Extracts

Lepidoptera Donation Boosts Biodiversity Research

A gift of more than 2 million butterfly and moth specimens to the University of Florida contains hundreds and possibly more than 1,000 new unnamed species, and will help researchers better understand biodiversity and environmental changes.

The gift to the Florida Museum of Natural History from Dr. William and Nadine McGuire of Wayzata, Minn., is valued at more than $41 million and includes funding for curation of the Lepidoptera collection, ongoing taxonomic and biodiversity-related research, training of scientists and publication of books and relevant papers. The gift brings the number of specimens in UF's collection to more than 9 million, one of the world's largest.

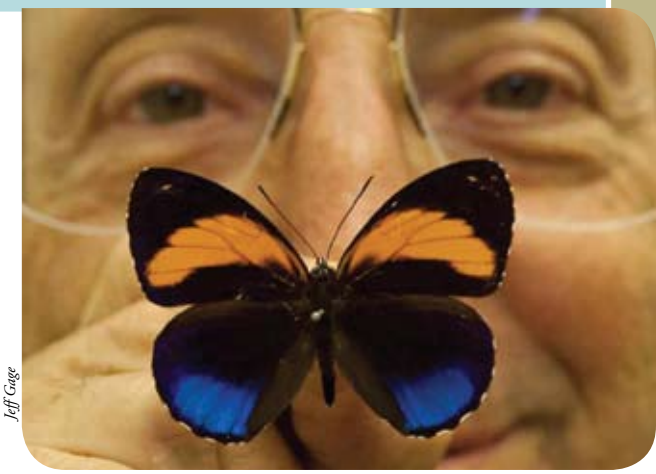
"It is important that both the world's scientific community and the general public recognize that one of the compelling issues of the early 21st century is the global threat to the present diversity of life on Earth," Bill McGuire said. "It is our belief that this threat to biodiversity demands a stepped-up educational and research effort on the part of universities and governments worldwide."

UF President Bernie Machen welcomed the McGuires' gift and said it speaks volumes about the university's place in environmental studies.

"The McGuires' support of biodiversity and Lepidoptera research at UF helps solidify the university's major commitment to understanding and preserving biodiversity and the environment," Machen said. "This private sector support of global issues is the mark of true, selfless philanthropy."

The Florida Museum of Natural History houses the McGuire Center for Lepidoptera and Biodiversity, named for the McGuires after previous gifts. McGuire Center Director Thomas Emmel said this "unparalleled and unique" gift includes butterflies from every continent except Antarctica, and from geographic sites no longer accessible to scientists.

"It will take years to completely curate this collection, but we know it contains hundreds, and possibly more than 1,000, species new to science," Emmel said.



Jeff Gage

Emmel said Lepidoptera research is critical to the study of the world's ecosystems because butterflies are good flagship species to assess environmental health.

Many ecologists worldwide now use butterfly and moth species as indicators for the overall biodiversity of an ecosystem or plant and animal community.

"Like canaries warning miners of dangerous gases in coal mines, the Lepidoptera are particularly sensitive to poisons in the environment, such as pesticides or heavy metals," Emmel said.

Tom Emmel, tcemmel@ufl.edu

Paul Ramey

3-D Skull Scans Reveal Evolution Of Primate Brains

Researchers at the University of Florida and the University of Winnipeg have developed the first detailed images of a primitive primate brain, unexpectedly revealing that cousins of our earliest ancestors relied on smell more than sight.

The analysis of a well-preserved skull from 54 million years ago contradicts some common assumptions about brain structure and evolution in the first primates. The study also narrows the possibilities for what caused primates to evolve larger brain sizes. The study appeared in the online *Proceedings of the National Academy of Sciences*.

