

AUBURN UNIVERSITY  
*Journey*  
The College of Sciences and Mathematics 2006



**Kathryn Thornton '74**  
*A Leader Among  
Women In Space*



*"If I have seen further, it is by standing on the shoulders of giants."*



*Einstein*



*Carver*



*Curie*



*Fred Allison*



*O.D. Smith*



*Cliff Hare*

In a letter to Robert Hooke in 1675 Isaac Newton wrote "If I have seen further, it is by standing on the shoulders of giants." Newton was recognizing the intellectual role played by Hooke in the development of some of his theories. Sciences and mathematics at Auburn University has its giants on whose shoulders those disciplines stand. Certainly there are the likes of Albert Einstein, George Washington Carver and Madame Curie but equally relevant are O.D. Smith, Cliff Hare, and Fred Allison, to name a few of the Auburn University sciences and mathematics giants, on whose shoulders our reputation has been built. There are future giants at Auburn today—the students and faculty of the College of Sciences and Mathematics. We face the challenge to assure that these students are recognized with scholarships and that the professors who inspire and instruct them are encouraged with professorships, facilities for teaching and research, and modern technology. This is the only way to continue the tradition of excellence that those who came before us put into place.



**Pictured Above:**  
**Dr. J.M. Wersinger, Carr Professor of Physics**  
**Lacedric Tolliver, Mathematics Student**  
**Kathryn Foti, Chemistry Student**



COLLEGE OF SCIENCES  
AND MATHEMATICS

BIOLOGICAL SCIENCES · CHEMISTRY AND BIOCHEMISTRY · GEOLOGY AND GEOGRAPHY  
MATHEMATICS AND STATISTICS · PHYSICS

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**Director of Development**  
Sherri Rowton

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Inquiries concerning *Journey/Spectrum* should be directed to Martha G. Barker, 315 Roosevelt Concourse, Auburn, AL 36830. Please send suggestions and new items to this address as well, or by email to [barkemg@auburn.edu](mailto:barkemg@auburn.edu).

Questions concerning the college's development program should be directed to Tammy Beck Hartwell at: 334.844.1449 or [becktam@auburn.edu](mailto:becktam@auburn.edu) or Sherri Rowton at: 334.844.1235 or [rowtosj@auburn.edu](mailto:rowtosj@auburn.edu).

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## “Are great artists different from inventors and scientists?”

Science and art both use creativity to explore, understand and give meaning to the world. In an interview recently published in *TIME* magazine, Washington University psychologist R. Keith Sawyer was asked, "Are great artists different from inventors and scientists?" Dr. Sawyer responded by saying, "All research shows that the creative process is basically the same: generating ideas, evaluating them and executing them, with many creative sparks over time." Thus, it is not by chance there is a natural relationship between science and mathematics and art: mathematics and music; anatomy and dance; chemistry and the culinary arts.

This bond seems to have been much more common at the time of the Renaissance than it is today. Many believe that Leonardo da Vinci (1452-1519) was the greatest model of the complementary nature of science and art. In science, da Vinci is best known for his studies of optics, anatomy and turbulence in water. He fashioned futuristic designs and inventions including flying machines, weapons, and water-lifting devices. He studied how light and color are used in painting and treated objects as three-dimensional bodies defined by light and shadow. In art, his Mona Lisa is arguably the world's most famous painting. In 1994, Bill Gates purchased one of da Vinci's notebooks, the Codex Leicester, for \$30.8 million. On a web page entry Gates wrote: "His writings demonstrate that creativity drives discovery and that art and science--often seen as opposites--can in fact inform and influence each other."

More recently, impressionist Paul Cezanne devoted a lifetime to studying and painting the relationships of space, light, and matter.

History shows that the sciences and technology have never flourished in the absence of similar flourishing of the arts. In fact, the arts can help scientists expand their abilities to recognize patterns. Many scientific breakthroughs happen when one recognizes a pattern in something. It is the arts that can teach us this pattern recognition, be it subtle and structural or complementary and overt. For example, it can be the rhythm and meter in a poem; the interrelationships of sounds and silence in melodies; and the structure and style of a unique painter.

It has been suggested that Kepler's laws of planetary motion, published in 1618, can be traced to the artists Giotto (1267-1337) and Alberti (1404-1472) who had strong interests in geometry and perspective. The scientist used the artists' manner of portraying objects when imagining himself on Mars looking at the Earth's motion.

It is only fitting, as we celebrate the 20th anniversary of the visionary formation of the College of Sciences and Mathematics, that we have the visual reminder of our creativity in science and art with the bronze portraits of 13 prominent scientists to be placed flanking the north entrance of the Sciences Center Laboratory building. They will serve to remind us of our place in history. The broad expanse of the frieze *Continuum* on the west façade of the Sciences Center Classroom building will keep us mindful of where we came from and where we are going. The complex interactions of form, shape, and idea in the intricate mosaic *Origins* that graces the floor of the Sciences Center Auditorium lobby remind us of the balance and interrelationship of art and science. We are fortunate to have the talents of AU art professor, Gary Wagoner, and one of his former students, Joanna Blake, to bring these expressions to reality.



From left: Joanna Blake, Gary Wagoner and COSAM Dean Stewart Schneller.

