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A QUARTERLY PUBLICATION HIGHLIGHTING RESEARCH ACTIVITIES AT UCF

UCF Research & Commercialization

BRAIN CONNECTION • HEART DISEASE • DIABETIC BLOOD-SUGAR LEVELS • DEFENSE PEPTIDE • NEWS

UCF Research & Commercialization

Cookin' with M.J.

M.J. Soileau
Vice President for Research & Commercialization

UCF Expansion in Life Sciences is Formula that Works

From my days as a working scientist, I learned that if you combine two beams of light together in a regular way you can get peak intensity twice as big. Pretty obvious! However, if you combine two coherent beams (like those from a laser) you get four times the intensity! Incoherent: 1+1 = 2. Coherent: $(1+1)^2 = 4$. Add three beams coherently and you get $(1+1+1)^2 = 9$.

Coherent addition is analogous to the promise of the biomedical cluster now building at Lake Nona. The Burnett College of Biomedical Sciences, the new UCF College of Medicine, Burnham and others will be located at Lake Nona. If we build these organizations in a coherent or cooperative way then we can expect not just success but success squared! The whole will be much greater than the sum of the parts. It is with this notion in mind that we welcome Burnham and other partners in biomedical sciences to Central Florida.

With the excitement surrounding last year's approval of the medical college, Burnham's decision to establish a research center near the college at Lake Nona and the other seemingly rapid development in the growth of our new medical city, it is easy to overlook the methodical way in which the project developed.

Five years ago this university made a key decision to invest in life sciences with the hiring of Pappachan Kolattukudy (aka PK). PK is not only one of the nation's foremost biomedical researchers, he has also had phenomenal success in the art of building the highest level university research centers by recruiting and developing top faculty. You can read more about PK in this issue. In 2004 PK was named dean of the Burnett College of Biomedical Sciences and proceeded to do just what he was hired to do. Here is a short list of what's been built so far:

- Top faculty have been hired—all of whom have secured competitive NIH grants.
- A state-of-the-art P3 lab, for safe handling of pathogens, has been established to support infectious disease research.
- A transgenic animal facility has been built.
- Multidisciplinary MS and Ph.D. programs have been developed and are graduating outstanding students.
- The number of undergraduates enrolled in baccalaureate life sciences majors has doubled, and many of these students' experiences are enhanced by participation in leading-edge research.
- New bio-med companies have started in Central Florida and others are moving here.
- The College of Biomedical Sciences has doubled extramural research funding in the past two years.

And this was done under conditions of extremely limited space and within the modest budget available.

These accomplishments are pretty good examples of the recipe for the intellectual enterprise that produce so-called 'disruptive science'. This cutting-edge work will result in the new businesses that are the core of the projected economic impact of the life sciences groups clustering at Lake Nona. The recipe is quite simple: top scientists, state-of-the-art equipment and laboratories, eager and bright students, and an entrepreneurial spirit.

The first unit to locate in the new Medical City at Lake Nona is the Burnett College of Biomedical Science. Not a bad start. And a pretty good anchor to start attaching other biomedical enterprises.

In this issue, we introduce a few members of the UCF faculty and a snapshot of their research and scholarly activities. We have an exciting opportunity to help our region and state develop knowledge-based industry in the biotech, biomedical field.

We have lots of work to do before the dream of a biomedical hub in Central Florida becomes a reality. However, the 'cluster' is forming at an amazing rate. The list of organizations committed to or considering the Lake Nona site include the Burnett College of Biomedical Science, the UCF College of Medicine, the new (as of July 1, 2007) UCF College of Nursing, Burnham, the VA Hospital, Nemours, a biomedical research group from UF, and others.

Critics have questioned our ability to build a biotech cluster in Central Florida and questioned the economic arguments as to the value of our new med school. I remember a standard school boy response to taunts of 'you can't do it,' when challenged to take on a difficult task. The response to that taunt is our response to the critics and naysayers: 'Pay me a quarter and I will let you watch.'