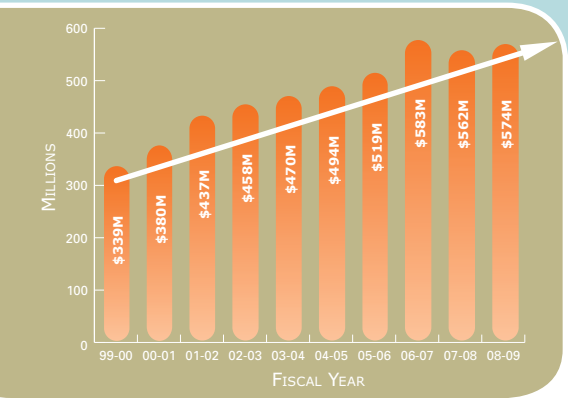
The skull belongs to a group of primitive primates known as Plesiadapiforms, which evolved in the 10 million years between the extinction of the dinosaurs and the first traceable ancestors of modern primates. The 1.5-inch-long skull was found fully intact, allowing researchers to make the first virtual mold of a primitive primate brain.

"Most explanations on the evolution of primate brains are based on data from living primates," said lead author Mary Silcox, an anthropologist at the University of Winnipeg and research associate at UF's Florida Museum of Natural History. "There have been all these inferences about what the brains of the earliest primates would look like, and it turns out that most of those inferences are wrong."

Researchers used CT scans to take more than 1,200 cross-sectional X-ray images of the skull, which were combined into a 3-D model of the brain.

"A large and complex brain has long been regarded as one of the major steps that sets primates apart from the rest of mammals," said Florida Museum vertebrate paleontologist and study co-author Jonathan Bloch. "At our very humble beginnings, we weren't so special. That happened over tens of millions of years."

The animal, *Ignacius graybullianus*, represents a side branch on the primate tree of life, Bloch said. "You can think



Research Funding Up 2.2 Percent To $574 Million

University of Florida faculty continue to excel at securing research funding, even in a weak economy. Last year, nearly 2,000 faculty received $574 million in research awards, a 2.2-percent increase over the previous fiscal year.

Led by double-digit increases to both the College of Liberal Arts and Sciences and the Institute of Food and Agricultural Sciences, the university's total research funding for the 2008-2009 fiscal year that ended June 30 represented a $12.4 million increase over $561.6 million in 2007-2008.

"During a challenging economic period when the university has been under extreme budgetary pressures, our faculty continued their commitment to securing external funding for their research," said Win Phillips, UF's vice president for research. "In addition to furthering science, this funding impacts all facets of Florida's economy, benefiting everyone from construction workers to graduate students."

The $574 million in research funding generates more than $1.2 billion in business activity and 10,500 jobs, according to economic impact methodology from the U.S. Department of Commerce.

Federal awards, which account for 58 percent of UF's total, rose 4.3 percent to $336.5 million, led by the National Institutes of Health with $131.7 million and the National Science Foundation with $46.3 million. Funding from state agencies, which make up 13 percent of the total, was down by 8 percent to $75.8 million.

The College of Liberal Arts and Sciences recorded a 14.3 percent increase to $47.9 million. Funding to the physics department for research about gravitational waves from the earliest moments of the universe reached nearly $4 million last year. Other significant CLAS grants included $780,000 from NSF to help fund a graduate education program in ecology.

IFAS awards rose 13.8 percent to $120.1 million, bolstered by $4 million from the Department of Defense to UF's Center for Food Distribution and Retailing, to develop better tracking systems for military food. Other IFAS awards included $1.3 million to study the citrus genome and $911,000 to improve the flavor of tomatoes.

College of Engineering awards rose 8.7 percent to $72.8 million, including $15 million from the State of Florida for research and administration of the Florida Energy Systems Consortium, a statewide program to develop alternative energy sources.

"Florida's academic research is focused both on energy generation and energy conservation, making it highly relevant to the state's future path," Phillips said. "This consortium brings together energy researchers at our universities to address the larger, statewide energy challenges facing Florida."

Funding to the Health Science Center, which accounts for half of UF's total, remained about the same as last year at $289.3 million. Major Health Science Center awards funded projects on smoking cessation, hypertension and blindness.

Joseph Kays

of it as a cousin of the main-line lineage that would have given rise ultimately to us."

