Fly, cruise, learn: ROTC students keep busy in summer months. Pg 8

Student’s Facebook app more than it’s cracked up to be. Pg 17

London 2012 could be calling distance star Lisa Koll. Pg 18

Jill Pruett’s research is changing how we think about chimpanzees.

The Art and Science of Discovery

Research and scholarly endeavors in Liberal Arts & Sciences are creating new knowledge and impacting our lives.
America's top teacher is from Iowa State
Sarah Brown Wessling, with English degrees and a teaching certificate from ISU, is the National Teacher of the Year.

Summer adventures near and far
Iowa State’s ROTC students use summer months to jump from planes, cruise on subs and develop leadership skills.

Research power
At a research university like Iowa State, Liberal Arts and Sciences bolsters the art and science of discovery.

Primatologist Jill Pruetz (left) has made some stunning observations of savanna chimpanzees.

Hatching a hot application
Computer science student and entrepreneur Brad Dwyer has turned Hatchlings into a Facebook favorite.

London 2012 calling?
Runner Lisa Koll just wanted to be an All-American once. She did it 11 times. Are the Olympics next?

At your service, Mr. President
Iowa State alumnus Dwight Ink served seven U.S. presidents, from Ike to Reagan.

We want your opinion on Link, the College of Liberal Arts and Sciences alumni magazine. Send us your thoughts: las@iastate.edu or 515-294-0461

We want to hear from you!
—Steve Jones, editor

More than one way to stay connected.
www.las.iastate.edu/social
New year means record enrollment at Iowa State

Dear Friends,

The campus is packed (literally and figuratively) with new students. There is always a palpable level of excitement as they explore the campus, settle into classes and do all the things we expect from individuals of that age set.

In a very positive way, I can’t help but think of the challenges and opportunities that await them. The University has just finished a new five-year strategic plan in which a concerted effort was also made to think about what ISU will be like in 2050. I am optimistic that we are giving students the foundational tools to successfully navigate through the next four decades (and beyond). This really has to be the unremitting and unfailing goal of a liberal arts education.

In spite of well-researched predictions for a decline in the undergraduate population, it hasn’t happened. Indeed, for the past two years our enrollments have set records. As we are increasingly dependent on student tuition dollars to run our operation, this has been good news. Yet even as the summer began, I don’t think anyone expected the numbers of new students. I appreciate the herculean efforts made by several departments, who almost daily scheduled additional laboratory sessions and found instructors to accommodate the overflow of new students in need of physics, math, biology and chemistry classes.

As you know, the College of Liberal Arts and Sciences takes its instructional mission very seriously. We are responsible for teaching more than half of all the student credit hours offered on this campus. The College is, after all, the core home to the basic offerings in the humanities, social sciences, biological and life sciences, physical sciences, and the mathematical and computational sciences. We offer courses ranging from chemical thermodynamics to magic, witchcraft and religion. We teach subjects going from differential equations to existentialism and from aquatic ecology to macroeconomics. If students want to know about the U.S. political system or history of medieval Europe, they are in the right spot. If they harbor an interest in artificial intelligence or wish to study small group communications, they need go no further. If they dream of becoming the next Brian Williams or want to be another Jane Smiley, they’re at the right place.

The LAS College’s research enterprise had a spectacular year. We continue to garner more than our share of NSF Early Career Awards and R&D 100 Awards. This past year the University increased its external competitive grant funding by 52.8 percent. During the same period, the College experienced an increase by a whopping 113.2 percent. Our faculty are internationally recognized, too. For example, Patricia Thiel, one of our truly distinguished chemists, collected more awards this past year than James Cameron has Oscars. There are many others like Pat on our faculty.

All of this spectacular work, in the classroom and the lab, has taken place against a backdrop of unrelenting budget cuts. Indeed, over the past two years the LAS College has seen its state-supported budget reduced by $11 million. Because so much of our budget is tied to salaries and personnel, we have seen a drop in the numbers of tenure-track faculty and other staff. There is no question, that in many respects, we are doing more with less – lots more.

Our College has many other high points, including our development team. Working with others in the ISU Foundation, this small group exceeded its ambitious annual fund-raising goal again this year and in the process met its target for the entire campaign – a year ahead of time. Please don’t close your checkbooks because we have a number of really good causes we would like to entice you with. When the snows melt next spring the University is looking forward to breaking ground for a new science teaching building. And this autumn, we dedicated Hach Hall, our new state-of-the-art chemistry building.

We are unabashedly proud of the accomplishments of our students, faculty and staff. Read about them on the pages that follow.

Regards,

Michael B. Whiteford, Dean
The Windy City is home to Iowa State tornado research. ISU’s Tornado/Microburst Simulator and two professors, Bill Gallus and Partha Sarkar, are part of the new Science Storms exhibit, which opened March 18 as a permanent display at the Museum of Science and Industry in Chicago.

A panel within the tornado portion of the exhibit shows a photo of Gallus, a professor of geological and atmospheric sciences, and Sarkar, a professor of aerospace engineering, standing in the spinning vortex of a laboratory tornado.

The caption describes how Iowa State researchers “developed a unique air vortex in their lab to study the effect of wind flow on landscapes and buildings. Dedicated to improving the engineering of buildings and structures, the team built a scale model of Chicago and blasted it with tornado-like winds.”

The College of Liberal Arts and Sciences has its first international dual degree programs. Iowa State’s Department of Computer Science and Kookmin University (Seoul, South Korea) entered into an undergraduate and graduate degree partnership that allows for a new dual undergraduate “2+2” degree program and a dual “4+2” graduate degree program, both in computer science.

Qualified undergraduate and graduate students from Kookmin who have completed part of their studies at Kookmin and meet the admission requirements at ISU are eligible for dual computer science degrees as offered by each university. “The computer and information industries are becoming more and more global,” said Carl Chang (above left), professor and chair of computer science at ISU. “The ability to work in a multicultural environment has become essential to our future graduates.”

New Iowa State research shows that as the earth’s average temperature rises, so too does human “heat” in the form of violent tendencies. Craig Anderson, a Distinguished Professor of psychology and director of Iowa State’s Center for the Study of Violence, and Matt DeLisi (above), an associate professor of sociology and director of ISU’s criminal justice program, showed how global climate change impacts human aggression and violence.

