



Workers excavate a house in an Amazonian city that dates from the mid 13th to mid 17th century.

Amazonian Settlements Rivalled Greece, Europe

They aren't the lost cities early explorers sought fruitlessly to discover.

But ancient settlements in the Amazon, now almost entirely obscured by tropical forest, were once large and complex enough to be considered "urban" as the term is commonly applied to both medieval European and ancient Greek communities.

So said a paper in the journal *Science* last August co-authored by anthropologists from the University of Florida and Brazil, and a member of the Kuikuro, an indigenous Amazonian people who are the descendants of the settlements' original inhabitants.

"If we look at your average medieval town or your average Greek polis, most are about the scale of those we find in this part of the Amazon," said Mike Heckenberger, a UF professor of anthropology and the lead author of the paper.

"Only the ones we find are much more complicated in terms of their planning."

The paper also argued that the size and scale of the settlements in the southern Amazon in North Central Brazil means that what many scientists have considered virgin tropical forests are in fact heavily influenced by historic human activity.

The communities are now almost entirely overgrown, but Heckenberger said that members of the Kuikuro, a Xinguano tribe that calls the region home, are adept at identifying telltale landscape features that reveal ancient activity. These include, for example, "dark earth" that indicate past human waste dumps or farming, concentrations of pottery shards and earthworks. Also assisted by satellite imagery and GPS technology, the researchers spent more than a decade uncovering and mapping the obscured communities.

The new paper reports that the settlements consisted of clusters of 150-acre

towns and smaller villages organized in spread-out "galactic" patterns.

None of the large towns was as large as the largest medieval or Greek towns. But as with those towns, the Amazonian ones were surrounded by large walls — in their case, composed of earthworks still extant today. Among other repeated features, each Amazonian settlement had an identical formal road, always oriented northeast to southwest in keeping with the mid-year summer solstice, connected to a central plaza.

The findings are important because they contradict long-held stereotypes about early Western versus early New World settlements that rest on the idea that "if you find it in Europe, it's a city. If you find it somewhere else, it has to be something else," Heckenberger said.

"They have quite remarkable planning and self-organization, more so than many classical examples of what people would call urbanism," he said.

But the research is also important because it means at least one area of "pristine" Amazon has a history of human activity. That could change not only how scientists assess the flora and fauna, but also how conservationists approach preserving the remains of forest so heavily cleared it is the world's largest soybean producing area. "This throws a wrench in all the models suggesting we are looking at primordial biodiversity," Heckenberger said.

Around the communities the scientists found dams and artificial ponds that indicate inhabitants farmed fish near their homes. They also found the remnants of open areas and large compost heaps suggesting widespread near-town cultivation.

The research has been funded by the National Science Foundation.

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UF Physicists Active In Large Hadron Collider

When the world's largest particle accelerator went live in early September, University of Florida physicists joined thousands of scientists working to crack the last major mysteries of the physical universe.

A team of UF physicists has a leading role in one of the two major experiments planned for the Large Hadron Collider, a 17-mile-long, \$5 billion, super-cooled underground tunnel that has been under construction outside Geneva, Switzerland, for 14 years. It has been described as the largest scientific project in history.

"The Large Hadron Collider will give us a deeper understanding of what's going on with the basic forces of nature," said Darin Acosta, a UF professor of physics and one of more than two dozen UF faculty or students involved in the experiment.

The accelerator is intended to smash together protons energized with seven trillion electron volts — recreating in miniature the conditions thought to

have existed in the first moments of the "Big Bang" more than 13 billion years ago. Physicists hope at least a few of those collisions will result in new, if extremely rare and fleeting, forms of matter. They believe subsequent analysis could yield clues to the most fundamental mysteries in physics — mysteries about which there are many theories but few observations.

For example, Acosta said, physicists have explained the presence of mass by theorizing the existence of the Higgs boson, a subatomic particle believed to endow particles with mass. But the Higgs — sometimes called the "God particle" because it is the last unobserved particle in the so-called Standard Model of particle physics — has so far eluded other colliders. Physicists hope the Large Hadron Collider is powerful enough to give them a first glimpse.