In previous research, Bloch and Silcox established that Plesiadapiforms were transitional species. Ignacius was similar to modern primates in terms of its diet and tree-dwelling but did not leap from tree to tree like modern fast-moving primates.

In many ways, the early primate behaved like living primates but with a brain that was one-half to two-thirds the size of the smallest modern primates. This means that factors such as tree-dwelling and fruit-eating can be eliminated as potential causes for primates evolving larger brain sizes, Silcox said, because "the smaller-brained Ignacius was already doing those things."

The move to larger brain size occurred during an evolutionary burst that happened 10 million years after the extinction of the dinosaurs. At that point, visual features in the brain became much more prominent while the olfactory bulbs became proportionately smaller.

More than likely, Bloch said, this change in brain structure and size was related to primates living in closed canopy forests that brought trees closer together and allowed for more leaping. But answering that will require the discovery and analysis of new fossils.

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Bill Kanapaux

Eric Zamora

Vertebrate paleontologist Jonathan Bloch shows the preserved skull of the 54-million-year-old primitive primate, Ignacius graybullianus*, and the virtual mold of the brain made from the skull.*

Extracts

$60 Million Aging Study Measures Exercise Benefits

The University of Florida will receive more than $60 million over the next six years from the National Institute on Aging to study whether a program of structured physical activity can prevent or delay major movement disability in older adults.

When completed, funding for the project is expected to total more than $60 million from the NIA, including $29.5 million through the American Recovery and Reinvestment Act of 2009. The total will amount to the largest federal award ever to UF. It is also the largest study to prevent mobility disability in seniors.

Many studies have shown that regular exercise improves physical performance. And the U.S. Department of Health and Human Services recommends that adults engage in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity aerobic activity each week, as well as muscle-strengthening activities.

Still, little is known about whether exercise can actually help prevent major mobility disability, defined as the inability to walk a quarter of a mile, or four blocks.

For older adults, staving off disability could help them maintain their physical independence and enhance the quality of their later years.

"We all know that physical activity is good for our health, but the definitive evidence whether it can prevent disability in older people — whether you can prevent them from being unable to walk — is lacking," said principal investigator Dr. Marco Pahor, director of the UF Institute on Aging.

The new study, called the Lifestyle Interventions and Independence for Elders, or LIFE study, seeks to fill that gap in scientific knowledge. This study of 1,600 sedentary adults ages 70 to 89

Sarah Kiewel

Dr. Marco Pahor

who are at risk of mobility disability will be conducted at eight institutions around the country.

"This grant reflects NIH's recognition of the excellence of Dr. Pahor's work in this area over the past 10 years," said Dr. David S. Guzick, UF's senior vice president for health affairs and president of the UF&Shands Health System. "It represents the kind of translational research that UF will increasingly be in a position to conduct."

UF is the coordinating center and a field site for the LIFE study, with other field sites at Northwestern University, Pennington Biomedical Research Center, Stanford University, Tufts University, the University of Pittsburgh, Wake Forest University Health Sciences and Yale University.

Recruitment will begin in early 2010. Eligible participants will be randomly assigned to take part in either a program of moderate-intensity physical activity or a health education program on successful aging. Individuals will be followed for up to three-and-a-half years.

It will be the largest randomized controlled trial ever conducted on physical activity in older adults, and the size of the study will allow scientists to examine the effect of physical activity on a large number of outcomes in ways not previously possible.

Primarily, the study seeks to gauge whether there are long-term effects of physical activity interventions on major mobility disability. Investigators will also examine the effects of physical activity on a number of factors, including cognitive function, serious fall injuries, disability in basic activities of daily living, cardiovascular events and hospitalization and nursing home admission. They will also examine quality-of-life measures such as depression symptoms, sleep quality, stress and satisfaction with life.

In addition, the project will allow an assessment of the cost effectiveness of walking programs for the elderly, and whether the money spent on such programs can help reduce medical expenses for injuries and illness that might otherwise result from lack of adequate physical activity.