Using U.S. government data, they estimate that an 8-degree F rise in the nation’s annual average temperature will increase the country’s yearly murder and assault rate by 34 per 100,000 people.

In addition to the “heat hypothesis,” they report that rising global temperatures also increase known risk factors for the development of aggression in violence-prone individuals – such as increasing poverty, growing up amid scarce resources, malnutrition and food insecurity. They contend that one of the most catastrophic effects of climate change will be food availability, producing more violence-prone individuals in the process.
Mary Swander (above), ISU Distinguished Professor of English and Iowa’s Poet Laureate, found that writing was a therapeutic outlet while dealing with her disabilities following car accidents and an environmental allergic reaction. For that reason, she helped establish “Writing Through Change,” a six-week, noncredit ISU online creative writing course for Iowans with disabilities.

The class, funded by Johnson & Johnson/Society for the Arts in Healthcare, encourages creativity and builds self-expression through short readings, journaling, and narrative and visualization exercises. Since the course was online, the summer’s 14 students came from all over Iowa and didn’t have to leave their homes.

“While someone is struggling with a disability, being creative through your writing or your artwork can be a diversion,” said Kim Rogers, class instructor and ISU Master of Fine Arts candidate in creative writing and environment. “And so art can heal you, or at least aid in your healing.”

Three Liberal Arts and Sciences professors have received the university’s highest academic recognitions in 2010. Alicia Carriquiry, statistics, and Carol Chapelle, English (applied linguistics), were named Distinguished Professors, and Stephen Willson, mathematics, was named a University Professor.

New exchange agreements will make it easier for mathematics graduate students from two South American universities to attend Iowa State. ISU’s Department of Mathematics is partnering with the Universidad Nacional de San Agustin in Arequipa, Peru, and the Universidad Mayor de San Andrés in La Paz, Bolivia. The agreements, which could also lead to faculty exchanges, will further diversify the Iowa State mathematics graduate program.

The protein that has long been suspected by scientists as being the master switch allowing brains to function has now been verified by Iowa State researcher Yeon-Kyun Shin (above). The professor of biochemistry, biophysics and molecular biology has shown that the protein called synaptotagmin1 is the sole trigger for the release of neurotransmitters in the brain.

“This is a really important thing in terms of neurosciences,” he said. “This is the heart of the molecular part of the brain function.”

Shin has been looking at this brain activity for 15 years. He believes his discovery may be useful in understanding brain malfunctions such as autism, epilepsy and others.
A new initiative at Iowa State to improve science instruction on campus aims to make it more relevant to students’ lives and allow them to engage in the excitement of science. The transformation of Iowa State’s introductory science labs and development of a course on science and sustainability are supported by a $1.6 million grant from the Howard Hughes Medical Institute of Chevy Chase, Md.

The goal of the initiative is to help attract and retain students and assist them in succeeding in scientific careers, said Craig Ogilvie (above), professor of physics and the principal investigator of the grant. The initiative has three emphases:

• Science laboratory instruction will change from an emphasis on traditional exercises to one in which students will design their own questions, conduct experiments and analyze the results.

• The proposed science and sustainability course will combine the strengths of several of ISU’s academic disciplines.

• Large lecture-based science courses will become more dynamic and interactive.

In memory

Victor S. Lin of the Department of Chemistry died May 4 after a brief illness. He had been an Iowa State professor of chemistry since 1999. Lin was featured on the cover of the Spring 2010 issue of Link. He is greatly missed. In addition to being a gifted chemist, he was a beloved family man and a friend to all.

Victor S. Lin

Iowa broadcasting legend, ISU professor Jack Shelley, 98, dies

On Sept. 14, the voice of Iowa and the Midwest, John D. “Jack” Shelley – World War II combat reporter, WHO (Des Moines) news director and Iowa State University journalism professor emeritus – died at age 98 in Ames. Shelley, a towering figure in real life at six-foot-three, was a journalism legend. Born in Boone, Iowa, on March 12, 1912, he witnessed the birth of broadcast journalism, covered World War II with the likes of Walter Cronkite and Edward R. Murrow, and inspired generations of ISU journalism students.

He was a WHO radio war correspondent in both Europe and the Pacific. In the field, whenever he saw soldiers, he got in the habit of calling out, “Anybody here from Iowa?” He found native Iowans on every battlefront.

“I’ll always remember listening with my dad to Jack Shelley’s crisp, clear voice booming over the radio,” Sen. Chuck Grassley, R-Iowa, recalled. “It was like listening to something from a higher power.”

Shelley taught broadcast journalism at Iowa State from 1965 to 1982. As an educator, Shelley insisted on putting his students’ needs above anything else. Some students who grew up watching his broadcasts found themselves working with a local hero in their classes.

“It was a privilege to have been one of his students,” recalled Jerry Bowen, CBS Evening News correspondent. “Jack was actually reading my copy and kindly making suggestions that continue to serve me for four decades.”

– Michael Bugeja, professor and director, Greenlee School of Journalism and Communication
Alumnus and chemist Jonathan Rich (left) received an honorary doctor of science degree and gave the commencement address at the May 8, 2010, undergraduate ceremony at Iowa State. Rich received a B.S degree in chemistry from ISU in 1977 and a doctorate in chemistry from the University of Wisconsin.

Rich was honored for scientific contributions to the chemical industry (including a new way to produce silicone polymers) and for his advocacy for shared public-private investment in research. Rich has been published in numerous journals and publications and is listed as an inventor on 26 U.S. patents.

Students benefiting from ISU’s new chemistry building, Hach Hall

A group of fourth-year chemistry majors, all wearing white lab coats and goggles, were finishing their lab experiments in Hach Hall.

They seemingly worked hard to keep their bright and modern lab tidy. They were, after all, among the very first students to use Iowa State’s new, $78 million, three-story chemistry building that welcomed students a week earlier.

“This facility will allow us to recruit the best students and the best faculty,” said Keith Woo, professor and associate chair of chemistry. “These facilities will really improve the undergraduate chemistry learning experience.”

Hach Hall is located northwest of Gilman Hall, the university’s main chemistry building built in 1914.

