# SFBR Fall Issue 2005 Control of the Southwest Foundation for Biomedical Research

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Leading the mission:

Dr. Anthony Infante takes the helm at SFBR

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New scientific director brings research on exotic disease to SFBR Page 9

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'Big hits' in biodefense research **Pages 20, 22** 



Anthony J. Infante, M.D., Ph.D., is using his skills as a physician, scientist and administrator to lead SFBR as its new president.





he spring of 2005 marked the beginning of a new era at Southwest Foundation for Biomedical Research, as the organization saw the first change in its presidency in 13 years.

Following the retirement of Dr. Frank Ledford, who guided the Foundation through a period of unprecedented growth and scientific progress, Dr. Anthony Infante took his place at the helm on June 1. Enthusiastic about this opportunity to build upon the Foundation's distinguished history and steer it toward an even brighter future, Dr. Infante himself has a distinguished background as a skilled physician, scientist, teacher and administrator, all roles he played during his past 22 years at the University of Texas Health Science Center at San Antonio (UTHSCSA).

Beginning in 1983 as a professor in the Department of Pediatrics, he was promoted to numerous leadership roles over the years, including division head of Pediatric Hematology/Oncology/Immunology from 1994-2001. During that tenure, he was called upon to establish the Children's Cancer Research Center at UTHSCSA, now known as the Children's Cancer Research Institute, and served as its interim director from 1999 to 2002.

Most recently, Dr. Infante served as associate dean for research at the UTHSCSA Medical School and as professor in the university's Department of Pediatrics and the Department of Microbiology & Immunology.

He also continues to serve as director of the Children's Immunology Clinic at CHRISTUS Santa Rosa Children's Hospital, where he works with children from throughout South Texas whose immune systems have not properly developed or have been weakened through chemotherapy, organ transplants, or similar circumstances.

Dr. Infante's extensive research experience includes

He is a world-class scientist with a body of research work spanning 30 years and a long track record of successful organizational leadership. – SFBR Chairman John Kerr current work on immune reconstitution in children with immune deficiency disorders. His recent research grants include several from the National Institutes of Health for the study of myasthenia gravis, an autoimmune disease in which a person's antibodies attack healthy muscle tissue. He also has been heavily involved in National Cancer Institute studies of minority children in NCI-approved clinical trials.

Scientific journals such as the Journal of Immunology, Journal of Neuroimmunology, and the Journal of Pediatrics have been publishing Dr. Infante's work since 1974.

"Dr. Infante is a major asset to the healthcare and biomedical research community in San Antonio, and we're thrilled that he

has filled this important role at the Foundation," SFBR Chairman John Kerr said upon his hire. "He is a world-class scientist with a body of research work spanning 30 years and a long track record of successful organizational leadership. His background both in research and clinical medicine uniquely qualify him to lead the Foundation."

Dr. Infante received both a Ph.D. in biological chemistry and an M.D. from Indiana University, where his interest in research began. He completed his residency in pediatrics at the Mayo Clinic, where he also was awarded a postdoctoral fellowship in immunology. He then served as a postdoctoral fellow in medicine/immunology at Stanford University

Medical Center before joining UTHSCSA in 1983.

"I am both honored and humbled to serve as president of Southwest Foundation for Biomedical Research," said Dr. Infante. "The Foundation is a leading organization in San Antonio's thriving biomedical industry, with an outstanding reputation both locally and nationally. Under Dr. Ledford's leadership, it has seen tremendous growth and scientific progress, and now I believe it is poised to make an even greater impact on human health through biomedical discovery. I am honored that I along with the Board of Trustees and the scientific staff - have been entrusted with leading the Foundation to its next level of achievement."





Dr. Anthony Infante lays out his vision for taking SFBR to the next level of excellence.

On Nov. 14, SFBR hosted a reception and dinner at The Argyle for trustees, major donors, and other community partners, thanking them for their outstanding support and offering them an opportunity to become better acquainted with the Foundation's new president, Dr. Anthony Infante.

At this special event, Dr. Infante shared his reflections on what sets SFBR apart from other research institutions, updated the audience on the Foundation's most recent scientific progress, and offered his vision for SFBR and its future impact. In an effort to share that vision with all of our friends and supporters, we provide a condensed version of this presidential address here for our readers.



ince the day I became president of Southwest Foundation for Biomedical Research, I've had one question asked of me every day by someone: "What are your plans for building on the great track record of Dr. Frank Ledford and taking SFBR to the next level? How are you going to move the Foundation forward in

your tenure as president?"

