

*what's new
what's next*



GEORGIA
RESEARCH
ALLIANCE

2008 Annual Report

today.

>> The developments chronicled in this annual report are more than a series of individual accomplishments. They are steps toward something else – another milestone in discovery, another company launched, another answer to a need.

This simple truth underscores the incremental nature of scientific research, where every outcome is born from the countless steps that preceded it. Indeed, the outcome itself is often the beginning of what comes next.

This is a major reason why Georgia created the Georgia Research Alliance: to help create a steady stream of “new” in order to fuel the next major development.

As you read about the new talent, new growth, new investment, new advances and new accolades that marked 2008, keep in mind this larger point: *What’s new today deserves to be celebrated, not only for its current significance, but for its future possibility.*

new talent

Talent is the cornerstone of GRA's strategy. By helping research universities bring world-class scientists to Georgia, GRA ignites a series of events that often leads to the launch of companies. These scientists – GRA Eminent Scholars – typically bring with them other researchers and millions of dollars in external research funding. Since 1990, GRA has recruited more than 60 scholars, including seven in 2008 (shown on pages 2-5). The program has received high acclaim: In 2007, the State Science and Technology Institute named GRA's Eminent Scholars program tops in the U.S.

DAVID SHOLL

Harnessing the power (and promise) of hydrogen

Hydrogen-powered cars and other vehicles may someday be commonplace, thanks to the work of researchers like David Sholl.

The GRA Eminent Scholar, who came to Georgia Tech in 2008 from Carnegie-Mellon University, is working to identify a material suitable for storing hydrogen in vehicles. No such material currently exists, and to evaluate potential candidates, Dr. Sholl and his research team have developed computational methods that enable them to screen millions of possible compounds.

Dr. Sholl is also exploring ways to capture carbon that is released in large-scale methods of hydrogen power generation, so that it is not harmful to the environment.

In recognition of his research efforts, the U.S. Department of Energy presented Dr. Sholl with a 2008 Hydrogen Program R&D Award.

MAX COOPER

New insights into the immune system

How white blood cells fight infections – and how they sometimes malfunction to produce diseases that fight the body's immune system – is better understood today because of the contributions Max Cooper has made in his career.

Dr. Cooper, who was recruited to Emory in 2008 as a GRA Eminent Scholar, is credited with a series of major discoveries, including the distinction between two kinds of white blood cells that work together to fight infection. That finding is now recognized as one of the most important organizing principles of the immune system.

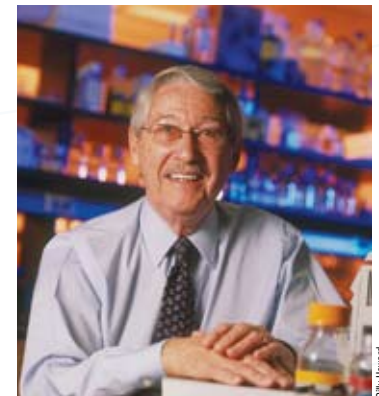
At Emory, Dr. Cooper is studying protein antibodies produced in the immune systems of fish – particularly a jawless predatory fish called the sea lamprey. His findings may shed new light on ways to better diagnose and treat disease.

“The impact of Dr. Cooper's many discoveries and insights would be hard to overstate,” says Tristram Parslow, who chairs Emory's Department of Pathology and Laboratory Medicine. “Through his own discoveries and the many other researchers he has trained and inspired, Dr. Cooper's influence resonates through all of contemporary immunology.”



Sholl: Working to make hydrogen-powered cars a reality

Billy Howard



Cooper: His work on the immune system is widely referenced

Billy Howard

C.J. TSAI

A better source of biofuel

How can trees be grown so that they are better suited to serve as an energy resource? That question is at the heart of research conducted by Chung-Jui Tsai, a GRA Eminent Scholar regarded as a key complement to the bioenergy research being conducted at the University of Georgia.