Kathryn (Kitty) Hach Darrow, an Iowa State alumna and Mukilteo, Wash., resident, was the lead donor to the project with a $10 million commitment. The building is named in honor of Hach Darrow’s late husband and ISU alumnus, Clifford Hach, and the extended Hach family. Clifford and Kathryn were longtime supporters of Iowa State dating back to the 1940s when they met on campus.

The building’s first floor is dedicated to the undergraduate teaching laboratories and student interaction space. The second and third floors are dedicated to research space for faculty, staff and graduate assistants.
During a beautiful spring day on the Iowa State University campus some 15 years ago, Sarah Brown Wessling had an epiphany of sorts.

Although coming from a family of teachers including her mother, the Iowa State student wanted to veer from the classroom. She had tested a couple different majors, yet was anything but settled on her future – until that pivotal day.

“I discovered that everything I loved happens in a classroom,” said Wessling. She was named the 2010 National Teacher of the Year at a White House ceremony with President Obama in April.

“I certainly was meant to be a teacher, and it took a little time before I realized it,” said the Winterset, Iowa, native who teaches language arts at Johnston High School near Des Moines.

Wessling holds both a bachelor’s degree (1998) and master’s degree (2003) in English from Iowa State. She was named Iowa’s Teacher of the Year last fall, thus qualifying her for the national honor by the Council of Chief State School Officers. The tall, energetic educator was both “euphoric and humbled” when learning of her award.

Representing teachers

“This is an incredible opportunity to represent all the magnificent teachers in this country,” she said.

What makes a National Teacher of the Year? It starts with a classroom focused on students. “The seeds of that are in my experiences at Iowa State,” Wessling said, “because I felt that I, as a learner, could learn beside and with the students around me as well as my professors.”

She appreciated the opportunities to sit down anytime with her Iowa State English professors and talk shop. “I knew that was the kind of experience I wanted for my own students because it was about a process for learning,” she said.

Wessling invited English faculty members Donna Niday and Bob and Michelle Tremmel to Washington, D.C., to take part in the Teacher of the Year festivities.

“It was so important to have them there with me,” she said. “They have been more than teachers. They have been mentors and colleagues, and we still collaborate today.”

Married with three young children at home, Wessling teaches a variety of language arts courses at Johnston. They include classes for lower-performing students in addition to her usual advanced placement courses.

Different learning styles

“Sarah recognizes that students are all different learners – that they all don’t learn the same way,” said Bruce Hukee, Wessling’s principal at Johnston High. “They learn in a style and manner that’s best for them, and she works to accommodate that.”

Wessling shows respect for all her students and believes each is meant for something special. One student a few years back truly struggled in English, but Wessling saw other skills hidden deep within the young man. She helped pull his abilities to the surface.

“Irrelevant, Wessling is spending the 2010-11 school year not in her beloved classroom but traveling about the nation as the Teacher of the Year speaking on behalf of education, schools and – especially – students.
Whisnant’s calculations hit a home run

Kerry Whisnant, Iowa State University physics professor, studies the mysteries of the neutrino, the elementary particle that usually passes right through ordinary matter such as baseballs and home-run sluggers.

Kerry Whisnant, St. Louis Cardinals fan, studies the mathematical mysteries of baseball, including a long look at how the distribution of a team’s runs can affect the team’s winning percentage.

Whisnant, who scribbles the Cardinals’ roster on a corner of his office chalkboard, is part of baseball’s sabermetrics movement. He, like other followers of the Society for American Baseball Research, analyzes baseball statistics and tries to discover how all the numbers relate to success on the field.

The results are ideas, analyses, formulas and papers that dig deep into the objective data.

Whisnant recently took up a decades-old formula written by Bill James, the baseball author and statistician who inspired sabermetrics and is a senior adviser for baseball operations for the Boston Red Sox. The basic formula, which has been tweaked over the years, uses the number of runs scored per game (RPG) and runs given up per game to estimate a team’s winning percentage.

Run production variance

Whisnant took that formula a step further by considering run distributions. What happens, in other words, when you consider how much a team’s run production varies? Does it help if a team consistently scores runs? Does it hurt if a team scores a lot of runs one day and very few the next? And is slugging percentage (SLG, total bases divided by at bats) a good measure of that consistency?

Whisnant’s answer, based on a Markov chain analysis that simplifies and simulates an infinite number of baseball games while eliminating the random fluctuations found by analyzing actual data from a finite number of games:

\[
W_1/L_1 = (\text{RPG}_1/\text{RPG}_2)^a (\text{SLG}_1/\text{SLG}_2)^b
\]

where

\[
a = 0.723 (\text{RPG}_1 + \text{RPG}_2)^{.373}
\]

and

\[
b = 0.977 (\text{RPG}_1 + \text{RPG}_2)^{(-.947)}
\]

“I hated math in school, just write me a very condensed summary Kerry,” a baseball fan wrote to dugoutcentral.com, a Web site for baseball talk and analysis, when Whisnant posted his formula there.

Consistency works

Whisnant’s reply: “Bottom line: More consistent teams (narrower run distribution) tend to win more games for the same RPG (runs per game). Teams with higher SLG (slugging percentage) tend to have a narrower run distribution. Given two teams with the same RPG, a team with a SLG .080 higher will on average win one more game a season. If their pitching/defense has the same RPG allowed but a SLG allowed .080 lower, that would add another game.” So there you have it: “The more consistent a team is in scoring runs, game to game, the better the team’s winning percentage for the total number of runs scored,” Whisnant said.

“My study shows that runs alone don’t tell the whole story,” he said. “Consistency is another factor. You want to score runs, and you want to be consistent.”

Across an entire 162-game season, Whisnant said more consistency could mean two additional wins. And that can be the difference between making the playoffs and calling it quits the first week in October.

Whisnant’s research explaining the formula was named in March the top paper in a contest sponsored by the Massachusetts Institute of Technology’s Sloan Sports Analytics Conference in Boston.

– Mike Krapfl, Iowa State University News Service
IOWA STATE UNIVERSITY

8

COLLEGE OF LIBERAL ARTS & SCIENCES

If they had to write the consummate back-to-school report of “what I did last summer,” some Iowa State University students could fill volumes.

Each summer, scores of Iowa State ROTC men and women work toward their United States military commissions by participating in training programs throughout the globe. Their experiences are anything but boring: Parachuting from planes, rappelling from helicopters, cruising on ships or submarines, learning mountain warfare, flying and participating in humanitarian programs, to name a few.