Also, there is considerable evidence that the universe contains abundant "dark matter" — matter that has never been observed but that obeys gravity and other physical forces. Physicists hope some smashed particles will yield the first observation of the mysterious stuff.

"We could directly see a neutral particle which could be what makes up 90 percent of the universe," Acosta said.

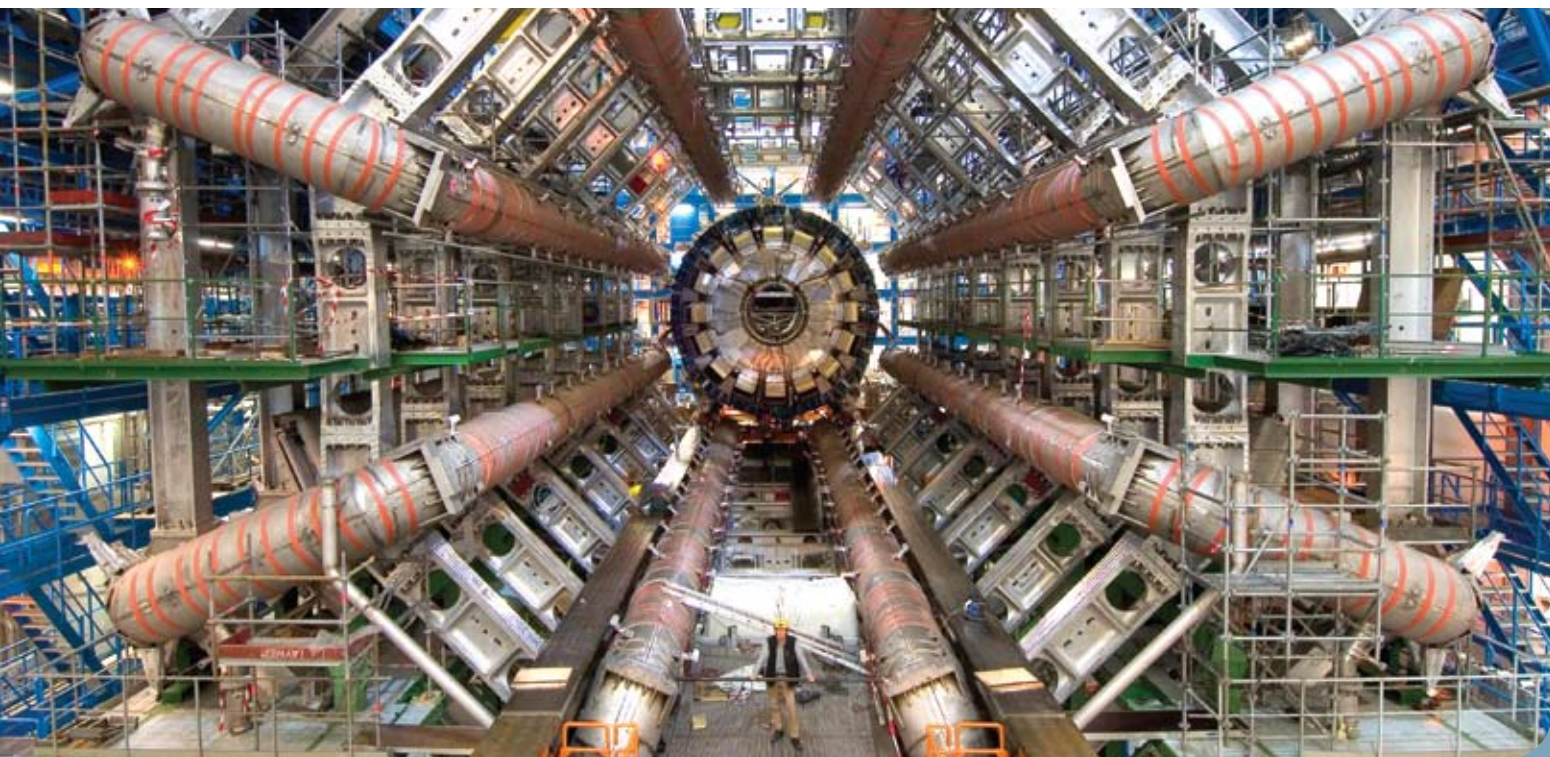
More than 30 UF physicists, postdoctoral associates and graduate students are involved in the collider's Compact Muon Spectrometer, or CMS, experiment, one of its two major experiments. About 10 are stationed in Geneva. The group is the largest from any university in the U.S. to participate in the CMS experiment, said Guenakh Mitselmakher, a UF distinguished professor of physics who heads the project.