The answer to that question begins with a clear understanding of what we already have, of what has been built over the past 64 years since the Foundation was formed.

I fully realize that I've been able to come to a very special place. In 1941, Tom Slick had a dream to create a "city of science" in San Antonio with a prime purpose of finding solutions to the great health problems facing mankind. He created – with his commitment and his own fortune – what became Southwest Foundation for Biomedical Research. That was a transforming moment for biomedical research in this country.

Tom Slick's legacy in biomedical research is extraordinary. I can't think of anyone who did not go to work every day in a white lab coat who was responsible for more groundbreaking medical research.

No, he didn't conduct that research personally, but he made it possible by setting a unique example of philanthropic vision that helped pull together some of the finest minds in the world to a one-of-a-kind set of facilities especially designed for scientific success.

The tools we have here at the Foundation in many ways give our faculty a leg up on their peers around the world, and we are now developing a strategy to find our special niche in biomedical research and exploit it to extraordinary success. We have a total of 480,000 square feet of scientific and support facilities that house our five departments: Genetics, Organic Chemistry, Physiology and Medicine, Virology and Immunology, and Comparative Medicine.

We have the Southwest National Primate Research Center – one of only eight such centers in the United States and the only one in the Southwest. The Primate Center is truly an international resource, fostering worldwide collaborations.

We have one of just a handful of biosafety level four laboratories in the United States – and the only one that is privately owned. Because of this laboratory, our Foundation is at the forefront of biodefense research in this country and the world.

We have the SBC Genomics Computing Center – home to a "computer ranch" with more than 1,500 computer processors working in parallel to create the world's largest computer cluster for statistical genetic analysis, allowing our scientists to search for diseaseinfluencing genes at record speed.

SFBR possesses a collection of scientific facilities that makes a scientist think it's Christmas morning – every morning!

With these extraordinary resources, brilliant scientists are accomplishing great things. In 2004, the Foundation's staff of 75 doctoral-level research scientists – of whom 33 are principal investigators – generated more than \$58 million in new grants and contracts, an all-time record. That's more than \$1.5 million per principal investigator, a ratio that ranks us in the very top echelon of our peer institutions, including the Salk Institute in San Diego and The Scripps Research Institute in La Jolla, Calif.

We have more than 200 funded research projects representing an incredible leap across the spectrum of

biomedical research. Our scientific work spans the globe. We have projects going on in Nepal, Brazil, Thailand, Oman, Australia and Spain, and across the United States, including Alaska, Arizona, the Dakotas and Oklahoma.

We are collaborating right now with scientists from such institutions as Sultan Qaboos University in Oman; Hospital San Pau in Barcelona; the FIOCRUZ Institute in Brazil; Hammersmith Hospital and Imperial College in London; and ChemGenex Pharmaceuticals and Royal Women's and Children's Hospital in Australia.

In this country, some of our collaborations include Harvard, Stanford, Duke University, the University of California at San Francisco, the University of Pittsburgh, Washington University, the Johns Hopkins School of Medicine, and many others.

Locally, we work with our very close partner, the University of Texas Health Science Center at San Antonio. Many of our faculty serve as adjunct faculty at the Health Science Center, including myself.

We also look forward to closer collaboration with the University of Texas at San Antonio (UTSA) and the Cancer Therapy and Research Center (CTRC).

Scientists are special people, and at the Foundation, we have dedicated people who are determined to make a difference – and I am committed to empowering them to be highly successful.

I'm referring to people like people like Dr. John Blangero, who, with other geneticists here, has pioneered the development of novel statistical methods for genetic analysis ... Dr. Eric Moses, who moved to the Foundation from Australia so he could better study the

genetics of preeclampsia ... Dr. Jean Patterson, who came from Harvard to run the BSL-4 lab and serve as chairman of our Department of Virology and Immunology ... Dr. Robert *Continued on page 6* 



The Argyle was abuzz with excitement as friends of SFBR gathered to hear Dr. Infante's plans for the Foundation's future.





Praising the Foundation's outstanding faculty, Dr. Infante highlighted the accomplishments of Dr. Jean MacCluer (left), Dr. Robert Lanford (center), Dr. P.N. Rao (right), and many others.