The cadets and midshipmen train hard, challenge themselves and become leaders.

Iowa State has ROTC (Reserve Officer Training Corps) programs in Military Science (Army), Air Force Aerospace Studies and Naval Science that includes the Marines. All are housed in the College of Liberal Arts and Sciences, and the students come from throughout the university.

“Our program supports sending its young leaders as far off campus as possible to further develop their intellect, character and overall global perspectives,” said Army Lt. Col. Jay Soupe, head of Military Science.

Forty-two Army cadets took part in summer 2010 programs including eight who traveled to locales such as Russia, China or Botswana in the Cultural Understanding and Language Program. The goal, said Soupe, “is to produce commissioned officers who possess the right blend of language and cultural skills in support of global operations.”

Nicholas Hasty spent two weeks in Costa Rica, where his duties included manual labor at a nursing home and a school. A senior political science major, Hasty said the trip was rewarding and improved his Spanish language skills.

“It is probably the most valuable experience I have had in college because I learned things I could not have learned in school,” he said. Hasty also volunteered at a home for elderly people. “All the activities were valuable, but I would say the volunteering was most rewarding because I saw it had a direct effect on people there.”

Jessica Dinges participated in two summer programs, including the Northern Warfare School at Ft. Wainwright, Alaska. The course trains units and leaders in harsh, arctic operations and included three days and two nights next to a glacier.

“We learned about moving personnel and equipment in a cold, mountainous environment,” said Dinges, a senior in psychology.

Later in the summer she and 22 other Iowa State cadets participated in the rigorous Leadership Development and Assessment Course at Joint Base Lewis-McChord, Wash. The 29-day course is the most important training event for an Army ROTC cadet – it’s required to be commissioned a second lieutenant. Some 6,400 participated in the course in 14 regiments.

“We had some long, tough days,” said Dinges, who finished in the top two percent in the physical fitness test – push-ups, sit-ups and two-mile run.

Also from Iowa State, Trenton
Fredrickson, a materials engineering major, was named the top cadet of the nearly 500 in the 7th Regiment, and James Stenson, a liberal studies major, was named the number two cadet of the 5th Regiment.

“The Cyclone Battalion consistently ranks in the top three percent of the 273 ROTC programs in the nation,” Soupene said. “This competition is about leadership, and we do very well.”

More than a dozen members of Iowa State’s Air Force ROTC Detachment 250 attended field training at Maxwell Air Force Base, Ala., including Katherine Meinig. “The field training process is designed to evaluate military leadership and discipline, and determine potential for entry into the professional officer corps,” explained Meinig, a junior in meteorology.

She said the first few days were the most challenging for her, both physically and mentally. “It was an atmosphere I had never been in, and with 17-hour days and thinking that I still had an entire month to endure, it was intimidating. What helped, though, was knowing that whatever was going to happen, I was going through it with my entire flight.”

Another cadet, Zachary Christensen, completed the Air Force Academy (Colo.) Free Fall program, which consisted of about 40 hours of ground training and five free fall jumps from 4,500 feet.

“One of the most unique things about the academy free fall program,” said Christensen, a senior studying logistics in the College of Business, “is it is the only jump school in the world where your first free fall jump is alone. It is the only jump school in the world where your first free fall jump is alone. - Zachary Christensen”

Junior Daniel Schnier cruised 12 days on the USS Albuquerque, a fast-attack submarine stationed out of San Diego. The mechanical engineering major learned about the sub as its crew went through its many drills.

“The submarine was constantly doing different types of drills to keep proficient in everything from steam line ruptures to man overboard,” said Schnier, who also had a special experience. “I was also able to drive the sub.”

In nearby Coronado, Calif., senior Rory Keel was attached to the Advanced Training Command of the Naval Special Warfare Command – the SEALs. The training was intense, beginning each day with “a high intensity workout run” by the Navy SEAL instructors.

“We ran the famous Basic Underwater Demolition/SEAL training obstacle course, and I gained a healthy respect for the community in which I hope to join following graduation,” said the industrial technology senior.

Nicholas Hasty was in Costa Rica.
Her days are long and taxing. Trekking through rough, woodland terrain in the West African nation of Senegal, in 110-degree, bug-infested heat, it’s the only way primatologist Jill Pruetz can observe her research subjects, savanna chimpanzees.

Research by mathematician Stephen Willson, on the other hand, often begins with paper, pencil and a place to concentrate to “try to see what happens” as he works on a new theorem.

Pruetz and Willson have different methodologies, yet they share the same drive, satisfaction and excitement in discovery. Call it research, scholarship or creative endeavors, Pruetz and Willson and nearly 500 other Iowa State University faculty members in the College of Liberal Arts and Sciences are, through discovery, adding to the body of knowledge in many disciplines – and improving our lives.

Research and scholarly activities are alive and well at Iowa State. “The research enterprise is extremely important to the university’s future success,” said Sharron Quisenberry, Iowa State’s vice president for Research and Economic Development.

She said Iowa State and Liberal Arts and Sciences are addressing some of the most critical issues facing Iowa, the nation and the globe. Researchers are studying energy sources including biorenewable products, the environment and climate, water quality, infrastructures, and the health and nutrition of plants, animals and humans.

Iowa State has been a research institution since its first students enrolled some 150 years ago. The university is a member of the Association of American
Universities, an organization of 63 leading public and private research institutions in North America. Iowa State also is an RU/VH – “research university with very high research activity,” so designated by the Carnegie Foundation for the Advancement of Teaching. The RU/VH tag hangs on the top 96 research universities in the United States.

Reputations of universities
Research is one segment of ISU’s three-prong mission, with teaching and outreach, and all three have equivalent value, say university officials. While the caliber of students who graduate from a university perhaps best defines a school, it’s the discovery – the research – that’s right behind.

“Reputations of institutions are, to a very large degree, built on their research,” said David Oliver, associate dean for research in Liberal Arts and Sciences. “Research brings prestige to a university.”

Liberal Arts and Sciences' lengthy history of discovery and creative endeavors has helped change the world and added to our cultural literacy.