Cheers! *MJS*

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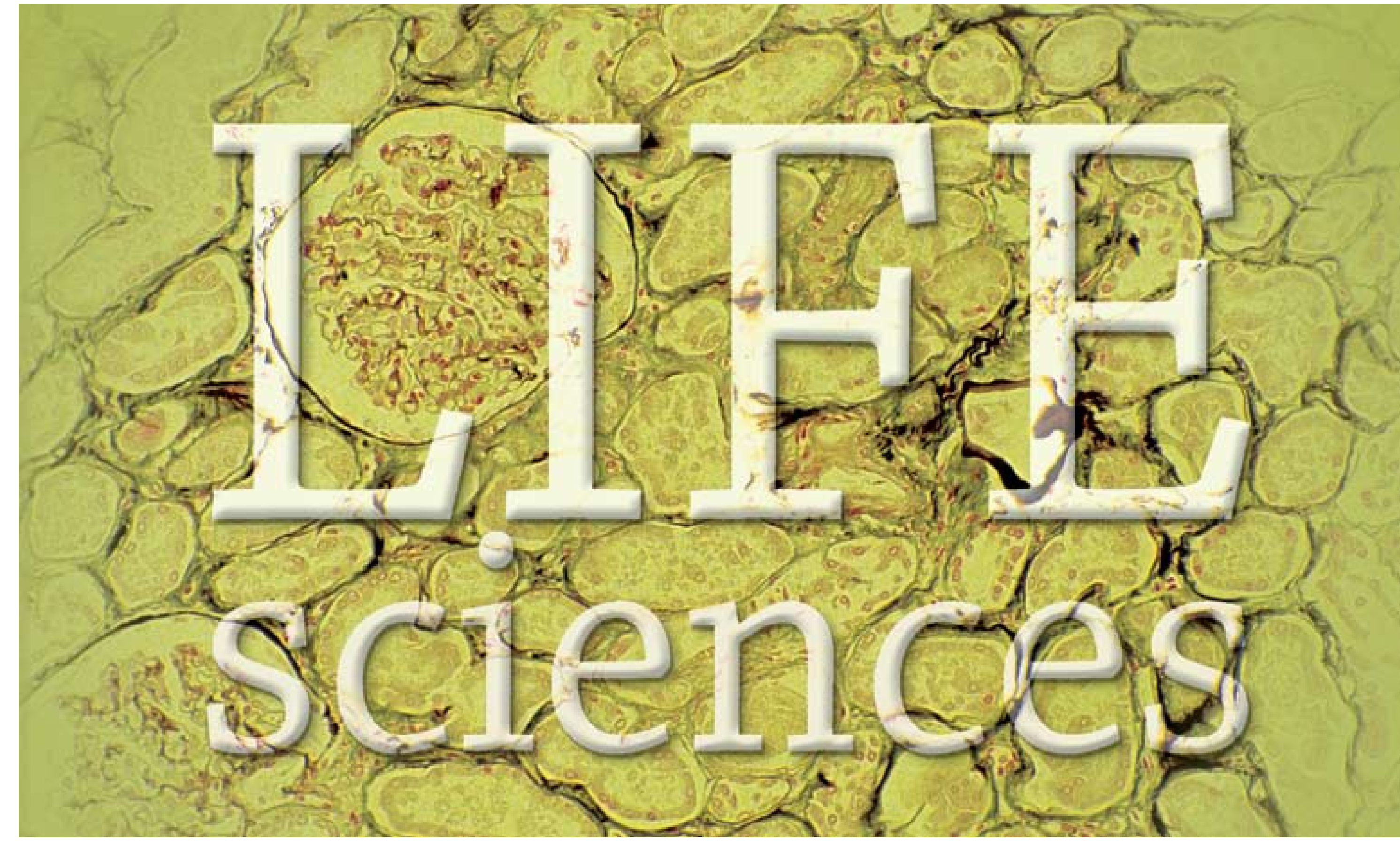


A QUARTERLY PUBLICATION HIGHLIGHTING RESEARCH ACTIVITIES AT UCF

Contents

Researcher Uses Heart in Teaching about Brain

MOST PEOPLE ARE FAMILIAR with Alzheimer's disease because of its devastating human toll – researchers say about 4.5 million Americans have the disease, a number expected to increase to more than 11 million by 2050.

The classic symptoms—impaired memory, thinking and behavior and ultimately death—are all too familiar to the legions of family members and caregivers who have watched their once-vital loved ones slip away.

Kiminobu Sugaya is well aware of the pain associated with Alzheimer's. He decided to pursue his career as an Alzheimer's researcher when he lost his grandmother to the disease. And now, while he is researching one of the newest and most hopeful possibilities for treatment, he also reaches out to the public—sharing his hope and their pain.

Sugaya, who came to UCF's Burnett College of Biomedical Sciences in 2004, has found that adult stem cells hold tremendous potential for memory recovery and in the treatment of a variety of neurological illnesses.

Most recently Sugaya's lab team completed a study showing that with the assistance of the commercial drug Posiphen, human neuronal stem cells transplanted into mice whose brain environment is similar to Alzheimer's in humans, were able to morph into neurons, effectively treating the impairment.

Alzheimer's disease results from the dysfunction and death of neurons in the brain.

Sugaya presented the results of the study at the 9th International Geneva/Springfield Symposium on Advances in Alzheimer's Disease held last April in Geneva, Switzerland.

He has also talked about his research with a group of retirees at UCF's Learning Institute for Elders and at an Alzheimer's Assocation meeting in Orlando.

Sugaya said he is sometimes surprised by just how savvy an Internet-fueled lay audience can be.

"At the learning institute I was asked a question about the role of beta cells in the isles of Langerhan in the progression of Alzheimer's and I had to admit I didn't know what the gentleman was talking about," he said with a laugh.

"Peoples are thirsty for knowledge, they want to know what is going on at the frontier," he said.

He also participates regularly in online research discussion groups and organized UCF's first international research conference on the brain which was held in Orlando, January 19-21, 2007.

Kiminobu Sugaya

Although the conference featured some of the world's most pre-eminent researchers in the field of Alzheimer's and aging brain, Sugaya made sure to keep it open to members of the public who may be interested in the most current research.

"We have to work with the communities to build our new medical school. It has to be accessible to the public, we cannot stay in the ivory tower.," he said.