*Stew Schneller*  
Stewart Schneller  
Dean and Professor

## **Did you know?**

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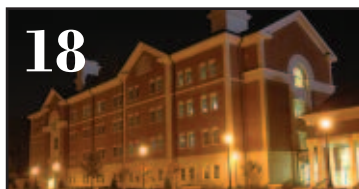
**Fall 2005 brought the largest freshmen class to COSAM, leading to a 45 percent increase in freshmen student enrollment in the past six years.**



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## ON THE COVER

The College of Sciences and Mathematics would like to thank Leon Loard Oil Portraits of Montgomery, Ala., for their kind gift of a magnificent oil portrait of Kathryn Thornton by artist Glen Nordyke of Louisiana. The oil portrait, which is now proudly displayed in the Physics Department was unveiled during the Fall 2005 COSAM Advisory Council meeting.

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## COSAM

### *Mission Statement*

The mission of the Auburn University College of Sciences and Mathematics is three-fold: to *teach* by providing an environment that ensures excellence in the biological, physical, and mathematical sciences for the purpose of preserving, interpreting, and conveying existing knowledge; to *research* by creating, integrating, and applying new knowledge; and to *reach out* to others by fostering educational exchange within the university, the Alabama community, and society as a whole.



*Dear Auburn Alumni and Supporters,*

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**W**ith fall semester behind us and the spring term well under way, there is much good news to report to you. Auburn began celebrating its 150th birthday — its Sesquicentennial — with a Founder’s Day ceremony, a Birthday Bash and Block Party all in February. I hope all of you had an opportunity to attend these events, which marked only the beginning of a year-long celebration of this important milestone in Auburn’s history. I invite you to visit [www.auburn.edu/150](http://www.auburn.edu/150) to see other planned activities. It’s my hope that we will use this year not just to celebrate Auburn’s past, but also to commit ourselves to its future. We also recently kicked off the public phase of our “It Begins at Auburn” capital campaign. This campaign comes on the heels of Auburn’s best fundraising year ever. In the fiscal year that ended in September, private giving to Auburn totaled a record \$101.2 million. With this effort as prelude, I am confident we will reach our campaign goal of \$500 million.

In November, we broke ground on a research park that will mark a new era in collaboration among our faculty and students and the private sector. This park will establish Auburn as a widely recognized research force, broaden and strengthen the research industry in east Alabama, produce an economic development engine for the state and region and create new revenue sources for the university. This effort would not have been possible without the support of Gov. Bob Riley, Rep. Mike Hubbard and Auburn Mayor Bill Ham. Thanks to their leadership, the state has committed \$10 million to the project and the City of Auburn has committed \$5 million in infrastructure development. We are grateful for their support.

We are also currently active in the state Legislature to achieve three primary goals: full funding of fringe benefits for AU faculty and staff, pay raises for faculty and staff equivalent to any granted K-12 employees and funding that will reflect AU’s status as a research institution in light of an increased emphasis and expectation for higher education to play a role in the state’s economic development. We will again work with the University of Alabama in this regard and ask your support for our efforts. War Eagle!

Ed Richardson  
President, Auburn University



## Academic and Student Affairs

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Larry Wit

*Associate Dean for Academic Affairs*



This has been a bountiful year for COSAM students. First, we are bigger than we have ever been...2,500 undergraduates to be precise. Most of this is due to a bumper crop of 844 freshmen who joined us this past fall. Yes, the word is out; COSAM is a great place to get a college education. Thanks for all you do to represent us so well to the ever-emerging new crop of students.

Our facilities are now second-to-none. There is no more odiferous Saunders Hall, no more traveling to the Pharmacy Building to take organic lab, and no more visits to the antiquated Cary Hall and Physiology Building. "It is almost fun to go to chemistry labs" is a comment that I actually hear these days. If you haven't visited us lately, you must come by and see our wonderful new home. There you will see students sitting in the new COSAM quad surfing the web in our wireless atmosphere, genetics students at their respective computer learning stations, histology/developmental biology students studying their slides via their individual scope and iMac, and organic chemistry students using their individualized hoods. There simply aren't any finer facilities anywhere. I would be happy to show you around if you are ever in the area.

Despite our burgeoning size, we have tried to maintain our personal touch. In fact, this year we incorporated a couple of programs including a student welcome reception. We initiated a peer instructor/advisor program in which our freshmen and sophomores have the opportunity to be mentored by some of our finest upperclassmen. The program is hugely successful and has had great reviews by our students. Yes, we still require all our students to meet with their advisor each semester. Although this is always a busy time, it gives us at least one chance to personally interact with each of our students.

Several new challenges await us this academic year. Managing the logistics that all these new students bring is not a simple task. Also, the university is adopting a new data management system these days which will become "live" in the student areas in the near future. We have already been besieged with challenges, and things are likely to get worse before they get better. Finally, there is the ever-present need for scholarships. The competition for students is keen, and another university northwest of here (that has an elephant for a mascot), is making an enormous push to penetrate what have been traditional Auburn markets. If we are going to remain competitive, we must be able to offer comparable scholarships. For those of you who are already helping in this venture, I thank you. For those of you who have not, let me encourage you to begin to participate...every bit helps.

As I am writing this, it occurs to me that tomorrow I will begin my 31st year at Auburn. Such occasions give me pause to reflect. It has been a wonderful ride, mostly because of people like you who share the Auburn spirit and make this such a special place. Thanks for making it so. Please let me know what has been going on in your life. I would love to have you visit; as I said, I will show you the new "digs." If not, just send me an e-mail at [witlawr@auburn.edu](mailto:witlawr@auburn.edu).



## Office of Diversity

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Dana Fields

*Interim Director of Diversity*

The Office for Diversity and Special Academic Projects continues their hard work of recruiting and retaining minority students in COSAM. The Summer Bridge Program, which has been a valuable asset to COSAM and its minority students since 1994, was a great success this summer. Thirty-two incoming COSAM freshmen completed four weeks of intense coursework in chemistry and pre-calculus and were given a very realistic picture of what to expect at AU both academically and socially. This year's Bridge was especially unique in that it was the first time the Summer Bridge participants were able to meet and interact with past Bridge participants. A number of former Summer Bridge students returned for the reunion and shared experiences and lessons learned since completing the Bridge program and graduating from Auburn University.

