. The findings could inform regional strategies for promoting biodiversity, not only in New York, but also in other urban areas.



Principal relations

ALL TOO OFTEN TODAY, newly hired principals are expected to take bold steps to improve their school's performance while mitigating any risk to staff relationships. But developing the capacity to build solid professional relationships in an era of accountability and take-no-prisoners-style leadership requires skills not typically found in principal certification courses and professional development workshops. How school principals' relational skills and dispositions develop has been the focus of ongoing research by professors in the University of Maine's graduate program in educational leadership. They describe three "clusters" of necessary relational skills: an effective consultant, listening to staff, students and parents, and helping them translate their concerns into action; a mediator and consensus builder; and a person who values relationships, making people a high priority. "(Principals') success at mobilizing faculty and staff to do their best work depends on their abilities to grow and maintain honest, supportive relationships with and within that group of important adults," according to UMaine educational leadership researchers Gordon Donaldson, George Marnik, Sarah Mackenzie and Richard Ackerman, writing in a recent issue of the journal *Educational Leadership*. "Principals cannot cultivate those relationships without regularly cultivating their own relational skills."



UMaine's master's degree program in educational leadership is a national model in engaging teachers and principals in the development of their own vital interpersonal skills.

experts
on topic



LONG BEFORE natural disasters such as Hurricane Katrina, marine geologists Daniel Belknap, left, and Joseph Kelley in the University of Maine Department of Earth Sciences were researching — and warning about — the effects of climate change on our shores. Their research in the Gulf of Maine, Mediterranean and Caribbean, and off the shores of Louisiana, Alaska, Delaware, Florida, Northern Ireland and Peru shed light on the critical issues related to coastal erosion and sea-level change that increasingly have societal implications.



What college men want

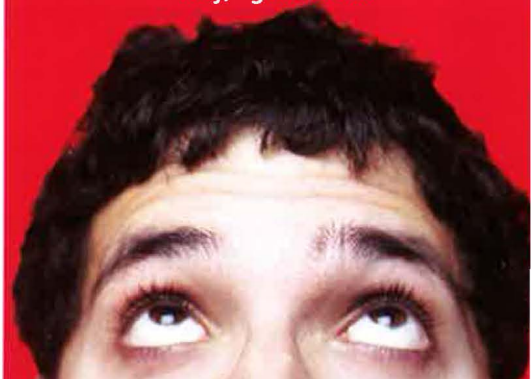
A NEW STUDY has identified factors affecting healthy weight maintenance in college-age men that could be used to inform obesity prevention strategies. Researchers in the University of Maine Department of Food Science and Human Nutrition, and the Center for Community-Based Research at the Dana-Farber Cancer Institute in Boston, Mass., identified weight-maintenance issues related to eating, physical activity and body perceptions among 47 men, ages 18–24. They found:

The biggest motivators for healthful eating were sports performance, self-esteem, attractiveness, long-term health and women.

Among the motivators to pursue physical activity: fitness, self-esteem/to feel better, attractiveness, self-reward, current/future health, relaxation.

Barriers to healthful eating were dislike for dairy products, tempting (unhealthy) foods, and issues with fruits and vegetables — taste, inaccessibility, spoilage.

The barriers to physical activity cited: "need more time," poor time management, obligations, "being lazy," girlfriends.

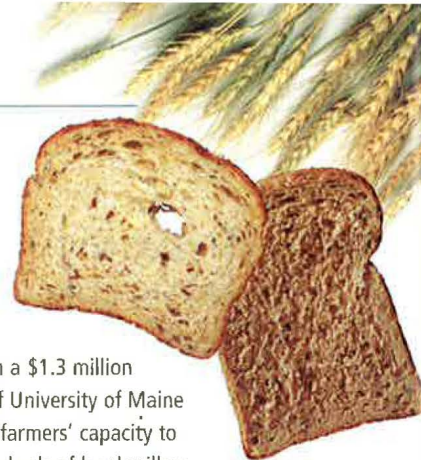


The value of knowledge

IT'S LONG BEEN KNOWN that knowledge is power. It's also been widely held that with greater knowledge comes a fatter paycheck. Now a new study by a University of Maine economist demonstrates that, indeed, "high knowledge" is money in such subjects as medicine and dentistry, engineering and technology, transportation, law and government, sales and marketing, and computers and electronics. However, some of these high-knowledge workers in the U.S. labor market are more valuable than others when it comes to the economic vitality of a metropolitan area. Of particular interest in economic development initiatives are those occupations requiring knowledge that has a "spillover effect" on others in the community, enhancing their earnings and productivity, says professor Todd Gabe of the University of Maine School of Economics. His study found that regional vitality could increase from the spillover effect of workers with high knowledge in such areas as administration and management, economics and accounting, telecommunications, and engineering and technology. Gabe's current research on the knowledge economy, conducted with Jaison Abel of the Federal Reserve Bank of New York, is beginning to look at the effects of knowledge on regional gross domestic product.