A company formed by Sugaya and Nilabh Chaudhary, a colleague who has conducted molecular cell biology research, commercialized products and managed biotech companies throughout his career, aims to make therapies formed from Sugaya's adult stem cell research, including a drug to increase endogenouse stem cells, available to the marketplace.

NeoCytex BioPharma, Inc. is currently located in the University of Central Florida's Technology Incubator. Angel Alvarez, one of Sugaya's doctoral students, led a team that won a UCF business plan competition last spring, securing a year's worth of incubator services for the company.

Sugaya's research focuses on using adult stem cells, which has a couple inherent benefits, he said.

"By using a patient's own stem cells instead of embryonic stem cells, we're able to avoid the ethical concerns many people have about stem cell research," he said. "We also don't have to worry about the immune system rejecting the new cells."

Stem cells hold promise for treating many diseases because of their ability to divide indefinitely and their ability to be programmed into taking on the characteristics of almost any other cell. Thus a stem cell taken from a person's bone marrow could be treated and transferred into that same person's brain, where it could potentially be coaxed to mimic healthy brain cells or neurons.

Sugaya and his team have also successfully taken stem cells from bone marrow and encouraged them to perform as retinal cells after being transplanted in rats. His research group also is testing the ability of stem cells taken from adults' bone marrow to become other types of cells, such as heart muscle cells.

- Barb Abney
Chad Binette contributed to this article

Brain Connection to Diabetic Heart Disease Explored at UCF

AS A RESULT of a chance encounter at a conference, a University of Central Florida scientist is one of the first in the country to actively study the impact of the brain on diabetic heart disease.

His findings could result in new treatments for heart disease focusing on correcting errant brain signals.

As the number one killer in the U.S., heart disease has been studied extensively. And since diabetics are two to four times more likely to die from heart disease than non-diabetics, the link between the two maladies has also been heavily researched. But heart research usually focuses on the valves and arteries.

With more $1.5 million in funding from the National Institutes of Health, Zixi "Jack" Cheng, an associate professor in Burnett College of Biomedical Sciences for the past year, is studying the connection between the brain and the heart and how those connections are complicated by conditions such as diabetes, aging and sleep apnea.

For most of his research career, Cheng has focused on heart-brain connections and on developing innovative microscopic techniques for isolating the particular neurons that lead to the heart.

In 1988, while working as a researcher at Purdue University, Cheng secured one of the nation's first confocal microscopes. The specialized laser imaging function of the device allows for clear images of thick specimens at various depths and has produced some of the most compelling images made to date of the intricacies of the brain.

After moving to the University of Louisville School of Medicine, Cheng attended a Juvenile Diabetes Research Foundation neuroscience conference. He noticed a poster with a map of the autonomic nervous system – a series of nerves that control the heart and other internal organs, regulate blood pressure, and control blood glucose levels.

Titled "The Forgotten Nerves," the poster invited researchers to apply for grants for study in that area.

Scientists knew that nervous system disorders were exacerbated by the aging process and by conditions such as diabetes. Cheng wanted to know if the neural pathway leading from the brain to the heart could in some way be causing the heart conditions also experienced by those populations.

Funding from diabetes association and his recent NIH grants have enabled him to identify those specific pathways and conduct tests to determine the source of the damage.

Now, at UCF Cheng is using even more advanced laser imaging techniques to explore the neurons on a cellular and molecular level.

- Barb Abney

Newly Discovered Protein Could Hold Key to Preventing Heart Disease

A newly discovered gene known as MCPIP could provide scientists with the key to developing treatments for preventing inflammation that can cause heart disease, University of Central Florida researchers have discovered.

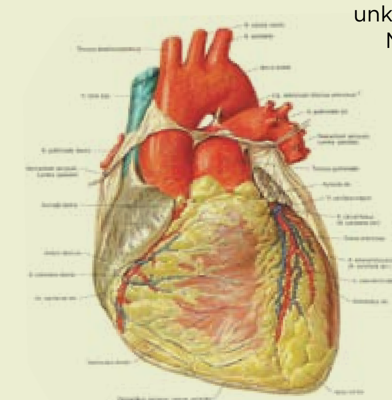
A research team led by Pappachan Kolattukudy, dean of the UCF Burnett College of Biomedical Sciences, found that the levels of MCPIP increased in mice as their blood vessels became inflamed and heart disease began to develop. The formation of MCPIP leads to the death of healthy cells, so treatments that block that formation could prove effective for heart disease.

The researchers are trying to discover the molecular changes that occur as heart disease develops. Better understanding those molecular changes would help with the development of drugs that can either prevent or treat the disease.

The laboratory mice developed heart disease in a way similar to how it forms in humans, which suggests that the findings could hold promise for treating human heart disease. However, more research is needed to evaluate whether the same results found in mice could be expected in humans.

The UCF research team already has found that MCPIP is elevated in human hearts suffering ischemic heart failure.

MCPIP is formed when an often-studied protein called MCP-1 binds to receptors. The MCP-1 protein helps to attract white blood cells known as monocytes to infected and injured areas of the body. The monocytes then attack bacteria and help the body fight diseases.