In addition to the high school recruiting trips that are scheduled every fall semester, COSAM's Drop-In Center hosted its second annual minority high school visitation day. Students from throughout Alabama and Georgia heard information about the great programs in Auburn University's College of Sciences and Mathematics, College of Engineering, College of Architecture, and College of Agriculture. Faculty, parents and students were excited about the event and we look forward to an even bigger minority visitation day next year.

Another new program has been added to the list of resources available to our students. The Alabama EPSCoR Summer Research Program is in its second year of providing research experience to minority sophomores, juniors, and seniors. The Alabama EPSCoR Summer Research project collaborates with the NSF-supported Alabama Louis Stokes Alliance for Minority Participation (LSAMP) project to increase the participation of underrepresented minorities in EPSCoR research activities. The students selected for the program are denoted as EPSCoR/LSAMP interns. Research mentors are identified for the recruited students and support is provided for these students to effectively engage in selected research. The EPSCoR/LSAMP interns present their research findings in the annual LSAMP Research Conference held each summer at the University of Alabama at Birmingham.

As a result of creating such minority programs and opportunities in COSAM as the ones mentioned above, Auburn University received national recognition by receiving the Minority Access Institutional Role Models Award in Las Vegas, NV in September of 2005. Minority Access, Inc. is a non-profit educational organization that supports individuals, institutions, federal, state, and local government agencies and various corporations to diversify campuses and work sites by improving the recruitment, retention and enhancement of minorities. The annual Role Models Conference focuses on institutions, students, and individuals who excel at accomplishing these goals.

Finally, we would like to congratulate Dr. Overtoun Jenda, who is now going on to do for the entire university campus what he did for the College of Sciences and Mathematics, as the Associate Provost for Diversity and Multicultural Affairs for Auburn University. We are sad to see him go, but we are confident that he will continue the wonderful work he started in COSAM and make a positive change for Auburn University in areas of diversity and minority issues.



# 2005-2006 COSAM Leaders

The COSAM Leaders are an exemplary group of students who serve the college as its official ambassadors.

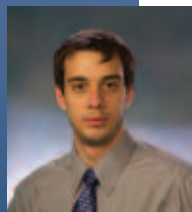


Back row (from left): Nathan Bullington, Clayton McEntire, David Johnson, David Kyle, BJ Jones, Alan Baggett, Rick O'Neal and Jeff Thompson. Front row (from left): Emily Tapley, Kathryn Foti, Stefanie Lycans, Shineca Weeks, Anjali Gandhi, JJ Cook, Haley Hallman and Christina Guice.

## 2005 Dean's Medalists



**Allyson Agerton**  
Geology/Geography  
Birmingham, AL



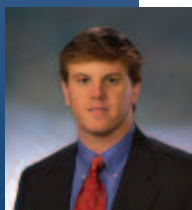
**Christopher Brown**  
Chemistry/Biochemistry  
Auburn, AL



**Christopher Long**  
Physics  
Cedar Rapids, Iowa



**Dale Hansen**  
Biological Sciences  
Memphis, TN



**John Dykes**  
Biological Sciences  
Atlanta, GA



**Jonathan Jennings**  
Biomedical Sciences  
Enterprise, AL



**Philip Putnam**  
Biomedical Sciences  
Auburn, AL



**S. Christopher Fuller**  
Mathematics/Statistics  
Valley, AL



**Shad Williams**  
Biological Sciences  
Anniston, AL



## BIOLOGICAL SCIENCES

Department Chair  
James Barbaree

- **James Barbaree** was elected President of the SE American Society for Microbiology for 2007.
- **Narendra Singh** and **Steve Dobson** were awarded Fulbright Fellowships.
- **Jim Bradley** is a Co-PI on an NSF Nanotechnology Undergraduate Education grant (\$200,000).
- **Craig Guyer** is the co-author of two books published this year.
- The June, 2005, issue of the *Biological Bulletin* was published with a micrograph on the cover from **Steve Kempf's** publication (Anti-tubulin labeling reveals ampullary neuron ciliary bundles in opisthobranch larvae and a new putative neural structure associated with the apical ganglion).
- **Ray Henry** is the Co-PI on an NSF EPSCoR Infrastructure Improvement grant for the CMB (1.5 Million dollars over 3 years).
- **Nanette Chadwick** was the featured collaborator in the Ask Aubie column of the *Opelika-Auburn News*.
- **Les Goertzen** was awarded the G. Ledyard Stebbins Medal by the International Association for Plant Taxonomy. The award recognizes the most significant paper in plant systematics from the previous year.
- **Tony Moss** cruised the Chesapeake and Delaware Bays to collect ctenophores and microbes for the Cape Henlopen project.



## CHEMISTRY BIOCHEMISTRY

Interim Department Chair  
Dave Worley

- The building housing the Department of Chemistry and Biochemistry has undergone a series of renovations costing in excess of a half million dollars designed to create additional laboratory space for faculty and graduate student

research. Existing NMR equipment has been relocated to a renovated area where it joins the new 600 MHz NMR equipment recently purchased for biological/chemical research.