The CMS is the collider's workhorse: It is designed to capture and measure all phenomena resulting from the proton collisions in the collider, Acosta said.

The UF team designed and oversaw development of a major detector within the CMS. The detector, the Muon system, is intended to capture subatomic particles called muons, which are heavier cousins of electrons. The bulk of the UF research was funded by the U.S. Department of Energy.

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Muy Caliente: Chili Peppers Heat For Defense

Despite the popularity of spicy cuisine, the hotness in chili peppers has always been something of an evolutionary mystery.

A plant creates fruit in order to entice animals to eat and disperse its seeds, so it doesn't make sense for that fruit to be painfully hot, said University of Florida zoology professor and evolutionary ecologist Douglas Levey.

But according to new research by Levey and six colleagues from other universities, chilies have a very good reason to make themselves hot. It boils down to protection.

Based on research on wild chili plants in rural Bolivia, the scientists found that the leading cause of seed mortality is a fungus called *Fusarium*. The fungus invades the fruits through wounds made by insects and destroys the seeds before they can be eaten and dispersed.

Capsaicin, the chemical that makes the peppers hot, drastically slows microbial growth and protects the fruit from *Fusarium*. And while capsaicin deters local mammals, such as foxes and

raccoons, from consuming the chilies, birds don't have the physiological machinery to detect the spicy chemical and continue to eat the peppers and disperse seeds, Levey said.

The researchers' findings were published online in August in the *Proceedings of the National Academy of Sciences*.

Levey and his colleagues were able to arrive at these conclusions because at least three of the approximately 15 species of chilies that grow in the Bolivian wild are polymorphic for pungency, which means that some individuals of those species produce pungent fruit and others produce non-pungent fruit. This provided the researchers with natural experimental conditions under which they could compare *Fusarium* attack on fruits with and without capsaicin.

Upon studying various chili pepper plants, the researchers observed a clear correlation between high levels of capsaicin and low seed mortality due to fungal growth, Levey said.

And the chemical doesn't just help the plants that produce it, either. Levey said the consumption of chilies can help protect humans from the dangerous diseases that are so plentiful in tropical climates.

"The use of chili peppers as a spice has spread to nearly every culture within 20 degrees of the equator, and it tends to decline as you move toward the poles," Levey said.

The capsaicin in chilies, one of the first plants domesticated in the New World, may have been used to protect human food from microbial attack long before refrigeration or artificial preservatives were available, he said.

At higher elevations, where moisture is high and *Fusarium* fungus is rampant, the scientists found that 100 percent of the plants produced hot chilies. In the drier lowlands, where fungus is less of a problem, only 40 percent of the plants produced fiery fruits.

While all of the plants look identical, telling the difference between hot and non-hot chilies is not difficult, Levey said.

"Just pop one in your mouth," he said. "You'll find out pretty quick."

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Jay Goodwin

Thawing Permafrost Holds Vast Carbon Pool

Permafrost blanketing the northern hemisphere contains more than twice the amount of carbon in the atmosphere, making it a potentially mammoth contributor to global climate change depending on how quickly it thaws.

So concludes a group of nearly two dozen scientists in a paper in the journal *Bioscience* in September. The lead author is Ted Schuur, an associate professor of ecology at the University of Florida.

Previous studies by Schuur and his colleagues elsewhere have estimated the carbon contained in permafrost in northeast Siberia. The new research expands that estimate to the rest of the

Researchers Develop Better Gene Therapy Agent

Replacing one amino acid on the surface of a virus that shepherds corrective genes into cells could be the breakthrough scientists have needed to make gene therapy a more viable option for treating genetic diseases such as hemophilia, University of Florida researchers said.

Reporting in the journal *Proceedings of the National Academy of Sciences* in May, UF geneticists said they have developed a new version of the adeno-associated virus used in gene therapy that works about 30 times more efficiently in mice than vectors scientists currently rely on.