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Lanford, one of the country's leading researchers on hepatitis ... Dr. Krishna Murthy, a member of our stellar team of AIDS researchers and part of a new HIV Vaccine Design and Development Team funded by the NIH ... Dr. Henry McGill, a pioneer in research on cardiovascular disease ... Dr. Jean MacCluer, one of the first recruits to our Genetics Department, who helped launch the Foundation's now-renowned focus on large-scale family studies to find genes that influence common complex diseases ... Drs. Sarah Williams-Blangero and John VandeBerg, who lead large family studies in Brazil and Nepal, focusing on genetic influences on infectious diseases ... and Dr. P.N. Rao, chairman of our Department of Organic Chemistry. The Foundation holds 12 patents for steroids he's synthesized and methods he's developed for the diagnosis and treatment of reproductive disorders, infertility and various forms of cancer. (Dr. Infante went on to recognize many other distinguished scientists at SFBR.)

It was this all-star roster that helped us attract our new scientific director, Dr. Philip LoVerde. He and his team occupy a building made possible by generous donors. It is home to his work on schistosomiasis, an exotic parasitic disease that ranks with malaria and tuberculosis in terms of the number of people affected worldwide. Dr. LoVerde had his pick of places to be, and again, SFBR won out because of the incredible mix of people and facilities.

We have the facilities. We have the people. We have the support.

Tom Slick's philanthropic vision has been embraced by

generations of new philanthropists. NIH funding covers most of our research programs, but it is private giving that has made possible the recruitment of these scientists, that has built the labs and furnished them with the very best equipment. Furthermore, it is private funding that has kick-started a number of novel research programs, contributing to significant research results and scientific progress.

Now, back to the original question: "So, Tony, what's the plan?"

Simply put, I'm going to do what Tom Slick told me to do – not through oil paintings hanging in the hallway, but through what I've been reading. Here is what Tom Slick said in speaking of the Foundation, and I consider these words to be my marching orders:

"I would like this effort to grow to be as big as it soundly can, and at the same time to embrace as wide a range of scientific research as is practical. Equally, if not more important than size and scope, should be the efforts to achieve the highest quality of accomplishment."

How do we do this? We need to grow, but grow sensibly, according to a well-thought-out strategic plan. We will continue attacking a broad range of important biomedical

research problems, and we'll do that with the very best people and the very best facilities. In everything we do, we will work to "achieve the highest quality of accomplishment."

My vision for SFBR is that within 10 years we will be the leading independent biomedical research institution between the east and west coasts of the United States. We are going to be among the top five such institutions in the nation. Who are the other four going to be? In my judgment, we will be in the company of The Scripps Research Institute in La Jolla, Calif.; Fred Hutchinson Cancer Center in Seattle; the Whitehead Institute in Cambridge, Mass.; and Jackson Laboratory in Maine.

In achieving that distinction, we will be known even further afield – nationally and internationally – for highimpact research in key areas of human health. That recognition is going to help us attract and develop more and more science all-stars, more and more NIH-funded research, and more and more private support.

In the process, the Foundation will be seen clearly as an absolutely indispensable asset for San Antonio – an asset that will be an increasingly important bioscience engine for this city, helping create more and better jobs, more investment and more economic growth.

We have already embarked on a strategic planning process that will help put us on the road toward these achievements. Good teams and collaboration are at the heart of great scientific research, and that is the same way we are going about developing this strategic plan – faculty, staff and board members working together as a team to chart our course.

We know that we are in a highly competitive environment – for the best people, for research dollars, for philanthropic support. We know that expectations are high – and we want them to be high! In fact, we expect to raise the bar ourselves.

Your philanthropic investments in the Foundation are the No. 1 enabler of this vision, and we hold ourselves to the

highest expectations as stewards of your gifts.

We are going to concentrate on human progress through scientific research. We'll be looking to develop cost-effective strategies for the prevention and treatment of disease, and we'll be doing that through both fundamental and applied research.

The strategic plan will look out three to five years to program initiatives and the incremental resources we need to carry out those research programs. In our case, a three- to five-year time frame makes sense. Things happen quickly in research. Environments change. Focus changes. Who knew in August of 2001, for example, that there would be a huge national focus on biodefense research? In that instance, it happened that the Foundation was positioned to help right away, because of our facilities and the outstanding researchers who were already here.

We have to try to look around the corner and position ourselves to be ready for the next big shift in research, even while we continue to build the absolute excellence of our ongoing research programs.

Where do we stand in the development of this plan? We've pretty well completed the data-collection phase and are now putting together the action plans. I expect that we will complete the plan and begin implementation by March of 2006.

Let me add that this plan isn't going to adorn the shelf in *Continued on page 8* 

The Foundation's mix of renowned faculty and resources continues to attract more highly respected scientists, such as Dr. Philip LoVerde (right), SFBR's new scientific director. Together, he and Dr. Anthony Infante (left), SFBR president, are working with trustees, faculty and staff to develop a strategic plan to lead SFBR to even higher levels of achievement.