- **Drs. Anne Gorden, Smita Mohanty, and John Gorden** have recently joined our faculty. Dr. Anne Gorden is an Assistant Professor of Organic Chemistry, Dr. Smita Mohanty is an Associate Professor of Biochemistry, and Dr. John Gorden is a Research Assistant Professor of Inorganic Chemistry. The Department hopes to hire two new faculty members and a continuing Chairman during this academic year.
- Professor **David Stanbury** was awarded a 3-year single PI grant from NSF for \$405,000 entitled "Reactions Involving Main-group Radicals in Solution." These radicals play prominent roles in energy transduction in living organisms, in chemical carcinogenesis, in the technology of fuel cells and solar cells, and in environmental chemistry. Professor **Thomas Albrecht-Schmitt** was awarded the Dean's Research Award in the College of Sciences and Mathematics and the Alumni Sigma Xi Research Award. He was elected to the Editorial Board of the *Journal of Solid State Chemistry* and was awarded two major research grants from the Department of Energy.



## GEOLOGY GEOGRAPHY

Department Chair  
Chuck Savrda

- **Bob Cook** completed 23 years of meritorious service as head of the department, and **Chuck Savrda** assumed duties as department chair.
- **Toni Alexander**, a cultural/historical geographer, joined the department in August.
- **Sonny Dawsey** and brothers saw the release in Brazil of the Portuguese version of their book on Confederados.
- **Bill Hames's** geochronology laboratory began producing data in support of NSF and USGS-sponsored research, including work with **Jim Saunders** on the timing of gold mineralization in Nevada.
- **David King**, who continued his studies of impact stratigraphy, was appointed to the

Alabama Board of Licensure for Professional Geologists.

- **Luke Marzen** continued his USGS-supported work with the AlabamaView consortium.
- **Mark Steltenpohl** organized and led well-received field trips for both the GSA SE section and Alabama Geological Society.
- **Ashraf Uddin**, promoted to Associate Professor, received new NSF funding, including a grant with **Jim Saunders** and **Ming-Kuo Lee** for arsenic-related studies in Bangladesh.
- **Lorraine Wolf** was promoted to professor.
- **Ming-Kuo Lee** received funding from Vulcan Materials for studies of acid-mine drainage, and from USGS-NEHRP for paleohydrologic studies in the New Madrid fault zone.



## MATHEMATICS STATISTICS

Department Chair  
Michel Smith

- The TEAM-MATH project, funded by a \$9 million NSF grant, held its second two-week workshop this past summer; about 750 elementary, middle school and high school teachers attended. Over the next five years of the project, hundreds of K-12 Alabama mathematics teachers will have the opportunity to attend these summer workshops.
- **Drs. Michel Smith and Overtoun Jenda** in collaboration with **Drs. Gary Martin** and **Marilyn Strutchens** from Mathematics Education were awarded an NSF Noyce Scholarship grant with planned funding of \$400,000 to support students with degrees in the Mathematical Sciences to obtain certification to teach and become high school teachers.
- **Dr. Jack Brown** received the Alumni Teaching Excellence Award and the COSAM Outstanding Teacher Award. **Kevin Meadows** received the COSAM Outstanding GTA Award; **Chris Brown**, a double major in mathematics and chemistry, received the Comer Award; **Chris Fuller** was named a Dean's Medalist; **Scott Varagona** was an Outstanding Junior.
- This spring, the department plans to host the regional combined MAA/SIAM

## Mathematics and Statistics Department hosts 12th International Conference

The Department of Mathematics and Statistics and the College of Sciences and Mathematics at Auburn University hosted the 12th International Conference on Statistics, Combinatorics, Mathematics and Applications (SCMA), December 2-4, 2005.

"This was truly an international conference with almost half of the participants having traveled from outside the U.S., representing six continents and 29 countries," said Dr. Mark Carpenter, Chair, Auburn Local Organizing Committee. "The underlying goal of this conference was to facilitate the confluence of the mathematical sciences through invited symposia, contributed sessions and several invited plenary speakers."

The conference is sponsored by the Forum for Interdisciplinary Mathematics and is held once a year at various locations around the world. This year's conference consisted of 300 presentations and over 400 attendees; approximately 70 were AU students and faculty.

There were 14 world-famous featured speakers from Combinatorics, Statistics and Mathematics; and special



invited symposia covered topics such as Bioinformatics, Biostatistics, Data Mining, Cryptography and Coding Theory, Econometrics, Engineering Statistics, Environmental/Ecological Statistics, Internet Traffic Data Analysis, Mathematical Biology, Medical Imaging, and Statistical Genetics, among many other special programs and traditional mathematical and statistical topics.

A student paper competition was held and judged by an international review panel. Three of the six student winners were from AU's Department of Mathematics and Statistics, including first place winner Gergely Ambrus. The five honorable mentions included Roxanne Baker and Michael Tiemeyer of AU, Dipankar Bandyopadhyay of the University of Georgia, Yoshiyuki Ninomiya of Kyushu University and Michael Swinson of Georgia Technical Institute.

The Saturday night mixer featured Salsa, Turkish, African-Caribbean and Indian Dancers, the AU Rhythm Section and piano music by Dr. Robert Donnelly from the Department of Chemistry and Biochemistry.

conferences; Dr. **Narendra Govil** is chair of the organizing committee.

- The department has hired Dr. **Peng Zeng**; Dr. Zeng received his Ph.D. from Purdue and has joined the statistics group.
- Dr. **Jerry Veeh** has announced his intention to retire this year.
- The department commissioned **Eric Harshbarger '92** to design LEGO artwork representing a mathematical theme. He created "TWENTY-ONE," a visual solution of the problem of partitioning a square into a number of smaller squares such that no two of the smaller are the same size.
- The new Statistics Practicum Seminar course was first implemented in 2005. The new course is a requirement in the graduate statistics program that gives graduate students experience in applying

statistical techniques to real world problems. Students and faculty from other departments receive important consulting work by the students in the seminar.