As adults age, many lose vitality and the inclination or ability to engage in physical activities as simple as walking. Older adults ages 60 to 85 spend almost 60 percent of their time — more than eight of their waking hours — in sedentary behaviors.

The length of time spent in sedentary behaviors has been associated with increased risk of weight gain and various diseases, including diabetes and heart disease. And people who lose their mobility have higher rates of sickness, hospitalization and death than others who do not have disabilities.

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Czerne M. Reid

Darryl Heard, (left) an associate professor in the UF College of Veterinary Medicine's Department of Small Animal Clinical Sciences, and doctoral student Ryan McCleary anesthetize a cottonmouth snake in preparation for venom extraction.

Venom Process Yields Snake Diet Insights

While studying a way to more safely and effectively collect snake venom, University of Florida researchers have noticed the venom delivered by an isolated population of Florida cottonmouth snakes may be changing in response to their diet.

Scientists used a portable nerve stimulator to extract venom from anesthetized cottonmouths, producing more consistent extraction results and greater amounts of venom, according to findings published in the journal *Toxicon*.

The study of venoms is important for many reasons, scientists say.

"The human and animal health benefits include understanding the components of venom that cause injury and developing better antivenin," said Darryl Heard, an associate professor in the UF College of Veterinary Medicine's Department of Small Animal Clinical Sciences. "In addition, the venom components have the potential to be used for diagnostic tests and the development of new medical compounds."

But in addition to showing the extraction method is safer, more effective and less stressful to both snake and handler than the traditional "milking" technique, Heard and Ryan McCleary, a doctoral candidate in biology, discovered the venom from these particular snakes differs from that of mainland snakes, likely because of their unique diet of dead fish dropped by seabirds.

Heard and McCleary collaborated to develop a safe, reliable and humane technique for collecting venom from cottonmouths as part of a larger study on a specific population of snakes that reside on Seahorse Key, an isolated island near Cedar Key on the Florida's Gulf Coast.

The venom collection study included data from 49 snakes on Seahorse Key.

"Snakes on this island are noted for their large size," said Heard, a zoological medicine veterinarian with additional expertise in anesthesia. He added that Harvey Lillywhite, a professor of biology at UF and McCleary's predoctoral adviser, has confirmed that cottonmouths on Seahorse Key eat primarily dead fish dropped by birds in a large seabird rookery.

Lillywhite also directs UF's Seahorse Key Marine Laboratory, located in the Cedar Keys National Wildlife Refuge. McCleary hopes to build on earlier studies about the snakes' ecology and to explore whether evolutionary changes may have affected the composition of the snakes' venom.

"My interest is in the evolutionary aspect," McCleary said. "If these snakes already have an abundant source of dead prey, why do they need venom?"

Preliminary findings show some differences in venom components, he added.

Traditionally, venom has been collected from venomous snakes by manually restraining the animal behind the head and having it bite a rubber membrane connected to a collecting chamber.

"This requires the capture of an awake snake, which increases the risk of human envenomation and is also stressful to the snake," Heard said, adding that manual collection of venom also does not guarantee that all of the venom is collected.

The nerve stimulator is used in human anesthesia to measure the effect of muscle relaxants.

"It delivers a series of electric stimuli, of very low voltage and amperage, and causes no pain or tissue injury," Heard said. "The electrodes are placed behind the eye, across the area of the venom gland. The nerve stimulator sends a current across the gland, causing reflex contraction and expulsion of the venom."

The technique allows collection from snakes that might not otherwise give up their venom, which is essential in the process of creating antivenins for victims of snake bite, Heard said.

"The stimulator is battery-powered and relatively inexpensive," he said. "In addition, the anesthetic we used, known as propofol, can easily be transported."

Propofol is a short-acting anesthetic administered by intravenous injection. The drug is commonly used to anesthetize animals in veterinary clinical practice, but it is not believed to have previously been used to anesthetize snakes for venom collection.

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Sarah Carey

Extracts

Gene Therapy May Help Cure Color Blindness

Researchers from the University of Washington and the University of Florida used gene therapy to cure two squirrel monkeys of color blindness — the most common genetic disorder in people.