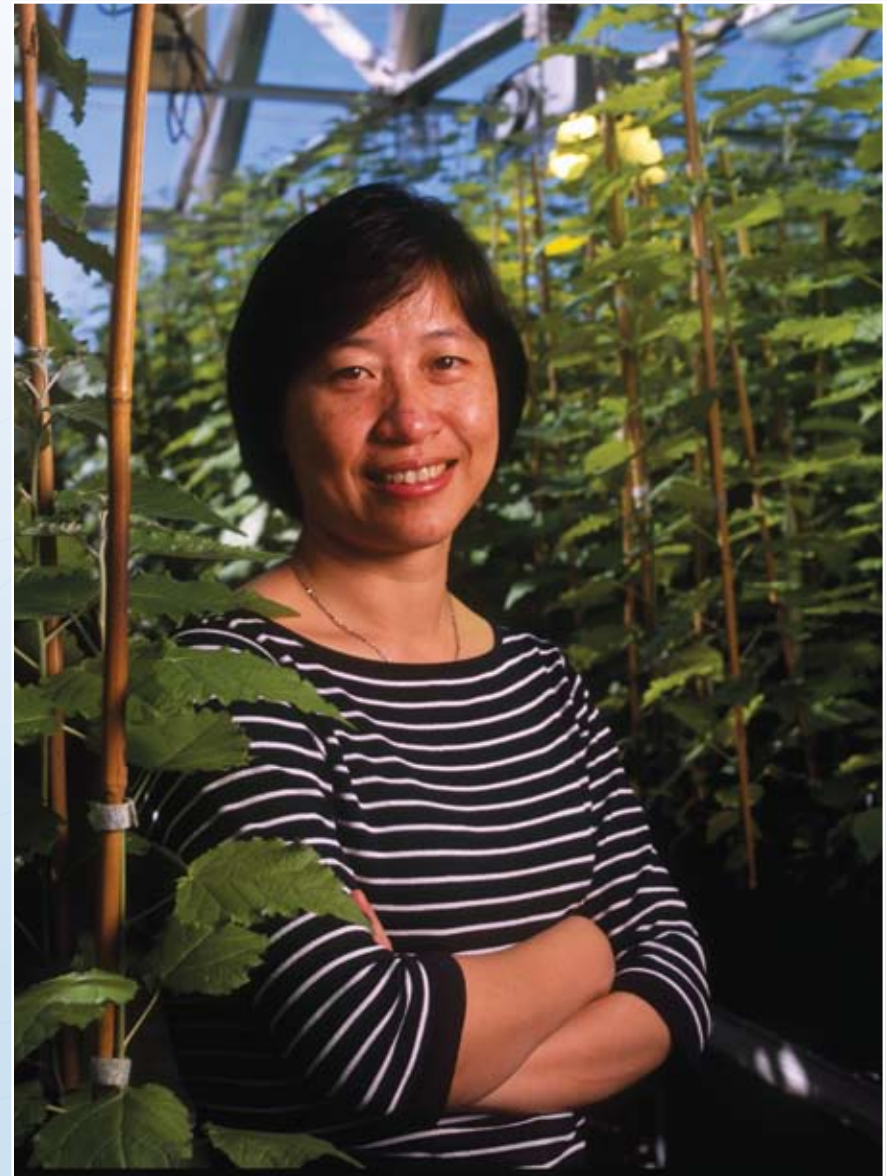
GRA helped UGA recruit Dr. Tsai in 2008 from Michigan Technological University, where she headed the Biotech Research Center for five years. She holds five patents for processes to modify an element in trees that hinders attempts to extract cellulose, which is crucial to biofuel production. If researchers like Dr. Tsai succeed in creating high-energy yielding trees for use in biofuel, trees could replace food crops as a potential power source.

Jeff Dean, a UGA professor of forest biotechnology, noted that Dr. Tsai has established a “respected program” of research that adds an essential component to UGA’s exploration of alternative energy.

“Dr. Tsai’s expertise in this area is highly complementary to existing research programs in several departments and schools across the campus,” Dr. Dean said, “and her addition to the faculty should serve to catalyze significant innovation as Georgia strives to become a leader in the field of biomass utilization.”

Dr. Tsai is also exploring how trees can better utilize their own chemical compounds to defend themselves from bugs and animals. Determining how that works, she said, could lead to the creation of “smarter trees, which have great ecological implications because they interact with so many organisms.”

Georgia’s forestry industry helped fund the Winfred N. “Hank” Hayes Professorship, which Dr. Tsai holds at UGA.

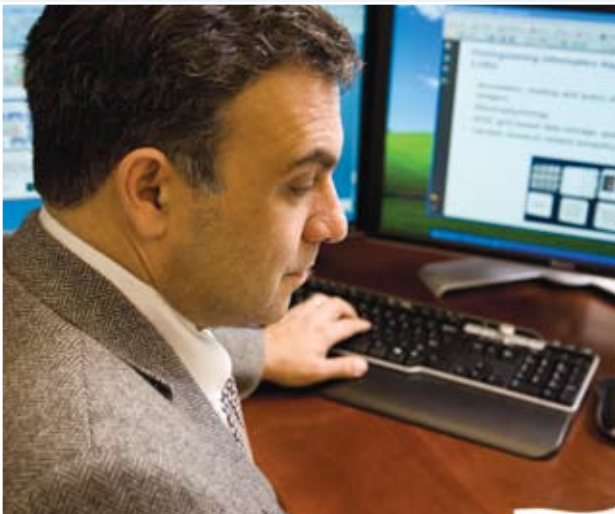


Billy Howard

Tsai: Seeking to grow trees that make viable fuel sources

JOEL SALTZ

Streamlining information to accelerate discovery



Knowing how best to acquire, store and use biomedical information has never been more important in efforts to develop new treatments and cures. In 2008, GRA helped Emory recruit one of the nation's foremost experts in this specialized field – called biomedical informatics – by bringing Joel Saltz to Georgia as a GRA Eminent Scholar.

In a career spanning two decades, Dr. Saltz has developed novel ways for computers around the world to cooperate with each other in processing and analyzing large amounts of biological data. He

Saltz: Making it possible for computers to cooperate in processing and analyzing huge amounts of bio-data

invented a framework to translate varying computer codes into a parallel language, and he is widely regarded as a pioneer in his field, which plays a crucial role in promoting the scientific collaboration needed to advance discovery.

Dr. Saltz came to Emory from Ohio State University, where he chaired the biomedical informatics department and focused much of his research efforts on cancer.

Among other achievements, he played a lead role in developing an international network to accelerate cancer research and discovery at 50 of the nation's premier cancer centers. The network, which operates from the National Cancer Institute, enables researchers to link to each other through virtual work stations and shared data systems.

Dr. Saltz was recruited to help Emory build one of the top bioinformatics programs in the world. He has secured more than \$70 million in grant funding and brings with him a highly-funded research program.