The discovery could be the solution to a problem that has plagued researchers and doctors using AAV as a gene therapy vector — how to administer enough of the gene-toting virus to yield a therapeutic benefit without triggering an attack from the body's immune system, said Arun Srivastava, the George H. Kitzman professor of genetics and the chief of cellular and molecular therapy in the UF College of Medicine department of pediatrics.

AAV is considered ideal for gene therapy because it possesses the viral ability to infect cells yet does not lead to disease. But scientists discovered they had to administer trillions of AAV particles for the corrective gene to take root in a cell's nucleus and begin working.

“Based on our studies and those of others, it's become clear that the reason you need so much is because about half the AAV particles get stuck in the cytoplasm,” said Srivastava, the senior author of the study and a member of the UF Genetics Institute. “It doesn't get to the nucleus very efficiently. The reason for that is obvious. AAV is seen by the body as an invading protein and it tries to block it.”

The body mistakenly tags many AAV particles as junk proteins and sends them into cellular trash cans called proteasomes, where they are destroyed, Srivastava said. And a particular amino acid, tyrosine, is to blame.

Tyrosine is found at seven spots on the surface of AAV, Srivastava said. The scientists created seven new vectors, replacing a different tyrosine in each one and inserting in them the gene that

triggers production of the blood-clotting protein Factor IX. Patients with hemophilia B, a common form of the disease, do not naturally produce this protein.

In tissue samples and in mice, all the new vectors worked better than a commonly used version of AAV. One of the versions in particular worked 11 times better in tissue samples after 48 hours. In mice, the results were staggering. Two weeks after the mice were injected with the corrective gene, one of the new AAV-gene combos was working 29 times better than the standard vector was at incorporating the new gene into cells, at a 10-fold lower dose.

In addition to being more efficient, the new version of AAV could also prove to be more economical, Srivastava said. Current gene therapy trials are expensive because scientists must administer so much of the vector containing the therapeutic gene to see results. Using the new vector, scientists could potentially scale back to using as little as 100 billion particles instead of 10 trillion, Srivastava said.

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April Frawley Birdwell

permafrost-covered northern latitudes of Russia, Europe, Greenland and North America. The estimated 1,672 billion metric tons of carbon locked up in the permafrost is more than double the 780 billion tons in the atmosphere today.

“It's bigger than we thought,” Schuur said.

Permafrost is frozen ground that contains roots and other soil organic matter that decompose extremely slowly. When it thaws, bacteria and fungi break down carbon contained in this organic matter much more quickly, releasing it to the atmosphere as carbon dioxide or methane, both greenhouse gases.

Scientists have become increasingly concerned about this natural process as

temperatures in the world's most northern latitudes have warmed.

Two years ago, Schuur and two colleagues authored a paper in the journal *Science* estimating that 400,000 square miles of northeast Siberian permafrost contained 500 billion metric tons of carbon. For this new paper, scientists combined an extensive database of measurements of carbon content in different types of permafrost soils with the estimated spatial extent of those soils in Russia, Europe, Greenland and North America.

The new estimate is important because it mirrors other climate change science, suggesting that at a certain tipping point, natural processes could contribute significant amounts of green-

house gases, supplementing human-influenced, industrial processes that release fossil fuel carbon, Schuur said.

“There are relatively few people living in the permafrost zone,” Schuur said. “But we could have significant emissions of carbon from thawing permafrost in these remote regions.”

The research was conducted as part of the International Polar Year 2008-2009 and sponsored by the National Science Foundation-funded National Center for Ecological Analysis and Synthesis, and the United Nations Educational, Scientific and Cultural Organization in a grant to the Global Carbon Project.

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Evolutionary Study Rewrites Bird 'Tree of Life'

The flamingo looks like it should be closely related to the stork or crane, but its closest relative may actually be the diminutive, modest grebe.

Falcons would seem to have evolved together with hawks and eagles, but the species are not close kin, appearing to have acquired their hawk-like characteristics completely independently from their look-alikes.

The largest group of birds, the passerines — which include such common North American birds as mockingbirds, blue jays and wrens — may be most closely related to a group not common at all in our latitudes: parrots.