But that process also produces several known and unknown proteins. The researchers focused on MCPIP, one of the previously unknown proteins, because they discovered links between it and the deaths of healthy cells adjacent to the infected ones.

This finding could lead to advances in treating other inflammatory diseases such as arthritis and some forms of cancer.

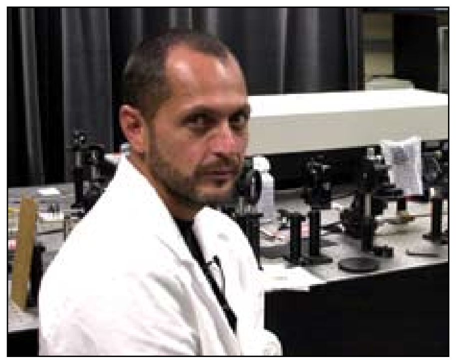
The team's findings were published last summer in *Circulation Research,* the journal of the American Heart Association. The research is funded through a $1.4 million grant from the National Institutes of Health.

– Chad Binette

UCF Professor Developing Teardrop Test for Diabetic Blood-Sugar Levels

A UNIVERSITY OF CENTRAL FLORIDA chemistry and optics professor is developing a method to test blood-sugar levels in teardrops, a system that would allow diabetics to forgo painful daily finger pricks.

The simple teardrop test, which could be made available in stores at stations similar to the blood-pressure booths common in many pharmacies, could also provide a means for early detection of diabetes, Assistant Professor Florencio Hernandez said.



"It's so simple, it's wonderful," Hernandez said. The chemistry involves placing a teardrop in a gold-salt solution to generate gold nanoparticles. The solution is then loaded into a UV-Vis spectrophometer that reads the concentration of gold nanoparticles, which is directly proportional to the concentration of sugar. The spectrophotometer is smaller than a CD.

The reaction of the gold with the sugar is visible to the naked eye. Depending on the level of sugar in a person's body, the solution will turn from light pink to a bloody red.

"I hope in two to three years to have prototypes out and that someday you'll be able to go to a grocery store and test your sugar, just like you test your blood pressure," Hernandez said.

Not only is the method painless, it could also be used to detect rising sugar levels years before any symptoms might lead a patient to visit a doctor for a diabetes test. It could also provide an early alert for pregnant women at risk for gestational diabetes.

"That was the whole idea, to have it be preventative," Hernandez said. "That way, if you see a pattern you can address the problem before it really becomes grave, before the disease does a lot of damage."

Diabetes, type 1 and 2, affects 20.8 million people in America according to the Centers for Disease Control. It ranks as the sixth-leading cause of death nationally and can lead to heart disease, stroke, high blood pressure, blindness, kidney disease and nervous system disorders.

Pricking a finger to get a sample of blood, which is then loaded into a meter that reads the sugar level in the blood is the most common way diabetics monitor their sugar. For some it's a daily routine, while for others it is required several times a day. It's painful, especially for young children who are diagnosed with the disease.

Marisol Garcia, a graduate student at the time Hernandez came up with the new approach, also helped with the research. She has since graduated from the program. Now Hernandez is working on increasing the sensitivity of the technology. While the nanoparticles can detect sugar in urine, blood and saliva, the best mediums are teardrops. He's also working to patent the technology.

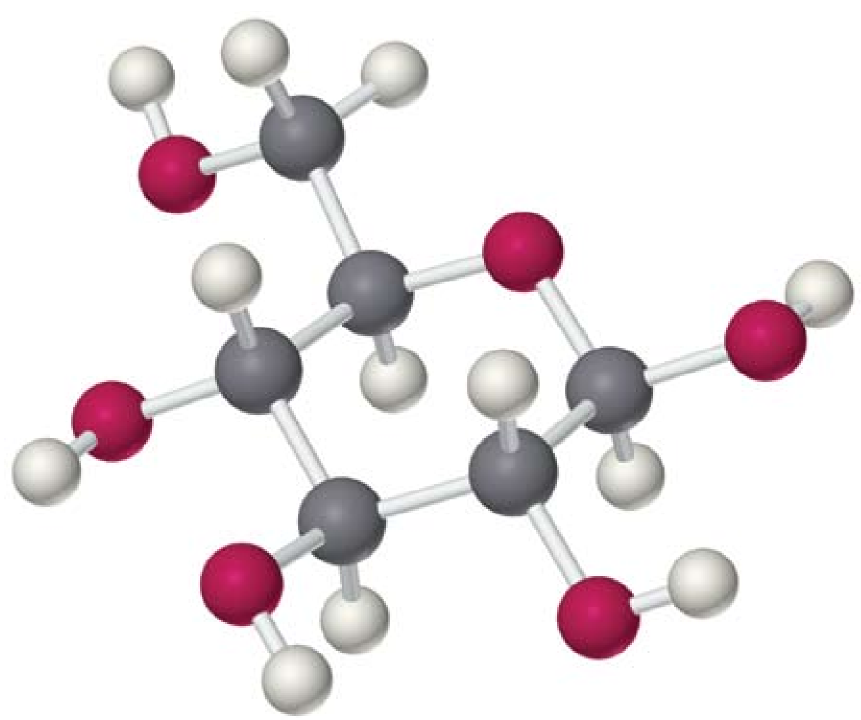
Last spring Hernandez's work was published in *Chemical and Engineering News* and he presented it at the American Chemical Society national meeting in Atlanta. The article follows another piece in which he describes his research into using gold nanoparticles to detect mercury in water.