Billy Howard

ED COYLE

Forward thinking for educating engineers

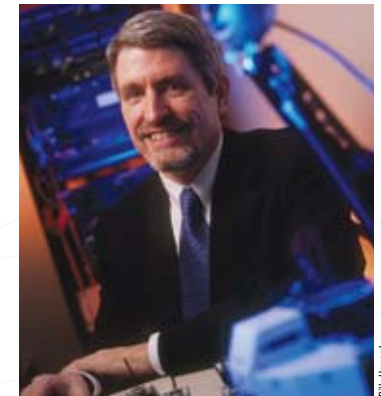
The engineers of tomorrow must have more than expertise in their field. They must also be proficient in information technology and have the ability to collaborate.

They can develop both skill sets through distributed engineering education, a practice that enables students scattered in various geographic locations to pursue a degree in engineering while working together on projects. In 2008, GRA helped Georgia Tech

strengthen its distributed engineering education offering by recruiting Edward Coyle from Purdue University.

Dr. Coyle, who co-directed a center to improve wireless-related education at Purdue, heads a similar enterprise at Georgia Tech – the Arbutus Center for Distributed Engineering Education. Through the center, Georgia Tech brings together students in multiple locations via teleconferencing and other media. Besides participating in classroom lectures and discussions, students will work in teams to develop new technologies and enterprises.

Dr. Coyle is also an accomplished researcher and serves as vice president of a company that developed sensor applications vital to Georgia's agricultural industry.



Coyle: Helping to transform engineering education by connecting remote students

Billy Howard



Gilbert: Discarded parts of food sources may be the best source of ethanol

HARRY GILBERT

Breaking down the walls

Until recently, the possible resources for producing ethanol have centered largely on corn and other food-source plants. But the discarded, non-edible parts of these plants may hold great promise too, provided that scientists find ways to break down their rigid cell walls – quickly, cleanly and cost-effectively.

A leading expert in this field is Harry Gilbert, a British biochemist recruited to the University of Georgia as a GRA Eminent Scholar in 2008.

Dr. Gilbert and his research team at Newcastle University helped design and develop new ways to direct enzymes to their cell-wall targets. Now, he is applying this knowledge at the University of Georgia to design more aggressive enzymes that break down cell walls faster and with less need for added chemicals. These new enzymes will aid other parts of UGA's research into biofuels by revealing new information on the structure of cell walls in plant life.

Dr. Gilbert worked at Newcastle for 23 years prior to joining UGA in November, and he has published more than 200 scientific papers.

PHILIPPE VAN CAPPELLEN

Unlocking the mystery of climate change

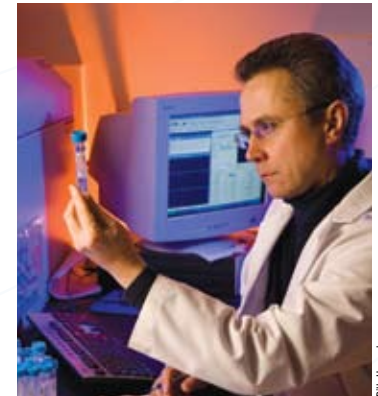
Modifying human behavior to mitigate major environmental changes requires a deep knowledge of the earth itself – and GRA Eminent Scholar Philippe Van Cappellen has that depth of knowledge.

An internationally renowned geochemist, Dr. Van Cappellen returned to Georgia Tech in 2008 to advance his study of how elements such as nitrogen and iron affect the global carbon cycle on the continents, in coastal areas and in oceans. His work yields new understanding of the connection between human activity – including power generation – and global environmental change.

“I am excited to return to Georgia Tech as the Georgia Power GRA Eminent Scholar in Global Climate Studies,” said

Dr. Van Cappellen, who taught and conducted research at Tech in the 1990s. “A better understanding of what affects the global climate is essential for effective environmental stewardship and energy policy.”

Dr. Van Cappellen most recently chaired the geochemistry department at Utrecht University in the Netherlands for nine years.



Van Cappellen: New insight into humans' effects on the environment

Billy Howard

new growth

Georgia is home to 150 companies whose origins can be traced to university inventions and discoveries that GRA investments have fostered. These companies are responsible for thousands of high-wage jobs, creating a ripple effect of growth across the Georgia economy. To drive the launch of new companies, GRA invests in university R&D projects through VentureLab, its signature commercialization program. A new program created in 2008, the GRA Venture Fund is designed to help these new companies as they grow. Championed by Governor Sonny Perdue, the \$30 million public-private venture capital fund helps offset limited local venture capital by providing added investment when early-stage companies need it most. As part of its commercialization efforts, GRA also brokers partnerships between existing companies and universities to spur product development and job creation.

SAMSUNG, LIFESYNC

New jobs created at Georgia Tech center

Executives at global electronics giant Samsung expect that a wireless laboratory opened at Georgia Tech in 2008 will yield inventions that will impact a “broad spectrum” of the company’s products worldwide. The lab – which is adjacent to the Georgia Electronic Design Center – will generate 100 new jobs and an expanded working partnership between Samsung and Georgia Tech. GRA played a pivotal role in 2003 in bringing Samsung to the Center.

Also moving to the Center in 2008 was the research and development operation of Florida-based LifeSync Corporation, maker of the first wireless electrocardiogram data communication system. The relocation of LifeSync’s R&D division – orchestrated in part by GRA – will enable the company to develop new kinds of wireless medical devices at the Center.