Writing in the journal *Nature*, scientists cast a rosy light on the potential for gene therapy to treat adult vision disorders involving cone cells — the most important cells for vision in people.

"We've added red sensitivity to cone cells in animals that are born with a condition that is exactly like human color blindness," said William W. Hauswirth, a professor of ophthalmic molecular genetics at the UF College of Medicine and a member of the UF Genetics Institute and the Powell Gene Therapy Center. "Although color blindness is only moderately life-altering, we've shown we can cure a cone disease in a primate, and that it can be done very safely. That's extremely encouraging for the development of therapies for human cone diseases that really are blinding."

The finding is also likely to intrigue millions of people around the world who are colorblind, including about 3.5 million people in the United States, more than 13 million in India and more than 16 million in China. The problem mostly affects men, leaving about 8 percent of Caucasian men in the United States incapable of discerning red and green hues that are important for everyday things like recognizing traffic lights.

"People who are colorblind feel that they are missing out," said Jay Neitz, a professor of ophthalmology at the University of Washington. "If we could find a way to do this with complete safety in human eyes, as we did with monkeys, I think there would be a lot of people who would want it. Beyond that, we hope this technology will be useful in correcting lots of different vision disorders."

The discovery comes about 10 years after Neitz and his wife, Maureen Neitz, a professor of ophthalmology at the University of Washington and senior author of the study, began training two squirrel monkeys named Dalton and Sam.

In addition to teaching the animals, the Neitz research group worked with the makers of a standard vision-testing technique called the Cambridge Colour Test to perfect a way the monkeys could "tell" them which colors they were seeing.

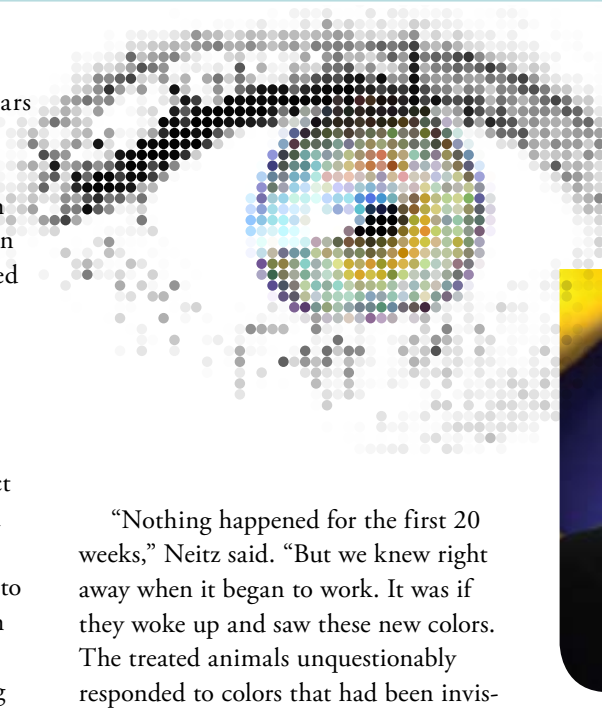
The tests are similar to ones given to elementary children the world over, in which students are asked to identify a specific pattern of colored dots among a field of dots that vary in size, color and intensity. The researchers devised a computer touch screen the monkeys could use to trace the color patterns. When the animals chose correctly, they received a reward of grape juice.

Likewise, Hauswirth and colleagues at the University of Florida have spent decades developing the gene-transfer technique that uses a harmless adeno-associated virus to deliver corrective genes to produce a desired protein.

In this case, researchers wanted to produce a substance called long-wavelength opsin in the retinas of the monkeys. This particular form of opsin is a colorless protein that works in the retina to make pigments that are sensitive to red and green.

"We used human DNAs, so we won't have to switch to human genes as we move toward clinical treatments," said Hauswirth, who is also involved in a clinical trial with human patients to test gene therapy for the treatment of Leber congenital amaurosis, a form of blindness that strikes children.