Hernandez and UCF colleague Andres Campiglia found that they could detect even trace amounts of mercury in water using light and tiny pieces of gold. The findings are being used to develop water filters that will help clean contaminated water.

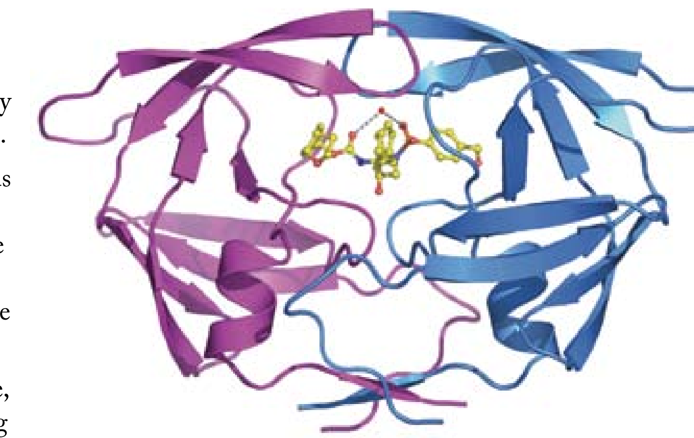
Hernandez hopes to partner on the glucose meter with a Florida hospital to begin animal and human testing.

"It's all about understanding nature," Hernandez said of his work. "Everything is there; you just have to be a careful observer. But figuring out how it works, now that's exciting."

- *Zenaida Gonzalez Kotala*



Defense Peptide Found in Primates May Block Some Human HIV Transmissions



AS PRIMATES EVOLVED seven million years ago, the more advanced species stopped making a protein that University of Central Florida researchers believe can effectively block the HIV-1 virus from entering and infecting blood cells.

HIV-1 often mutates quickly to overcome antiviral compounds designed to prevent infections. But a research team led by Associate Professor Alexander Cole of UCF's Burnett College of Biomedical Sciences has demonstrated that over 100 days the virus develops only weak resistance to retrocyclin, a defense peptide still found in monkeys and lower primates.

If additional laboratory tests demonstrate only weak resistance, Cole will study how retrocyclin could be developed into a drug designed to prevent the HIV virus from entering human cells.

Cole is also working with Henry Daniell, a UCF professor of molecular biology and microbiology, to develop a way to grow retrocyclin through genetically engineered tobacco plants. The retrocyclin gene would be incorporated into the chloroplast genome of tobacco cells before the plants grow. Daniell has developed a similar approach to growing anthrax vaccine in tobacco plants.

An inexpensive way to produce the drug with only a small amount of tobacco would help to make it accessible in areas such as Southeast Asia, Africa and the Caribbean where the disease is spreading most quickly.

"If we could develop retrocyclin in plants and produce enough of the drug cheaply, we could potentially save a lot of lives," Cole said.

Cole was recently awarded about $4 million of National Institutes of Health grants through 2011 for the HIV-1 research and similar studies. The grants were provided through the National Institute of Allergy and Infectious Diseases; National Institute of Child Health and Human Development; and the National Heart, Lung and Blood Institute.

Cole started his research into theta-defensins at the University of California, Los Angeles, before he moved to UCF in 2003. Drs. Otto Yang and Robert Lehrer, infectious disease specialists at UCLA, and researchers at the University of Pittsburgh and Emory University are collaborating with Cole.

There are three classes of defensin peptides, and most research around the world has focused on alpha and beta defensins, the two types that humans still make. Cole studies theta-defensins called retrocyclins, which are no longer made by humans or advanced primates such as chimpanzees. However, theta-defensins are more active against HIV-1 than the other two types of defensins and can be developed in laboratories, two features that suggest retrocyclins still could become an effective way to fight the virus.

HIV-1 is the most common form of the human immunodeficiency virus that causes AIDS. The disease is often transmitted sexually, and the drugs produced from Cole's research would be applied to the vagina in the form of a gel or cream. Many of the laboratory tests have shown that retrocyclin can prevent HIV-1 infection of human vaginal tissue.

Retrocyclin was still an effective inhibitor of HIV-1 even after 100 days of continuous exposure to human cells in a laboratory setting. Cole and his team are encouraged that only minimal resistance of the virus occurred during that time. Higher resistance levels make it more difficult to develop drugs to fight the virus because doses must be increased substantially over time.

The exact reason why resistance does not develop quickly with retrocyclin is unclear, but it may be a result of retrocyclin interacting with more than one target on both the cell and virus. Viruses that have to defeat more than one antiviral mechanism often develop resistance at a much slower pace.

The next phase of Cole's research will delve more into the mutations that HIV-1 can take in an effort to minimize them as much as possible. Many series of laboratory tests would need to be completed before clinical trials could begin no earlier than 2009.