How wheat it is

DEMAND FOR LOCAL organic food has inspired new interest in growing bread-quality wheat in New England. Regional farmers have long produced small grains for animal feed. With a \$1.3 million grant from the U.S. Department of Agriculture, Ellen Mallory of University of Maine Cooperative Extension is leading a group focused on building farmers' capacity to produce high-quality organic bread wheat that meets the standards of local millers, bakers and, ultimately, consumers. The funding will help identify the best wheat varieties for the region, develop fertility strategies for high-quality grain, and evaluate innovative weed management systems. The group also will offer farmers networking opportunities, including exchanges with experienced bread wheat producers in Canada and Denmark.



A NEW MICROSCOPE at the University of Maine is helping researchers in the Department of Earth Sciences extensively research many aspects of the Earth's crust, including its strength and chemical evolution, as well as environmental processes such as weathering and sea-level change. The Tescan Vega II XMU was funded in part by a more than \$457,000 grant from the National Science Foundation's Major Research Instrumentation program. The new system complements existing microanalytical facilities in the Department of Earth Sciences by providing a versatile imaging tool, and new chemical and crystallographic analytical capabilities. In addition, the instrument will serve as a teaching tool in UMaine classes and K-12 outreach.

"This electron microscope opens an incredible number of research pathways that simply weren't accessible to us before. We also hope to excite more K-12 students about the Earth and what we must study to ensure a sustainable future."

Christopher Gerbi
Assistant Professor of Earth Sciences



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We believe that if you pretreated pulp with our enzyme, you would reduce hazardous waste, make the extraction of cellulose more efficient and provide another source of revenue for Maine's paper industry.”

Nancy Kravit

Research Scientist
Forest Bioproducts Research Initiative

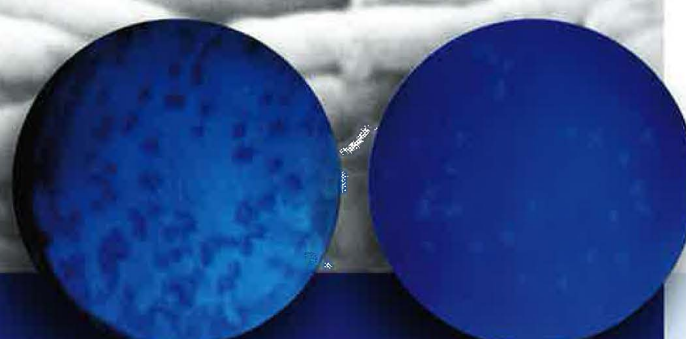
A circular inset image showing a dense field of small, glowing blue spots, representing clones that absorb long-wave UV light.

Image left: taken under long-wavelength UV light during hemicellulose-lignin etherase cloning, showing all the clones, which absorb the long-wave UV light.

A circular inset image showing a field of small, glowing blue spots, representing clones that fluoresce under short-wavelength UV light.

Image right: taken under short-wavelength UV light, shows only the clones that fluoresce because they have the hemicellulose-lignin etherase that generates the fluorescent material.

Research scientist Nancy Kravit is bioprospecting for microorganisms. In particular, she's investigating an enzyme that could make the papermaking process easier and more environmentally friendly. The enzyme breaks down ether bonds between hemicellulose and lignin, which in traditional paper manufacturing are chemically removed together, then burned for energy. By, in essence, feeding the hemicellulose to microorganisms, valuable fermentable sugars in hemicellulose can be made into biofuels such as ethanol and provide another revenue stream for paper mills. Kravit, a University of Maine alumna and co-founder of the pioneering biotechnology company Tethys Research LLC, is affiliated with UMaine's Forest Bioproducts Research Initiative (FBRI). Her research, which has led to the discovery of new genes and a new class of enzymes, is funded largely by a Department of Energy Small Business Innovation Research award to Tethys Research and a grant from the Maine Technology Institute.

Literary vision

IN HER LIFETIME, Orono, Maine-based poet and publisher Constance Hunting championed writing and the integrity of words. She believed that language has a melody and mystery all its own, and that authors of all ages are traveling the same literary path, just at different stages on the continuum.

She founded Puckerbrush Press in 1971 with proceeds from her first book, which was published by Scribner. Seven years later, she launched the preeminent literary magazine, *Puckerbrush Review*, forever changing the literary landscape in Maine — and beyond. She further promoted writing as a professor at the University of Maine, where she taught students to appreciate language and encouraged them to find their voices. Her many published works continue to inspire generations of writers.

Hunting, who was trained as a classical pianist and was a poet laureate of Indiana, once likened her life's work to that of a missionary, "opening up language to people." The result is a timeless literary vision.

This year, **The Puckerbrush Review Endowment Fund** was established in the **University of Maine Foundation** in memory of Hunting, who died in 2006. Income from the fund will provide general operating funds for *Puckerbrush Review*.



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