These are among the surprising findings of the largest-ever study of the evolution of birds described in an article in the journal *Science* in June. The study — conducted in large part by five institutions, including the University of Florida — challenges current bird classifications, alters understanding of avian evolution and provides a valuable resource for studying the evolutionary history of birds.

“We basically tried to make the next big step in understanding how different types of birds are related to each other,” said Rebecca Kimball, an associate professor of zoology at UF and one of three lead authors of the *Science* paper. “There has still been a lot of controversy about this issue. Some people have suggested that it is an unsolvable problem.”

Birds are among the most studied and loved animals, and much of what is known about animal biology — from natural history to ecology, speciation and reproduction — is based on birds. Nevertheless, the avian tree of life has remained elusive — until now.

For more than five years, the Early Bird Project has been examining DNA from all major living groups of birds. So far, scientists have built a dataset of more than 32 kilobases — a kilobase

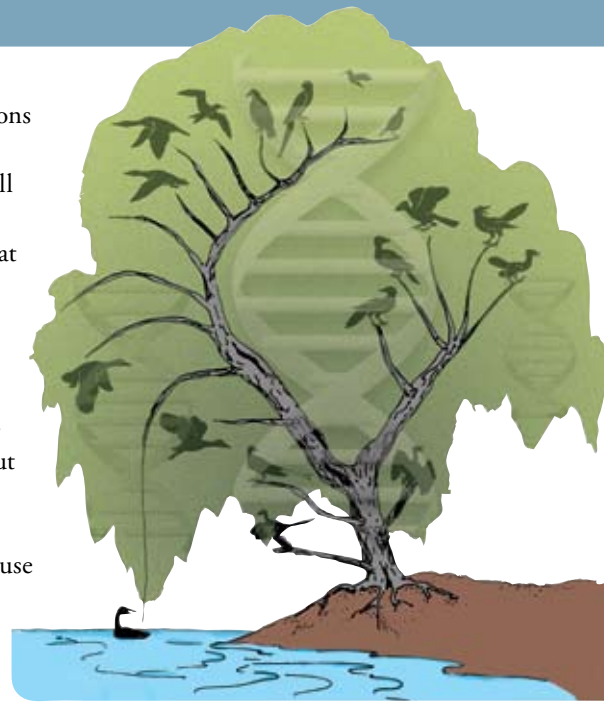
is a DNA fragment containing 1,000 base pairs — from 19 different locations on the DNA of each of 169 bird species. The result is equivalent to a small genome project.

The study’s results are so broad that the scientific names of dozens of birds will have to be changed, and biology textbooks and birdwatchers’ field guides will have to be revised. The study resulted in a number of new or expanded findings about bird evolution:

- Birds adapted to diverse environments several distinct times because many birds that now live on water did not evolve from a different waterbird group, and many birds that now live on land did not evolve from a different landbird group.
- Distinctive bird lifestyles, such as birds that are nocturnal or raptorial, evolved several times. For example, contrary to conventional thinking, colorful, daytime hummingbirds evolved from drab nocturnal nightjars.
- Shorebirds are not an early evolutionary group, which refutes the widely held view that shorebirds gave rise to all modern birds.

Kimball said labs at each of the major institutions involved in the study took charge of sequencing separate genes from the same bird species. Because of the enormous amount of data involved in the sequencing work, the UF researchers, led by zoology Assistant Professor Edward Braun, sought to predict how many genes were needed for a satisfactory result.

“We actually tried to simulate the evolutionary process,” she said. “If we hypothesize that birds evolved in this rapid evolution, how much data would we need to have a chance to start to find those bits of information that would help us piece together these relationships? We used that simulation as our guide in how we set up the project.”



The UF portion of the research was funded with a \$455,000 grant from the National Science Foundation through its Assembling the Tree-of-Life Research Program.

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Burn Center Tests Virtual Reality Disaster Training

Forget the stethoscope — the video game controller could be the newest item you find in your doctor’s black bag.

Medical trauma doctors and nurses throughout Florida are testing an interactive training program developed by University of Florida experts to model a mass disaster involving patients with burn injuries.

