



Signs of Spring

Last week marked the official beginning of spring despite cooler temperatures. As March comes to a close, many flowers, like these pansies, could be seen blooming all across campus. Faculty and staff who remain on campus this week will enjoy a more beautiful campus as numerous azaleas come into full bloom.

Auburn engineering research leads to medical uses for contact lenses

The vision-impaired have long appreciated the liberation that contact lenses provide from the annoyances associated with eyeglasses. However, this tiny vision correction marvel may soon also provide the wearer with relief from allergies and other eye diseases and irritations.

Researchers in the Department of Chemical Engineering of Auburn's Samuel Ginn College of Engineering have developed a technology that has proven in laboratory testing to enable the contact lens to hold medication in concentrated, renewable doses and release the drug in a controlled, timed and targeted manner. The result may be a significant improvement over the use of drops and ointments, says the lead investigator, Assistant Professor Mark Byrne.

Since its inception, the hydrophilic (soft) contact lens has been considered to have potential as an effective medication delivery medium, Byrne said. The largest obstacle has been its limited capacity to hold and release medication in an effective and controlled manner — which has prevented any viable product showing up in the contact lens market.

"We have overcome those problems by improving the structural properties within the polymer matrix of the gel that comprises the lens," Byrne said.

"A contact lens is mostly water," Byrne added. "To clean and rehydrate it, one needs only to soak it in a saline-based cleaning solution. When the lens is made of the right materials, this same process enables it to be loaded with concentrated amounts of medication. Because it is easily placed directly on the eye, the contact lens can thus become a very effective medium for drug delivery."

Byrne said the key lies in matching engineering technology with the science of biology. Although the AU technology uses materials no different from those found in commercially available contact lenses, Byrne says they have changed how

those materials are incorporated into the lens, but not in a way that requires changes in the lens manufacturing process.

"This technology has a fundamental link to biology," Byrne said. "We've been able to match chemistry with the biology that comprises binding properties and other biological mechanisms in the human body. The result is a biometric polymer that binds with the desired medications and provides a controlled, timed release of these medications. We have not changed the material to a large extent. We have mostly changed the synthesis of the material."

Byrne noted that 90 percent of the current eye treatment drugs available are either drops or ointments. Neither is as effective in targeting as is desired, he added.

"Typically, less than 7 percent of the applied drug is absorbed by the eye tissue," Byrne said, citing a problem with ointments and drops. "Because of that poor absorption rate, the drug has to be applied in very high, multiple dosages to be effective."

Using the contact lens as the delivery mechanism, he says, enables the drug to be administered at lower doses and with greater absorption by the affected tissue, and with less impact on other untargeted tissues.

Byrne began his research focused on using the contact lens as a delivery mechanism for antihistamine.

"We found quickly — based on analysis of histamine action in the body — that the contact lens could be made effective for antihistamine delivery," Byrne said.

Byrne and two student researchers — doctoral candidate Siddharth Venkatesh and senior chemical engineering student Parker Sizemore — have expanded their research to examine the use of contact lenses to deliver anti-inflammatory drugs, antibiotics and other medications.

Auburn has filed for patent protection on the new technology.

Scottish society inducts Szechi

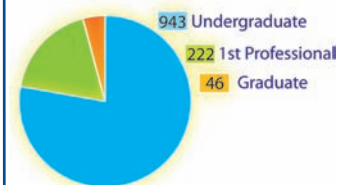
Daniel Szechi of the AU College of Liberal Arts was recently elected a Corresponding Fellow of the Royal Society of Edinburgh.

As a peer-elected member of the Royal Society, Szechi, a professor in the History Department, joins a diverse body of influential scholars, philosophers, writers and public servants, ranging from economist Adam Smith and philosopher David Hume in the 18th century to Alan Greenspan, who recently retired as chairman of the U.S. Federal Reserve.

Szechi received his Ph.D. in history from Oxford University and has published several books and articles on Scottish history, with a concentration on the 18th century.

How Auburn Stacks Up

Net increase in AU enrollment by student level, 1995-2005



Source: Institutional Research and Assessment

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FOR THE FACULTY AND STAFF OF AUBURN UNIVERSITY report

World's Fair

Students got the opportunity to travel around the world at last week's AU World's Fair on the Haley Center Concourse. More than 40 countries were represented with displays that included information about each country's culture and customs as well as crafts and games. The event was sponsored by the offices of International Student Life and Admissions as well as the UPC.



Math professor named Distinguished Graduate Faculty Lecturer for 2006

The AU Graduate School has selected Olav Kallenberg of the College of Sciences and Mathematics as Auburn's 32nd annual Distinguished Graduate Faculty Lecturer.

Kallenberg, a professor in the Department of Mathematics and Statistics, will receive an award and present his public lecture, "On the Wondrous World of Modern Mathematics," at 4 p.m. April 5 in the Sciences Laboratory Center auditorium.

A member of the AU faculty since 1986, Kallenberg is an internationally recognized researcher in the area of probability theory, and he is a Fellow of the Institute of Mathematical Statistics.

Born and educated in Sweden, Kallenberg received his Ph.D. in 1972 from Chalmers Technical University in Gothenburg. After various teaching and research positions at Swedish universities and some visiting positions abroad, he came to the United States in 1985. He is internationally known in the field of mathematics for his books *Random Measures*, *Foundations of Modern Probability* and

Probabilistic Symmetries and Invariance Principles, as well as for numerous research papers in all areas of probability theory.

Kallenberg's lecture will focus on the significance of modern mathematics.

"Mathematics used to be regarded as an essential part of the cultural heritage, but not anymore. Many 'well-educated' people are totally ignorant about the subject, to the point of doubting that any significant progress has been made in the area since the age of Newton," he said. "I shall try to dispel such beliefs by explaining what modern mathematics is all about, why it matters in our society and what mathematicians are doing when they are not teaching calculus to endless crowds of undergraduate students."

The Distinguished Graduate Faculty Lecturer is selected each year by a committee of previous recipients. The award recognizes distinguished service in support of graduate education at Auburn University. In addition to a keynote address, the recipient is honored with a dinner for invited guests sponsored by the Office of the President. The Alumni Association also presents the lecturer with an honorarium.