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my office and gather dust. We will use it, update it and check ourselves against our projected progress on a constant basis.

Where is this all going to take us? What I know is this: If we accelerate our efforts to find and bring in the very best people, if we provide them with the labs and other support they need, then breakthroughs will come. The more we are able to do that, the broader our reputation will spread, and that will make it easier to attract even more of the world's finest biomedical researchers.

We are on the edge of something big, but it's going to take our very best efforts. As the old comic strip character, Pogo, once said, "We are surrounded by insurmountable opportunities." Where I differ from Pogo is that I know we can grasp those opportunities and "surmount" them. It's ours for the taking. We just have to reach out and get it.

What excites me about becoming the new president of SFBR is that there is a very personal connection here. Our founder is not some abstraction. He was a real person, and many people who are still a part of the Foundation family knew him on a very personal basis. I love the fact that his family is still deeply involved in the Foundation in leadership and philanthropic roles, including board members Earl Slick, Phyllis Slick Cowell, Charles Slick, John Kerr and Jeff Moorman.

Tom Slick laid out a vision, and his family and friends embraced that vision and have stayed the course. That has carried over to our scientists, who know that this is a very special place.

Tom Slick set up a place where people can strive to be – and can become – the very best, where extraordinarily bright people can have the time, the facilities and the support to make real, measurable progress in dealing with the most intractable health problems facing humanity.

My goal, simply, is to carry on Tom Slick's dream so that this Foundation continues to be a "difference maker" in biomedical research.

I feel like I've prepared my whole career for this position, and I want to cap that career with a major success by bringing the Foundation to the next level. I want NIH, the Centers for Disease Control and Prevention, the World Health Organization and biomedical researchers around the globe to say: "I don't know the answer. We'd better call those people down in San Antonio and see what they think. We'd better put the people at Southwest Foundation for Biomedical Research on the problem."

I want us to be the "go-to guys." Maybe you think that's too far-fetched or too romantic a notion. I don't think so. After all, who would have thought in 1941 that we would have made this sort of progress? I'll tell you who: Tom Slick.

We're not that far away from our goals right now. These calls already come in from around the country and around the world. We just have to focus our efforts, continue to provide the right kind of research environment, keep bringing in the best and the brightest – and the growing reality of our achievements will result in that "Top Five" ranking and reputation.

But the real results will come in the progress we achieve in making possible a better, longer life for people around the globe. In that regard, the Foundation itself will be a "citizen of the world."

I ask that you – our strongest supporters – continue to share this vision. Together, we form an unbeatable team.

I will use all my energies and knowledge and skill to continue moving us down that road at the highest possible speed. That is my commitment to Tom Slick – who I know is looking over my shoulder – and that is my commitment to you. Building dedication celebrates

# new scientific director, exotic research program of global import



hen SFBR leaders cut through a giant ribbon on October 27, they officially opened a large gift to the Foundation that

could have a big pay-off for the health of people around the globe.

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Dr. Philip LoVerde looks at fresh-water snails that carry the schistosome parasite. The tiny parasite wreaks havoc on human health around the globe.

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Built with generous funding from several major donors, including a \$1-million lead gift from the USAA Foundation, the 5,000-square-foot Ledford Building is much more than a laboratory and office complex. It is a key component in a campus modernization effort begun under the leadership of the Foundation's former president, Dr. Frank F. Ledford Jr. – for whom the building is named – and carried forward today under the direction of Dr. Anthony Infante, who took the helm June 1.

The building's construction enabled the recruitment of a renowned infectious disease expert, Dr. Philip T. LoVerde, as the Foundation's new scientific director, as well as the expansion of SFBR programs focused on global health issues.

Dr. LoVerde, former associate chairman of microbiology and a distinguished professor at the State University of New York at Buffalo, runs one of the world's leading research programs on schistosomiasis, a sometimes fatal disease affecting 200 million people in 76 countries. The completion of the Ledford building allowed Dr. LoVerde to move his research program to SFBR over the summer, when he also stepped into the Foundation's lead scientific position on a full-time basis. For the previous year, he divided his time between SFBR and SUNY.

"The opening of this facility – which recognizes Dr. Frank Ledford and his tremendous efforts to modernize our campus and keep our scientists in state-of-the-art laboratories – enhances the Foundation's ability to address global health concerns," said Dr. Anthony Infante, president of SFBR. "We are extremely grateful to the friends of SFBR who funded its construction. Their generosity enabled the recruitment of Dr. Philip LoVerde, a distinguished scientist who provides the Foundation both with great scientific leadership and a renowned research program that could potentially improve the health and well-being of millions of people worldwide."