John Atanasoff was on the physics and math faculty when he created what became the foundation for the modern computer. During World War II, chemists Frank Spedding and Harley Wilhelm developed a process to produce highly pure uranium for the secret U.S. Manhattan Project, advancing the nation’s wartime efforts. And Jane Smiley was on the English faculty when she won the 1992 Pulitzer Prize for fiction for her novel, *A Thousand Acres*.

Liberal Arts and Sciences and the rest of the university share a common trait – many areas of scholarship excellence exist, but Iowa State’s research “cannot be everything for everybody,” Quisenberry said.

All universities concentrate on their strengths, and Liberal Arts and Sciences has many. The biological and physical sciences have long traditions of excellence. Statistics’ graduate program is perennially ranked high (fifth in the nation in 2009) by *U.S. News & World Report* magazine. Other programs, research groups and individuals are among the very best at what they do.

And all those Liberal Arts and Sciences scholars share a curiosity and a drive for creating and learning something new, no matter the locale or methodology.

Chimps using tools
Jill Pruetz rattled the science community in 2007 when she reported the chimpanzees from her Senegale site were using spear-shaped tools to hunt. The chimps were the first non-humans observed to routinely use the primitive tools to hunt other vertebrates, in this case small primates called bush babies.

Pruetz, associate professor of anthropology, is the first person to study chimps in savanna woodlands. Previous extensive studies took place in tropical forests. Her groundbreaking work included observations that some savanna chimps have a near human understanding of wildfires and exhibit some new forms of food sharing.

“Anthropologists study primates to get a better understanding of human evolution,” said Pruetz. “So by comparing the chimps I study with the chimps in the forest...”
and seeing those differences – especially where they coincide with human behavior – leads you to think that this (savanna) environment can produce some changes that take them in a human-like direction.”

The findings led her to be selected as a National Geographic Emerging Explorer for 2008. She also provided one of the hunting tools used by the savanna chimps for a new exhibit on understanding human origins in the Smithsonian Institute’s National Museum of Natural History in Washington, D.C.

Pruetz’s research has been compared to that of another chimpanzee authority, Jane Goodall.

“Sixty years ago,” said Michael Whiteford, dean of Liberal Arts and Sciences and also an anthropologist, “Jane Goodall’s revolutionary observations that chimpanzees made tools led the late Louis Leakey, one of the eminent paleoanthropologists of the 20th century, to observe that up until Goodall’s discovery, humans were believed to be the only animals capable of making tools.

“He noted that chimpanzees now should be declared humans or we needed to rethink our definition of humans. In terms of its impact on our thinking about the development of culture and perhaps human evolution, Jill Pruetz’s work is just as important as Goodall’s was decades ago.”

**Networks instead of trees**

Stephen Willson’s training is in algebraic topology – “very theoretical pure mathematics,” said the University Professor. In the last decade, however, his research has taken a different direction. In the 1990s he attended a seminar on mathematical applications to biology.

“I found the problems very interesting,” he noted.

Willson’s research focus is on the mathematics of biological evolution, specifically building phylogenetic graphs, commonly called “trees” or “networks.” Charles Darwin’s *The Origin of Species* in 1859 included trees to show the evolutionary
relationships among various animal species thought to have a common ancestor. Willson is among the scholars who believe the true diagrams are often more “networks” than trees.

Two newly discovered natural processes have entered the equation. Hybridization is the combining of different species to create a hybrid, and lateral gene transfer is the introduction of genes from one organism to another while the recipient is not the offspring of the source. It means mathematicians who create theorems to produce trees must take a broader look at how life evolves.

“Allowing for these networks means a huge, huge difference in the mathematics of the subject,” Willson explained. “You get diagrams that are very different.” Instead of simply branching out, the branches grow back together to form complicated, knotted structures.

“I have theorems about trying to produce these diagrams from the DNA,” he added. He says his work is applied because, “the fundamental problems I’m trying to study come from biology, but I’m taking a pure mathematician’s viewpoint. I’m looking not for approximations so much as theorems about how certain methods might work under certain circumstances.”

Much of Willson’s work is done on his computer – to write programs and run simulations, for example. “But ultimately,” he noted, “the methods are found by thinking about it and trying things with paper and pencils.”

**Tremendous capabilities**

Quisenberry wants to facilitate the growth of Iowa State’s research. The university attracted a record $388 million in grants, contracts, gifts and cooperative agreements in fiscal 2010. Of that total, $239 million was for research projects submitted by university faculty and scientific staff.

“I think that gives you an indication of the quality of the faculty, staff and students that we have at this university, and the ability to really grow beyond what was accomplished this past year,” she said.

“We have tremendous capabilities and are poised to accomplish great things.”

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| **Don Sakaguchi**  |
| Genetics, Development & Cell Biology |
| Research focuses on neuroscience and developing experimental strategies for rescue and repair of the damaged and diseased nervous system. |

| **Tin-Shi Tam** |
| Music |
| The university carillonneur, who performs 78 steps above Central Campus, researches bells and bell music in China and pedagogy for online learning in performing arts. |

| **Theresa Windus**  |
| Chemistry |
| Uses super computers to develop and use new methods and algorithms for high-performance computational chemistry. |
Bill Gutowski is part of a “downscaling” effort in climate change research.

The research is not diminishing for the professor of geological and atmospheric sciences at Iowa State University. Rather, it is focusing on regional, smaller scale areas of the world to produce detailed information more applicable to people than the information coming from wider, global climate research methods.

Gutowski and fellow Iowa State professors Ray Arritt and Gene Takle have been part of groundbreaking research for several years producing detailed regional climate change simulations for the United States and Canada with the North American Regional Climate Change Assessment Program.

The program has joined a handful of other regional research groups from around the world in an organization named CORDEX (Coordinated Regional Climate Downscaling Experiment). CORDEX, under the World Climate Research Programme, is charged with coordinating efforts to produce a new generation of finer-scale regional climate information.

A one-degree (Fahrenheit) temperature rise in the global average might not worry Iowa’s corn farmers. But the change will be more in some places and less in others, and how it affects temperature and precipitation in the U.S. corn belt could be a major concern.

Gutowski is a member of the task force that established the initial guidelines for CORDEX.

For years climate scientists around the world have been constructing global climate models using sophisticated computer programs. They run many simulations then figure the averages.

“That’s why we call it climate,” Takle explained. “It’s an average, not an hour-by-hour forecast, but a season climate forecast.” Climate prediction is based on probabilities. It’s not what the temperature actually will be at noon on July 4, it’s the probability of what the temperature will be at that time.