After the treatment, the monkeys began to acquire color vision, almost as if it occurred overnight.



"Nothing happened for the first 20 weeks," Neitz said. "But we knew right away when it began to work. It was if they woke up and saw these new colors. The treated animals unquestionably responded to colors that had been invisible to them."

The research was supported by the National Institutes of Health, the National Eye Institute, the Harry J. Heeb Foundations, The Posner Foundation and Research to Prevent Blindness.

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John Pastor

Study Finds T-Cells Key To Zinc Benefits

In the midst of a severe flu season, University of Florida research has revealed a fundamental mechanism behind zinc's immune-boosting power — it ramps up one of the body's primary lines of defense, white blood cells known as T-cells.

"We've known for a long time that zinc can give your system a helping hand when you're fighting illness," said Tolunay Aydemir, a researcher with UF's Institute of Food and Agricultural Sciences and lead author of the study. "This gives us an important bit of understanding as to why it confers that benefit."

Found in most multivitamins and many mineral supplements, zinc has

Blood Stem Cells Can Become Vision Cells

University of Florida researchers were able to program bone marrow stem cells to repair damaged retinas in mice, suggesting a potential treatment for one of the most common causes of vision loss in older people.

Maria B. Grant

The success in repairing a damaged layer of retinal cells in mice implies that blood stem cells taken from bone marrow can be programmed to restore a variety of cells and tissues, including ones involved in cardiovascular disorders such as atherosclerosis and coronary artery disease.

"To our knowledge, this is the first report using targeted gene manipulation to specifically program an adult stem cell to become a new cell type," said Dr. Maria B. Grant, a professor of pharmacology and therapeutics at UF's College of Medicine. "Although we used genes, we also suggest you can do the same thing with drugs — but ultimately you would not give the drugs to the patient, you would give the drugs to their cells. Take the cells out, activate certain chemical pathways, and put the cells back into the patient."

In a paper in the journal *Molecular Therapy*, scientists describe how they used a virus carrying a gene that gently pushed cultured adult stem cells from mice toward a fate as retinal cells. Only after the stem cells were reintroduced into the mice did they completely transform into the desired type of vision cells, apparently taking environmental cues from the damaged retinas.

After studying the cell-transformation process, scientists were able to bypass the gene manipulation step entirely and instead use chemical compounds that mirrored environmental conditions in the body, thus pointing the stem cells toward their ultimate identities as vision cells.

The work was supported by the National Eye Institute.

Researchers removed blood stem cells from the bone marrow of mice, modified the cells in cultures and injected them back into the animals' circulatory systems. From there, the stem cells were able to home in on the eye injury and become retinal cells.

At 28 days after receiving the modified stem cells, mice that had previously demonstrated no retinal function were no different than normal mice in electrical measures of their response to light.

Scientists chose to build retinal pigment epithelial cells, which form the outer barrier of the retina. In addition to being very specialized and easy to identify, RPE cells are faulty in many retinal diseases, including age-related macular degeneration, which affects nearly 2 million people in the United States, and some forms of blindness related to diabetes.

"This work applies to 85 percent of patients who have age-related macular degeneration," Grant said. "There are no therapies for this devastating disease."

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John Pastor

been shown to reduce the duration and severity of digestive and respiratory tract infections as well as blood infections such as malaria.

As they report in the *Journal of Leukocyte Biology*, the researchers gave a group of healthy volunteers 15 milligrams of zinc as oral supplements for four days, a dosage at the upper boundary of the recommended daily allowance. Volunteers in a control group got a placebo.

They then drew blood from the patients to examine their T-cells, an essential part of the body's immune function.

Some T-cells identify and destroy bacterial and viral pathogens, as well as human cells infected by those pathogens.

Others "remember" pathogens, reacting quickly to summon the body's defenses if exposed to those pathogens again. Still other T-cells moderate the activity of all the others.

The researchers found that, when exposed to chemicals known to invoke an immune response, the T-cells from the group taking the supplements showed much greater biochemical activity than T-cells from the placebo group.

