

Nanospheres Deliver Insulin Through the Skin

McCarthy Takes 'Best Paper' Award for Breakthrough Technology

Insulin has been administered transdermally for the first time in lab conditions, using hollow and biodegradable nanospheres developed at UMass Lowell—an advance that could lead to improved treatment of diabetes. The nanospheres were also successful in delivering insulin orally. Both reduced blood glucose levels in animal studies.



▲ Prof. Stephen McCarthy with the Best Paper Award from the Society of Plastics Engineers, Medical Plastics Division

Prof. Stephen McCarthy, director of the Biodegradable Polymer Research Center, developed the new technology with research scientist Dr. Balint Koroskenyi. Prof. Robert Nicolosi, director of the Center for Health and Disease Research, directed the animal studies for drug delivery.

Diabetes is one of the most common and widespread diseases, affecting nearly six percent of the world's population. Complications make it the fourth most important cause of mortality and the main cause of permanent blindness. In the United States alone, 16 million people have diabetes. Most patients require three to four injections of insulin a day, leading to patient compliance problems and possible side effects. Taking insulin orally would be preferable, but developing a successful method is tremendously challenging because of conditions in the digestive tract. The ideal method would be transdermal insulin delivery.

McCarthy's presentation at the Medical Plastics Division of the Society of Plastics Engineers' annual technical conference won the Best Paper

Award. The paper will be published in conference proceedings.

The nanospheres are made with a core and shell of contrasting amphiphilic and amphiphobic (water-loving and water-hating) polymers. The shells are crosslinked for strength and the cores degraded, then the nanospheres are infused with insulin.

"The nanospheres passed through the skin simply by rubbing on the preparation," says McCarthy. "In the oral version, the nanospheres composed of a carbohydrate shell were apparently able to protect the encapsulated insulin (which is a protein) from acids and enzymes without any additional coating. We think the drug is particularly stable when encapsulated; we actually freeze-dried the nanospheres with insulin and rehydrated them after a month, and the formulation was equally effective."

McCarthy and Nicolosi are exploring further applications and commercialization of the new approach, with the hope of significantly improving diabetes treatment.

—SS

Freshman Reading Balloons into Film, Theatre, Essays, Coffee-House Talks

Common Text Program to "Integrate the Downtown"

The English Department's new Common Text Program, which began with the simple decision to require the reading of the same non-fiction text in every first-semester College Writing class, has been expanded to embrace theatre, film, essay-writing, on-campus appearances by playwrights and off-campus coffee-house discussion groups.

"It's incredibly exciting to watch this unfold," says English Prof. Paula Haines, a member of the original Common Text Committee. "The unity of these things seems almost limitless—it just doesn't stop."

Following the selection of the common text—Barbara Ehrenreich's "Nickel and Dimed: On (Not) Getting By in America," which was adopted following a vote of the department faculty and was required of first-semester

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UML Field Hockey: Simply The Best

Only one team finishes a season with a win, a national champion.

For the first time in its history the UMass Lowell field hockey team is that team.

The River Hawks won the Division II National Championship with a double overtime, 2-1 victory, over three-time defending champion Bloomsburg University of Pennsylvania.

The NCAA National Championship is the sixth in the university's history, but the first ever for a women's athletic program and the first women's title in the University

system in 19 years.

"This is unbelievable," head coach Shannon Hlebichuk said. "At the beginning of August, I didn't think in my wildest dreams we'd be here. But after seeing the leadership the seniors provided we knew it was a possibility."

Possibility became a reality 92 minutes and one second after the final battle began. At that moment senior Joanna DaLuze's shot rifled from the circle eluded the Bloomsburg goalkeeper and settled into the right side of the net and the celebration began.

"I wasn't concentrating on scoring," DaLuze said. "I was looking at getting a corner, or shooting for the pads and getting a deflection."

The DaLuze goal was unassisted. The Senior midfielder stole the ball from a Bloomsburg player 30 yards from the goal, maneuvered past two opponents to the circle before releasing the game-ending shot.