### PHYSICS

Department Head  
Joe Perez

- **Mitch Pendzola** and **Francis Robicheaux** recently received an Innovative and Novel Computational Impact on Theory and Experiment (INCITE) Award from the Department of Energy after submitting a proposal entitled: Computational Atomic and Molecular Physics for Advances in Astrophysics, Chemical Sciences and Fusion Energy Sciences.

Pendzola and Robicheaux's team (which included six other scientists from the United States and United Kingdom) was one of only 15 around the world to receive the award out of 42 team applicants. The award will allow the group 650,000 processing hours on the HP-MPP at Pacific Northwest National Laboratory.

Process-hours refer to how time is allocated on a supercomputer. A project receiving 50,000 hours could run on 50 processors for 1,000 hours, or about 42 days. Running the same project on a single processor desktop computer would take almost six weeks.<sup>1</sup>

*1. U.S. Department of Energy, Office of Public Affairs, Washington, D.C.*



**AU Explore introduced more than**  
**1,700** middle and high school students to  
the thrills of sciences and mathematics.



**O**n Friday, April 22, 2005, more than 1,700 students from across the states of Alabama and Georgia gathered at the College of Sciences and Mathematics new Sciences Center complex to take part in the inaugural AU Explore sciences and mathematics open house event.

“Our primary goal was to show students how relevant sciences and mathematics are to their everyday lives,” said COSAM Director of Outreach, Mary Lou Ewald. “We had more than 1,700 students attend our first AU Explore and for 2006, we are expecting close to 2,500.”

Students were given the opportunity to play games at the Science Carnival, get up close and personal with bats, raptors and snakes at the Wildlife Pick-N-Pet and take part in a variety of short and fun hands-on science seminars at the Science Fun Workshop.

AU Explore 2006 is scheduled for Friday, April 21. For more information, log on to [www.auexplore.auburn.edu](http://www.auexplore.auburn.edu)



## *Celebrating 20 Years*

**T**he 1980's brought big changes to Auburn University when then-president, James Martin, declared that it was time to "make Auburn University a major national research university...beyond the agricultural production areas that had once been the university's mainstay."<sup>1</sup> One way to achieve this goal was to concentrate on the need to bring the physical, biological and mathematical sciences together into one new college, putting sciences and mathematics at the forefront and becoming the foundation for instructional, research and outreach success. It was believed that the organization of these disciplines would follow the growing trend toward interaction between the various branches of science and mathematics; and would be a positive move, not only for these disciplines, but for the university as a whole.

On March 6, 1985, the Board of Trustees approved reorganization authorizing the new college. It would include the Departments of Chemistry, Physics, Geology and Mathematics from the School of Arts and Sciences and the Departments of Botany/Microbiology and Zoology/Wildlife Science from the School of Agriculture. With that decision, the College of Sciences and Mathematics (COSAM) came into existence with the fall quarter of 1986.

Dr. Robert Kribel, who was the Head of the Physics Department at that time, was named Acting Dean of the College of Sciences and Mathematics in December 1985. Jo Hawkins, also of the Physics Department, was appointed Administrative Secretary to Kribel.

Temporary offices were housed in the Leach Science Center; but the following year, the college made its permanent home in the Extension Cottage. Dr. J. Ivan Legg from Washington State University arrived to become Dean of the College in 1987. Under Legg's leadership, the College saw an increase in its number of students and the beginning of the Science Olympiad at Auburn University. Legg led COSAM through the '80s and into the '90s, and in 1992, left for a position at Memphis State University.

Associate Dean for Academic Affairs, Larry Wit, was named Acting Dean while a search took place for a permanent dean. During this time, COSAM was awarded a five-year \$1 million grant from the Howard Hughes Foundation for undergraduate science education.

By 1993, Dr. Stewart W. Schneller, previously chair of the Chemistry Department at the University of South Florida, was chosen to be COSAM's permanent dean. He had a great vision for the future of COSAM and brought numerous innovations to his role as Dean of the College.

Schneller recognized the need for outreach and minority opportunities in order for the college to increase awareness and interest in the fields of the sciences and mathematics. The outreach and minority affairs programs were both established under Schneller's leadership. These programs would later prove to be effective recruitment tools.

At COSAM's 10th anniversary in 1996, Schneller noted six qualities which illustrated the excellence of the college: the proportionately large number of faculty receiving teaching awards; the high percentage of COSAM students in the University Honors Program; the only first team 1995 *USA Today* Academic All-American from the state was a COSAM student; the internationally recognized faculty research; a high percentage of students inducted into Phi Kappa Phi honor society; and a high acceptance rate of students applying to professional schools.

Today, COSAM is comprised of five departments: Biological Sciences, Chemistry/Biochemistry, Geology/Geography, Mathematics/Statistics and Physics. It is one of the largest at Auburn with 150 faculty and more than 2,500 undergraduate students and nearly 300 graduate students.

COSAM saw a significant rise in student enrollment in sciences and mathematics with a 45 percent increase from 1999-2005. Schneller attributed this growth to an increasing awareness by high school students of the emerging career options that have been reinforced by the college's recruiting efforts; COSAM's pre-college outreach programs; the college's commitment to minority student success; increased scholarship resources provided by donors; dedicated faculty and staff who have put into place quality programs that provide a meaningful learning experience in the sciences and mathematics; and most recently, the 2005 opening of a new state-of-the-art three building Sciences Center.