In particular, they observed a stimulation of the T-cell protein ZIP8. This protein ferries zinc into a specific region inside the T-cells, where it triggers a chain of events that prime the cell for action.

The work not only helps illuminate the mechanisms behind zinc's ability to improve immune function but also could be a first step toward developing medicines based on those mechanisms, said Professor Robert Cousins, a co-author of the paper and director of the UF/IFAS Center for Nutritional Sciences.

"We're still just scratching the surface of the role zinc plays in the body," said Cousins, a National Academy of Sciences member. "But it's not just about tracking this one element. It's discovering all of the associated processes — that's the ultimate payoff."

Along that line of thought, Aydemir, Cousins and colleagues will soon embark on a much more ambitious research project. In 2010, they hope to study how zinc interplays with the entirety of the human genome.

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Stu Hutson

Extracts

Gene Therapy Offers Hope For Sugar Disorder

A dog born with a deadly disease that prevents the body from using stored sugar has survived for two years and is still healthy after receiving gene therapy at the University of Florida — putting scientists a step closer to finding a cure for the disorder in children.

Cathryn Mah

Called glycogen storage disease type 1A, the genetic disease stops the body from being able to correctly store and use sugar between meals. In order to survive, children and adults with this disease must receive precise doses of cornstarch every few hours. The disease is even more dire in dogs, which must be fed sugar every 30 minutes to survive.

"Without treatment, these dogs all die," said Dr. David Weinstein, director of the UF Glycogen Storage Disease Program and co-investigator on the study. "People usually survive because they are fed so much as infants. But by 4 to 6 months of age, they will have developmental delays and a big liver. If it is diagnosed at that point, the kids can do fine. If it is not diagnosed, then the kids get exposed to recurrent low sugars, and they will end up with brain damage, seizures or they will die."

UF researcher Cathryn Mah, a member of the Powell Gene Therapy Center and UF Genetics Institute, presented the findings at an American Society of Gene Therapy meeting.

About one in 100,000 children have this severe form of glycogen storage disease. Children receive doses of cornstarch at scheduled intervals throughout the day because it metabolizes more slowly than other carbohydrates. Until this therapy was discovered about 30 years ago, most children born with this disease did not survive past infancy.

Glycogen storage disease type 1A stems from a faulty enzyme that doesn't convert stored sugar, or glycogen, to glucose, the type of sugar the body uses for energy. This prevents the body from getting the energy it needs and causes glycogen to build up in the liver.

The goal of gene therapy is to restore the faulty enzyme so the body uses sugar properly, said Mah, a UF assistant professor of pediatric cellular and molecular therapy and a co-investigator on the study.

The dog, which comes from a line of dogs genetically prone to the disease, received its first dose of gene therapy the day after it was born, Mah said. The dog improved at first, often going as long as two to three hours without needing additional glucose to supplement its diet. But several weeks later the progress stopped.

When the dog was 5 months old, the researchers administered another dose of gene therapy, this time using a different type of AAV. Six weeks after the therapy, the dog was completely weaned off glucose supplements.

"We have never had to use any glucose supplementation since we weaned her off," Mah said. "She just gets fed normal dog food. That is a huge improvement in quality of life."

A few years ago, when Weinstein, Mah and other UF and National Institutes of Health collaborators began discussing the project, the longest a dog with the disease had lived was 28 days.

"The success is beyond what I would have imagined at this stage," Weinstein said.

Researchers hope to eventually establish a clinical trial in humans, but for now would like to test gene therapy in dogs again within the next year, Weinstein said.

The study was funded by the Children's Fund for Glycogen Storage Disease Research.

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April Frawley Birdwell

$26 Million Grant Will Speed New Therapies

Eighteen years of working in the fine-dining industry have given Jennifer Stamps an appreciation for good food and drink. She has worked alongside chefs whose memories of smell and taste are so refined they can combine flavors in their minds and know how the end product will taste. And all the while, she was unwittingly preparing for her current doctoral work.