The River Hawk heroes were many.

Junior Goalie Nicole Staiti made 14 saves in the game including a diving stop on a breakaway in the second overtime period.

Junior Forward Sara Hohenberger gave UMass Lowell a lead eight minutes into the contest with her team-leading 25th goal of the season after receiving a pass from Courtney Hill. Hohenberger set the school record for goals and points (63) in a single season.

The National Championship put an exclamation point on a spectacular season. The River Hawks finished the year 20-3. The 2005 team set a school record by winning 16 consecutive games at one point, and finished the year winning 18 of their last 19.

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IN OTHER NEWS

The Ombuds Solve Problems— Alan Lincoln says that after five years as problem solver, the biggest question is always, "What's an ombuds?"

Good Morning, Bruce Jackson—ABC's Good morning America interviews Asst. Prof. Bruce Jackson about his genealogy research on African-Americans.

Frightening Laboratory Work—Wang School students create scary Halloween creatures in Doug Prime's Design Laboratory.

To see these and other stories, go to UMass Lowell's new online eNews Web site at www.uml.edu/enews

Three New Officers Join UMass Lowell Police Department

Provost John Wooding Administers Oath in Cumnock Hall Ceremony

Provost John Wooding administered the oath of office on Wednesday, Nov. 9, to three new members of the UMass Lowell Police Department—Walter A. Nadeau, Matthew E. Dupont and Kenneth W. Spooner.

Police Chief Brian C. Pray delivered keynote remarks at the ceremony held in the Cumnock Hall auditorium. Also participating in the event were Vice Chancellor Diana Prideaux-Brune and Police Capt. Linda Thomas.

Officer Nadeau is a graduate of the Massachusetts Special State Police Academy in New Braintree. Prior to

joining the University department, he was a dispatcher and auxiliary police officer with the town of Billerica.

Officer Dupont, who has a bachelor's degree in Criminal Justice from Salem State College, formerly was a member of the Wentworth Institute and Simmons College police departments, and was a dispatcher with the Revere Police Department. He also is a graduate of the MBTA Transit Police Academy in Quincy.

Officer Spooner, who is pursuing an associate's degree in Criminal Justice at Massachusetts Bay Community College, has served as a police officer at Simmons and Bentley colleges, and was a deputy sheriff in the Rockingham County (N.H.) Sheriff's Department. He also is a graduate of the Massachusetts Special State Police Academy in New Braintree.



▲ Police Chief Brian C. Pray, second from left, welcomes three new officers to the ranks of the University Police Department. The three are, from left, Officers Walter A. Nadeau, Matthew E. Dupont and Kenneth W. Spooner.

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UML Field Hockey: Simply The Best

En route to the title, UML knocked off semifinal opponent Stonehill College, 2-1, to avenge a controversial loss to the Skyhawks in the Northeast-10 Tournament Championship game and end their opponents 15-game winning streak.

Five members of the field hockey team were named to the Field Hockey Coaches Association Division II All American team. DaLuze, Hill, Hohenberger and

Josselyn Mroz were named to the first. Kim Villare earned a spot on the second team.

This was the third consecutive trip to the NCAA National Tournament for the UMass Lowell field hockey team, and the second time the team reached the championship game, but the first time a season ended with a win.

Third time is a charm.
—BE



Nanomanufacturing Enters Collaboration With MFIC

Nanomaterials Research Will Advance with Microfluidizer Equipment

U Mass Lowell has signed a research and collaboration agreement with MFIC Corporation, headquartered in Newton, to develop new applications, processes and products in the area of nanomaterials using MFIC's materials processing and chemical reactor equipment.

Microfluidics, the operating subsidiary of MFIC, is providing a Microfluidizer® Processor and the new-generation Microfluidizer® Multiple Stream Mixer/Reactor (MMR) lab system. The MMR is one of only two advanced, fully equipped systems in existence, with a current value of \$350,000. With the processor valued at \$100,000, plus the provision of technical and financial support to projects, the MFIC contribution is valued at more than \$545,000.