During 2006, the college will reflect on those who came before us and honor the achievements which have resulted from their efforts with the dedication of the 140,000 square foot, three-building Sciences Center, one of the Southeast's premier instructional facilities. COSAM looks forward to continued excellence in its students and faculty as well as its programs, research and facilities as it strives to be the leading center for university science and mathematics teaching, research and outreach in the State of Alabama and beyond.

*LAU Report*, July 27, 1998

By Carol Nelson

# *Of Academic Excellence*

## COSAM Today

- ◆ COSAM has more of its students in the Honors College than does any other college.
- ◆ The average ACT/SAT score for incoming freshmen students in COSAM is greater than the all-university average.
- ◆ The pre-professional program in COSAM has successfully placed its students in medical, dental, etc. schools at a rate of 30% above the national average; similar successes exist in placing students in graduate schools and professional positions in our other major fields.
- ◆ The high school GPA for new COSAM freshmen is the highest on campus.
- ◆ Almost 50% of the May 2005 COSAM graduates graduated with honors.
- ◆ 53% of the Spring 2005 Phi Beta Kappa inductees were COSAM students.

# COSAM Hears From Some of Its First Graduates...



**Rich Hughey**

*“It is a strategic way of thinking that has come from knowing that, in the details, there are numbers, properties, theorems, formulas and ‘good ol’ physics’ behind many things that I do.”*

**WORK:** Since graduation in 1986, I have held numerous positions, but with only two employers - U.S. military and FedEx. Both involve aviation. I flew fighters for 15 years in the military and now fly an MD-11 for FedEx. I am currently pursuing my graduate degree through the AU College of Business’s Executive MBA program, and will graduate in May 2006.

**FAMILY:** Wife, Christine; daughter, Corey; son, Austin; Our daughter is currently a joint-enrolled high school student taking classes at AU. She has recently been asked to be a part of the AU Women’s swimming program.

**FAVORITE AU CLASS:** Probability Theory. I had a professor from Pakistan who, despite his accent and challenges with English, delivered a fun class that looked at many “real world” applications of probability - Vegas games! Despite struggling in that class, I learned, had fun and recalled from this class NOT to gamble when I lived in Nevada!

**WHAT COSAM TAUGHT ME:** The methodologies required for math coursework have provided a great foundation for thinking, and enabled a unique context in the way I look at things. Knowing there is math behind all that I experience; whether in aerodynamics while flying, time compression while in combat or budget planning with government dollars, I am not intimidated by the mathematical complexity of the particular environment I am in.



**James Shikle**

*“I enjoyed many of my classes at Auburn, but the first calculus class was great.”*

**WORK:** I am a pathologist in the U.S. Army currently assigned to the Naval Medical Center in San Diego, Calif. My current position includes primarily surgical pathology, cytopathology and clinical pathology. Research and teaching are also a part of my practice.

**FAMILY:** Wife, Carol; son, Davis; daughter, Hannah.

**FAVORITE AU PROFESSOR:** Dr. Robinson because he presented the material and expected you to master calculus by practicing and to be able to apply it to problems.

**WHAT COSAM TAUGHT ME:** Never quit. When you keep plugging along, eventually you will acquire the necessary knowledge and skill to meet life’s challenges.



**James Sutcliffe**

*“From a scientific perspective, coming up with an original idea, an original hypothesis, then testing that hypothesis, proving it and being able to contribute in an important way to what we know about a disease is very rewarding.”*

**WORK:** I am an Associate Professor at Vanderbilt University. I spend the vast majority of my time on research-related activities. My field is “neuropsychiatric genetics,” which is essentially trying to identify genetic risk factors that predispose people for increased susceptibility to psychiatric and developmental disorders. I’m currently teaching a neurogenetics class to graduate students. I am also the co-director of a neurogenomics post-doctoral training program at Vanderbilt.



**FAMILY:** Wife, Cara; sons, Dylan 5 and Cian 3.

**FAVORITE AU CLASS:** I had three favorite classes and professors. The first was Biochemistry taught by Mike Friedman; the second was Cell Biology taught by Jim Bradley; and the third was Physiology taught by Larry Wit. All three had a major influence on me, and I really appreciated the opportunity to learn from them.

**WHAT COSAM TAUGHT ME:** Again, those three professors, Friedman, Bradley and Wit provided the foundation in sciences that was crucial to my own professional training.



## Jill Siniard Kimbrough

*“I love that I am available and involved with [my children] any and all the time. There have been so many instances where I have thought, ‘I would have missed this if I had been working.’”*

**WORK:** Upon finishing residency, I went in to private practice working part-time with a large Birmingham psychiatry group. I continued to work part-time after I had my first child and then decided to quit working to stay home with them after my second child was born. I have several opportunities to re-enter my field, which I plan to do this fall when my youngest enters kindergarten.

**FAMILY:** Husband, Hardie; children, Julia, 10; Hardie, 7; Jack, 5.

**FAVORITE AU PROFESSOR:** My favorite teacher at Auburn was Dr. Larry Wit. His upper level physiology classes were very challenging, but they seemed as close to med school as we would get in college. His classes proved to prepare us well for med school and I have always appreciated that.

**WHAT COSAM TAUGHT ME:** What stands out most to me is my time spent in the lab while in college. Having to go to a three hour lab two or three afternoons a week (when your friends are out doing something fun!) prepared me for the sacrifices necessary for post-graduate work and beyond.



## Tom Oliver

*“Most people ask why I have a mathematics degree when I chose to practice law. I respond by saying that I have the best of both worlds as I truly enjoyed the math and sciences studies, but always had a desire to go to law school.”*

**WORK:** I am an attorney in private practice in Birmingham, Ala. We specialize in the defense of Fortune 500 companies in civil litigation. Personally, I serve as an adjunct professor at Cumberland School of Law teaching students the art of trial advocacy.

