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Rising Tide 2012/2013

UNE Office of Research and Scholarship

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University of New England

UNE Communications

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Reflections

The introduction to UNE’s Rising Tide magazine is being drafted as I attend the annual Society for Neuroscience meeting in New Orleans. While the influx of over 30,000 neuroscientists into “America’s Most Interesting City” has kept my schedule quite full, the travel has provided time to reflect on the remarkable progress UNE has made in developing its research and scholarship programs. This advancement can be attributed to numerous factors ranging from the creativity and innovativeness of UNE’s faculty scholars, to the sustained commitment of resources from the senior leadership of the university. The culture of collegiality and collaboration that spans our colleges and disciplines has also played a critical role. This last point was crystallized while I listened in on a morning symposium entitled “Connecting to the Humanities and Social Sciences.” The speakers, all from preeminent colleges and universities, made compelling cases for how their neuroscience students were benefiting from newfound connections between the sciences and the liberal arts. In essence, they are discovering the successful approaches UNE has been taking toward its academic and research and scholarship programs since its founding in 1978.

The Interprofessional Education Collaborative (IPEC) highlighted in this issue of Rising Tide is a great case example. Over a decade ago, a group of UNE faculty realized that future healthcare professionals needed to be trained in teams rather than as individual specialists. As the group expanded and implemented a variety of innovative approaches to education, they began disseminating their findings to the broader medical and health professional communities. Connections between the IPEC and community and public health groups has led to additional initiatives. The recent awarding of a Health Services Resource Administration (HRSA) grant is developing and delivering a training model in team-based interprofessional care and cultural competence to nurses serving immigrant and refugee populations in Maine. The integration of the visual and performing arts into IPEC’s curriculum, spring symposia and various scholarly activities is just one more example of UNE innovation. In recognition of the progress being made, President Ripich recently designated the IPEC initiative as UNE’s fifth Center of Excellence.

UNE’s Centers of Excellence continues to make progress in their missions while further connecting faculty and students in each of the colleges. The Center for Excellence in the Neurosciences was recently awarded a $10 million grant from the National Institutes of Health to study the neurobiology of pain. Under the leadership of Professor Ian Meng, the grant will support the scientific development of four junior investigators and provide the university with valuable core facilities. The evolution of the neuroscience program at UNE is highlighted in a featured article. An open letter from the new director of the Center for Land Sea Interactions, Dr. Barry Costa-Pierce, further reinforces the UNE Center approach – namely, identifying unique well-defined niches in which a group of people shares a common vision and work together to solve challenging problems facing society. The Center for Community and Public Health is taking a similar approach, whether it is tackling health disparity issues in rural Maine or improving health services in Ghana. The new campus in Tangier, Morocco and the Center for Global Humanities will provide additional valuable resources for our faculty and students to pursue their scholarship at an international level.

Rising Tide celebrates the diversity of scholarly activities being conducted at UNE, whether it is from an individual, a small group of faculty, or a larger Center initiative. A variety of dashboards and benchmarks confirm a positive trajectory. The level of extramural funding has steadily increased from approximately $3 million in FY06 to $11.6 million in FY12. Through the peer-reviewed process, federal and state agencies, as well as foundations, are supporting these efforts and investing in our future. Importantly, the funding is not just flowing to the natural and biomedical sciences, but also supporting the humanities and creative and fine arts. Faculty and students are disseminating their work more broadly through peer-reviewed publications, books and book chapters, and major presentations and performances. Members of the UNE community are earning national and international recognition for their excellence.

It is an exciting time for the University of New England as we celebrate recent accomplishments and work toward further growth in the quality and impact of our research and scholarship. I am grateful to be part of these efforts and pledge continued support from the Office of Research and Scholarship.

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Sarah R. Gorham – Assistant Lecturer, Department of Arts and Communications:
If I see beauty in pain does it hurt less? Series #4 of 6, Acrylic on Canvas

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Associate Provost for Research and Scholarship
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Making a Difference Statewide: The REACH Collaborative Involves UNE Students, and Students Statewide, to Make Gains in Research and Prevention Evaluation Assistance

REACH, directed by Maryann Corsello, Ph.D., associate professor, department of psychology, was founded to help continue the gains made by the Assets Getting to Outcomes Grant (AGTO). In that grant (funded by National Institute on Drug Abuse, led by Matthew Chinman of RAND), six community coalitions and their programs received the two-year AGTO intervention (manuals, training, onsite technical assistance) and a second group carried on practice as usual (but received AGTO later in the grant). The intent of the AGTO intervention is to build capacity for high-quality prevention—including evaluation capacity. Corsello saw the importance, after the AGTO grant, of these community prevention programs continuing to receive assistance; she also saw the valuable research and learning experience that existed for students within this program. With this experience, Corsello started the REACH Collaborative.

The REACH (Research and Evaluation Assistance for CHange) collaborative is a statewide network of Maine colleges and universities and community prevention programs with two mutually supportive goals: to provide program evaluation assistance to local youth prevention efforts, and to offer authentic community-based learning experiences for college students.

Brandon Hotham
Public Health

Maryann Corsello
Psychology
With one year under its belt, REACH has engaged faculty from six colleges and universities in Maine who have directed approximately 53 students in 21 evaluation projects in the communities of Portland, Bucksport, Skowhegan, Ellsworth, Old Orchard Beach, Waterville, Augusta, and York. Evaluation areas include toxic stress, kindergarten readiness, juvenile delinquency, health promotion in middle schools, youth employment, child abuse prevention, parenting education, and obesity in elementary school students. Evaluation areas include toxic stress, kindergarten readiness, juvenile delinquency, health promotion in middle schools, youth employment, child abuse prevention, parenting education, and obesity in elementary school students. Many of these evaluation projects have included UNE students. For example, Rose Ashnre ’12, completed a project working with the Parent Resource Center of Springvale. Katelyn Kaulback ’12, worked on two different projects through REACH, both with United Way of York County. One project focused on toxic stress in young children and the other looked at parent educational resources. Both students have claimed this work to be invaluable to their learning experience at UNE. These are just a few examples of the great research and evaluation work students are engaging in through REACH.

Through the efforts of faculty and students across the state, REACH has contributed over $100,000 to date in free evaluation assistance to local prevention programs through providing rich community-engaged learning experiences for Maine college students. With this impact in mind, the REACH Collaborative recently received the 2011-12 President’s Leadership Award from the Maine Campus Compact. This award recognizes contributions to community service, service learning, and/or civic engagement efforts on each member campus. For its second year, REACH is planning to accomplish even more. REACH recently received a $20,000 grant from the Bingham Foundation to help assist in the successful implementation of its second year of local prevention program research and evaluation assistance sustainability. REACH plans to work with more students around the importance of local evaluation assistance and research.

For more information on REACH, visit REACH’s website at www.une.edu/ccph/ reach, or contact the Director of REACH, Maryann Corsello at mcorsello@une.edu.

“REACH was one of the most interesting and rewarding experiences of my undergraduate career. Not only was I able to take control of a real research project, but it also benefited a small nonprofit organization that does amazing work. It’s extremely gratifying to know that my hard work made a difference in this organization.”

Rose Ashner | UNE Class of 2012
Current MSW student at the University of Connecticut
An Eventful Year for UNE Philosopher David Livingstone Smith

David Smith | Philosophy

The 2011-12 academic year was an eventful one for UNE philosopher David Livingstone Smith, Ph.D. Smith authored five academic papers, gave 12 talks and symposium presentations, spent three days in the Middle East being filmed for a Swedish television documentary, took part in a debate before an audience of 3,000 people, wrote proposals for an edited volume and a single authored book, and was awarded a grant from the National Endowment for the Humanities. Among all of these events, two stood out as especially noteworthy.

In April, Smith was en route to give a presentation at a symposium at Oakland University, when he received a telephone call from Henry Louis Gates Jr., Ph.D., Harvard professor and PBS television host, who informed him that his most recent book *Less Than Human: Why We Demean, Enslave, and Exterminate Others* had been awarded the 2012 Anisfield-Wolf Prize for nonfiction. Formerly nicknamed the “Black Pulitzer Prize,” the Anisfield-Wolf Prize was established in 1935 to recognize books that have made important contributions to our understanding of racism and human diversity. Previous winners have included Langston Hughes, Martin Luther King, Jr., and Toni Morrison. In September, Smith received his prize at an award ceremony at the Ohio Theater in Cleveland, and read an excerpt from his book to an audience of 1,000 people.

Then, in June, Smith received a telephone call extending an invitation on behalf of Mexican president Felipe Calderon to speak at the upcoming G20 summit at Los Cabos. Smith subsequently participated in an event entitled “Rethinking G20: Designing the Future.” This meeting was convened by President Calderon to give a hand-picked group of academics a platform for presenting their views on important issues that world leaders at the summit should attend to. Amongst tight security (more than 4,000 security personnel, helicopters circling overhead, a fleet of vehicles mounted with machine guns, and a gunboat off the beach), Smith addressed an audience of several hundred financiers, diplomats, government ministers, directors of NGOs, and CEOs of multinational corporations, describing his research into dehumanization and underscoring its importance for preventing genocide, war, and human rights violations.
In Fall 2011, Jennifer Stiegler-Balfour, Ph.D., associate professor of psychology at the University of New England, published an article examining the mental updating process of outdated information in news stories in the peer-reviewed journal *Discourse Processes*.