AEROVETRX

Testing a new way to deliver vaccines

AerovectRx initiated testing in 2008 of its aerosol method of delivering flu vaccines to animals. GRA Eminent Scholar Ralph Tripp is participating in the process, which is funded in part by a GRA VentureLab grant to the University of Georgia. AerovectRx seeks to develop technology that delivers therapeutics and vaccines to the respiratory tract without use of needles.

SUNIVA

A better solar cell is born in Norcross

Less than a year after making initial plans to manufacture some of the world’s most efficient solar cells, Suniva, Inc. began production at its Norcross facility in November. Suniva – which was launched early in 2008 out of a Georgia Tech lab receiving GRA support – uses a new manufacturing process that yields a higher-performing solar cell with lower production time and cost. The cells manufactured by Suniva are based on technology that increases power output by as much as 30 percent over the current industry standard. Suniva also announced plans to triple its manufacturing capacity at the Norcross facility in 2009.



Georgia Tech

Celebration: Promising 100 new jobs, Samsung opened a wireless technology facility at the Georgia Electronic Design Center in June. At the dedication (L-R): Georgia Tech Interim President Gary Schuster, GEDC Director Joy Laskar, Samsung CEO Homoon Kang and Atlanta Development Authority President Peggy McCormick.

ZENDA TECHNOLOGIES

Early detection, early treatment for Alzheimer's



Left: Zenda's new device offers a faster, more precise assessment of reaction time and memory. Above: Emory's David Wright, M.D., who helped develop DETECT

GRA VentureLab graduate Zenda Technologies rolled out a device in 2008 that helps detect early stages of Alzheimer's disease during a routine visit to the doctor.

The device, called DETECT, administers a 10-minute test to gauge a person's reaction time and memory. The test is much quicker than the standard 90-minute, pen-and-paper test that doctors typically administer.

By revealing "mild cognitive impairment," DETECT enables doctors to initiate treatments that help slow the onset of the disease. Zenda emerged from collaborative research involving Emory and Georgia Tech scientists.

GRA/TAG COMPETITION

Start-ups continue to spur investment

Seventy start-ups competed in the 2008 Georgia Research Alliance/Technology Association of Georgia Business Launch Competition, believed to be the largest competition of its kind in the nation. The winners of the contest for each of its three years are showing promising growth:

Acculynk 2008 winner ATM Direct, which invented software that allows people to make secure debit card payments over the Internet, changed its name to Acculynk in August. The company raised \$10.5 million in new capital investment in 2008.

IVOX IVOX, the driver safety technology start-up that took top honors in the 2007 competition, "closed a multi-million dollar financing round at the end of September during the worst part of the nation's credit crisis," according to CEO Greg Warren.

REACH Call™ The winner of the 2006 inaugural competition, Reach Call, received a \$2 million investment in October to accelerate rollout of technology to provide remote diagnosis and treatment of stroke.

MERIAL

Partners in animal vaccine discovery

Animal health company Merial enlisted the help of two GRA Eminent Scholars at UGA in 2008 to explore development of new vaccines. Dr. Egbert Mundt is studying a new vector to improve a vaccine aimed at avian flu, and Dr. Rob Maier is investigating vaccines that combat gastritis in swine. Merial moved its headquarters from New Jersey to Georgia in 2000 partly because of the opportunity to partner with GRA member universities.

new leverage

When recruited to Georgia, GRA Eminent Scholars often bring millions of dollars in research funding to support their work. Once here, they continue to generate even more federal and private investment – dollars that are pumped into local economies. In 2008 alone, GRA Eminent Scholars generated more than \$200 million in outside support to pursue their next discovery or invention.

\$10 MILLION

Insights into juvenile diabetes

One of the world's largest research initiatives for understanding the causes of Type 1 (juvenile) diabetes entered its next phase in 2008 with a \$10 million National Institutes of Health grant to GRA Eminent Scholar Jin-Xiong She at the Medical College of Georgia. The 20-year initiative – called TEDDY – involves screening more than 400,000 newborns in six international centers and monitoring 7,000 children over 15 years. The study is designed to shed new light on how environment triggers Type 1 diabetes in children who are genetically susceptible.



Medical College of Georgia

She: Shining light on the triggers of juvenile diabetes

\$9.2 MILLION

Unlocking clues to regenerative medicine

New therapies for treating diabetes, heart disease and other ailments are the ultimate goal for a \$9.2 million research effort launched at the University of Georgia in 2008. GRA Eminent Scholar Steve Dalton will lead the NIH-funded effort to learn more about how embryonic stem cells “differentiate,” an understudied area of stem cell biology that could unlock clues to the body's ability to repair itself.

\$7.8 MILLION

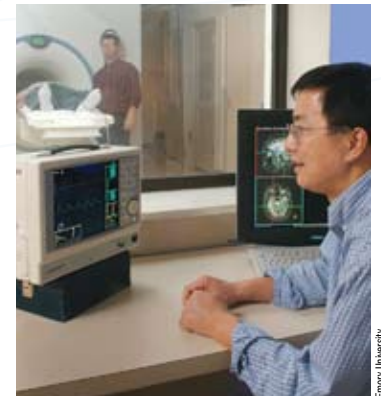
New capacity for Clark Atlanta University's research

Clark Atlanta University is expanding exploration of prostate cancer biology and chemistry, thanks to a \$7.8 million National Institutes of Health grant awarded in 2008. The funds will enable CAU's Center for Cancer Research and Therapeutic Development to enhance core facilities and recruit more faculty and research staff. GRA Eminent Scholar Shafiq Khan leads the center, which has yielded new knowledge of how prostate cancer impacts African Americans.