Research will proceed under the direction of the Nanomanufacturing Center of Excellence (NCOE) at UML.

"We expect the Microfluidics equipment will become key manufacturing platforms for high throughput nanomanufacturing," says Prof. Julie Chen, director of the NCOE.

"Researchers on campus and across industry sectors are interested in exploring nanoparticle production that is scalable from experimental quantities to production amounts, with consistency and stability."

Irwin Gruverman, CEO and Chairman of MFIC, said, "We welcome this opportunity to collaborate with the substantial formulation

and engineering strengths at UML. Our Microfluidizer® Processor equipment and the technology embodied therein is well proven in thousands of instances and hundreds of applications, many in nanomaterials-based uses. The MMR chemical reactors, while relatively new, have demonstrated their ability to perform continuous chemical reactions in varied applications which yield, with unparalleled precision, controlled size, purity, product uniformity and pharmacokinetic properties. These innovative systems can enable many UML projects to produce nanomaterials for, among others, pharmaceutical and nutraceutical formulations. We intend to take an active role in the selection and validation of specific projects as members of the Steering Committee."

MFIC and UMass Lowell have ongoing research collaborations. Faculty researchers have been using the Microfluidizer materials processing equipment for significant recent research. Prof. Robert Nicolosi, director of the Center for Health and Disease Research, is developing compounds for medical application; Prof. Carl Lawton, director of the Massachusetts Bioprocess Development Center, assists biotechnology companies in their process development.

Under the agreement, UMass Lowell and MFIC will work together to explore and develop applications and new products—using this breakthrough technology—that can move rapidly to commercialization. The collaboration will benefit both parties through the arrangements for intellectual property, patent rights and licensing royalties.

Montrie Looks Back at Workers Who Fought Back

Session Enriches Common Text Program

The remnants of Hurricane Wilma whipping outside seemed an appropriate backdrop for Asst. Prof. Chad Montrie's session on "Fighting Back at Work." He said he offered the interactive discussion in order to "establish a bridge" between two films in the Common Text Film Series, "Roger and Me" and "9 to 5." He also connected workers' struggles to the book all freshmen are reading as part of the Common Text Program, Barbara Ehrenreich's "Nickel and Dimed: On (Not) Getting By in America."

In the 1970s, said Montrie, 97 percent of clerical workers were women, and "office work" was the occupation of a third of all women in the paid labor force. Montrie linked women's movement into the workforce in great numbers—a backdrop of the soon-to-be-

screened "9 to 5"—to the de-industrialization that occurred in the early 1980s in places like Flint, Mich.—the locale of "Roger and Me." When men were laid off from well-paid manufacturing jobs, their wives went to work in to make ends meet, said Montrie. "9 to 5" was released in 1980. The movie spurred the creation of a bargaining unit in the Service Employees International Union, District 925.



▲ Asst. Prof. Chad Montrie of the History Department led a discussion about workers' resistance efforts to link two films in the Common Text Film Series, "Roger and Me," and "9 to 5." Assoc. Prof. Marlowe Miller, left, and Paula Haines of English encouraged students to attend. Haines coordinates the Common Text program with the College Writing course.

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Freshman Reading Balloons into Film, Theatre, Essays, Coffee-House Talks

ter students beginning this fall—a film series was assembled, starting in early September, with weekly, Thursday-night movies in O’Leary Hall chosen to reflect the workaday theme of Ehrenreich’s best-selling book. The Oscar-winning “Norma Rae,” with Sally Field as a gritty southern mill-worker, was among the early offerings; “Roger and Me”, Michael Moore’s 1989 satirical documentary of life in Flint, Mich. after the GM plant closed down, drew a large crowd in mid-October; December screenings will include “The Corporation,” “Fast, Cheap and Out of Control” and “Office Space.”