"In fine dining, people have lots of access to new flavors. It was always interesting to interact with people and see what they chose to eat," said Stamps who grew up in Green Cove Springs.

A third-year student in UF's Interdisciplinary Program in Biomedical Sciences, Stamps is on a quest to find out how damage to people's senses of smell and taste can decrease their pleasure in life and, in turn, their health.

Her work involves studying individuals with disorders such as Alzheimer's and Parkinson's who become malnourished as a result of damage to nerves that govern smell and taste. She hopes her work eventually will lead to new ways to test clinically how much pleasure people get from life, and therapies to enhance that pleasure by increasing their ability to sense flavors.

Stamps' research is being supported in part by a fellowship from UF's Clinical and Translational Science Institute (CTSI), which gives her practical training in how to turn laboratory discoveries into clinical applications.

"It's a lot of hands-on training on how to actually do clinical research," she said.

The CTSI is a partnership of several entities both within the university and in the wider community. Its fellowships provide formal training in areas such as biostatistics, manuscript writing for human and clinical studies,

ethical conduct of research and clinical research practice.

"We think that these programs will provide fellows with a background that they otherwise don't have in conducting clinical research," said Dr. Marian Limacher, director of the CTSI's training and professional development program. "We are hoping that this level of training will prepare the workforce to design and accomplish the research that will improve health over the next decades."

That is also the broader goal of the institute, which in July was awarded nearly $26 million over five years by the National Institutes of Health to speed the transformation of scientific discoveries into medical advances for patients.

In winning the competitive NIH Clinical and Translational Science Award (CTSA), UF joined a prestigious national consortium of medical research institutions, whose membership will be capped at 60 by 2012. To date, UF is the only university in Florida to get the award, which is geared toward accelerating scientific discovery, enhancing medical care, producing highly skilled scientists and physicians and fostering partnerships with industry.

The grant, administered through NIH's National Center for Research Resources, will support multidisciplinary research in a wide range of fields such as biomedical informatics, gene therapy, aging, nanotechnology and infectious diseases.

Institutions that receive CTSAs are poised to become much more competitive than others by offering stronger research programs in addition to basic medical training, securing more NIH funding and attracting and retaining skilled faculty.

And the community benefits — every $5 million in annual research funding leads to about 100 new jobs and $20 million in incremental business activity, according to estimates from the nonprofit Families USA organization.

"Lots of things can happen with this grant that might not have happened — or happened as well — without it," said Dr. Peter Stacpoole, director of UF's CTSI and the grant's principal investigator.

The CTSI also is supported by $23 million from the UF Office of Research and $70 million in commitments from the College of Medicine.

"This award is an endorsement of UF's leading-edge research efforts and its contributions to health-related fields," said Win Phillips, UF's vice president for research. "The strong research efforts of UF faculty will provide the foundation for enhanced translational and bench-to-bedside research leading to contributions to health care that is the focus of this highly competitive program."

Sarah Kewzel

Dr. Peter Stacpoole

The impact of the resulting discoveries will extend beyond academia to industry, government and the nation. In addition, discoveries that are developed commercially can generate royalty streams for the university.

"By attracting external funding, whether from federal agencies such as NIH or CDC, or from foundations or industry, new dollars come into Florida from outside the state — this leads to new jobs and a ripple effect in the local economy," said Dr. David Guzick, UF's senior vice president for health affairs and president of the UF&Shands Health System.

The partnership comprises UF's Gainesville and Jacksonville campuses, including the colleges of Medicine, Dentistry, Nursing, Pharmacy, Public Health and Health Professions, Veterinary Medicine, Fine Arts, Journalism and Communications, Liberal Arts and Sciences, Engineering, Health and Human Performance and Agriculture and Life Sciences. Also participating are the Institute of Food and Agricultural Sciences, Shands HealthCare and the North Florida/South Georgia Veterans Health System.

"It's a truly fundamental – from the roots up – transformation of how we do research and training," Stacpoole said.

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Czerne M. Reid