### What is schistosomiasis?

For the past three decades, Dr. LoVerde has been studying schistosomiasis, a parasitic disease spread by freshwater snails. Today, his research has progressed to the point that he is studying promising candidates for a vaccine. There is much interest internationally in developing a vaccine because of the large number of people affected, said Dr. LoVerde, who has served for years on panels with the World Health Organization and the National Institutes of Health in their efforts to eradicate parasitic ailments.

"Schistosomiasis is a disease that people in the United States don't often hear about," Dr. LoVerde said. "But it is one of the major causes of morbidity – or illness – in the world today. It ranks with malaria and tuberculosis in terms of world health importance."

About 10 percent of those infected become seriously ill, with varying degrees of debilitation that helps to perpetuate poverty in many areas. Some 800,000 people die each year from the disease.

Schistosomiasis is endemic in Africa, the Middle East, South America (primarily Brazil), the West Indies and Asia (primarily China and the Philippines).

Why study a disease that does not affect the United States?

"Our nation's strategic interests take the U.S. military to areas of the world where this disease is endemic," Dr. LoVerde said. "That can put our soldiers at risk of acquiring these infections. Many missionaries and millions of tourists also travel to regions that make them susceptible. Finally, if we want to help other countries achieve a better quality of life, it is important to develop the means to protect their populations from infections like schistosomiasis."

### The disease and its impact in the United States

Schistosomiasis does not spread from human to human. Its life cycle depends on fresh-water snails as intermediate hosts. When people enter water infested with infected snails, the schistosome larvae released from the snails burrow into their unbroken skin, enter the blood stream, migrate to the liver, mature into adult worms, inhabit the circulation of the intestine and begin to lay eggs. Some of the eggs enter the intestine and pass to the outside environment through feces, and once in fresh water, the parasite continues its lifecycle by infecting specific snails. The remaining eggs get trapped in the infected person's tissues, particularly the liver.

The body tries to isolate the eggs by encasing them in capsules, forming what are known as granulomas, which begin to accumulate and clog blood vessels. This can lead to an enlarged liver and spleen and intestinal problems, as well as ballooning varicose esophageal and gastric blood vessels that eventually burst, causing severe and sometimes fatal internal bleeding.

Schistosomiasis research began in the United States after World War II, when the troops that invaded the Philippines under Gen. Douglas MacArthur contracted the infection, suffered from reduced fighting capability, and returned home with the exotic disease. Dr. LoVerde recalled a case discovered in 1974 after a World War II veteran underwent surgery for an unrelated intestinal condition, indicating that schistosomiasis infection can last for decades without symptoms. Other chronically infected people experience varying degrees of illness, which may combine with symptoms caused by other parasites.

"This disease has what we call subtle morbidity," Dr. LoVerde said. "It makes people lethargic, and they can't work as much as they should. Children become mentally dull and are underachievers in school because they don't have energy. We call it subtle morbidity because you can't always measure the symptoms easily and ascribe them to

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Dr. LoVerde and his team enjoy working in their new laboratory at SFBR, which was built entirely with donor funding.

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something. It affects people's daily lives, and it prevents them from achieving at a level that they could without the disease."

### The need for a vaccine, how SFBR can help

An inexpensive drug, Praziquantel, effective with a single, oral dose, is available for treating the infection, but it does not prevent re-infection.

Dr. LoVerde's vaccine development at SFBR initially will focus on three candidates that have proved effective in mice and hamsters. Under a \$1.86 million grant from the National Institute for Allergy and Infectious Diseases, Dr. LoVerde will work with baboons to study the vaccines' efficacy and safety.

"We will do these studies in baboons because they develop a disease much like humans," Dr. LoVerde said. "This is the real prelude to going into clinical trials in humans."

In the future, Dr. LoVerde also hopes to study the pedigreed baboon colony at the Foundation's Southwest

National Primate Research Center, which he described as an unparalleled resource for genetic studies on the disease.

In a separate genetic study with a human population in Brazil, Dr. LoVerde and SFBR geneticist Dr. Sarah Williams-Blangero are working with Brazilian colleagues to get a better



understanding of why some schistosome-infected people get sick and some don't.