Cole's findings were published last summer in *The Journal of Immunology*, a top journal in the fields of immunology, molecular biology and microbiology.

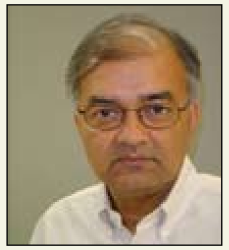
- *Chad Binette*

Biomedical Science Center Focus Areas

CANCER • CARDIOVASCULAR DISEASE • INFECTIOUS DISEASES • NEURODEGENERATIVE DISEASES

AT THE UNIVERSITY OF CENTRAL FLORIDA, biomedical researchers are advancing our understanding of human disease and developing innovative methods of treatment. Many are engaged in research on the world's most prevalent and serious health problems, including cancer and cardiovascular, infectious and neurodegenerative diseases.

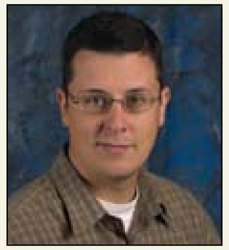
Research in **Dr. Karl X. Chai's** laboratory led to the discovery of a protein that limits the invasion of prostate and breast cancer cells. His research team is currently assessing the protein's ability to stop metastasis in animal models. This team is also investigating how the protein functions. Some of their findings are being patented and may provide the basis for a new method to detect and treat invasive cancers.



Dr. Debopam Chakrabarti oversees research on the parasite that causes malaria — a disease that kills 2.7 million people each year. An urgent need for new drug targets has developed with the spread of drug-resistant strains of malaria. Members of the Chakrabarti laboratory are focusing on complex changes that occur in the parasite's life cycle. By analyzing molecules that regulate the cycle, they have identified potential targets for anti-malarial drugs. Clinical trials using a drug developed in the lab are currently under way.

Dr. Ratna Chakrabarti's research team is identifying genes responsible for two distinct forms of prostate cancer: slow growing and rapidly progressing. The group is using human genome microarray technology to identify candidate genes. Determining the genes that cause the two cancer types will greatly enhance our ability to diagnose the disease and design new drugs for treatment.

Research by **Dr. Alexander Cole** focuses



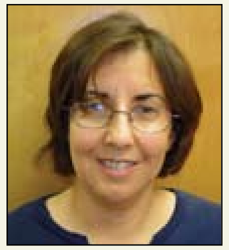
on the innate ability of humans to resist diseases caused by pathogenic bacteria and viruses that are constantly present. His laboratory has found that individuals who are unable to resist nasal Staphylococcus infections have a defect in their nasal fluid. The lab is conducting studies to identify proteins associated with the defect. In another study, Cole's lab is analyzing the function of a primate peptide (protein fragment) with intriguing anti-viral activity.

Large amounts of vaccines for serious,

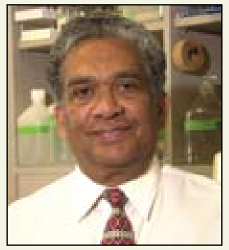
often fatal, infectious diseases such as anthrax, plague and cholera are being developed using an innovative technology developed by **Dr. Henry Daniell**. His laboratory uses "chloroplast genetic engineering" to modify the genetic makeup of plants. Tobacco plants modified using this technology can produce large quantities of a desired protein, which can be used as therapeutic agents and vaccines, at low cost.

Research in **Dr. Cristina Fernandez-Valle's** laboratory includes studies on Schwann cells, whose membranes wrap around peripheral nerves to form an insulating layer of myelin. Her laboratory is investigating signaling between Schwann cells during growth and adhesion. Its findings will increase our understanding of the critical role these cells play during development and repair of nerves following injury and disease. Dr. Fernandez-Valle serves on the board of the Children's Tumor Foundation, Florida Chapter, which seeks to end neurofibromatosis through research.

Work by Dr. Cristina Fernandez-Valle and her team is increasing our understanding of hereditary tumors in the nervous system. They are studying ways in which cells communicate with each other to regulate cell growth, attachment and movement. By identifying the proteins involved in these activities, the researchers will contribute to the development of new cancer therapies.



Dr. Annette Khaled studies programmed cell death, a biological process that eliminates abnormal cells in healthy tissue. When this process is disrupted, abnormal cells proliferate and result in cancer. The Khaled team is trying to understand how changes in cell signals cause this disruption. Her research is expanding our understanding of the origins of cancer and may lead to novel treatments and methods for early detection.

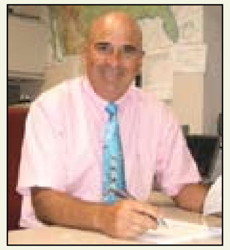


Scientists working with **Dr. Pappachan Kolattukudy** use gene chip technology to identify the genes involved in the inflammatory process associated with the development of human ischemic heart disease. They have developed a transgenic animal model that mimics all aspects of the human disease, which they are currently using to discover novel targets for therapeutic intervention.