**UNE Cognition Lab Furthers Exploration of Cognitive Difficulties**

Jennifer Stiegler-Balfour | Psychology

The study of reading comprehension has expanded our knowledge of the basic cognitive processes involved in learning from text and thus, has helped explain the comprehension difficulties experienced by some readers. While some people may read and integrate information efficiently, many struggle to understand basic written messages. Over the last several years, analyzing what differentiates good and poor readers – and identifying what can be done to close the gap – has gained significant momentum in cognitive research.

In Fall 2011, Jennifer Stiegler-Balfour, Ph.D., associate professor of psychology at the University of New England, published an article examining the mental updating process of outdated information in news stories in the peer-reviewed journal *Discourse Processes*. This study complements Stiegler-Balfour’s ongoing research which explores the many factors impacting reading comprehension. One of the current initiatives in Stiegler-Balfour’s lab is investigating the relationship between reading skill and the ability to inhibit irrelevant text information.

Stiegler-Balfour has also undertaken an exciting new line of research in collaboration with Regi Robnett, Ph.D. from the occupational therapy department at UNE. With the funds of an Office of Research and Scholarship mini grant, they are investigating ways in which written text can be altered to alleviate the cognitive difficulties experienced by individuals with Alzheimer’s Disease and related disorders.

Stiegler-Balfour’s research efforts have also inspired exciting new opportunities focused on best practices in the modern classroom. In 2012, Stiegler-Balfour published a chapter in the book *Effective college and university teaching: Strategies and tactics for the new professoriate*, and is currently involved in new research projects that explore the correlation between reading skill and the ability of students to excel in reading- and writing-intensive courses, and instruction methodologies for faculty engaging students in traditional and online learning environments.

Undergraduates continue to have a strong presence within the Cognition Lab’s research efforts and two of Stiegler-Balfour’s research assistants, Julia Rich (Psychology/English, 2013) and Hadleigh Smith (Education major, Psychology minor, 2013), received summer research stipends for 2012. Smith and Rich also received the College of Arts and Sciences Undergraduate Research Symposium Poster Award in May 2012.
Teaching Law and Literature
Matthew Anderson and Cathrine Frank | English

Matthew Anderson, Ph.D. and Cathrine Frank, Ph.D.—both faculty members in the University of New England’s Department of English—along with co-editor Austin Sarat, of Amherst College, recently published a new book, Teaching Law and Literature (2011), with the Modern Language Association (MLA), in its Options for Teaching series. The volume, which brings together 41 chapters by faculty from a wide range of colleges, universities, and law schools, is the only resource of its kind in the field. A review in The Literary Lawyer offers this praise. “It is not too much to say that Teaching Law and Literature is indispensable to those entering the field and of immense value to those who have made the field what is.”

Anderson comments on the project’s scope and describes its connection to their other collaborative contributions: “The book was a major undertaking—it took five years to complete—and could not have come forward under more auspicious circumstances: publishing it with the MLA means not only that we had the benefit of working with their experienced editorial staff, but also that the volume will reach as many professionals in the field as possible. We are delighted to contribute to the field of law and literature in this way, and more broadly, to continue to build UNE’s reputation as a leading center of interdisciplinary research in the field of law and the humanities.”

The book builds upon two other recent projects by these UNE faculty members: Law and the Humanities: An Introduction (Cambridge University Press, 2010), an edited collection—once again with Austin Sarat—of 20 chapters by leading scholars; and “The Rule of Law: Legal Studies and the Liberal Arts” (June-July 2009), a five-week summer institute for college and university faculty that was funded by a major grant ($165k) from the National Endowment for the Humanities.

Peterson’s Self and Close Relationships Lab:
Shedding Light on the Heart’s Hidden Agenda
Julie Longua Peterson | Psychology

As a social psychologist and assistant professor in the psychology department, Julie Longua Peterson, Ph.D., has recently been exploring how explicit (conscious, controlled) and implicit (unconscious, automatic) processes influence how people navigate the ups and downs of intimacy in their close relationships. While most of us recognize that our close relationship partners, such as lovers, friends, and family members, can be a source of both comfort and stress, few are aware of how these kinds of relational ups and downs impact evaluations of themselves or their relationship partners. Along with her team of undergraduate research assistants, Peterson is pursuing the intriguing possibility that unconscious evaluations of the self and others are particularly sensitive to these types of fluctuations in relationship quality.

As part of Peterson’s Self and Close Relationships Lab, Michelle Arkow (continuing education), Lyle Vintinner (2012), Bethany Kay (2012), Beth Giguere (2014), and Shelby Peterson (2014) have been involved in all aspects of the research process, including participant recruitment, data collection, data analysis and the presentation of research results. Throughout the academic year, these undergraduate students have helped Peterson examine the power of positive and negative relationship experiences to alter implicit (unconscious) evaluations of the self and others. For example, Arkow, Vintinner and Giguere have extended Peterson’s research to college roommate relationships by investigating how conflict impacts students’ implicit evaluations of their roommate. Bethany Kay and Shelby Peterson, on the other hand, have explored how people unconsciously project their own feelings of self-worth onto perceptions of their romantic partner’s worth, and the implications this has for both conflict and acceptance in the relationship. As Dr. Peterson and her lab team continue to study and understand the role of the unconscious in close relationships, Peterson hopes to shed light on the heart’s more hidden agenda.
Sadlier probes for the impactful factors that lead to these decisions to “make a difference” in the lives of others.

Standing Up for the Other: Who, Why, and How
Heather Sadlier | Education

Heather Dwyer Sadlier, Ed.D., associate professor of education, addresses issues related to bias, harassment, and hate in her scholarship. Previously, she has conducted research and written articles that have examined how educational leaders create schools where myriad differences are respected and members of school communities can feel safe and included and their learning opportunities are optimized.

In spring 2011, when previewing resources for her courses, Sadlier found the catalyst for her current research at the intersection of three texts. It was the compelling subtitle of Linda Darling Hammond’s book, The Flat World and Education: How Our Commitment to Equity Will Determine Our Future (2010), which first caught Sadlier’s eye. Jonah Lehrer’s book, How We Decide (2009), contributed extensive examples of humans’ default behavior to “disregard disconfirming evidence.” The third and most influential text, Less Than Human: Why We Demean, Enslave, and Exterminate Others (2011), was written by David Livingstone Smith, Ph.D., UNE associate professor of philosophy. In it, Smith provides a critical and comprehensive examination of vivid historical and contemporary examples of how homo sapiens persist in dehumanizing the perceived “other.”

Sadlier focuses her researcher’s lens on notable examples that run counter to the behaviors documented in Smith’s text. She interviews individuals who choose to humanize “others” and to stand up and/or speak out for individuals or groups who would not be seen as members of their own “tribe.” Sadlier probes for the impactful factors that lead to these decisions to “make a difference” in the lives of others. This research provides information about life occurrences, including possible formal educational experiences, which may contribute to an individual’s choosing to humanize rather than dehumanize perceived “others.” These revelatory stories can serve as both inspiration and templates for individuals to decide to similarly effect change and level the playing field for “others.”

One of the narratives in Sadlier’s growing collection features Jane Starke, a UNE education major, class of 2013, who started “making a difference” as a high school junior. After a class discussion about health problems in other countries, Starke founded a non-profit to fund the purchase of water filters for people in Haiti who suffered ill health and death because they did not have access to clean drinking water. More recently, she initiated a service learning opportunity for UNE students to spend their spring break tutoring English language learners (ELL) in the Dominican Republic.
Archival Research Yields Answers
—and Surprises
Jennifer S. Tuttle | English

On its face, archival research with primary sources seems a straightforward task: turning to original documents, uncovering forgotten materials—surely such dogged work should enable us to answer nagging questions and to reveal long-hidden truths. While it does provide useful information, recovering material from archives is never so straightforward, and it usually leads researchers to initiate new—and unexpected—lines of inquiry.

This was the case for American Literature scholar Jennifer Tuttle, Ph.D., Dorothy M. Healy professor in the Department of English, in her investigation of turn-of-the-century reformer Charlotte Perkins Gilman (1860-1935). Tuttle knew that New England-born Gilman had had a love affair with California, where she had fled in 1888 after the breakdown of her health and the breakup of her marriage. There she launched a career that would ultimately establish her as the foremost intellectual of the women’s movement. So Tuttle was thrilled to find, in an obscure file at the California State Library, a yellowed questionnaire Gilman had completed quite early in her career. The young Gilman had been invited to appear in a “Library of California Writers” published in a prominent San Francisco magazine. Reading the questionnaire confirmed all that Tuttle thought she knew about Gilman. But the entire project changed when she chanced to look on the document’s reverse side, where the Library’s author scrawled a scathing note about Gilman, who evidently had publicly ridiculed the very idea that California had its own literary culture. Thus began a 15-year odyssey through archives on both coasts in which Tuttle documented Gilman’s fiercely contradictory attitudes toward the Golden State.