### A leader in his field

In addition to his research role at SFBR, Dr. LoVerde serves as the Foundation's scientific director, the

Dr. LoVerde is joined at SFBR by a research team that includes (standing L-R) Dr. Wenjie Wu, Dr. Marceb Fantappié and Francisco Bastos de Oliveira. Not shown is Dr. Claudia Carvalho-Queiroz.



organization's chief scientific position, with oversight of five research departments. He brings a depth of experience to the position. Among other prestigious appointments, Dr. LoVerde serves in a leadership role or as a permanent member with various study sections for the National Institutes of Health. With the World Health Organization, he is chairman of the committee that coordinates basic science research programs, and he serves on the committee for pathogenesis and applied genomics, the committee for research capacity strengthening, the Tropical Disease Research Program, and on the expert panel for helminthic (worm) diseases.

Dr. LoVerde also serves on the editorial boards of eight peer-reviewed scientific journals, including his role as editor of the journal *Molecular and Biochemical Parasitology*, in addition to serving as an ad hoc reviewer for other front-line scientific journals. He is active in national scientific societies and is former president of the American Society of Parasitologists, where he continues to serve on committees, as well as with the American Society of Tropical Medicine and Hygiene.

At the State University of New York at Buffalo, he trained more than 26 Ph.D. students and more than 15 postdoctoral students. Many of them hold positions today in academics as professors and department chairs, in government at the U.S. Food and Drug Administration and U.S. Department of Agriculture, and in private industry.

At SFBR, he enjoys working with Dr. Infante, faculty and staff in setting the Foundation's direction for the next several years. "I believe I come with a fresh, objective view as well as a depth of experience that allows me to evaluate the Foundation's vast scientific programs and understand scientists from varied backgrounds," he said. "SFBR is a world-class scientific research institution with potential to be even greater. I am honored to be able to use my experience and expertise, working in collaboration with other SFBR leaders, the faculty and staff, to expand our vision for the future."

> SFBR extends its thanks to the generous donors who enabled the construction of the Ledford Building and the recruitment of Dr. Philip LoVerde:

USAA Foundation Elizabeth Huth Coates Foundation Helen Storey Estate Ewing Halsell Foundation Gorman Foundation Brown Foundation Amy Shelton McNutt Foundation Southwest Foundation Forum



The Ledford Building, named in honor of the Foundation's former president, Dr. Frank F. Ledford Jr., was dedicated Oct. 27.



SFBR leaders and donors cut the ribbon for the building's official opening. Shown here are (L-R) Leslie Negley with the Brown Foundation; Dr. Frank Ledford; Dr. Anthony Infante; Dr. Philip LoVerde; Barbara Gentry with the USAA Foundation; Jim Gorman with the Gorman Foundation; Ed Austin Jr. with the Ewing Halsell Foundation; and Kathryn Dehlinger with the Southwest Foundation Forum.



On a tour of the new laboratory, Dr. Philip LoVerde explains his research to (L-R) Leslie Negley, Marilyn and Dr. Frank Ledford, and SFBR Chairman John Kerr.



# New contract funds novel, promising HIV vaccine approach

A promising therapeutic vaccine for HIV is under investigation at the Southwest Foundation for Biomedical Research as part of a new government subcontract awarded to Dr. Krishna Murthy.

Intended initially to be used as a therapy to help treat individuals already infected with HIV, the vaccine has shown a broad ability to prevent highly variable forms of the AIDS virus from binding with and entering immune cells, which renders the virus incapable of surviving.

Now Dr. Murthy and his research team will conduct further studies to examine the vaccine's safety, toxicology and proper dosage. If these tests are successful, he will examine the vaccine's efficacy in chimpanzees, the only animals besides humans that are susceptible to HIV infection. While chimpanzees can be infected with HIV, their immune systems prevent them from developing AIDS, making them ideal for humane studies of the vaccine's efficacy before it moves on to human trials.

"AIDS continues to be a worldwide health crisis, with some 40 million people infected around the world and approximately 3 million deaths in 2004 alone," said Dr. Murthy, citing statistics from the United Nations. "We must do everything possible to find a way to





stop this deadly disease, and I am honored to have the opportunity to help in that cause."

Dr. Murthy is conducting this research as a partner in an HIV Vaccine Design and Development Team recently funded by the National Institute for Allergy and Infectious Diseases (NIAID). The consortium's \$17-million government contract covers the full cost of the development and manufacturing of the vaccine, led by Dr. Chang Yi Wang, CEO of New York-based United Biomedical, Inc. (UBI), in collaboration with the California Department of Health Services in Richmond and Dr. Murthy at SFBR. Murthy's research as part of this consortium is funded by a \$2.3million subcontract.

Dr. Wang at UBI said the new contract should accelerate the vaccine's progress toward human trials under the NIH Adult AIDS Clinical Trials Program.