**FAMILY:** Wife, Denise; children, Trey, 14; Britney, 12.

**FAVORITE AU CLASS:** I don't recall a specific class or professor at Auburn that I found to be my favorite. All were different and challenging and thus were rewarding in their own way.

**WHAT COSAM TAUGHT ME:** Handling many personal injury cases, I actually use my mathematics training every day. We are required to do various calculations to determine the damages that may be assessed in a case along with the respective settlement values of a case. I often review the mathematical and engineering analyses of experts and my training at Auburn significantly benefits my practice in that regard.

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To read more about our featured graduates, or if you are a 1986 COSAM alum and would like to submit an update, please visit our website at:

[www.auburn.edu/cosam](http://www.auburn.edu/cosam)

and click on the 20th Anniversary icon in the special features section.



# Sciences Center Opens To Students

In 2005, COSAM's Sciences Center complex welcomed students to campus for the fall semester.

The new 140,000 square foot facility positions the college to lead innovative instruction, research and outreach well into the 21st century. The complex consists of a four-story biology/chemistry instructional laboratory facility, a 300-seat auditorium and a two-story classroom and administrative building.

One of the most modern university teaching facilities in the Southeastern United States, the complex is intended to match the expectations of future students by complementing and supplementing the traditional professor-focused lecture environment with space-age technology including: flat panel plasma screens for sharp instructional imaging, wireless PDAs (personal digital assistants) for real-time classroom participation and virtual laboratories for 3-D simulations.

In addition, the combination of chemistry and biology laboratories within the four-story building will seed interdisciplinary teaching on the Auburn campus and enhance the students' knowledge of the biological, physical and mathematical sciences.

*Right: AU Art Professor Gary Wagoner and his former student, Joanna Blake '99, stand beside the mosaic *Origins*. They are also the artists who created the frieze *Continuum*.*





## Award Winning

The Robins & Morton Group of Birmingham has recently received three awards for their work on Auburn University's College of Sciences and Mathematics Sciences Center. The honors include the South Central Construction Award of Excellence and two Merit Awards from the Excellence in Construction Program of Associated Builders and Contractors, Inc. on both the state and national level.

Robins & Morton provided construction management services on the 140,000 square foot Sciences Center project.

"From conceptualization to reality this has been an extremely rewarding experience. Credit goes to the university leadership for making the project possible and giving us design freedom. Also, I want to acknowledge the architects of Gresham, Smith and Partners and the construction manager team of the Robins & Morton Group for working so closely and patiently with us to assure the Sciences Center was truly a state-of-the-art instructional complex that is second to none," COSAM Dean Stewart Schneller said.

## Naming Opportunities

The naming of a designated space within the Sciences Center is an opportunity to honor, in perpetuity, an individual, family or organization's commitment to the Auburn University College of Sciences and Mathematics.

For each named facility, a plaque will identify the generous benefactors whose gift symbolically supported the construction of a world class learning environment. As generations pass through the college, the facility's names will become a part of COSAM's vernacular; no different than Samford, Haley or Parker.

For more information, or to receive a *Building For The Future* Sciences Center Naming Opportunities booklet, contact Tammy Beck Hartwell at 334.844.1449 (becktam@auburn.edu) or Sherri Rowton at 334.844.1235 (rowtosj@auburn.edu).



*Left: The COSAM Quad, created as a result of the Sciences Center construction, provides students with a quiet place to relax, study; and, because it is a wireless hotspot, log onto the Internet.*

*Photography by Heather Carson*

*Logging  
more than  
16 million  
miles in orbit  
to become*

## A Leader Among Women in Space



**I**n 1989, Kathryn Thornton climbed aboard the Space Shuttle Discovery where she would become not only the first woman to participate in a classified U.S. Government space mission, but also a member of the first crew to return to orbit following the 1986 Challenger disaster.

After returning from her first mission, Kathryn would go on to participate in three more shuttle flights, log more than 16 million miles in space, become the second woman to walk in space, and set a female record for the number of spacewalks and total time spent on spacewalks -- just to name a few of her accomplishments.

A native of Montgomery, Ala., Kathryn earned her bachelor's of physics in 1974 from Auburn, and then went on to earn her master's and doctorate of physics from the University of Virginia.

After earning her doctoral degree in 1979, Kathryn was awarded a NATO Postdoctoral Fellowship to continue her research at the Max Planck Institute for Nuclear Physics in Heidelberg, West Germany and later returned to Charlottesville, Va., where she worked as a physicist at the U.S. Army Foreign Science and Technology Center. It was at that time a certain job posting caught her attention.

"It was a notice from NASA," she said. "I hadn't really thought about becoming an astronaut before, but I decided to send in the application. I figured all they could do was say, 'no.'"

But, they didn't say, "no" and five months later Kathryn was called for an interview.

"It was a week-long process of mostly medical tests, but there was also an interview with the selection board and visits with astronauts to find out what the jobs were like and

that sort of thing," she said. "I met so many interesting people and I had a great time, but I just knew when I left there that I would never see Houston again."

But sure enough, two months later she received another call.

"There were about 5,000 applications in that round and they interviewed about a 120 of us about 20 at a time for the next six weeks. Then they selected 17...to this day I believe they called the wrong number when they called me," she smiled.

Kathryn said it was a tough decision to leave Virginia and move to Houston because her husband was a professor of physics at the University of Virginia and the couple had a two-year-old daughter. They decided it was an opportunity that couldn't be passed up so in July of 1984, with her husband's blessings, she packed her and her daughter's bags, kissed her husband goodbye and moved to Houston.