Awarded a Research Support Grant last fall by the Schlesinger Library on the History of Women in America at the Radcliffe Institute, Harvard University, Tuttle dug further into Gilman’s papers and those of her close family. The resulting article, “New England ‘innocent’ in the Land of Sunshine: Charlotte Perkins Gilman and California,” forthcoming in the journal Western American Literature, both makes sense of Gilman’s love-hate relationship to California and broadens Gilman studies beyond its New England roots and into the American West.
A Shared Vision for Marine Programs at the University of New England: A Letter From the New UNE Henry L. & Grace Doherty Chair of Marine Sciences and Director Marine Science Education and Research Center

We have embarked on an exciting journey to create a shared vision for the marine programs at the University of New England. Our goal in this journey is to find a limited number of unique, well-defined niches for excellence in UNE marine programs. The process we are using is attempting to be as inclusive as possible of both the many emerging marine priorities in coastal Maine, New England, America, and the world, while considering the many disciplines to which modern marine students need interdisciplinary training. Creating a shared vision is a complex task that takes time, requires authentic engagement, understanding, and follow-up from those involved. As a new member of the thriving UNE community, it is my responsibility to draft visions and ideas based not only upon my professional experiences, but also to listen with "big ears" to professionals and students at UNE and larger marine communities we intend to serve.

By defining niches for systems thinking and collaborative approaches to ocean issues, UNE marine programs can play a pivotal role in improving the stewardship of marine ecosystems by training the next generation of students to be ocean leaders. We already have a substantial niche that demonstrates the inextricable connections between the oceans and human health and prosperity. My goal is to facilitate and develop unique marine programs that produce the next generation of coastal leaders - not only as thoughtful and informed coastal citizens - but also as leading interdisciplinary scientists, policy makers, and marine business leaders.

There is a unique window of opportunity now for the development of marine programs at UNE. America is an Ocean Nation. The ocean is part of the soul of the great state of Maine which has the second longest coastline in the USA after California. The ocean provides about 66 million American jobs, about 40% of all American jobs. 90% of the goods arriving to American shores come to us via the ocean, not the land. But the ocean is undergoing unprecedented rapid changes, warming faster than all previous scientific predictions, and decreasing alarmingly in productivity.

The timing is ideal for ocean/coastal philanthropists and donors to make major investments in marine programs at UNE to help us train students and faculty to not only conduct marine research to address the most pressing ocean problems of our time, but also to reach out and make innovative partnerships with Maine’s marine business community. Demand is increasing for professionals who are competent in addressing issues across a wider range of perspectives who can integrate issues surrounding water, food security, energy, climate variability, rural to urban migration, environmental restoration and ecotourism, and increasing economic uncertainty which are the central drivers for the massive changes we see in coastal and marine ecosystems.

Barry A. Costa-Pierce
Marine Science
The University of New England has significant impact on Maine’s economy which provides a compelling case for establishing University-based marine business incubator programs that create the enabling conditions for accelerated marine economic developments in the creative economy (Planning Decisions, 2007). The rapid growth of UNE highlights the unique opportunity we have to elevate marine programs and become a marine science education center of excellence. In the first half of 2013 we will deliver to the UNE leadership and our twin cities community a strategic pathway with clear goals for growing world class, interdisciplinary marine programs at UNE that will define a unique marine brand.

The coastal economy in the Biddeford to Boston Corridor (a new “BBC”) is an ideal incubator space for innovative enterprise developments in marine programs, with abundant opportunities for partnerships with businesses, universities, and creative UNE partnerships.

I came to UNE because I was convinced that this University has all the elements in place to become a leading example of a new paradigm in higher education for marine programs over the next decade. There is a strong community spirit, a large professional class of innovative small businesses, and a universal love of the ocean. Our coastal ethic is omnipresent. There is a strong commitment from UNE’s leadership having already invested an estimated $10 million in marine programs to date. Moreover, UNE’s fiscal, environmental, and human health connections are vital parts of the day-to-day leadership planning here; there are well-positioned capital investments in infrastructure, and bold additions of online courses and programs. There are clear commitments to increasing the quality of teaching, to add high-quality research faculty and staff, and significant regional and global expansions that have transformed the University of New England, all within a few short years. I absorbed all of this and decided that I wanted to be a part of this unique story. I’m honored to be a new member of this community. Thank you.

Sincerely,

Barry A. Costa-Pierce

Effects of Saco River Plume on Crab and Bivalve Larvae
Kylie Bloodsworth | Graduate Student, Marine Science

What do you do when you are less than a millimeter long, can barely swim, and need to fight against river currents to get home? Marine sciences graduate student Kylie Bloodsworth, with her advisors Charles Tilburg, Ph.D., associate dean for the College of Arts and Sciences, and associate professor in the department of marine sciences, and Phil Yund, Ph.D., director of the Marine Science Center, has explored this question through the eyes of crab and bivalve larvae by examining the potential mechanisms for larval transport in Saco Bay.

The Saco River estuary receives large amounts of freshwater discharge each year, forming a plume of fresh water that spreads throughout Saco Bay and can change daily based on precipitation, winds, and tides. Many of the marine animals that reside in the estuary are affected by the plume, especially during their larval stage. With limited swimming abilities, larvae are at the mercy of currents and must find ways to get back to adult habitats where they can settle and reproduce. Some larvae will use these currents to their advantage by swimming vertically in the water column so that they can position themselves in a current that will either transport them offshore or export them back into an estuary.

Kylie has examined the distribution of crab and bivalve larvae in relation to the Saco River plume. In the summer of 2011, she collected plankton from Saco Bay to determine larval densities and measured the physical conditions within the Bay. Data showed that bivalve larvae acted more passively while crabs may be exhibiting some of these vertical migration behaviors. Kylie has had the opportunity to present her findings at two conferences this past year, at the Northeastern Estuarine Research Society’s meeting and at the Gulf of Maine Marine Ecology Symposium. She anticipates that her research will provide more information on the behaviors of bivalve and crab larvae, and help coastal managers predict population dynamics based on larval distributions.

With limited swimming abilities, larvae are at the mercy of currents and must find ways to get back to adult habitats where they can settle and reproduce.
Blue Mussel Distribution in Down East Maine
Elizabeth Prochaska | Graduate Student, Marine Science

In Maine, blue mussels are a common intertidal species and are commercially important. There are two species of blue mussels in Maine: *Mytilus edulis* and *Mytilus trossulus*. Physically, there is no way to tell the two species apart. Historically, *M. trossulus* was not known to be present in Machias Bay located in Down East Maine; however, now Machias Bay is the inshore southern boundary range for this species. This shift of the *M. trossulus*’ range has created an economic and locally important small-scale climate change study for Maine. UNE graduate student Elizabeth Prochaska, who works with Charles Tilburg, Ph.D., and Phil Yund, Ph.D., is looking at the distribution of larvae and adult *Mytilus* species throughout Machias Bay. Preliminary results indicate that *Mytilus* larvae are deposited into Machias Bay via the cold, salty Eastern Maine Coastal Current, which is located right outside of Machias Bay. Once in the tidally dominated bay, *Mytilus* larvae are distributed completely throughout the bay. Larvae densities are highest at the mouth of the bay (which is closest to its source, the Eastern Maine Coastal Current) and lowest in the upper bay (which is the furthest away from its source). Adult *Mytilus* species were collected and genotyped to indicate whether the species are *M. edulis* or *M. trossulus*. It was determined that Eastern Maine Coastal Current water frequently mixes through two-thirds of the bay and episodically mixes throughout the whole bay. This episodic mixing has created an isolated population of *M. trossulus* by trapping *Mytilus* larvae in the upper bay, not allowing the *Mytilus* larvae to move freely with the tides back toward the mouth of the bay.

Crabs Running on Treadmill: Entertaining, but Also Real Science
Markus Frederich | Marine Science

When you visit the Marine Science Center, you might see students watching crabs running on a treadmill. This is part of a research project that investigates the stress physiology of invasive crustaceans. Markus Frederich, Associate Professor in Marine Sciences, and his students investigate why green crabs and Asian shore crabs are such successful invasive species, outcompeting local crabs and depleting the clam fishery. One of the secrets of these invasive species seems to be their exceptional adaptability to environmental stress, such as high and low temperature, low oxygen or low salinity. Testing how well the species can perform under stressful conditions—can easily be done by assessing their ability to run on a treadmill. In addition to this often entertaining experiment Frederich, and his lab test for other whole animal parameters like oxygen consumption, and cellular parameters such as the activities of enzymes, ion transporters and heat shock proteins. Furthermore, using methods of molecular biology, such as polymerase chain reaction (PCR) and semi-quantitative real-time PCR, Frederich and his team quantify the expression of stress-activated genes. By covering the whole spectrum of parameters, from whole animal to single genes, Frederich hopes to elucidate what makes these species so successful and what might be done to prevent a further spread of the invasion.