\$7.5 MILLION

New images for early cancer detection, treatment

An Emory University center working to “see more” inside the human body began a five-year project in 2008 to find new ways to detect cancer sooner. Through a \$7.5 million National Cancer Institute grant to Emory's Molecular and Translational Imaging Center, GRA Eminent Scholar Xiaoping Hu and colleagues will work to develop, validate and apply “biomarkers” that doctors could use to spot cancer earlier and more precisely. Earlier GRA investments helped the center purchase one of world's most powerful MRI machines to support its research.

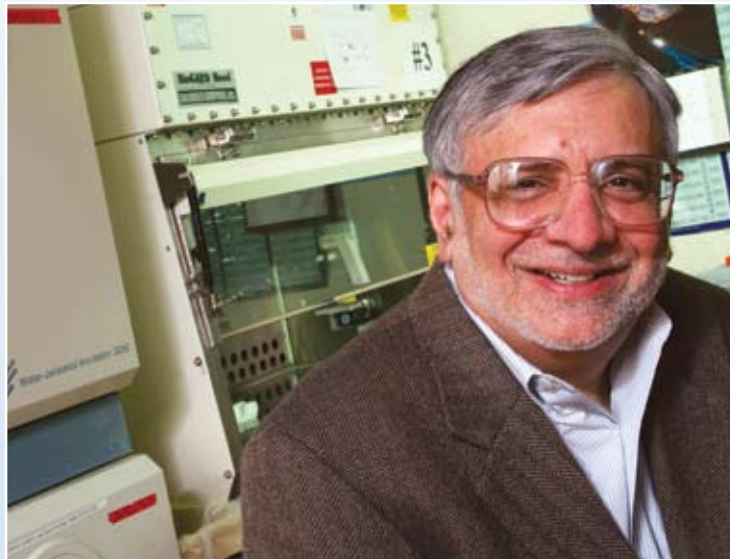


Emory University

Hu: Capturing medical images never before imagined

\$13 MILLION

Exploring the body's defense against viruses



Ahmed: New project builds on his earlier work to bolster the immune system

GRA Eminent Scholar Rafi Ahmed's groundbreaking work in understanding how the body wages war against HIV got a boost in 2008 with a \$13 million NIH grant to advance a multi-institutional research project.

Dr. Ahmed, who heads the Emory Vaccine Center, was named program director for the project, which explores how a cell receptor called PD-1 regulates chronic viral infections, provides targets to treat HIV and impacts a variety of treatments.

His earlier work on PD-1 revealed that HIV "switched on" the receptor in mice – an event that effectively shuts down blood cells that serve as a chief defense against viruses. Blocking the pathway to the receptor, Dr. Ahmed found, reduced the amount of virus and rejuvenated the blood cells to resume their defense.

In the new project, Dr. Ahmed will lead a collaborative effort involving scientists at Harvard, NYU, Massachusetts General Hospital and other institutions.

Other major grants

GRA Eminent Scholar **Steve Knapp** is part of a multi-university team that received an \$8.6 million National Science Foundation grant to analyze the genomics of a variety of plants. Dr. Knapp also received a \$1.2 million grant to assess the biofuel potential of sunflowers ... A multi-year \$7.5 million grant from the Department of Defense helped fund the launch of a center at Georgia Tech that will develop new technologies to reconstruct bones, blood vessels, nerves and even cells in soldiers and others suffering from traumatic injuries. GRA Eminent Scholar **Barbara Boyan** directs the center ... Kidney transplants for children may become more tolerable in the future if a study led by GRA Eminent Scholar **Allan Kirk** finds new ways for the body to accept organ and tissue transplants. Funded by a five-year, \$6 million grant from NIH, Dr. Kirk's research is looking for alternatives to toxic drugs used to prevent transplant rejection ... A joint program involving the U.S. energy and agriculture departments awarded \$1.3 million to GRA Eminent Scholar **Jeff Bennetzen** to advance genetic and genomic study of foxtail millet. The plant is a relative of switchgrass, which is considered an excellent potential source of ethanol ... **Bill Koros**, a GRA Eminent Scholar at Georgia Tech, received a five-year, \$10 million grant from the King Abdullah University of Science and Technology to help develop better methods of purifying oil and natural gas hydrocarbons.

new advances

Each year brings new steps toward a solution, invention or cure, and 2008 was no exception. Here are just a few advances made by GRA Eminent Scholars in 2008. To learn more about scientific advances taking place in Georgia, visit www.gra.org.



Medical College of Georgia

Tsien: Studying new treatments to remove traumatic memories

MEMORY BLOCKING

Imagine treatments that help people overcome incapacitating memories of traumatic events – like terrifying experiences in battles or natural disasters – by selectively removing those memories. GRA Eminent Scholar Joe Tsien is guiding a Medical College of Georgia research team through the first steps toward just such treatments. The team has been studying how memories are formed in the brains of mice, but their work has implications for humans as well – albeit in the distant future. Says Dr. Tsien: “We are barely at the foot of a huge mountain.”

CLARITY FROM COMPLEXITY

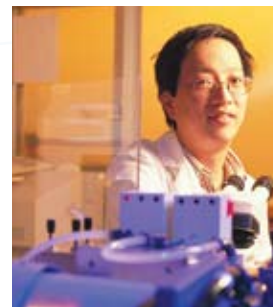
GRA Eminent Scholars Eberhard Voit and Jeff Skolnick at Georgia Tech played key roles in forming a new Integrative BioSystems Institute (IBSI) that takes a holistic approach to understanding complex biological systems. IBSI unites biologists, engineers and computational experts in exploring new ways to interpret the immense amounts of biological data that can now be collected. GRA Eminent Scholar Stephen Harvey also joined other world-class researchers in the Institute.