### A novel approach

Because traditional approaches to an HIV vaccine have so far been ineffective, the UBI-led consortium followed NIAID's call to "think outside the box" in the development of a new approach. This vaccine design is novel in that it induces the production of antibodies that bind with a conserved cell-receptor complex on immune cells targeted by HIV. This complex, known as the CD4 receptor complex, is used by a protein in HIV's coating structure to bind with immune cells called T cells. By binding with that receptor complex, the antibody blocks an essential mechanism that all subtypes of HIV need to infect a cell, and if the virus cannot infect a cell, it eventually dies.

### **Designed to be broadly effective**

Researchers believe this approach creates a vaccine that could be broadly effective against the hypervariable HIV virus, which has posed a significant challenge in the past. HIV is highly genetically divergent, with numerous genetic subtypes that frequently mutate as they replicate. Those mutations then recombine with other subtypes, creating even more permutations of the virus. Therefore, a preventative or therapeutic vaccine designed for efficacy against one genetic subtype of HIV will not necessarily work against a different subtype.

But by spurring the immune system to produce antibodies that bind with an essential receptor complex on immune cells targeted by HIV rather than the traditional approach of producing antibodies specific to the HIV virus, researchers believe they may have found a way to block infection by all subtypes of the virus.

"If this peptide vaccine can induce an immune response that produces antibodies that block the CD4 receptor complex, we can treat infection with HIV and potentially prevent infection. That's the hypothesis," explained Dr. Murthy. "And this would treat infection by virtually all subtypes of HIV, not just one or a few, because almost all HIV subtypes use this same receptor complex. So if this turns out to be an effective therapeutic vaccine, it should be a global immunotherapy."

### **Previous success**

The group's approach is based upon – and their hopes bolstered by – their experience with a monoclonal antibody developed by UBI called mAb B4, which likewise binds to the CD4 receptor complex on T cells. In 1999, the group published a paper in the *Proceedings of the National Academy of Sciences of the United States of America* explaining findings from research conducted by Dr. Murthy and his laboratory at SFBR. "The study showed that, when administered to chimpanzees one hour before or one hour after exposure to HIV, the antibody prevented infection," Dr. Murthy said.

Furthermore, test tube experiments conducted by the California Department of Health Services showed mAb B4 to be effective in blocking all HIV subtypes tested, including subtypes found in different parts of the world.

This antibody is now being developed to treat healthcare workers, for example, after possible exposure to HIV from an accidental needle stick, as well as AIDS patients experiencing episodes of high virus replication.

Applying their knowledge of this antibody to what they hope is a successful vaccine design, UBI proceeded to develop a synthetic peptide that is designed to prompt the immune system to produce antibodies that have a

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mechanism of action similar to mAb B4.

As proof of concept, research conducted by the California Department of Health Services has shown that when UBI's new synthetic peptide is administered to rabbits and guinea pigs, the animals' immune systems do indeed start to produce B4-like antibodies.

"These results are very encouraging, so now we want to move forward and study the peptide in nonhuman primates," said Dr. Connie Finstad of UBI. "That's where the resources and expertise of SFBR will prove to be so vital."

### **Moving forward**

Dr. Murthy and his research team are first conducting toxicology studies to ensure that the peptide vaccine is safe. Following those studies, his group will continue research with baboons to see if the peptide induces the same immune response seen in rabbits and guinea pigs, and then they will work to identify the appropriate vaccine dose that produces the maximum response. These efforts will include steps to identify an appropriate schedule for administering the vaccine.

If the vaccine proves to be safe and when the proper dose and schedule are worked out in baboon studies, SFBR researchers will then perform the ultimate test, vaccinating chimpanzees with the peptide and then challenging them with HIV to see if they are protected. That would be the last step before the vaccine could go into human clinical trials.

"The animal studies alone are likely to take four to five years. This is a prolonged process that takes a great deal of time to understand," Dr. Murthy said. "Only if the vaccine proves safe and effective in nonhuman primates would it advance to human trials. But we are certainly encouraged by what we've seen so far."



Scientists pinpoint inflammation GENE

Discovery has implications for wide range of diseases



team of international researchers led by SFBR scientists has discovered that a specific gene on chromosome 15 regulates inflammation, a finding with implications for a wide range of disorders, including cancer, cardiovascular disease, diabetes, obesity, Alzheimer's and infections. The findings were published in the October 9 online issue

of the journal Nature Genetics.

The discovery is generating a great deal of interest among biomedical and pharmaceutical researchers because of an already heightened understanding of the role of inflammation in so many human disorders.