The federally funded program, “Burn Center,” simulates an explosion at a theme park and teaches life-saving skills needed to treat up to 2,000 victims of burns, bombs and blasts. Health professionals care for virtual patients, making crucial decisions and dealing with potential complications from their injuries. The



Cancer Compound From Under The Sea

University of Florida College of Pharmacy researchers have discovered a marine compound off the coast

of Key Largo that inhibits cancer cell growth in laboratory tests, a finding they hope will fuel the development of new drugs to better battle the disease.

The UF-patented compound, largazole, is derived from cyanobacteria that grow on coral reefs. Researchers, who described results from early studies in August at an international natural products scientific meeting in Athens, Greece, said it is one of the most promising compounds they've found since the college's marine natural products laboratory was established three years ago.

An initial set of papers in the *Journal of the American Chemical Society* also has garnered the attention of other scientists, and the lab is racing to complete additional research. The molecule's

natural chemical structure and ability to inhibit cancer cell growth were first described in the journal in February and the laboratory synthesis and description of the molecular basis for its anticancer activity appeared in July.

"It's exciting because we've found a compound in nature that may one day surpass a currently marketed drug or could become the structural template for rationally designed drugs with improved selectivity," said Hendrik Luesch, an assistant professor in UF's Department of Medicinal Chemistry and the study's principal investigator.

Largazole — discovered and named by Luesch for its Florida location and structural features — seeks out a family of enzymes called histone deacetylase, or HDAC. Overactivity of certain HDACs has been associated with several cancers such as prostate and colon tumors, and inhibiting HDACs can activate tumor-suppressor genes that have been silenced in these cancers.

Although scientists have been probing the depths of the ocean for marine products since the early 1960s, many pharmaceutical companies lost interest

before researchers could deliver useful compounds because natural products were considered too costly and time-consuming to research and develop.

Many common medications, from pain relievers to cholesterol-reducing statins, stem from natural products that grow on the earth, but there is literally an ocean of compounds yet to be discovered in our seas. Only 14 marine natural products developed are in clinical trials today, Luesch said, and one drug recently approved in Europe is the first-ever marine-derived anticancer agent.

Since 2006, Luesch and his team of researchers have screened cyanobacteria provided by collaborator Valerie Paul, head scientist at the Smithsonian Marine Station in Fort Pierce. They check the samples for toxic activity against cancer cells and last year encountered one exceptionally potent extract — the one that ultimately yielded largazole.

"We have only scratched the surface of the chemical diversity in the ocean," Luesch said. "The opportunities for marine drug discovery are spectacular."

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game features multiple scenarios, and players receive scores based on response time and accuracy of care provided.

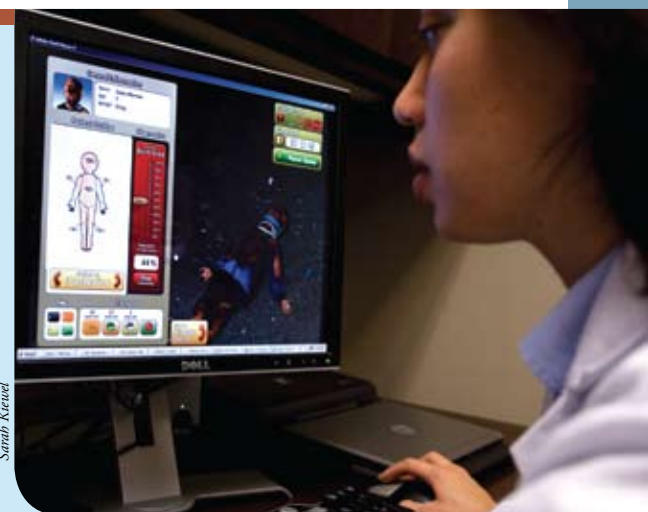
"Burn Center targets trauma surgeons and nurses to provide training regarding what they would encounter in burn and blast injuries — something they may not see every day," said David W. Mozingo, M.D., a professor of surgery in the UF College of Medicine and director of the Shands Burn Center at UF, who collaborated with UF simulation expert Sergei Kurenov, the Florida Department of Health, ProMedia, and Orlando-based 360Ed to create the fast-paced training program to simulate a terror attack involving mass casualties.