Scientists might predict, for example, the average daily maximum temperature for September at some point in the future could be 3.5 degrees (Fahrenheit) warmer than the current average daily high for September. But does a relatively small global temperature increase mean much to an average Iowa corn grower?

“Global climate change means nothing to the farmer in Oskaloosa,” Gutowski said. “That’s true anyplace around the world.”

That’s where Gutowski, Takle and Arritt come in with their work on regional climate modeling. Instead of looking at climate change from a global scale, researchers are focusing on regions. The Iowa State researchers have been looking at Middle America and Iowa.

“It’s a scale that can affect people in their day-to-day lives,” Arritt said.

A one-degree (Fahrenheit) temperature rise in the global average
An Iowa State University team of researchers has developed a type of hybrid protein that can make double-strand DNA breaks at specific sites in living cells, possibly leading to better gene replacement and gene editing therapies.

Bing Yang, assistant professor of genetics, development and cell biology (GDCB), and his colleagues developed the hybrid protein by joining parts of two different bacterial proteins. One is called a TAL effector, which functions to find the specific site on the gene that needs to be cut, and the other is an enzyme called a nuclease that cuts the DNA strands.

Yang hopes the research will lead to the ability to modify genomes by cutting out defective or undesirable parts of DNA, or by replacing defective or undesirable gene segments with a functioning piece of replacement DNA – a process called homologous recombination.

Yang says that his hybrid proteins can be constructed to locate specific segments of the DNA in any type of organism.

“This breakthrough could eventually make it possible to efficiently modify plant, animal and even human genomes,” said Yang. “It should be effective in a range of organisms.”

The proteins work by binding onto the specific segment of DNA the researcher wants to change. Yang's proteins do this by reading the DNA sequence and finding the specific area to be cut.

Once the protein binds onto the DNA at the correct spot, the other half of Yang's protein then cuts the double-stranded DNA.

Bad or undesirable DNA can be resected (removed) and good or more desirable DNA can be introduced. When the DNA heals, the good DNA is included in the gene.

Yang started his research about a year ago after seeing the results of research by Adam Bogdanove, ISU associate professor of plant pathology, showing that TAL effectors use a very straightforward code to bind to a specific DNA sequence.

This discovery allowed Yang to predict exactly where the TAL effector nuclease will bind on the DNA to make the cut. Another study had similar results.

The concept has also been proven by Bogdanove and Dan Voytas, collaborator in genetics, development and cell biology at Iowa State, and director of the Center for Genome Engineering at the University of Minnesota, Twin Cities.

The TAL effector-nuclease approach improves on tools currently available for genome modification. It should be faster and less expensive to make TAL effector nucleases, and easier to design them to recognize specific DNA sequences, according to Yang.

Voytas and Bogdanove were also able to show that the TAL effector part of the hybrid protein can be customized to target new DNA sequences.

Yang’s team includes, from Iowa State, Ting Li, graduate assistant; Sheng Huang, postdoctoral researcher; David Wright, associate scientist; and Martin Spalding, professor and chair of GDCB.

– Dan Kuester, Iowa State University News Service
Terrific academic trio

Three Liberal Arts and Sciences students, all working to change the world one way or another, garnered major national honors.

Connor Schenck, a senior in computer science, was named a Goldwater Scholar for 2010-11. The Goldwater Scholarship is the premier undergraduate award in mathematics, natural sciences and engineering. Schenck is one of only nine computer science majors nationwide to be selected for the competitive scholarship. He was one of 278 recipients from a national field of 1,111 students. Goldwater Scholars receive one- and two-year scholarships up to $7,500 per year.

As an undergraduate researcher in Iowa State’s Developmental Robotics Lab, Schenck was part of a team of three students investigating object recognition using multiple modalities of perception. The study resulted in a research presentation and paper at an international conference on intelligent robots and systems.

Schenck also serves as a teaching assistant in the human-computer interaction program.

Sam Bird, a senior in economics and global resource systems, was named a 2010 Udall Scholar by the Udall Foundation. The foundation awards scholarships to students committed to careers related to the environment, natural resources or Native American issues.

Bird was selected as one of 80 scholars from a field of 537 candidates nominated by 256 colleges and universities. Udall Scholars receive a scholarship of up to $5,000.

In summer 2009 Bird lived and worked in Uganda as part of the ISU-Makerere University Uganda Service Learning Program. For three years he also organized an annual fundraiser to purchase building supplies for schools in Uganda.

Bird represented the International Association of Students in Agricultural and Related Sciences at the United Nations Commission on Sustainable Development in New York City in 2009. This year he participated in ISU’s Global Agriculture and Food Program, conducting research at Biodiversity International in Rome.

Nora Tobin, a May 2010 graduate in political science and international studies, was named to the USA Today 2010 All-USA College Academic First Team. Tobin was one of 20 winners chosen from hundreds of juniors and seniors nominated by colleges nationwide.

USA Today honors students who excel academically while also extending “their reach beyond the classroom to benefit society.” Winners receive a $2,500 award.

At Iowa State, Tobin interned with the World Food Prize and National Religious Campaign Against Torture, and she conducted research with ISU’s Center for Sustainable Rural Livelihoods.

She worked abroad with the Uganda Women Concern Ministry and at the Office for Institutional HIV Coordination in Stellenbosch, South Africa. She also studied at Leiden University in the Netherlands.

Tobin now is the Africa Programs associate for International Student Exchange Programs, an organization that coordinates student study abroad exchanges in 42 countries.
Hatchlings Inc. has three full-time employees including Dwyer’s mother and has had about 3.4 million users worldwide since its Feb. 1, 2008 launch.

The original business model projected revenue via Facebook ads. Now additional income comes from the sale of premium memberships and “virtual goods” such as limited-edition eggs for people who want to complete collections.

It all started with a $105 investment – $100 for an artist to design the first eggs and a $5 Facebook ad. (At the time they were provided free server space.)

That brainstorm early in 2008 turned into a successful Facebook application called Hatchlings, based on the rather simple concept of an online Easter egg hunt.

Users try to find and collect as many eggs as possible from friends’ Facebook pages. Most of the eggs also hatch virtual pets requiring regular digital feeding.