See the crabs in action by visiting our website: http://www.une.edu/cas/marine/crab/
The Sulikowski Fish Research Lab: Building Knowledge through Collaborative Learning
James Sulikowski | Marine Sciences

James Sulikowski, associate professor of marine sciences, and his laboratory of undergraduate and graduate students are dedicated to advancing our knowledge of the life history and population dynamics of fish and the anthropogenic effects on these processes. He is a strong advocate of promoting the involvement of undergraduate and graduate students in his research. These highly motivated students are actively engaged in all aspects of his laboratory and are pivotal to the success of each research project. Sulikowski believes the involvement of students is not only essential to advancing our understanding of the ecology of fishes, but also provides a springboard for the training of future marine scientists. Over the last academic (2011-2012) year, Sulikowski and his students have authored seven peer-reviewed papers, given 10 presentations at scientific meetings, and amassed $350,000 in external grant funding. This work has focused on such projects as quantifying by-catch mortality and stress responses in elasmobranchs (sharks, skates, and rays); delineating movement patterns of sturgeon and sharks using acoustic and satellite tags; developing non-lethal techniques to study reproduction in elasmobranchs; and ecosystem monitoring of the Saco River. This and other research on fish will ultimately offer new management strategies that will benefit not only commercial and recreational fishermen but the ecosystem, as well.

Over the last academic (2011-2012) year, Sulikowski and his students have authored seven peer-reviewed papers, given 10 presentations at scientific meetings, and amassed $350,000 in external grant funding.
SPartACUS, a $2.87 million project funded by the National Science Foundation GK-12 program, is a collaboration among the Departments of Marine Sciences (Dr. Stephan Zeeman and Dr. Charles Tilburg) and Education (Dr. Susan Hillman) with six public school districts in southern Maine. The Saco River watershed is the focus to engage K-12 students and teachers in authentic inquiry-based learning in STEM (Science, Technology, Engineering, and Mathematics)-related disciplines regarding biogeochemical cycling. The project involves specially trained graduate students who are pursuing their master's degree in Marine Sciences or Biology working as “resident scientists” in classrooms within the districts. The primary purpose of the GK-12 grant is for graduate science fellows to improve their communication skills in articulating and sharing their research with children, yet at the same time the fellows gain understanding of teaching, collaboration and team building. The K-12 students and teachers gain additional STEM content expertise by having a scientist in the classroom.

This university-school partnership rests on an extensive needs assessment that was conducted prior to grant funding. The needs assessment interviewed 20 school administrators and 41 teachers from area school districts to identify the science education needs of the schools and to explore ways in which the University of New England could provide science outreach to meet these needs. In this manner, the work is focused on what the schools needed. SPartACUS helps to fill those needs by having science experts in the classroom to work with the teachers.

The Saco River watershed and the Saco River Coastal Observing System (SaRCOS) are used in school projects designed through collaboration among University faculty, Graduate Fellows, and teams of teachers in the schools. We use “place-based inquiry” as a tool to engage students which can involve field data collection, real-time data acquisition from instruments in the river and offshore, laboratory analogues, and others. These interactions center on real scientific questions based in their local environs, so students engage in current research that is relevant to them. This pedagogy makes students more aware and interested in STEM disciplines, increases scientific literacy, aids in critical thinking skills, and enhances teacher comfort with STEM content and knowledge about STEM disciplines and careers.
UNE Neuroscience: Past, Present and Future

On the surface, neuroscience is the study of the brain and nervous system, and the relationships between its various structures and functions. Deeper examination yields an intricacy and elegance that challenges our views on consciousness, on being human, and the interactions between individuals, groups and cultures. Neuroscientists are studying some of the most complex and devastating diseases and disorders, including Alzheimer’s disease, mental illness and chronic pain. Responding to these challenges requires fresh perspectives and cross-disciplinary approaches between the natural and social sciences, the humanities and fine arts, mathematics and the computer sciences, as well as the medical and health care professions. The University of New England (UNE) is well positioned to advance the field through scholarly contributions, education of students, and its community outreach efforts.

The neurosciences are deeply rooted in UNE’s history and evolution, with the story being set in motion with two of the earliest faculty hires in the College of Osteopathic Medicine (COM). Barbara Winterson, Ph.D. and Frank Willard, Ph.D. were classically trained neuroscientists hired to help build the college and its medical curriculum, while also conducting their own independent research. Dr. Winterson was awarded the University’s first major research grant in 1980 to support her research on eye movements and the sensorimotor systems responsible for image stabilization on the retina. Similarly, Dr. Willard conducted neuroscience-related research comparing the neuronal architecture of the cochlear nucleus in opossums and mice.

As the medical school expanded, the University began to attract the attention of individuals with expertise in the neurosciences and other related disciplines. Peter Morgane, Ph.D., a world-renowned comparative neuroanatomist, contacted the medical school in hopes of becoming involved with the program as he entered into the “retirement” phase of his career. During his 25-year affiliation with the University, he provided steadfast support for the growth of research quality and capacity through his own involvement as a faculty member, as well as through his philanthropic generosity.

Dr. Morgane and his wife Cécile provided funding to build the Cécile Morgane Research Laboratories and the Peter and Cécile Morgane science building. These laboratories and classrooms have been critical for the continued expansion of the neurosciences at UNE.

Beginning in the late 1980s and through the 1990s, UNE added a number of other faculty members with neuroscience-related research and teaching interests. David Sandmire, Ph.D., for example, began teaching an undergraduate human neuroscience course. David Mokler, Ph.D., and David Johnson, Ph.D., both worked extensively with rodent models to study the neurobiology of addiction and processes of learning and memory. Amy Davidoff, Ph.D., a cardiovascular physiologist, had most of her early training in the electrophysiology of the lobster nervous system. As an experienced researcher, she effectively advocated for the establishment of infrastructure needed to obtain and conduct externally funded biomedical research. Investments in buildings and laboratories allowed more of the UNE researchers to focus their efforts on the Biddeford campus rather than through collaborations with larger medical schools and universities in the Boston area.

Edward Bilsky
Associate Provost
Co-Director, CEN
Edward Bilsky, Ph.D. and Ian Meng, Ph.D. were recruited to UNE in 2001 and 2003, respectively. It was apparent to both that UNE's research program was poised to take off in a positive direction. A strong champion for biomedical research was Ed Legg, who at the time headed the Office of University Relations. Legg recognized that research and scholarship play an integral role in advancing the academic reputation of a university, as well as stimulating local and state economies. He worked closely with the Dean of COM, Steve Shannon, D.O., to encourage the state of Maine to invest in UNE's nascent biomedical research program. As a result, a comprehensive strategic plan for growing biomedical research on campus was crafted by a blue ribbon committee headed by the American Association for the Advancement of Science.

The next few years led to additional neuroscience hires, in part through serendipity and in part through coordination and planning. The department of biology in the College of Arts and Sciences (CAS) recruited Geoff Ganter, Ph.D., who was a neurobiologist studying the neural basis of behavior in fruit flies. Andrew Binks, Ph.D., a respiratory physiologist who studies the neural mechanism of dyspnea and air hunger, was brought into the Westbrook College of Health Professions. Dr. Bilsky recruited Glenn Stevenson, Ph.D., as a research assistant professor as part of his NIH grant to study opioid pharmacology and its connections to pain and addiction. Dr. Stevenson quickly received his own NIH AREA grant to study the assessment of pain relief in animals, and moved over to a tenure track position in the department of psychology in CAS. Another key recruitment was Dr. Ling Cao, M.D., Ph.D. Dr. Cao's laboratory studies the interactions of the immune system with the nervous system, and in particular how these interactions may lead to chronic pain states. Her expertise filled a void in teaching immunology to the medical students while strengthening the pain research program at UNE.

Recognizing neuroscience as an area of strength, President Danielle Ripich established the Center of Excellence in the Neurosciences (CEN) in 2007 with the specific goal of creating an organizational structure that promoted cross-college and cross-disciplinary collaboration to advance neuroscience research and education. The CEN, first led by Edward Bilsky, Ph.D., and now co-directed by Drs. Bilsky and Meng, prioritized several initiatives to build a vibrant and sustainable neuroscience community. One of the first key initiatives was to support an active seminar program that would bring together faculty and students on a regular basis to learn about individual laboratory activities that were taking place, while also encouraging interaction with guest speakers who are leaders in their field. This was especially crucial to the emerging neuroscience program at UNE in that there were few senior investigators to help mentor the more junior faculty. A second key initiative was to build support for student-centered research projects. The CEN faculty mentors were doing an admirable job engaging students in their laboratories, and wanted to support more of this type of activity, especially in the summer months when students could devote full-time efforts toward their projects.

The CEN also invested in seed projects and new initiatives. One exciting example was establishing a connection between the neurosciences and the humanities, social sciences and the creative and fine arts. CEN member Sarah Gorham explores connections between the arts with medicine and healing, while David Smith, Ph.D., studies human nature from both a philosophical and neuroevolutionary point of view. By strengthening these ties, we expand the opportunities for students to enhance their undergraduate education. Students are encouraged to think differently and more creatively about a particular problem or the methods and approaches needed to find a solution.

What is the COBRE?

In August 2012, the University of New England was awarded the largest grant in its history. This $10 million, five-year grant from the National Institutes of Health was awarded for the specific purpose of studying chronic pain and strengthening the neuroscience community, both on- and off-campus.