“Students packed the room for ‘Roger and Me,’” says Haines. “And a lot of faculty were there, too. Once the lights went on and people started talking to each other, and the kids realized that the folks next to them were teachers—well, that was really fun to see. The faculty and students together—a chance to show that those relationships don’t have to end at the close of a 50-minute period. I’ll tell you, it was very moving.”

Meanwhile, the faculty were assigning essays on related topics: work, class, consumerism, anything related to the themes of Ehrenreich’s book. And not long ago, the Department announced an essay contest—



▲ The Common Text Committee of the UMass Lowell English Department: from left, Paula Haines, Jeannie Judge, Marlowe Miller and Department Chair Melissa Pennell.

with awards up to \$100—also to be an offshoot of “Nickel and Dimed,” open to anyone enrolled in College Writing for the fall semester.

The harmony doesn’t end there. On Feb. 5, a new play by Lynn Nottage, “Intimate Apparel,” will open at the Merrimack Repertory Theatre in Lowell. The product of an evolving partnership between the MRT and UMass Lowell, the play is the depiction of the life of an early 20th-century black seamstress and her struggle for self-respect. Like Ehrenreich’s book, it was chosen following a vote of the English Department and will be read—again, as a common text—by all students of College Writing II.

But the immersion goes deeper still. Sometime during the course of second semester, as a result of funding proposed in a grant, some or all of the play’s participants—actors, set directors, director, possibly even the playwright—will visit the campus for a series of “talk backs” with students. One goal of all this, according to a statement released by the English Department, is to “tie the general-education goals of critical thinking and communications skills to a live, community-based cultural experience.”

And finally, in an effort, says Haines, “to embrace the fact that we’re an urban campus, that Lowell is a college town,” the Common Text Program will be hosting a series of after-theatre discussions at venues in downtown Lowell. “The idea is to integrate the downtown into the whole experience, maybe to hold the talks at one of the coffee houses in town, or even the Textile Museum...”

“The students, I’m confident, would be open to that. Throughout all of this—the films, the theatre, the reading, all the ways we’re connecting with this project—they’ve just blown me away with their openness to things.”

—GD

Senate Stimulus Bill Provides \$35 Million for Integrated Research Building

Senator Panagiotakos Spearheads Effort

The Massachusetts Senate recently passed an economic stimulus bill providing \$35 million—and the authority to borrow another \$35 million—for an advanced manufacturing research building on campus.

“Research at the University of Massachusetts is a key driver of economic development in the state,” said Sen. Steven C. Panagiotakos of Lowell at a State House unveiling of the legislation. The bill provides close to \$500 million statewide to jump-start the economy, a significant percentage of which is directed to the UMass system. Panagiotakos was a lead author of the bill.



▲ Sen. Steven C. Panagiotakos

If passed, the legislation would provide the Lowell campus with an immediate infusion of \$21 million for design and construction of new facilities to promote nanomanufacturing and biomanufacturing and related areas, equipment and operating costs. The bill also authorizes the Commonwealth to borrow an additional \$14 million for the same purposes and permits the UMass Lowell to borrow another \$35 million. University plans call for an \$80 million facility, which would entail raising an additional \$10 million from other sources.

At a recent talk on campus, Chancellor William T. Hogan thanked Panagiotakos and the Lowell House delegation for supporting funds for the building (see related story).

It would be an “integrated research building, not a traditional classroom building,” said Hogan. The faculty has the talent, he said, which could be turned toward “full-scale productive activity.” The funding would allow the campus to build the modern facilities needed to achieve this and to meet the training needs of the innovation economy.

In nanomanufacturing the funds will be used to expand the research centers currently in operation—the federally-funded Center for High-Rate Nanomanufacturing and the state supported Center of Excellence in Nanomanufacturing—overseen by Profs. Carol Barry, Julie Chen and Joey Mead. It also would allow the University to consolidate its nano-efforts, which currently are dispersed among several departments, and to provide a home for highly technical equipment and laboratories.