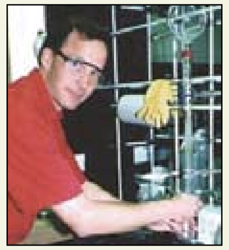
Other researchers at UCF are seeking new drug targets for the microbe that causes tuberculosis. This microbe, which is present in one-third of the world's population, causes more than one-quarter of all preventable adult deaths, has developed resistance to multiple drug treatments. The pathogen's ability to go into dormancy until a person's immune system is weakened makes it impossible to eliminate from infected people. Dr. Kolattukudy's team is seeking novel drug targets to prevent the clever tricks the pathogen uses to evade the host's defense mechanism.

Neurodegeneration is involved in the death of some patients with common cancers outside the nervous system. Dr. Pappachan Kolattukudy's team is exploring the mechanisms involved in neurodegeneration. They use gene knockout technology to discover the functions of the genes potentially involved in such degeneration.

Dr. YouMing Lu's work is determining the molecular basis of brain injury and repair in some neurological disorders. His lab is using cellular and molecular biological tools to identify certain intracellular molecules in vulnerable neurons in the adult brain. They are also using electrophysiological approaches and behavioral analysis in rat models of ischemic stroke to deliver transcriptional activators to stimulate endogenous stem cell production for repairing the brain after injury.



Dr. Mark Muller's research focuses on enzymes called topoisomerases, nuclear proteins that participate in most if not all DNA transactions. His interest is in understanding the physiological function of these enzymes in chromosomes and in chromatin structure. The primary project of the lab deals with topoisomerases and cancer chemotherapy. Certain drugs interfere with the action of topoisomerases on DNA. Such drugs are effective in treating cancer and many topoisomerase active agents are used clinically to kill tumor cells. There is significant potential for new, anticancer drugs that target these enzymes.

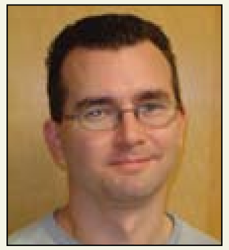


UCF chemists are designing new drugs that stop uncontrolled cell division — a hallmark of cancer — by acting directly on DNA. **Dr. Otto Phanstiel** is overseeing the development of a unique drug complex that enters a cell, binds to DNA, prevents the DNA molecule from participating in critical cell functions and ultimately causes cell death. Dr. Thomas Selby is developing ways to use structure-based drug design targeted at cancer.

Dr. Kiminobu Sugaya's main research focus is to develop stem cell therapies for neurodegenerative diseases, including Alzheimer's disease, Parkinson's disease and ALS. He believes investigations of stem cell biology under the pathological conditions may give us a clue for causes of the diseases as well. Dr. Sugaya's lab is also using their advanced stem cell technologies to generate cells, which is important for not only brain function, but also vision and hearing. Their efforts are changing therapeutic strategies from prevention of neuronal death to regeneration of neurons.

Dr. Suren Tatulian and his colleagues are using state-of-the-art molecular biological and biophysical approaches to reveal how enzymes catalyze the production of potent molecules that play a key role in the development of inflammation. Their findings will help guide the design of improved anti-inflammatory therapies.

Evidence suggests that inflammation of the brain may contribute to damage caused by Alzheimer's disease. Dr. Suren Tatulian's research on key events that lead to inflammation will provide valuable information about this component of the disease.



Dr. Ken Teter's research interests lie in the field of cellular microbiology. The long-term goal of his research program is to understand the molecular events that allow cholera toxin and other bacterial toxins to enter the host cell. Elucidation of this process will identify cellular targets for therapeutic intervention.

Dr. Laurence vonKalm, Department of Biology, uses fruit fly genetics to discover genes whose human counterparts are involved in prostate, ovarian and kidney cancers. The power of the fly genetics is likely to enhance our understanding of the basic signaling process that may be involved in certain cancers.

Biomedical College Dean Builds on Excellence

PAPPACHAN KOLATTUKUDY likes to build. From an 800-square-foot pier into the Indian River from his Titusville property to research centers respected worldwide for their advances in biotechnology, the award-winning researcher specializes in encouraging excellence.

Before joining UCF, Kolattukudy served as the guiding force behind interdisciplinary research centers at Washington State and The Ohio State University.

At Ohio State he took over an abandoned 93,000 square foot building, had it gutted and renovated into state of the art laboratory space. His vision resulted in a new Biomedical Research Tower housing over 180,000 square feet of laboratory space.

While at Washington State, two members of the Institute of Biological Chemistry that he founded were inducted into the National Academy of Sciences, one of the most prestigious honors in the field.

The opportunity to once again build something from scratch drew him to UCF.

"I met with M.J. Soileau (vice president for research) who persuaded me that UCF presented an opportunity to help build the university. . . I thought it would be gratifying to help build a nationally recognized biomedical science program at UCF," Kolattukudy said.

UCF first focused on biotechnology with a Center for Diagnostics and Drug Development, started in 1997, but broadened its scope with the establishment of the Biomolecular Science Center in 2002.

What Kolattukudy saw in Orlando was potential. Florida was showing signs of committing to the development of the biotechnology industry and the state's large percentage of older residents represented increasing need for new treatments for debilitating diseases such as cancer, cardiovascular disease, Alzheimer's and Parkinson's.