CANCER DISCOVERY

Binghe Wang, GRA Eminent Scholar at Georgia State University, is moving his research into the use of carbohydrate-based biomarkers to diagnose cancer closer to commercialization through a \$2 million Small Business Technology Transfer grant from the National Institutes of Health. Dr. Wang and his colleagues in the GSU Center for Biotechnology and Drug Design are working to identify different forms of glycoproteins that indicate the presence of cancer cells. This funding and another NIH grant for \$1.2 million are, in part, outcomes of a GRA Collaboration Planning Grant with GRA Eminent Scholar Robert Yu at the Medical College of Georgia.

ENIGMATIC ENZYME

A group of scientists that includes GRA Eminent Scholar Xiaodong Cheng, professor of biochemistry at Emory, has deepened



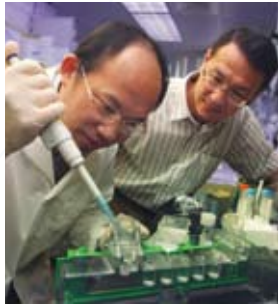
Billy Howard

understanding of cell division in mammals by revealing the critical role of an enzyme in the complex process. Understanding how this enzyme enables cells to duplicate themselves accurately may also help researchers learn how to prevent the uncontrolled cell division that occurs in cancer.

Cheng: New findings may offer clues to controlling cancer cell division

new accolades

Georgia's reputation as a leading research center continues to rise. The contributions of GRA's Eminent Scholars are a major reason why. Here are just some of the awards presented to Eminent Scholars in 2008.



Medical College of Georgia

Mei: Found a protein that promotes two-way communication in cells

CELL CONVERSATION

A research team at the Medical College of Georgia may have discovered a key piece in solving the puzzle of how to treat muscular dystrophy and related diseases. Under the guidance of GRA Eminent Scholar Lin Mei, who heads developmental neurobiology at MCG, researchers recently identified a protein that enables nerve cells and muscle cells to communicate with each other. This two-way communication establishes the lifelong ability of muscle and nerve cells to respond to each other's signals.

WHEN SOAKING HELPS

If you have diabetes, you may want to soak your brown rice, says GRA Eminent Scholar Robert Yu at MCG. He and Dr. Seigo Usuki learned that soaking brown rice for 24 hours unleashes a compound that helps normalize blood sugar and enzymes, thus reducing complications related to diabetes. "The advantage of knowing this key ingredient is we can now make a ton of it," Dr. Yu says.



Medical College of Georgia

Yu: Soaking brown rice reduces complications from diabetes (with Dr. Seigo Usuki on left)

MORE ADVANCES

The development of biofuels, the use of virtual worlds in industry, the emergence of cancer vaccines and solutions to the water crisis are all advances explored in a 2008 satellite broadcast co-presented by GRA and the MIT Enterprise Forum of Atlanta. Called "Enterprising Georgia," the four-part series was broadcast live from the studios of Georgia Public Broadcasting and reached viewers from Seattle to London.

Jeff Bennetzen at the University of Georgia received a Fulbright Fellowship and a Guggenheim Fellowship. The fellowships will expand his research into palms and parasitic weeds and strengthen collaboration with scientists in France, Germany and Mali ...

Max Cooper at Emory University traveled to Vienna in September to receive the Avery-Landsteiner Prize for his "outstanding contributions to immunology." Awarded by the German Society of Immunology, the award is named for two Nobel Prize recipients. And in November, the Association of American Medical Colleges honored Dr. Cooper as a Distinguished Researcher in the biomedical sciences ... NARSAD, the world's leading charity committed to mental health research, presented **Lin Mei** at the Medical College of Georgia with the Distinguished Investigator Award. The honor carries a \$100,000 research grant ... NIH tapped **Xiaodong Cheng** at Emory to participate in its Roadmap Epigenomics program, a broad initiative to accelerate biomedical research. A two-year, \$350,000 award will support Cheng's work ... The North American Membrane Society presented the Alan S. Michaels Award to Georgia Tech's **Bill Koros** for "exceptional lifetime contributions to membrane science and technology" ... The American Crystallographic Association presented **Bi-Cheng Wang** at the University of Georgia with the A. Lindo Patterson Award for his contributions to crystallography.

new momentum

GRA launched the Next-Generation Vaccines and Therapeutics Initiative in 2007 to position Georgia as a world leader in the discovery, commercial translation, production and delivery of a new class of vaccines and therapeutics. In 2008, a number of developments advanced that initiative, which spans GRA's talent, infrastructure and commercialization efforts.

Next-Generation Vaccines & Therapeutics Initiative

GRA boosted its talent pool in vaccines and therapeutics research and development by helping to recruit world-class scientist **Max Cooper** to Emory University (see page 2). GRA also added two rising star researchers as the first Distinguished Investigators for the Initiative. **Yukai He** joined the Medical College of Georgia from the University of Pittsburgh to expand his research using lentiviruses to deliver substances that generate antibodies in host cells. And **Elizabeth R. Wright** returned to her alma mater, Emory University, to build on her work of examining the structural and biochemical details of viral-cell systems.