In biomanufacturing, the building would make possible the expansion of the Massachusetts Bioprocessing Center, run by Assoc. Prof. Carl Lawton. The legislation authorizes another \$10 million in bonds for a large-scale bioprocessing facility near UMass Dartmouth. The two facilities would work together to service the biotechnology industry’s need for assistance in producing drugs needed for FDA trials. A new drug must gain FDA approval before it can be mass produced.

The Senate stimulus bill is currently before a joint House-Senate Conference Committee to iron out differences in the two versions of the legislation. It would then go before Gov. Mitt Romney.

Chancellor: Economy Needs Building That Will Go Beyond the Classroom

Lauds Area Legislators and Faculty

At recent faculty-staff gatherings on UML North and South, Chancellor William T. Hogan offered an upbeat assessment of where things are today at UMass Lowell, commended legislators for pursuing state funding for “an integrated research facility” that will drive the area’s innovation economy, and lauded the faculty for the talent they will bring to that facility.

Hogan said the quality of the student body is improving. With a jump in the number of applicants, the admission rate has gone from 66 percent to 61 percent of those apply-

ing. This means a larger percentage of incoming freshman have GPAs above 3.0. He said the campus is undertaking an effort to keep those talented freshman in five- and six-year programs, in order to address a demographic shortfall in the number of graduate students applying.

On state support for UMass Lowell, Hogan said, “I cannot say enough good things about the local delegation.” He said Sen. Steven C. Panagiotakos and Lowell Reps. David Nangle, Kevin Murphy and Thomas Golden were working hard to pass a number of items that would help the institution, including a new building.

“Why a building?” he asked. “As a public institution, we have a

commitment to go out beyond the classroom and laboratories.” He said an \$80 million “integrated research facility”—\$35 million from the state, \$35 million borrowed, and \$10 million from the federal government—would serve “probably the only viable strategy in New England—to continually innovate to generate new products and new services.” He said the faculty “have gone way down that path.” He mentioned medical imaging, drug delivery, nanotechnology and biotechnology manufacturing and green chemistry.

Hogan pointed out that the number of faculty has climbed back to near 2002 levels, after losing a large percentage to early retirements, and that the faculty is talented. “We need

to take that talent and turn it into full-scale productive activity,” he said.

Hogan also said that garage construction will soon be underway and that he expects the property transfers involved in obtaining what was formerly the St. Joseph’s Hospital building are likely to be finalized by the end of the year.

On UML South, Provost John Wooding said the Campus Transformation Project, expected to yield an action plan designed to guide UMass Lowell into the next decade, is well underway. Ten teams have been formed to help implement the plan. The official team kickoff is scheduled for Nov. 21.

Olsen Lobby Gets a New Look

Generosity of Donors Makes Refurbished Lobby Possible

Faculty, staff, students and members of the Board of Advisors of the Division of Science gathered recently at a ribbon cutting ceremony to celebrate the completion of the Olsen Hall lobby renovation.

In addition to fresh paint and new chairs, one wall of the lobby is adorned with a huge aluminum grid, components of which sweep across the ceiling toward the elevators.

"We wanted to freshen up the lobby, make it more inviting and more usable for our students," says Bob Tamarin, dean of the Division of Sciences. "The sculpture is intended to draw people into the building."

The ceremonial ribbon was cut by Board member Carole Ward, '62; outgoing Chair of the Board Michael J. Morin, '76 and Tamarin, who credited Ward for her

dedication to the project.

Other project donors included Mary Richardson Bedell, '81; Russell Bedell, '81; Sean L. Gaffney '98; Nancy Kleniewski, former dean of the Division of Fine Arts, Humanities and Social Sciences; L. Donald LaTorre '59; Diane Lamprey O'Connor, '82, and Thomas C. O'Connor, '77 and '80. Corporate contributors to the project included Duke Energy Foundation, Mobile Solutions International, Inc. and Raytheon Corporation.