The phenomenal growth of the University of Central Florida, the presence of regional hospitals already collaborating with the university on research, and the need for increasing numbers of biomedical professionals all appealed to Kolattukudy.

He also was impressed by UCF's existing strengths in optics, lasers, modeling and simulation which all offered potential for interdisciplinary research.

The faculty he has hired include experts in all of the Burnett College's focus areas. Ultimately the center will hire 30 new faculty with active research programs.

Many of those programs will result in companies that will, in turn, benefit the local economy.

While Kolattukudy emphasizes the role faculty have played in building a solid research base in the life sciences, he continues his own groundbreaking work in the lab. He is ranked among the top five percent of scientists most highly funded by the National Institutes of Health in the U.S. in the past 25 years. He remains one of the nation's most highly cited researchers according to ISIHighlyCited.com, which identifies the nation's most influential scholars by tracking references in 21 broad subject categories.

And just last spring, his research team's findings about a key gene that could potentially contribute to heart disease were published in *Circulation Research,* the journal of the American Heart Association.

- Barb Abney

NEWS

Incubator Graduate Company Acquired by Global Medical Diagnostics Group

COGNOSCENTI HEALTH INSTITUTE, LLC, a graduate of UCF's Technology Incubator, has been acquired by Clinical Pathology Laboratories, a move that is likely to result in both local job creation and substantial growth for the newly expanded company.

Cognoscenti's Central Florida location and its pioneering work in evidenced-based laboratory medicine information systems were compatible with the long-range goals of CPL and its parent company, Sonic Healthcare of Australia, said Dr. Philip Chen, founder of president of Cognoscenti and now vice president and chief medical informatics officer for CPL.

Sonic is a global medical diagnostics company with an annual revenue of $1.3 billion, offering clinical laboratory and radiology services in Australia, New Zealand, Germany, Great Britain, Hong Kong and the U.S. Sonic acquired 82 percent of CPL a year ago.

The acquisition of Cognoscenti provides Sonic with a regional hub for further expansion, said Chen. "They have a philosophy similar to what we want to achieve," he said.

Cognoscenti uses advanced information technology and emerging biotechnology to deliver real-time ordering of patient tests and quick results for patients and physicians. The company is one of the first in the U.S. to use such information technology based systems and Chen indicated the technology used at Cognoscenti will be the model for Sonic's North American expansion.

Cognoscenti has been highly awarded since its inception in 2001. The company was named the 2004 Outstanding Technology Company by the National Business Incubation Association (NBIA), received the 2003 Healthcare Hero Award in Innovation by the *Orlando Business Journal* and the 2004 Quality Achievement Award from the Florida Healthcare Coalition.

The expansion is expected to add 20 to 40 more workers to Cognoscenti's 72 employees over the next year and dramatically increase the 4,000 lab tests now being processed each day.

While the company will remain in the Central Florida Research Park for the immediate future, Chen would not rule out a possible future move to the Lake Nona area.

"We have special space needs we'll have to address," Chen said.

NeoCytex BioPharma Wins Joust

Joust winner proposes new stem cell technology to treat diseases

A company that is developing technologies that can help treat neurodegenerative diseases by modifying a patient's own cells so they can be used to create personal stem-cell lines, won first place last spring in the University of Central Florida's third-annual Business Plan Tournament called the Joust.

NeoCytex Biopharma's unique technology approach would give adult stem cells the potential to be embryonic stem cells while avoiding ethical and clinical limitations. The company plans to develop this technology to focus on treating neurodegenerative diseases, such as Alzheimer's and strokes, and to license the technology for use in other therapies for ailments such as heart disease, diabetes and cancer.

By winning the Joust competition, NeoCytex Biopharma earned $3,000 in prize money and business-development assistance from the UCF Technology Incubator for one year.

Participants in the Joust presented their business plans to a panel of expert judges, and finalists were chosen based on the most feasible business concepts.

Members of the NeoCytex Biopharma team were Lessenia Cervantes, a student in the Master of Business Administration program; Angel Alvarez, who is pursuing a doctoral degree in Biomolecular Sciences; Maha Khan, a master's student in Management Information Systems; and Temitayo Akinrefon, a master's student in Industrial Engineering.

Human Subjects Conference Coming To Orlando

THE UCF INSTITUTIONAL REVIEW BOARD (IRB) is co-sponsoring a human subjects protection regional conference in downtown Orlando on February 26.

Directors of the federal agencies which regulate human research protections, including the Office for Human Research Protections (OHRP), the Food and Drug Administration (FDA), and the Office of Research Integrity (ORI), as well as nationally recognized attorneys and authors will be speaking at the one-day event. Institutional officials, IRB members and staff, faculty and student researchers, research associates, and contracts and grants personnel are encouraged to attend.

Sponsors include UCF, USF, Florida Hospital, Orlando Regional Healthcare and M.D. Anderson Cancer Center Orlando.

Due to the capacity of the hotel, the number of registrants is limited. EARLY registration is advised. The cost is $100 including meals.

The agenda can be found at http://www.flhosp.org/irb/forum.

Contact Barbara Ward at the UCF IRB office, 407-882-2276, if additional information is needed.