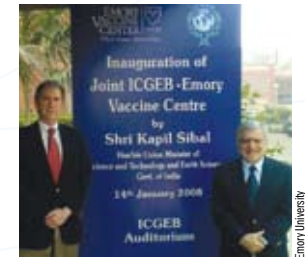
Think tank: (L-R) Drs. Stanley Plotkin (Sanofi Pasteur), Ray Dolin (Harvard Medical School), Tom Shenk (Princeton) and Rino Rappuoli (Novartis)

The GRA **Global Thought Leaders Think Tank** held its first meeting in February to elevate the dialogue around Georgia's strengths in next-generation vaccines and therapeutics and to provide feedback on the state's potential for success in next-generation vaccine R&D. Think Tank members are known internationally for their groundbreaking vaccine research and hold influential positions with major vaccine companies. Says Dr. Stanley Plotkin of Sanofi Pasteur: "We are very impressed by the level of science being done and the facilities available. GRA's initiative certainly seems foresighted and something that I'm not personally acquainted with anywhere else."

Georgia State's new Center for Vaccine Scale-up/Process Research was awarded \$2.5 million in federal funds to develop a **facility to characterize and define vaccines/biologics** during various stages of manufacturing and during storage and stockpiling. The aim is to develop "turnkey" approaches to vaccine development and manufacturing.

In the summer of 2008, GRA awarded more than **\$1.5 million in Collaboration Planning Grants** to support 16 joint research and commercialization projects at Georgia universities and the CDC. This was the first year that CDC researchers were eligible to participate in the program. Last year's grants were leveraged into \$7.1 million in new non-state research funding, with another \$8.8 million still in the application pipeline.

The Emory Vaccine Center and the International Centre for Genetic Engineering and Biotechnology (ICGEB) teamed up to create the **Joint ICGEB-Emory Vaccine Centre** at New Delhi. The Joint Center is dedicated to vaccine research focused on infectious diseases, including HIV, tuberculosis, hepatitis C, dengue virus and malaria.



Collaboration: Emory and a center in New Delhi are exploring vaccines for infectious diseases

Immunosuppressive drugs are a necessary evil in organ transplantation: They help prevent the body from rejecting the organ but increase the risk of unwelcome side effects. To develop new ways to suppress immunity without using such drugs, the Mason Trust awarded GRA Eminent Scholars Andrew Mellor (MCG) and Allan Kirk (Emory) a \$1 million grant to advance their research in this area. **The Mason Trust** focuses on improving the process of organ transplantation for Georgians.

Georgia Research Alliance Eminent Scholars

Rafi Ahmed, Ph.D.
Vaccine Development
Emory University

Clifton A. Baile, Ph.D.
Agricultural Biotechnology
University of Georgia

M. Bruce Beck, Ph.D.
Water Quality &
Environmental Systems
University of Georgia

Jeffrey Bennetzen, Ph.D.
Molecular Biology &
Functional Genomics
University of Georgia

Kapil Bhalla, M.D.
Cancer Research
Medical College of Georgia

Barbara D. Boyan, Ph.D.
Tissue Engineering
Georgia Institute of Technology

Jean-Luc Brédas, Ph.D.
Molecular Design
Georgia Institute of Technology

Gee-Kung Chang, Ph.D.
Optical Networking
Georgia Institute of Technology

Xiaodong Cheng, Ph.D.
Structural Biology
Emory University

*Max D. Cooper, M.D.**
Immunology
Emory University

John A. Copeland, Ph.D.
Technology Transfer
Georgia Institute of Technology

James C. Cox, Ph.D.
Experimental Economics
Georgia State University

*Edward J. Coyle, Ph.D.**
Distributed Engineering
Education
Georgia Institute of Technology

Stephen Dalton, Ph.D.
Molecular Cell Biology
University of Georgia

*Roberto Docampo, M.D.,
Ph.D.*
Tropical and Emerging Global
Diseases & Cellular Biology
University of Georgia

Russell Dupuis, Ph.D.
Electro-Optical Systems
Georgia Institute of Technology

William S. Dynan, Ph.D.
Molecular Biology
Medical College of Georgia

James D. Foley, Ph.D.
Telecommunications
Georgia Institute of Technology

Don P. Giddens, Ph.D.
Biomedical Engineering
Georgia Institute of Technology

*Harry J. Gilbert, Ph.D.**
Bioenergy
University of Georgia

Michael J. Hannafin, Ph.D.
Technology Enhanced Learning
University of Georgia

Stephen C. Harvey, Ph.D.
Computational Structural Biology
Georgia Institute of Technology

Julia K. Hilliard, Ph.D.
Molecular Biotechnology
Georgia State University

Xiaoping Hu, Ph.D.
Biomedical Imaging
Emory University

Eric Hunter, Ph.D.
Retroviral Molecular Biology
Emory University

Jiri (Art) Janata, Ph.D.
Sensors and Instrumentation
Georgia Institute of Technology

Nikil S. Jayant, Ph.D.
Wireless Systems
Georgia Institute of Technology

Biing H. (Fred) Juang, Ph.D.
Advanced Communications
Georgia Institute of Technology

Shafiq A. Khan, Ph.D.
Cellular Biology of Cancer
Clark Atlanta University

Allan D. Kirk, M.D., Ph.D.
Transplant Immunology
Emory University

Steven J. Knapp, Ph.D.
Crop Genomics
University of Georgia

William J. Koros, Ph.D.
Membrane Science
and Technology
Georgia Institute of Technology

Michael J. Kuhar, Ph.D.
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University of Georgia

Lars Mathiassen, Ph.D.
Business Process Innovation
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Neuroscience
Medical College of Georgia