"Every time you play the game it is going to be different because the complications and patient problems are put

in a 'controlled randomness' where it is an appropriate complication to occur, but may not occur every time you play the game," said Mozingo, who developed the patient training scenarios with the help of other Florida burn and trauma physicians.

Disaster preparation and response training are crucial to victim survival after a mass casualty incident, Mozingo said. The nation has only about 1,800 burn beds, with just 60 in Florida, limiting opportunities to care for patients in the aftermath of a mass disaster. Opportunities also are limited to prepare key medical practitioners for the unexpected. Eventually the program will be made available nationally.

Jennifer Brindise



Surgical resident Connie Lee tests a virtual reality disaster training program created to model a mass disaster involving patients with burn injuries.

Promising Results for Blindness Gene Therapy

All three people who received gene therapy at the University of Florida to treat a rare, incurable form of blindness have regained some of their vision, according to a paper published online in *Human Gene Therapy*.

The patients — one woman and two men ranging from 21 to 24 years old with a type of hereditary blindness called Leber congenital amaurosis (LCA) type 2 — volunteered to test the safety of an experimental gene-transfer technique in a phase 1 clinical research study conducted by UF and the University of Pennsylvania with support from the National Eye Institute (NEI) of the National Institutes of Health.

In this form of LCA disease, photoreceptor cells cannot respond to light because a gene called RPE65 does not properly produce a protein necessary for

healthy vision. In the study, researchers used an adeno-associated virus — an apparently harmless virus that already exists in most people — to deliver RPE65 to a small area of the retina.

Not only were there no ill effects other than routine postsurgical soreness, the subjects said the vision in their treated eyes was slightly improved in dim lighting conditions.

“The patients report seeing brighter areas and perhaps some images, but basically the message is that this treatment is fully safe,” said William W. Hauswirth, a professor of ophthalmology and member of UF’s Powell Gene Therapy Center and the UF Genetics Institute.

“One thing we did not do is suppress the patients’ immune systems, which was done in two other LCA clinical trials that were under way,” said Hauswirth, who began studying the adeno-associated virus as a vehicle to deliver genes into living animals more

than 30 years ago. “Theoretically, the idea was that it might be necessary to suppress the immune system because we are using a vector that might activate the body’s defenses and cause a harmful response. However, immune suppression itself carries a risk of infections and

Surgeons perform a relatively common retinal procedure similar to one used in a clinical trial that tested the safety of gene therapy in patients with a hereditary form of blindness.



Obesity Linked To Chronic Ear Infections

More than 5 million children cope with the agonizing ache of ear infection annually, but a new discovery suggests damage to taste nerves caused by the common childhood ailment might increase the risk of obesity later in life, said University of Florida College of Dentistry researchers.

Chronic ear infections appear to trigger a preference for high-calorie food, leading to increased consumption and excessive weight gain in adulthood, said Linda Bartoshuk, a UF expert on the sense of taste and genetic variations in taste perception. She reported study findings from health surveys establishing the link at the annual meeting of the American Psychological Association in Boston in August.

Bartoshuk’s preliminary study findings suggested a link between the

infections and obesity. Researchers from other academic institutions confirmed the discovery with data from three independent studies.

“We have known for a long time that ear infections can damage taste because the major taste nerve, the chorda tympani nerve, passes through the middle ear on its way to the brain,” said Bartoshuk, “When we learned that taste damage can intensify non-taste sensations from foods, all of the pieces of the puzzle fell into place.”

When ear infection pathogens damage the main sensory taste nerve it can intensify sensations produced by fatty foods. This heightens the preference for those foods and can lead to weight gain, Bartoshuk said.

In 1993, Bartoshuk and her students began collecting general health information from written questionnaires distributed during taste lectures she gave across the country. Since 1993, she has

surveyed more than 6,500 people ages 16 to 92. With age, those individuals who had moderate to severe histories of ear infections gained weight at a faster rate than those who had never had an ear infection. Of respondents over 30 years old, 39 percent of those with no history of chronic ear infections were overweight or obese, whereas 51 percent of those with ear infections were overweight or obese.