Indeed, it’s a simple idea, but also a profitable one. Hatchlings Inc. has three full-time employees including Dwyer’s mother and has had about 3.4 million users worldwide since its Feb. 1, 2008 launch.

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Dwyer, a Clive, Iowa, native, first tested his game – then called the World Wide Easter Egg Hunt – with friends and family who sent it on to their friends. With that small cluster of users, he launched the application with the $5 ad, which brought in about 100 more players.

The game, which made a profit its first day, grew virally to 50,000 users by Easter, less than two months later.

“So after that $5 of initial advertising, we really didn’t have to pay for our traffic,” Dwyer said. “It was awesome because everybody was just coming in, and it was growing like crazy. It’s kind of the typical story of the Internet where you start something and it takes off. It’s just a wild ride.”

After Easter he changed the game’s name to Hatchlings for year-round play. Through hard work and late nights, he improved the game, hired some employees and slowed his ISU education to a crawl to run the business.

Hatchlings is not Dwyer’s first enterprise. He started a web development business while attending Dowling Catholic High School and continued the venture into his freshman year of college. “I’d be sitting in class at Iowa State working on a web site and charging my usual fee while I was listening to the lecture.”

Dwyer’s business continues to grow, yet he wants to accomplish more.

“I hope I come up with something that will be really big and something that will change the world and make it a better place. I try and think about things that will do that with Hatchlings, but it’s just not on the scale yet where I can make all that big of a difference.”


“We figured we were making a lot of money and there should be some way to channel this into doing something good for someone else,” he said. So his company sold a special Make-A-Wish egg for $10 each and donated the funds to the organization that helps children with life-threatening medical conditions.

The total Make-A-Wish donation: $90,000.

Another idea Dwyer is mulling over is selling “branded” eggs. Perhaps Tony the Tiger will hatch from a Frosted Flakes egg someday.

What about Cy cracking out of a cardinal and gold ISU shell? Dwyer just smiled. No doubt this Iowa entrepreneur has already considered it.
A new realm of possibilities

Like most new students, Lisa Koll had goals when she arrived at Iowa State as a freshman. She wanted to get her degree in biology. And after being a state track and cross country qualifier at Ft. Dodge High, she hoped to become a college All-American someday, too.

Koll would earn her degree in the College of Liberal Arts and Sciences in three years – summa cum laude (3.9 or higher GPA), no less – and would be accepted into Iowa State’s veterinary medicine program.

She became an All-American even faster, earning honors in cross country as a sophomore. Koll would eventually be an 11-time All-American who won four NCAA and nine Big 12 track championships while setting the all-time collegiate record in the 10,000-meter run (31:18.07). And she topped it off by earning the 2010 Honda Sports Award in track and field as the nation’s top collegiate female athlete in the sport.

Never a high school state champ, collegiate 10,000-meter record holder and four-time NCAA winner Lisa Koll has an eye on London in 2012.

Running in the 2012 Summer Olympic Games in London, Koll finished second in the 10,000 at the USA Outdoor Championships at Drake Stadium on June 24. She signed to run professionally for Nike soon after.

She’d still like to be a veterinarian someday. But ultimately, her decision to downgrade that priority last summer may have allowed her to bounce back from an injury-filled junior season when she admits that she wasn’t getting enough sleep while juggling too much.

“I spent the summer kind of re-evaluating things and asking, ‘How important to me is running?’ And I just realized that I wasn’t ready to give it up,” she said. “I wasn’t ready to hang up the spikes and just be happy with whatever happened in my last year.

“But I worked really hard to get into vet school and it’s something I was really passionate about. I just kind of had to decide which one is going to be more important to me at the moment,” Koll continued. “Running has a timeline, and I’m not always going to be able to go back to running, but I can always go back to school. So I talked to the dean and everyone at vet school was really accommodating.”

Koll said she found all the faculty to be willing to work with her throughout her busy Iowa State schedule. But she also made a commitment to a lifestyle for success.

“Distance running takes a sort of commitment and drive and dedication that’s also needed in the classroom, so the two really go hand-in-hand,” Koll said. “It’s like a lifestyle – get up, run, study, eat, sleep. That’s really all you have time for.

“So, when some people say ‘How did you do it? [find success academically and athletically]’ it was really just a choice,” she continued. “I don’t think it was really that difficult. It was more of just being committed to it [the lifestyle] and finding joy in being successful in those things.”

And Koll found plenty of joy as Iowa State’s greatest women’s track athlete.

“I just realized that I wasn’t ready to give it up.”

–Mike Ferlazzo, Iowa State News Service who also is the public address announcer for ISU track meets.
In the 1940s, Dwight Ink persuaded the Iowa State College faculty to approve a double major degree in history and government, a decision that would prove vital for his impressive career.

Without the government (now political science) degree he earned in 1947, Ink said he would not have been able to pursue public administration in graduate school, which eventually led him to Washington, D.C., serving in executive positions for seven consecutive presidents, from Eisenhower to Reagan.

The foundation from Iowa State, both inside and outside the classroom he said, made his exciting public service career possible.

A ‘cyclone of activities’

Coming from a small Iowa high school during the Depression, Ink was thrilled with the opportunities available on campus in 1940. He made his mark at Iowa State participating in a number of campus groups, enough for him to be referred to as a “cyclone of activities” by the Iowa State Daily Student (now the Iowa State Daily), Ink recalls.

Ink served as president of Iowa State Debaters, organizing 47 teams, the largest program in the nation. He chaired the Education Committee of the War Council, in which he hosted weekly WOI radio programs and wrote editorials in the Iowa State Daily Student.

He was also Ward representative on Cardinal Guild (the student body government) and launched campus write-in campaigns. Ink led these activities while working as a janitor in Beardshear Hall and pruning college apple trees. Plus, he left campus for four years to serve in World War II.

“The organizing experience I gained at Iowa State was fundamental to my successes in public administration,” Ink said. “The debates and editorials gave me public speaking and writing skills that were invaluable in my later communicating with department heads, presidents and leaders of Congress.”

Ink completed his master’s degree at the University of Minnesota and began his public service career in local and state government, concentrating on anti-corruption actions. In the early 1950s he began work for the federal government under Presidents Truman and Eisenhower.