Andrew L. Mellor, Ph.D.
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Medical College of Georgia

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Drug Discovery
University of Georgia

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*Joel Saltz, M.D., Ph.D.**
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Genomic Medicine
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Animal Reproductive Physiology
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Neurobiology
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Systems by System-on-Package
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Structural Biology
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Binghe Wang, Ph.D.
Drug Discovery
Georgia State University

Wayne Wolf, Ph.D.
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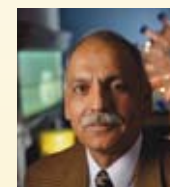
Ying Xu, Ph.D.
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Computational Biology
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*Robert K. Yu, Ph.D.,
Med.Sc.D.*
Molecular & Cellular
Neurobiology
Medical College of Georgia

* New Eminent Scholar in 2008



Julia Hilliard



Shafiq Khan



Stephen Harvey

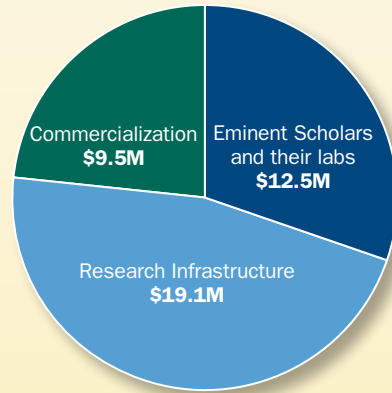
About GRA

The Georgia Research Alliance *creates opportunities* to grow Georgia's economy through scientific discovery.

We help recruit enterprising scientists to Georgia ... fuel the launch of companies that create high-value jobs ... and broker working partnerships between businesses and universities.

The impact of GRA's opportunity creation is both deep and far-reaching. By serving as a catalyst for a climate in which discovery and invention thrive, GRA helps drive advances in science and technology while growing the Georgia economy.

GRA FY 2008 investment portfolio



Total = \$41,100,000

Source of Funds: The funding for this program is provided by the State of Georgia.

About the portfolio:

- GRA's **Eminent Scholars** program helps to identify and bring world-class scientists to Georgia's research universities to lead extraordinary R&D programs with the highest potential for improving the state's economic vitality.
- GRA's **Centers of Research Excellence**, developed around GRA investments in research infrastructure, serve as the backbone of Georgia's research enterprise.
- GRA's **Commercialization** activities include VentureLab and grants to support University-Industry research partnerships. VentureLab seeks out university-based innovations, assesses their commercial potential, and provides resources to address management, market and technology risks associated with new venture formation.



Communities across Georgia feel the impact of their connections to university research made possible in part by the Georgia Research Alliance.

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While GRA's investments are funded through state appropriation, its operating budget is funded entirely by the generosity of individuals, companies and foundations. Following is a list of contributors to GRA's most recent fundraising campaign. *If you wish to help strengthen the groundbreaking scientific work taking place in Georgia, please contact GRA at 404-332-9770.*

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MESSAGE FROM THE PRESIDENT AND CEO

What's next for Georgia

A renowned scientist once said that the best way to predict the future is to invent it. Judging by what's being invented and discovered at Georgia's research universities, we can see some of what the future holds for our state and our world. And it is encouraging.

It is entirely possible that Georgia scientists could produce the world's first HIV vaccine, make hydrogen-burning cars a reality, slow or prevent the onset of Alzheimer's or accomplish any number of other extraordinary feats. Exactly how many of these breakthroughs will occur is unknown, but one thing is certain: In the years to come, we will see Georgia produce more treatments, products and stepping-stone advances that will influence the quality of life of people everywhere.

The stories in this annual report exemplify this point. So what will happen next? Here are three significant developments that we can expect to emerge in our state in the not-so-distant future:

1. *A growing reputation as the crossroads of global health.* Georgia has a "perfect storm" of government, non-profit, university and private sector enterprises that are engaged in global health. GRA will continue closing deals to generate more capacity for discovery and invention in this area. Recruiting world-class scholars, expanding the bridge between our universities and the CDC and strategically investing in the required research infrastructure are just a few examples of how we'll do this.
2. *Accelerated commercialization of discoveries.* Companies born in Georgia ought to stay in Georgia. That's why GRA worked with Governor Sonny Perdue to forge a venture capital partnership between business and government to advance the most promising university-based discoveries. As this seed money gets put to work, and as GRA continues to deepen its support for commercialization, the pace of bringing discoveries to market will quicken. This means more new companies and high-wage jobs in Georgia.
3. *Increasing collaboration.* The "C" word is popular in rhetoric, but in Georgia it's a reality. Many of our university scientists are actively engaged in cross-institutional research. That's good news, because federal funding is increasingly directed toward multi-university teams that work together. Look for Georgia to leverage its strength and cement its position as a center of research collaboration. GRA will continue to foster working partnerships as we've done with our Collaboration Planning Grants. The grants, which are awarded exclusively to multi-university teams, have already spurred further investment seven times over the initial grant allocation.

If you like what you're seeing in Georgia now, wait until you see what's next.



C. Michael Cassidy
President and CEO

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GRA Eminent
Scholars® recruited

28

New nationally
recognized Centers
of Research Excellence

\$2.1 billion

Federal and
private investment
leveraged

Dozens

Major scientific
breakthroughs
from scholars' work

100+

Existing corporations
served by university
partnerships

150/5,500+

Companies and
jobs created



**GEORGIA
RESEARCH
ALLIANCE**