Chronic pain continues to be a major health, social and economic problem throughout the world, affecting an estimated 1 in 3 individuals. Although research has vastly increased our knowledge regarding the basic mechanisms of acute, inflammatory and neuropathic pain, relatively little is known about the processes involved in the transition from acute to chronic pain. UNE aims to create a Center of Biomedical Research Excellence (COBRE) that will significantly contribute to the scientific understanding of the neurobiology of chronic pain and sensory function, facilitating the discovery and development of novel therapies.

This research center will establish a core group of neuroscientists, pharmacologists and chemists whose research is focused on understanding the neurobiology of pain. The COBRE will provide the junior investigators with a career development plan, mentorship, and research infrastructure that will facilitate gaining independent investigator status. Furthermore, this program is designed to strengthen UNE’s medicinal chemistry capabilities in collaboration with the College of Pharmacy, providing scientists with novel compounds that can be used as valuable tools for exploring the pathophysiology of chronic pain. Ultimately some of these compounds may also be advanced as clinical drug candidates. Fulfillment of initial short-term goals will lay the foundation for future development of a clinical pain research group that complements the basic science investigators.
CEN members are passionate about educating people of all ages on the brain and the nervous system. Several related initiatives are laying the foundation for future success. Drs. Ganter, Stevenson and Meng spearheaded efforts to establish the undergraduate neuroscience major in CAS in 2010. The program has been steadily growing, and the first class of seniors received their degrees in the spring of 2011. We are also attracting prospective students to the major, in part because of the research opportunities that freshman and sophomores have while working under the direction of faculty mentors. With the opportunity to conduct research for four years of the undergraduate education, as well as summers, we are observing some very sophisticated honors theses and other research-related products from these motivated students.

Another successful initiative of the CEN is a K-12 outreach program involving local school systems in southern Maine. Michael Burman, Ph.D. and Dr. Bilsky established teams of UNE faculty, staff and students. These teams reach out to the schools to deliver thematic neuroscience content. These well-developed modules include lessons in brain anatomy, brain safety and substance abuse. A unique aspect of this program is that the modules are designed to be both vertically and horizontally integrated with the catch phrase of “Growing up and Growing out” with UNE neuroscience. The brain safety activities start in second and third grades when children are starting to ride bikes and skateboard. By bringing lesson plans and models of the human skull and brain, students develop an understanding that the brain is fragile and needs extra protection. As students progress into middle school, the level of instruction advances with sheep brain dissections and activities on concussions, a timely topic given students’ participation in contact sports. The module further develops for students in high school, when human brain dissections and case-based presentations are introduced to complement their biology curriculum. The growing-out portion comes with the expansion of neuroscience topics such as substance abuse and its effects on brain development, as well as new connections to other disciplines such as mathematics, physics and chemistry. During the 2011-2012 academic year, the CEN visited over 1,500 K-12 students. Partnerships with foundations and the Maine Society for Neuroscience are further expanding the reach and impact of this program.

From the start, the Center has focused on ensuring sustainability in order to provide long-term support for individual research projects, training opportunities for students, and essential infrastructure improvements – such as equipment, laboratory space and core facilities. Maine qualifies for Institutional Development Awards (IDeA) because it does not attract the level of federal funding as compared to some of the larger research-intensive states such as Massachusetts. Dr. Meng saw an opportunity to seek funding for UNE’s first Center of Biomedical Research Excellence grant (COBRE). He initiated efforts to build a team of faculty who study the neurobiology of pain. Affiliated faculty hires such as Frank Porreca, Ph.D., Todd Vanderah, Ph.D. and Robert Lenox, M.D., further added to the team, along with coordinated hiring of neuroscientists such as, Lei Lei, Ph.D., Colin Willis, Ph.D., and Tamara King, Ph.D. After a three-year application process, UNE was awarded this prestigious grant (see COBRE side bar).

It is difficult to predict how a group or organization will evolve or develop over the course of five to seven years. To sustain the momentum of its growth, the CEN is working on strengthening medicinal chemistry to complement the basic science drug discovery research that is taking place. Adding a translational component to the pain research program may lead to investigator-initiated clinical trials. The outreach program is expected to expand as CEN works on ways to assess the effectiveness of the modules on student learning outcomes. Securing extramural support with the program and working with other departments at UNE is a top priority. Cross-disciplinary collaboration is key to this and many of the other efforts of the CEN. This will include further strengthening the connections with the humanities as well as groups such as the Marine Science Center, mathematics, and the InterProfessional Education Collaborative. Ultimately, the CEN will be a model program that creates a community that fosters faculty and student creativity and innovation to address some of the most challenging neurological and psychiatric problems facing society.

Over the past three decades, UNE faculty and students have built robust research and academic programs in the neurosciences. At UNE we believe in honoring the past, recognizing the strengths of the present and innovating for the future. We will continue to apply these principles toward the neurosciences in the coming years.
Exercise and Sport Performance Students Present Research at National Meetings
Lara Carlson | Applied Exercise Science

Groin wrapping and its effects on skating performance
Vital to any athletic endeavor is maintaining optimal performance during periods of injury. Athletic training undergraduates Howard Theberge, Julie Bigelow, Stacie Lee and Brittany Pelkey—advised by Lara Carlson, Ph.D., assistant professor in the applied exercise science program—studied the effect of wrapping on skating performance in ice hockey players. The students wrapped the hockey players’ groin as if they had an actual injury and measured the speed of their skating. The results demonstrated that wrapping the groin did not affect players’ skating speed or agility.

This study was presented by Howard Theberge, a senior at the University of New England, at the New England Chapter of the American College of Sports Medicine (NEACSM) conference in November 2011, where Howard won the Undergraduate Student Investigator Award. Theberge also traveled to San Francisco in June and presented a poster at the 59th Annual Meeting of the American College of Sports Medicine and 3rd World Congress on Exercise is Medicine conference. The students plan to submit their manuscript for publication in a scientific sports medicine journal.

Barefoot phenomenon
The recent enthusiasm for barefoot running has charged a heated debate of its benefits vs. injuries. Non-contact anterior cruciate ligament (ACL) injuries often occur during lateral cutting maneuvers, which can create the high loads on the ACL. Although growing interest in barefoot running is increasing, lateral cutting maneuvers have only been studied in the shod (with shoes) condition. To date, there is no evidence pertaining to barefoot sports, which are played in areas around the world such as Brazil and Africa. Athletic training student Brianna Bisesti, with help from exercise and sport performance student Casey Cottle and co-advisors Michael Lawrence, M.S., biomechanics lab manager and Lara Carlson, Ph.D., FACSM, assistant professor in the applied exercise science program, studied the stress on the ACL during both barefoot and shod lateral cutting. The results, which Bisesti presented in August 2012 at the American Society of Biomechanics in Miami, Florida, indicated that no greater stress was placed on the ACL when cutting barefoot, suggesting that barefoot cutting may be a safe activity for people. The students plan to submit their manuscript for publication in a scientific sports medicine journal.

Improving sprinting performance
Usain Bolt’s recent gold-medal-winning performances in the 2012 London Olympics have undoubtedly inspired many sprinters to analyze their own performances in hopes of shaving precious seconds off their 100-meter times. One technique that might improve sprint times is the use of a weighted sled during training. Exercise and sport performance student Casey Cottle, aided by athletic training students Matthew Jackson and Brianna Bisesti, co-advised by Michael Lawrence, M.S., biomechanics lab manager and Lara Carlson, Ph.D., assistant professor in the applied exercise science program, compared sprint starts in runners who towed a weighted sled with 10% and 20% of their body weight to a non-weighted condition. Data analysis is currently under way, but preliminary findings suggest that these loads do not provide enough resistance to meaningfully alter an athlete’s force production during a sprint start. The students plan to submit their manuscript for publication in a scientific sports performance journal.
Therapeutic Horseback Riding Improves Balance and Mobility in Children and Adults with Disabilities

Jim Cavanaugh | Physical Therapy

Anyone who has tried to get people to engage fully in physical activities that are “good for them” knows that making the activity fun is the way to go. Horseback riding is not only a fun activity, but also it provides variable, rhythmic and repetitive movement that may increase trunk control and improve mobility. Doctor of Physical Therapy (DPT) students Christine Hill, Courtney Kretchkin, Kaitlyn Mahoney and Marissa Stewart experienced this effect firsthand. Under the direction of faculty advisors Jim Cavanaugh PT, Ph.D., a neurologic clinical specialist, and Eileen Ricci PT, DPT, MS, a pediatric clinical specialist, the students conducted a pilot study on the effect of therapeutic horseback riding on mobility skills in children and adults with disabilities. The participants took part in a once weekly, 14-week riding program at the Riding to the Top Therapeutic Riding Center in Windham, Maine. The students determined that some participants had improved balance and mobility skills after the program. The DPT students presented their findings at the Professional Association of Therapeutic Horsemanship International Region 1 Conference in Brattleboro, Vermont.
The need for smaller, more efficient, and synthetically tailorable devices has driven today’s engineers and scientists to design electronic systems that can be controlled and driven by a single molecule.