▲ Ceremonial ribbon cutters at the dedication of the Olsen Hall lobby renovation were, from left, Board of Advisors member Carole Ward, '62; Dean of the Division of Sciences Bob Tamarin, and outgoing Board of Advisors Chair Michael J. Morin, '76.

Gift Jump Starts Allen House Renovation

Requests for bids will be sent out shortly for a planned million-dollar renovation of Allen House on UML South, a project that will include a new art gallery funded by a gift from two alumni. Francis and Mary Jo Spinola recently donated \$125,000 over four years to create the Spinola University Gallery. The new space will provide the University with a first-class exhibition and reception facility and will host art shows by students, faculty and alumni.

The Allen House renovation will also include a new faculty lounge and offices for the dean of the College of Arts and Sciences-Humanities. The Office of University Advancement continues to solicit donors to support these elements of the project.

In addition to supporting the art gallery, the Spinolas also donated \$125,000 over four years to create the Francis M. and Mary Jo Spinola Endowed Scholarship Fund, which will provide scholarships for undergraduates, with preference given to students from the Merrimack Valley who have been involved in the Big Brothers/Big Sisters program. With a matching grant from the state's Public Higher Education Endowment Incentive Program, the fund will total \$187,000.

The Spinolas graduated in 1966, Frank from Lowell Tech and Mary Jo from Lowell State. In 1999, Frank Spinola retired as CEO of Indspec Chemical Corporation, a company he helped found in 1988. He received the 2004 Distinguished Alumni Award, which recognizes professional and public service contributions by

University alumni. He serves on the board of Big Brothers and Sisters of Greater Pittsburgh and of Family Resources of Allegheny County, an organization that works to prevent child abuse. He also serves on the council of the McGowan Institute, a research organization developing regenerative medicines and artificial organs.



▲ Frank and Mary Jo Spinola (center) recently donated \$125,000 to create the Spinola University Gallery in the soon-to-be renovated Allen House. He is pictured here with Chancellor William T. Hogan (left) and Provost John Wooding at Commencement 2004, where he received the Distinguished Alumni Award.

CITA Sustainability Conference Considers the Workplace

Labor Leaders and Activists Guide the Discussion

National voices in labor opened and closed the annual Conference on Sustainability, sponsored by the Committee on Industrial Theory and Assessment (CITA). The UMass Lowell Labor Extension Program joined in sponsoring and organizing this year's conference, Sustainable Jobs/Sustainable Workplaces.

Larry Cohen, newly elected national president of the Communications Workers of America (CWA) and a founder of Jobs With Justice, gave the opening keynote speech.

"We can't have democracy in society if there is no democracy in the workplace," said Cohen. "It's not about our next contract; it's about how we unite ourselves, about what kind of collective voice we are building." He advocated a "broad tent" of inclusion for the labor movement and pointed out the extensive powers held by corporate leaders, who have unlimited access to legal services, enjoy salaries hundreds of times greater than workers, and can use corporate structures to avoid regulation and constraint.

During the body of the conference, worker activists and community leaders opened each topic with their perspectives. Faculty members responded with their research insights, followed by small group or general discussion.

"We found a surprising level of commonality across all types of work—even professional, even in higher education," says Michael Prokosch, coordinator, Labor Extension Program. "As the large posters from each small group were posted around the room, we could see that, even at universities, people are experiencing pressures from automation, reduced resources, part time work and increasing demands."

The conference closed with a presentation by Jane Slaughter, editor of *The Troublemakers' Handbook* and long-time contributor to *Labor Notes*. She offered practical suggestions for taking action to improve conditions on the shop floor.

Moderators for the conference were Charley Richardson, director, Michael Prokosch and Susan Winning, coordinators, all of the Labor Extension Program; and Lenore Azaroff, project coordinator, Work Environment Department.

More information can be found at CITA ([link](#)) and Labor Extension ([link](#)).



▲ Charley Richardson



▲ Jane Slaughter

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