"When I first went down there I didn't know which end of the shuttle was up; I mean I knew absolutely nothing," she grinned. "I didn't really know what I had gotten myself into to tell you the truth, but it sounded like a good deal."

After her training was delayed due to the January 1986 Challenger explosion, Kathryn said she was anxious to receive her first flight assignment because she had waited a long time and backing out wasn't even a thought in her mind.

Her first assignment came aboard the Space Shuttle Discovery, which launched at night from the Kennedy Space Center in Florida on Nov. 22, 1989, carrying Department of

Defense payloads. After 79 orbits of the Earth, the five-day mission concluded at Edwards Air Force Base in California.

"By the time you board the shuttle you have done a lot of training and you are just anxious to get on board. You know something could go wrong, but waiting another day or two, a week or even five years isn't going to change that."

Kathryn admits that after all the preparation, the lift-off was somewhat uneventful.

"We usually board the shuttle about three hours before lift-off. It can be uncomfortable because you are lying on your back and it is not like laying on a soft cushion. You are laying on your parachute, survival kit and radio," she said. "We spent most of the time listening to command communications and hoping not to hear, 'we have a problem,' that would cause a scrub. Most of the countdown, we would talk and sing school fight songs, tell jokes and that kind of stuff."

Once the shuttle reached its orbit, the crew got down to business. Kathryn said it wasn't the task at hand that was weighing on her mind, because she had received plenty of training, but rather it was a bit of motion sickness that concerned her.

"After we had deployed the satellite and completed our tasks for the day, I was feeling crummy, but was determined not to get sick," she said. "I sort of rolled up in my sleeping bag and I was just feeling terrible when I heard the alarm that signals the loss of cabin pressure. And for a split second, I thought, 'Geez, I am feeling sick and now I am going to be freeze-dried right here.'"

Fortunately, the problem turned out to be with the toilet and not the cabin pressure, so besides a little motion sickness on the first day, Kathryn said the first flight was absolutely amazing.

"The hardest part of the return was not the wobbly feeling you experience at first," she said. "The hardest part was trying to stop smiling. I had this grin on my face for a month and I just couldn't get it off, I was so happy. I was ready to go and would have climbed aboard another shuttle the next day. The sad part about coming back is that you have to wait a long time before you get another shuttle assignment."

It would be three years before Kathryn's next assignment, but there was no down time.

"Being an astronaut is a full-time job. If you are not training for your own mission, then you are supporting another mission. There are lots of ground jobs to do, such as working with mission control, participating in tests, and

working in the simulator. So basically you stay in training all the time."

This second assignment came in May 1992 on the maiden flight of the new Space Shuttle Endeavour during which time the crew completed a record four EVAs (extra vehicular activity) to repair and deploy the International Telecommunications Satellite (INTELSAT) and during the mission, Kathryn completed her first spacewalk.

"When you climb into the suit you immediately add an extra 350 pounds to your body weight and it restricts your ability to control it somewhat, but after you have been out there a while, your body begins to adjust."

Kathryn's first spacewalk took seven hours and 45 minutes to complete.

"It goes by in a heartbeat because you have so much to do and you are moving so slowly. You have one bag of water inside that you can tip your head to get to and you have something sort of like a Fruit Roll-Up, but you don't really have time to think about getting hungry or thirsty."

Shortly after returning from her second mission, Kathryn was assigned as a mission specialist EVA crew member on the Endeavour to repair and service the Hubble Space Telescope.

The crew's mission was to install corrective optics into the world's first space-based optical telescope, and America and the media were watching and waiting to find out if the astronauts were successful in repairing the impressive telescope. After a record five spacewalks, the crew successfully returned the telescope to full capacity.

In October of 1995, Kathryn made her fourth and final space flight aboard the Space Shuttle Columbia as the payload commander of the second United States Microgravity Laboratory Mission.

In 1996, after making a graduation speech at the University of Virginia, she was asked by the university to return to campus. Kathryn decided to join the faculty and today serves as the Associate Dean of Graduate Programs for the School of Engineering and Applied Sciences.

Between her job and her family, Kathryn doesn't have much free time, but when she is able to sneak away for a minute, she enjoys a quick flight.

"I have my pilot's license so I like to go out sometimes and just defy gravity," she smiles.



**By Martha Barker**

*Photos courtesy of Kathryn Thornton and NASA*



Pictured above are members, guests and friends of COSAM's Advisory Council. First row: Hank Hartsfield, Dan Philen, Phil Bailey, Herb Martin, Bill Johnston and Linda Stone. Second row: Rita Patton, Dave Worley, Marie Wooten, Chuck Savrda and John Bullington. Third row: Scott Harvey, Danny Royal, Andy Morris, Rosemary Greaves, John Trawick, Roger Cox and Michelle Burgess. Fourth row: John Johnson, Lani Kaiser, Michele Humphrey, Harold Zallen and Wallace Smith. Back row (from left of stairs): Mike Bangham, Kathryn Thornton, Larry Wit, Jim Ott, Jim Baird, Dean Stewart Schneller, Ed Wampold, Joe Perez, Ralph Jordan and Paul DePriest.

## *Introducing Two New COSAM Organizations*

### **Society of Women in Sciences and Mathematics**



The Society of Women in Sciences and Mathematics is committed to mentoring the next generation of women who will begin their careers in sciences and mathematics. The Society will host a symposium on Aug. 25, 2006 with special guest speaker Rossanne Philen.

### **Society of Health Professionals**



The AU Society of Health Professionals is open to all Pre-Health alumni and friends. All contributions will be used to fund endowed scholarships, professorships and program enhancements in the College of Sciences and Mathematics.