Designing “Greener” Molecular Electronic Devices
Amy Kierstead | Chemistry

Molecular electronics is a newly emerging field encompassing aspects of physics, chemistry, and materials science where single molecules and polymers are used to carry out various functions in electronic circuitry that are traditionally performed by semiconductor devices. The need for smaller, more efficient, and synthetically tailorable devices has driven today’s engineers and scientists to design electronic systems that can be controlled and driven by a single molecule. Amy Keirstead, Ph.D., and her undergraduate research students in the Department of Chemistry and Physics have been studying a class of “on-off” molecular switches called spiropyrans. Spiropyrans are photochromic, meaning that they undergo a change in color following exposure to different wavelengths of light, much like the “transitions” lenses found in prescription sunglasses. When the spiropyran is exposed to UV light, a ring-opening reaction takes place and the change in molecular structure causes the compound to appear a red-violet color (the “on” form); exposure to visible light closes the spiropyran back to the colorless “off” form.

The Keirstead research group has been particularly interested in how the spiropyrans behave in a class of materials called ionic liquids, which are thought to be good hosts for molecular electronic devices. Ionic liquids have been coined “green” solvents because they are nonvolatile and can be reused and recycled. They are also expected to protect molecules from degradation, which would extend the lifetime of a molecular device. Dr. Keirstead’s team has observed some interesting photoluminescence behavior from the spiropyran molecules in the ionic liquids compared to traditional molecular solvents; along with the red fluorescence observed in “normal” systems, blue-green phosphorescence was also detected. In addition to contributing to our overall knowledge of ionic liquids, these findings could be used to develop a robust two-color emitting “on-off” molecular system that could be used for sensors or in electronic devices.
Understanding Fear and Anxiety
Michael Burman | Psychology

The laboratory of Michael Burman, Ph.D., assistant professor in the department of psychology, is attempting to better understand the neurological substrates of pediatric anxiety disorders. In the US, approximately 20% of children experience some sort of pediatric anxiety disorder. Although many of these cases will spontaneously remit, as many as 73% will go on to be diagnosed with some sort of mental disorder, typically anxiety or depression, as adults. Specific phobias and separation anxiety disorder emerge at a particularly young age and are often diagnosed prior to age 5. Although we now know a great deal about the fear and anxiety circuitry in adults, how and when these circuits emerge over development is still poorly understood. Thus, we do not yet know what makes one susceptible in these early cases of anxiety.

Several anxiety disorders, including specific phobias and post-traumatic stress disorder (PTSD), involve memory for aversive events. In specific phobias, due to some combination of innate susceptibility and previous experience, an excessive fear develops to a specific target. In PTSD, a traumatic event triggers inappropriate recollection and hyper-activation of the sympathetic nervous system in a variety of non-threatening situations, perhaps linked with our implicit memory system.

The Burman Lab primarily investigates the development of the neural substrates required for the intersection of memory and fear. They focus on two brain structures: the hippocampus, involved in the formation of conscious memory, and the amygdala, involved in the formation of implicit traumatic and emotional memory. Their research tries to understand when each system develops and how and when they come to work together. They hypothesize abnormal connectivity between these neural systems may contribute to the development of anxiety disorders.

In the U.S., approximately 20% of children experience some sort of pediatric anxiety disorder. Although many of these cases will spontaneously remit, as many as 73% will go on to be diagnosed with some sort of mental disorder, typically anxiety or depression, as adults.

The lab recently received an NIH grant to investigate activation of the hippocampus, amygdala and intermediary structures during traumatic memory formation and retrieval at different ages in rats. This project should reveal how abnormal neural systems develop in some anxious individuals. Other projects in the lab examine the duration and strength of emotional vs. non-emotional memories. Finally, we collaborate with other labs to examine the role of specific genes and neurotransmitter systems in emotional learning and which could lead to new treatments for anxiety disorders.
None of Us is As Smart As All of Us

Interprofessional education (IPE) is defined as faculty, students, and clinicians from two or more health professions learning about, from, and with each other in shared academic activities.

The Center for Excellence in Interprofessional Education will design, deliver and demonstrate student competencies in interprofessional health practice. In June 2012 the University of New England welcomed the Center for Excellence in Interprofessional Education (CEIPE). The Center designation highlights the achievements of faculty, students, staff, administrators and community partners who since 2010 have worked collaboratively as the Interprofessional Education Collaborative. IPEC members have produced extracurricular events, symposia, IP case conferences and student orientations, professional papers and presentations, and a range of shared learning opportunities for students and faculty across UNE’s two campuses.

The Center’s programs are guided by national and global health care competencies that include: knowledge of others’ roles and responsibilities, IP communication, IP ethics and values, teamwork, collaborative leadership, and patient-centeredness. Evidence suggests that professional knowledge of these competencies reduces medical errors, increases patient safety and decreases health care costs.

Shelley Cohen Konrad, Ph.D., CEIPE director, believes that introducing students to IP competencies as early as possible is critical to improving health care practice. “Every health professional has a story to tell about missed opportunity or unnecessary suffering brought about by not knowing who to turn to when they reach the limits of their professional knowledge,” says Cohen Konrad. “Although they work in settings alongside one another they often do not appreciate the benefits of their shared expertise.”

Collaboration is not only key to improving patient care; it also creates a robust environment for scholarship and research. UNE faculty have recently developed a number of publications and presentations on interprofessionality, which have been presented internationally at conferences and in WORK: A Journal of Prevention, Assessment, & Rehabilitation (2012). Ultimately however, Cohen Konrad is most excited about engaging students in IPE scholarship and research initiatives. In the fall of 2012 the Center inaugurated a student-led mini grant program aimed at advancing IPE through interprofessional service learning, scholarship, and research projects. “We fully believe that UNE students will graduate as collaborative healthcare leaders of the future,” says Cohen Konrad.

Commitment to improve patient-professional collaboration and interprofessional teamwork drives CEIPE’s mission. The Center promotes TeamSTEPPS™, an evidence-based teamwork system designed by the Agency for Healthcare Research and Quality (AHRQ) to advance communication and teamwork skills among health care professionals. Cohen Konrad, along with Dora Mills, M.D., M.P.H, FAAP, vice president for clinical affairs at UNE, and Karen Pardue, M.S., R.N., CNE, ANEF, are TeamSTEPPS master trainers, working to modify its content-originally designed for hospitals and acute care settings for health professions educators.

The Center is currently producing COMTime: Competencies for Collaborative Health Care, an online learning IPE toolkit funded in part by the Bingham Program Foundation. COMTime consists of six modules, each of which highlights IPE competencies. Students will follow a patient throughout the modules learning about collaborative practice as they go. COMTime, like all IPE initiatives, is guided by a diverse advisory team that can best support the project.
Working collaboratively across professions has its challenges, not the least of which is scheduling. Kris Hall, CEIPE program coordinator, talks about the hurdles the team has faced while orchestrating last year’s spring symposium on Neuroscience Discoveries and Clinical Practice: “We made sure to include faculty, students, staff, and community members who each had something valuable to bring to the day. Keeping the lines of communication open and creating an atmosphere that encouraged everyone to give their best was a big priority for us, and the results were evident throughout the day.” Yet those committed to IPE seem able to transcend these trials.

As CEIPE looks toward the future, its goal is to link academic and clinical interprofessional learning. Toward this end, students from the University’s College of Osteopathic Medicine, College of Pharmacy, and Westbrook College of Health Profession’s nursing department are piloting shared rotations at the Maine General Hospital’s Family Medicine Institute during the Fall 2012 semester. The Center will bring TeamSTEPPS and IPE competencies training to this and other community sites.

“This is an exciting time in interprofessional education and practice,” says Cohen Konrad, “The potential to empower our students and transform a patient’s experience is tremendous, and thanks to the University’s longstanding commitment to IPEC, we are poised to take our place nationally and internationally as a key collaborator in this field.”

For more information on CEIPE initiatives, visit www.une.edu/wchp/ipec.
Theater provides a context for the learner to understand the complexities surrounding emotional and painful realities and allows the learner to become engaged with the issue in a safe environment.

**Theater as a Teaching Tool:**  
**Breaking Through Violence to Better Health**  
Denise Bisaillon | Public Health  
Cathy Plourde | Add Verb Productions

Using theater to teach students about difficult issues is an innovative, compelling and effective educational tool. Theater provides a context for the learner to understand the complexities surrounding emotional and painful realities and allows the learner to become engaged with the issue in a safe environment.

Denise Bisaillon, Ed.D., director of the graduate programs in public health and Cathy Plourde, M.A., director of Add Verb Productions, demonstrated the power of theater at the American Public Health Association’s Annual Conference held in Washington, D.C. last October 2011. Their presentation, “Theater for teaching violence, abuse and trauma prevention and intervention: Setting the bar for students and reinvigorating providers,” provided an overview of a curriculum pilot module using theater to teach students in clinical programs and providers in health care settings. The curriculum module includes a 40-minute presentation, “Major Medical Breakthrough,” performed by professional actors, that combines best practices, medical research and a recognition of social and professional barriers to addressing violence, abuse, and trauma in the lives of patients.

The module was piloted with students from the Westbrook College of Health Professions and the College of Osteopathic Medicine, and has been presented to the Maine Osteopathic Association, Maine Public Health Association, Martin’s Point, and students and medical practitioners at Maine Medical Association, as well as at several national conferences. It offered the students a primer on the role that domestic violence and substance abuse play in the lives of patients—social scourges that impact everyone, but primarily women, girls, and vulnerable populations. The module was also tested with providers as a continued medical credit unit. Surveys were conducted with both student and provider groups.