In addition, UF researchers found that those with ear infections liked sweet foods such as cookies and milk chocolate 14 percent more than those without ear infections. And they liked high-fat foods such as mayonnaise and butter 18 percent more than those without ear infections.

“Obesity is heavily inherited,” Bartoshuk said. “But (ear infections) are not genetic. This is environmental and this is something you can stop.”

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Melissa Thompson

other problems. Clearly we have shown there is no need to do that in this case.”

Dr. Samuel G. Jacobson, a professor of ophthalmology with the Scheie Eye Institute at the University of Pennsylvania, is the study’s principal investigator.

“This groundbreaking gene therapy



Samih Krenel

trial builds on 15 years of research sponsored by the National Eye Institute of NIH,” said Dr. Paul A. Sieving, director of the NEI. “The study has partially restored vision in three young adults, and it demonstrates that gene therapy can be effective in treating human vision disease. Many human diseases are inherited in families and result from mutations in single genes. These genetic conditions are particularly suited to potential treatment by gene therapy. This trial to treat vision loss from the condition of Leber congenital amaurosis is an important demonstration of proof of principle and shows that we are on the right track. We can now invest in further work to refine and, ultimately, to expand genetic treatment approaches.”

Results focus on the health of the entire retina, not just the tiny portion that received the gene therapy.

“The safety study itself is a mile-

stone, but when we see a benefit to the subject — that is a truly a welcome bonus,” said Dr. Barry J. Byrne, a professor of molecular genetics and microbiology and director of UF’s Powell Gene Therapy Center, which manufactured the viral vectors used in the study. “Improvements in someone’s medical condition are ultimately what we are after.”

LCA2 affects about 2,000 people in the United States and is one of several incurable forms of blindness collectively known as retinitis pigmentosa, which in turn affects about 200,000 Americans.

Children with LCA2 experience major visual disability that can lead to total vision loss in adulthood. Although vision loss is severe, the structure of the retina — including its connection to the brain — can remain relatively intact for decades before the photoreceptor cells degenerate.

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John Pastor

Cogongrass Becoming Worse Than Kudzu

And you thought kudzu was bad.

A weed called cogongrass is rapidly spreading across the Southeast, and a University of Florida researcher said it’s already overtaken kudzu as Florida’s most obnoxious weed.

“Kudzu’s no longer the poster child. Cogongrass is a big deal,” said forestry researcher Shibu Jose. “It’s becoming a major, major problem.”

Cogongrass (CO-gun-grass) has yellowish-green foliage and can reach 4 feet tall, said Jose, of UF’s Institute of Food and Agricultural Sciences.

Introduced into Alabama from Japan as a packing material in 1912, cogongrass was tested as a forage crop in the 1920s, which allowed it to gain a toehold. It began making its presence known in the 1970s and 1980s, Jose said, and is now causing problems in Louisiana, Mississippi, Alabama, Georgia and Florida.

A 2003 survey showed 1.5 million acres of cogongrass across the Southeast, compared to 1 million acres of kudzu, Jose said. Florida has about a half-million acres of cogongrass.

Cogongrass is well-suited to its role as an aggressive weed. It’s a perennial that can spread quickly underground, its roots easily besting other plants for water, nutrients and space.

Cogongrass also thrives where fire is a regular occurrence. Jose believes recent wildfires may make the problem worse, because fires kill smaller trees and plants, leaving lots of room for cogongrass to move in and take over.

When cogongrass squeezes out native plants, it can hurt animals that depend on those plants for food or shelter.

Jose, who published a paper on cogongrass in the June issue of the journal *Biological Invasions*, has been studying the grass for about nine years.

Some Florida counties, such as Alachua and Marion, are making a

concerted effort to bring everyone from government officials to landowners to researchers together to eradicate cogongrass. But the entire state must be on board, he said.

“It doesn’t do any good if everyone’s not doing the treatments. Private landowners, agencies, et cetera—everyone has to work together,” he said. “If we don’t do this, we will see cogongrass everywhere.”

Cogongrass can be controlled, but it takes a specific regimen of mowing and controlled burns, coupled with repeated, well-timed herbicide treatments, he said.

UF researchers are looking for a biological control solution for cogongrass, but so far, that’s been elusive, said UF plant pathology Professor Raghavan Charudattan.

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