Serving seven presidents

During his years of presidential service, Ink touched many areas of American government. He briefed Eisenhower on the concept of a limited nuclear test ban treaty, which was negotiated by Kennedy with the Soviet Union. He directed reconstruction programs after the great Alaska earthquake of 1964 for Johnson. Ink also handled all management initiatives for Nixon and managed the federal government’s energy conservation effort under Ford. And he designed civil service reform for Carter.

His unique career also involved a brief kidnapping by drug lords while he was directing foreign assistance in South and Central America for Reagan.

Now retired in Virginia, Ink remains involved in the National Academy of Public Administration, which gave him its highest award two years ago. He is also writing his memoirs for his family and the place where his public service aspirations began: Iowa State University.

“Iowa State is the reason that I went into public service,” Ink said. “The encouragement of the faculty, the extracurricular activities, the opportunities to organize, debate, provide radio commentary and write in the Daily all combined to persuade me that public service was the field for me.”

Book highlights Ink’s service

Distinguished Professor Gary Wells has researched the efficiency and accuracy of police lineups for many years and has become one of the country’s leading experts on eyewitness testimony. Now the Iowa State University psychologist has a new title: The Wendy and Mark Stavish Chair in Social Sciences.

The Stavishes of Leesburg, Va., provided funds to create the new endowed faculty position. The social sciences at Iowa State include anthropology, economics, political science, psychology and sociology. Wendy is a 1977 Iowa State graduate in sociology with an emphasis in social work. Mark Stavish earned a bachelor’s degree in psychology in 1976 and a master’s in industrial relations from Iowa State.

“Wendy and I feel blessed and privileged to be in a position to help Iowa State attract and retain a world-class faculty in the social sciences,” Mark Stavish said. “We have always believed our experiences at Iowa State provided a critical foundation for many of the blessings we have received in our adult lives.”

Endowed faculty positions, such as the Stavish Chair, are key to enhancing Iowa State’s academic excellence. Faculty members use the flexible funds provided by the endowments to support classroom and research efforts including graduate assistantships and postdoctoral stipends.

“I feel humbled by this honor,” said Wells, an Iowa State faculty member since 1989. “It was totally unexpected.”

Wells’ research on the reliability of eyewitness identification has led to improvements in the accuracy of eyewitness testimony. His findings have been incorporated into standard textbooks in psychology and law. In addition, his proposals on lineup procedures are increasingly being accepted in law enforcement practices.

The gift is part of Campaign Iowa State: With Pride and Purpose, the university’s $800 million fundraising effort.

Alumnus’ gift will lead to high-tech auditorium

The Change Happens Foundation of Hawaii has made a $5 million commitment toward the construction of a $10 million, 400-seat auditorium building at Iowa State University. The structure will be named after 1967 Iowa State mathematics graduate Douglas D. Troxel, of Holualoa, Hawaii. He is president and chief executive officer of the Change Happens Foundation, a private family organization committed to helping motivated groups with pioneering research and forward-thinking projects that benefit humanity.

“As an alumnus, my family and the Change Happens Foundation are proud to work in partnership with the Iowa State family in building a high-tech center for active learning on the beautiful and world-class Iowa State campus,” Troxel said.

The auditorium will be built near the horticulture building and is scheduled to open in 2012. The structure will allow Iowa State to greatly increase the number of introductory course sessions offered in the sciences and social sciences.

Troxel is a Lake City, Iowa, native who founded Serena Software in 1980. From 1980 to 1997, Troxel served as president and chief executive officer of Serena and is now its chairman emeritus.

The gift is part of Campaign Iowa State: With Pride and Purpose.
We reached our milestone, but we’re not done
By Michael Gens

We did it!

Because of you, we recently surpassed our ambitious Campaign Iowa State goal for the College of Liberal Arts and Sciences – $65 million. With just over $68 million raised to date, we celebrate this important milestone.

But we’re not done.

We have great opportunities needing to be addressed in the campaign that ends June 30, 2011. Iowa State has set yet another enrollment record – 28,682 – and we need to provide even more scholarship opportunities.

In the Liberal Arts and Sciences, students develop the foundational skills upon which an Iowa State degree – in virtually any academic discipline – and a lifetime of learning are built. This is why supporting students is among our greatest priorities. As part of our $65 million goal, $13 million is for student support. We are almost there with $11 million raised.

Because most Iowa State scholarships are tied to specific programs or academic majors, the College of Liberal Arts and Sciences needs to build its discretionary scholarship program.

Providing scholarships for which students qualify regardless of major will allow us to help incoming students still considering a field of study. Additionally, supporting current students desiring to change or design their own majors enables flexibility of their learning process without the risk of losing their support.

Endowed scholarships, which create a lasting source of student support, may be initiated and named with an outright gift or multiyear pledge of $25,000. Annual (non-endowed) scholarships can be established with a gift or pledge of $12,500 or more, which provides an award of $1,250 annually for five years.

When you establish a scholarship fund for students in the College of Liberal Arts and Sciences, you provide them with a sense of financial security early in their academic journeys as they are discerning their career paths, allowing them to be more confident of their abilities to continue their educations and plan for the future.

Contact any of us if we can assist in helping our students. Thank you again for your continued support!

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Chemistry’s Caldwell Chair aids Winter’s research efforts

Assistant professor Arthur Winter is the new holder of the Carlyle G. Caldwell Chair in Chemistry at Iowa State University.

The two-year chair will provide Winter with supplemental annual funds for his teaching and research efforts. Endowed chair funds often are used to support graduate students and postdoctoral researchers, purchase additional equipment and provide professional development opportunities.

The Caldwell Chair was established in 1985 in honor of Iowa State chemistry alumnus Carlyle G. Caldwell and funded through contributions from corporations, foundations and individuals. Caldwell was chairman and chief executive officer of the National Starch and Chemical Corp. until 1984 before becoming chair of the company’s executive committee. He earned both his B.S. (1935) and Ph.D. (1940) degrees in chemistry from Iowa State.

Winter’s research group is developing new chemical tools for investigating cancer cells at the molecular level and also for the targeted delivery of chemotherapies.
Whenever, wherever...
You can be a part of something truly important.

Supporting Iowa State University through online giving has never been easier or more secure. Invest in an area of your greatest interest and make an impact where it matters to you most. www.withprideandpurpose.org