Bisaillon and Plourde reported that the findings from the pilot surveys indicated increased learning:

- 72% of learners (students and providers) indicated that as a result of seeing Major Medical Breakthrough, they will now be more likely to discuss interpersonal violence/sexual assault with their friends and colleagues. (Pre-show survey indicates that only 45.3% were comfortable discussing interpersonal violence/sexual assault with friends and colleagues.)
- 82% of learners indicated that as a result of seeing Major Medical Breakthrough, they are now more concerned about interpersonal violence/sexual assault issues.
- 87% of learners said that as a result of seeing Major Medical Breakthrough, they are now more knowledgeable about interpersonal violence/sexual assault issues. (Pre-show survey indicates only 46% were knowledgeable about interpersonal violence/sexual assault issues).
- 69% of learners stated that as a result of seeing Major Medical Breakthrough, they will now seek additional training on interpersonal violence/sexual assault issues.
- 91% of learners indicated that as a result of seeing Major Medical Breakthrough, they will now ask patients about the presence of interpersonal violence/sexual assault issues in their personal lives.

Additionally, students and providers were able to recognize best practices in screening interviews, discuss the different types of psychological, social and medical effects of abuse and trauma, and identify resources and strategies to deal with violence, abuse, or trauma experiences. This module is in the process of being converted to an on-line CME tool with funding from the Bingham Program.
Opportunities for student involvement in research exist in basic sciences such as biology, chemistry, pharmaceutics, pharmacokinetics, and pharmacology, and in studies performed in clinical practice settings, including evaluations of the effectiveness of medications, therapeutic and safety-related outcomes, and the appropriateness of medication use.

College of Pharmacy Students Conduct Innovative Research
George Allen | Pharmacy Practice

Students enrolled in the Doctor of Pharmacy program at the University of New England are afforded the opportunity to conduct innovative research with faculty in a variety of settings, from research laboratories to clinics to the classroom. Opportunities for student involvement in research exist in basic sciences such as biology, chemistry, pharmaceutics, pharmacokinetics, and pharmacology, and in studies performed in clinical practice settings, including evaluations of the effectiveness of medications, therapeutic and safety-related outcomes, and the appropriateness of medication use. Faculty are also engaged in the scholarship of teaching – designing and evaluating innovative teaching methods, including interprofessional education. Doctor of Pharmacy students contribute to scholarly works in all of these areas.

Examples of research projects that have involved students include Karen Houseknecht, Ph.D.’s work to elucidate the molecular mechanisms underlying the adverse effects of antipsychotic medications on bone health, and Srinidi Mohan, Ph.D.’s studies of L-arginine supplementation in cardiovascular diseases. Students have also pursued cutting-edge computational research with Olgun Guvench, M.D., Ph.D., in the area of protein-carbohydrate interactions, which is a frontier in molecular recognition and signaling. Steven Sutton, Ph.D., has mentored a student whose research is designed to predict the intestinal precipitation of orally administered drugs using in vitro methods, with the goal of simulating the bioavailability of medications. George Allen, Pharm.D., has hosted several students in his laboratory, where he studies new strategies for the treatment of antimicrobial-resistant bacteria such as Neisseria gonorrhoeae (the cause of the sexually transmitted disease gonorrhea). Finally, Leslie Ochs, Pharm.D., Ph.D., performs research that seeks to understand the implications of second-generation antipsychotic medications on clinical practice, with a special focus on vulnerable populations such as children and the elderly.

These represent merely a portion of the scholarly activities taking place at the College of Pharmacy. Such activities provide Doctor of Pharmacy students valuable opportunities to learn research skills, present their work at local and international conferences, and to disseminate their work as peer-reviewed publications.
Second-generation antipsychotic drugs (SGAs) are medicines designed to treat the most severe mental health disorders, including schizophrenia. In the past five to 10 years, however, SGAs are increasingly prescribed “off label” for the treatment of disorders as diverse as ADHD in children and dementia in the elderly. At the same time, clinical data have been emerging that reveal an increase in the incidence of obesity, diabetes, hyperlipidemia, and bone fractures in patients treated with these medications. Karen Houseknecht, Ph.D., professor of pharmacology, began working to elucidate the molecular mechanisms underlying adverse side effects of second generation antipsychotic drugs in 2005, as a research fellow at Pfizer, Inc., and was the first to elucidate that adverse metabolic (insulin resistance) side effects induced by SGAs can occur following a single, clinically relevant dose. Since coming to UNE, Houseknecht has built a collaborative, interprofessional team to address the impact of these side effects at the molecular/pharmacological, patient, and population levels.

In 2012, Houseknecht has published groundbreaking work (Bone 2012 50:490-498) in collaboration with world-renowned bone researcher Cliff Rosen (Maine Medical Center Research Institute) that shows treatment with risperidone, the most commonly prescribed SGA, leads to severe bone loss in adolescent mice. These data are particularly important as the adverse effects of SGAs on bone biology are just emerging in the clinical literature, and as these drugs are highly-prescribed “off label” to vulnerable patient populations during periods of peak bone development (children and adolescents) and bone loss (post-menopausal women, aging men). By identifying the pharmacological mechanism(s) underlying the adverse side effects, Houseknecht’s research can inform drug discovery efforts to develop newer, safer therapies, and identify pharmacological co-therapies to ameliorate patient side effects in the meantime.

In addition to addressing the impact of SGAs on the health of patients, Houseknecht and her UNE colleague Leslie Ochs, Pharm.D., Ph.D., are addressing the public health implications of off-label prescribing of atypical antipsychotic medications to vulnerable populations in New England.

1. Evaluate prescribing trends for “off label” use of SGAs in children and the elderly in Maine and the New England area
2. Test the hypothesis that prescribing rates may be different for children in rural vs. urban settings and for children with access to private insurance vs. Medicaid/MaineCare
3. Evaluate prescribing patterns in the Veterans Administration hospital population and examine possible relationships of SGA prescribing with indications of adverse metabolic and endocrine side effects.

In addition, Ochs is seeking to determine trends in the type of health care provider prescribing these medications and patient access to mental health services. The ultimate goal of this project is to generate data with important public health implications in order to inform public policy, prescribing recommendations, and inform/enhance patient counseling and screening for markers of metabolic and endocrine side effects of these medications.
Add Verb has years of anecdotal feedback testifying to the impact on individuals, but until now little data has existed to support that the plays, nestled in the midst of a community education/action program, have impacted likelihood of bystander action.

Theater and Social Transformation: Two Longitudinal Studies
Cathy Plourde | Add Verb Productions

A research team is investigating the impact of two of Add Verb’s touring programs, “The Thin Line,” and “You the Man,” two long-standing programs meant to help communities better address eating disorders and dating violence/sexual assault, respectively. Add Verb has years of anecdotal feedback testifying to the impact on individuals, but until now little data has existed to support that the plays, nestled in the midst of a community education/action program, have impacted likelihood of bystander action.

Researchers Nancy Shore, Ph.D., M.S.W., M.P.H., associate professor in the School of Social Work, Peter Herrick, MSEd, adjunct research professor in the College of Graduate Studies and Cathy Plourde, M.A. director, Add Verb Productions, adjunct assistant professor of integrated health sciences, have been working with School of Social Work Students Carin Stromgren and Elisa Orme, who have participated in research being conducted in seven Maine high schools, notably through running groups, analyzing focus group data and preparing survey data for statistical analysis. These two studies are funded to follow three successive 9th grade classes, and it is hoped that Add Verb will secure funding for two additional years so that each cohort can be followed for at least three years.

There is little research in either the United States or in the world about theater’s measurable impact over time; most available data falls under the “feel good” category or as responses immediately following a show, which may spike a short-term change but has little connection to long-term attitude or behavioral shifts. Initial findings were presented at the International Conference Against Violence, Abuse and Trauma, Maine Public Health Association, and the American Public Health Association in Fall 2012.
Deh Kidz in Jamaica and International Social Work Practice
Leslie Yaffa | Social Work

In working with the UNE Global Initiatives Office and after much course development “International Social Work Practice in the Caribbean” is piloting a full course in Fall 2012 with hopes of adding an international component for Summer 2013. As part of the course, online social work students will travel to Jamaica to further improve their discipline through global awareness. The idea for this course was developed from years of research done by Leslie Yaffa MSW,Ed.D., lecturer and full-time faculty member in the department of social work, both as a student and an academic while working internationally in Jamaica.

With many years of unique international social service experience courtesy of Jamaica, and to accomplish what is needed for Dr. Yaffa’s research, the development of Deh Kidz in Jamaica: Youth Mentoring Program Outcomes Evaluation Questionnaire will be a tool to look at outcomes of mentoring. This researcher recognizes that children and adolescents in Jamaica need much more than food and clothing. The reality for children and adolescents explains a need for greater time being spent investing in skills, leadership, research, and evaluative tools to aid in emergent positive relationships and programming. By developing a well-researched mentoring tool, children and adolescents might gain greater access to caring, supportive mentors who invest in their lives.

To bring further awareness to Jamaica’s children and adolescents The Walk Good Foundation (www.thewalkgoodfoundation.org) was created. The goal of the foundation is to create a bridge from theory (research) to practice and at the same time construct alternative programming. The relationship between research and practice ignited Dr. Yaffa’s passion, not only to create tangible research for programming with children and adolescents, but also to create a vision of looking at research as an instrument to putting programming in practice in Jamaica and Caribbean wide. In building such a foundation, it is her hope that it not only promotes research, but also invites the community to have full involvement in the practice of child and adolescent programming.

Dr. Yaffa’s passion is to not only create tangible research for programming with children and adolescents, but also to create a vision of looking at research as an instrument to put programming in practice in Jamaica and Caribbean wide.
Wildlife Forensics at Thornton Academy
Daniel Brazeau | Pharmacy

The University of New England’s Genomic, Analytic and Proteomics Core as part of the National Science Foundation’s Geneticist-Educator Network Alliances (GENA) program successfully ran a two-day exercise in wildlife DNA forensics for 43 students at the Thornton Academy in Saco, Maine in March 2012. The exercise brought state-of-the-art genomics instrumentation into the classroom to introduce genetic technologies and concepts to the students. The students were assigned with the task of determining the gender of white-tail deer forensic DNA samples. In most states hunters must have special permits (doe permits) to hunt female deer. Wildlife officers often collect samples from hunters or processors which they suspect may come from illegally hunted does. Genetic tools now exist to easily determine the sex of even minute samples, including blood samples. Students gained hands-on experience with DNA techniques including the polymerase chain reaction (PCR), gel electrophoresis and data analysis. Discussions included what is DNA, how it is collected, and what DNA can tell scientists about individuals and populations. We hope to offer this program to other high schools next year.

UNE’s new Genomics and Proteomics Multiuser Facility
Daniel Brazeau | Pharmacy

The UNE Genomics, Analytics and Proteomics Core (GAPC) provides academic and private researchers with state-of-the-art scientific training and technical support in modern genomics, analytics and proteomics, including a commitment to developing and implementing cutting-edge methodologies and instrumentation. The services provided at this core facility will improve research opportunities and capabilities for the state of Maine and New England in biomedical, environmental, pharmaceutical, biotechnology and other life sciences. GAPC also provides innovative educational programs and activities centralized toward mass spectrometry (MS), genomics and proteomics technologies. Currently, GAPC has 13 projects ongoing involving UNE researchers, students and New England industrial scientists. Areas of study range from assessing the secondary effects of antipsychotic medications used in the treatment of mental illnesses on bone remodeling to evaluating the utility of seals as sentinel species to assess the buildup of antibiotic resistance in the microbial community of natural marine environments.

Genetic tools now exist to easily determine the sex of even minute samples, including blood samples.
These students are fellows of CAS’ Summer Undergraduate Research Experience (SURE), a program designed to provide new research opportunities for students, supplement the students’ education, and encourage faculty research.

Summer Undergraduate Research Experience (SURE)
Charles Tilburg | Associate Dean, College of Arts and Sciences

What does the average college student do during his or her summer? In the summer of 2012, 29 College of Arts and Science (CAS) undergraduate students conducted cutting-edge research using the latest techniques with UNE faculty and researchers on diverse projects ranging from the creation of a play that examines prescription drug abuse in Maine, to the study of habitat use of a wetland turtle, to the investigation of the oviducal gland in the little skate. These students are fellows of CAS’ Summer Undergraduate Research Experience (SURE), a program designed to provide new research opportunities for students, supplement the students’ education, and encourage faculty research. All of the SURE fellows completed a competitive application process that required them to prepare research proposals that were evaluated by a committee of CAS faculty.

The program is sponsored by the Maine Space Grant Consortium, the Marine Science Center at UNE, the Pond Foundation, UNE’s Office of Research and Scholarship, and UNE’s College of Arts and Sciences. The fellowships provide students with a stipend salary, research funds to buy needed equipment or supplies, and the opportunity to conduct research with some of UNE’s best faculty.

The SURE team which consists of Catie Cardner, Denise Gendron, and Charles Tilburg, ensured that the students also enjoyed some down time over the summer by organizing a tie-dye event, a kick-ball game, barbeques, and a highly anticipated trip to see the Sea Dogs play in Portland.

After the summer, each student prepared a written report and presented their research to their peers, their faculty, and the rest of the UNE community at a research symposium on September 8th, 2012.
The UNECOM Dean’s Office has sponsored 160 research fellowships since 1986, ranging from the basic sciences and qualitative research, to experiential scholarship.

Research Fellows and OMT Outcomes Study Begins
Amy Davidoff | Pharmacology
Marilyn Gugliucci | Geriatrics
Ling Cao | Microbiology

This year we had 32 student poster presentations and 9 student oral presentations to celebrate COM Research Week. The University of New England’s College of Osteopathic Medicine (UNECOM) has fostered and encouraged a culture of research for decades, and now enjoys robust research in the biomedical sciences (with a strong focus in the neurosciences), aging, and assessment (e.g., medical education and healthcare delivery). The UNECOM Dean’s Office has sponsored 160 research fellowships since 1986, ranging from the basic sciences and qualitative research, to experiential scholarship.

Extramurally funded fellowships
There has been a growing interest in gaining additional training in research by applying for extramurally funded internships/fellowships, either for a summer or a year. Since 2003, 106 UNECOM students mentored by faculty in the UNECOM Department of Geriatric Medicine have been awarded various fellowships in the field of aging and other specialties. Eighteen of these students have been awarded the very competitive and prestigious American Federation for Aging Research (AFAR) Medical Student Training in Aging Research (MSTAR) Fellowship. During the summer of 2012, Shayna Shackford (MS III) and Heather Hassett (MS II) were both awarded this AFAR fellowship and conducted their research at Johns Hopkins. Past UNECOM AFAR Fellows have conducted research at institutions such as Harvard, UC San Diego, Johns Hopkins, and University of Pittsburgh; all are top-ranked geriatrics research programs. The AFAR Fellows have accrued 24 conference presentations and a number of publications. Additionally, two UNECOM students were awarded a prestigious NIH Research Training Fellowship, Jeremy Force, D.O. (2011) and Stephanie Bissonnette MS IV (2012); and Puthery Va, D.O. (2012) was awarded a fellowship in 2010-2011 by the Fogarty International Clinical Research program, to work on an NIH-funded cancer epidemiology research at the Shanghai Cancer Institute. UNECOM is gaining the reputation of having dedicated, passionate and outstanding applicants.

Osteopathic Manipulative Treatment and Heart Failure Patients
Several current College of Osteopathic Medicine students have taken the initiative to craft and implement an osteopathic manipulative therapy-focused research project. Matthew Sharbaugh, Jacqueline O’Toole, Benjamin Levy and Sarah Smithson (OMS IV) designed a project during their third-year rotation at Eastern Connecticut Health Network (ECHN). The purpose of their study is to improve the standard of care for hospitalized patients with heart failure as their admitting diagnosis. The hypothesis to be tested is that osteopathic manipulation as an adjunct therapy to the standard of care will improve patient outcomes as measured by length of stay, readmission rate, and quality of life compared to patient outcomes in those who receive the standard of care only. The study gained IRB approval in February 2012 and enrolled patients over the course of five months at ECHN. The preliminary data are being analyzed by Woon Yuen Koh, Ph.D. from the UNE Department of Mathematics. With the student researchers ascending to fourth-year, the student investigators have recruited current third-year students to continue this important student-run program at ECHN.
This body of work evolved out of small painted studies created when my father was diagnosed with a terminal brain tumor in 2004. Immediately following his diagnosis I took to the studio to relieve the pain and frustration through the physical act of painting. Using tempera paints, a fluid quick medium, I painted small interpretations and visions of the tumor as I envisioned it reaching and expanding in his brain. With each painting my anxiety decreased and was assuaged, even if momentarily, by the process. For him each passing day was painful, brought new physical limitations, and opened the vulnerability of a lifetimes’ worth of worry and anger. He struggled with his personal possessions, his disparate relationships, his sadness, and his regrets. He cried, yelled, concealed fear, attempted stoicism, forced smiles, and yet still marched on, determined. I painted and witnessed his demise.

Although it has been eight years since he passed away, the work still calls for creation. I have since become entranced by the intersection of grief, pain, and the painting process. I’m drawn into the middle ground between curiosity and loathing. My repetitive visualizations of how I “see” cancer pulls me to the paint and at the same time I am angered, and withdraw, in my knowing of how destructive it is. I wonder if I try to see beauty in what angers me will my perspective shift, or will the anger abate.

I wonder how one’s personal visions, beliefs, or relationship with these visions affects the outcome when cancer invades. What if we saw this invader differently? Can we paint a different picture and if we did what would that do? Would it help with mental suffering? Would it ease the pain? Lessen the pain? I am not sure. I know that my father’s tumor picked a beautiful brain to inhabit. At least that is how I see it now. If he had seen beauty would it have made a difference?

“If I see beauty in pain does it hurt less?”

Acrylic on Canvas, Series # 1-6
February 2012