"Practically every common disease involves an inflammation component," said Dr. John Blangero, a scientist in the SFBR Department of Genetics and the paper's senior author. "So the discovery of a new player in the inflammation pathway opens up many potential avenues for intervention on a broad range of health issues."

Along with Dr. Blangero, lead researchers in identifying the SEPS1 (Selenoprotein S) gene's influence on inflammation were Drs. Joanne Curran and Ahmed H. Kissebah. Dr. Curran, who also is a geneticist at SFBR, was formerly with ChemGenex Pharmaceuticals, an Australian-based company that initially identified the gene through animal studies and funded this latest analysis of its role in humans.

Dr. Kissebah is professor of medicine at the Medical College

Continued on page 18

#### Inflammation, continued from page 17

of Wisconsin and medical director of TOPS (Take Off Pounds Sensibly), an international weight-loss organization whose members provided genetic material for analysis. Other scientists from SFBR, ChemGenex, Deakin University (Geelong, Australia) and the International Diabetes Institute (Melbourne, Australia) also contributed to the work.



### **Cellular garbage truck**

The group's research identified SEPS1 (pronounced "Sep S One") as a type of "garbage truck" that helps clear cells of misfolded proteins that build up when cells are placed under stress, Dr. Blangero said. Inflammation develops when those faulty proteins accumulate in a cell. People with a genetic variation that impairs SEPS1's ability to purify the cells by clearing out the bad proteins tend to

suffer higher levels of inflammation than people in whom the gene fulfills that role more efficiently.

The study found the same relationship between SEPS1 and inflammation in two geographically and ethnically distinct populations of people in the United States, one in Wisconsin and one in Texas.

### New opportunities for intervention

Dr. Greg Collier, CEO of ChemGenex, said the discovery of SEPS1 and its function could yield new approaches for inhibiting inflammation, perhaps through medications that regulate the gene. An expected search for other genes that influence SEPS1 also could lead to other potential areas for drug intervention.

Researchers studying diseases impacted by inflammation also might look to see what role SEPS1 plays in disease susceptibility. Drs. Blangero and Curran explained that ChemGenex and SFBR scientists already are beginning to study how this gene influences a variety of complex diseases, including cardiovascular disease, diabetes, obesity, preeclampsia, and various infectious diseases.

Dr. Kissebah said it provides new insight into studies he leads on the genetics of obesity. "Now that we have identified SEPS1's role in inflammation, which is known to initiate the process of arterial wall hardening and the onset of Type 2 diabetes, we are developing an understanding of why obese persons with a faulty SEPS1 gene may be at higher risk of developing heart disease and diabetes," he said.

## The path to discovery: finding SEPS1 and its influence

These groundbreaking findings about SEPS1 are built upon a discovery five years ago by ChemGenex Pharmaceuticals. The company was studying the Israeli sand rat, an animal that, like humans, has certain individuals with a greater propensity than others for obesity and diabetes, as well as the inflammation associated with those conditions. ChemGenex researchers found that the obese and diabetic sand rats exhibited a different pattern of a previously undiscovered gene, which is now known to be SEPS1. Given the results in animals, the SFBR-led team was brought in to determine whether this gene is relevant to inflammation in humans.

Dr. Blangero, who designed the study, first

teamed up with Dr. Kissebah and the large-scale, family-based study Dr. Kissebah leads with TOPS members. This study population is largely of Northern European ancestry and has a high incidence of diabetes and obesity.

Scientists worked with 522 individuals from 92 families in the TOPS program, sequencing their entire SEPS1 gene and identifying all the genetic variations among individuals. These molecular genetic analyses were performed at the International Diabetes Institute in Melbourne, Australia, and directed by Dr. Curran and Dr. Jeremy Jowett.

Back in San Antonio, researchers used novel statistical methods developed by Dr. Blangero and other SFBR scientists to sift through this information and predict which of these genetic variants was most likely to have a direct effect on inflammation.

For this effort, they relied on 1,500 parallel processors in the foundation's SBC Genomics Computing Center, built in 2003 with a lead \$1-million gift from the AT&T Foundation, the philanthropic arm of AT&T Inc. An unparalleled resource for genetic analysis, the center enabled an otherwise too-time-consuming comprehensive analysis to eliminate scientific "guesswork" on which variants ought to be investigated in the laboratory.

The statistical analysis identified one particular variant in the SEPS1 gene – a variation in the gene's promoter region, which regulates SEPS1 expression – as the most important factor among the individuals with the highest levels of inflammation.

This allowed an Australian research team at Deakin University led by ChemGenex Pharmaceuticals to conduct laboratory investigations to discover the function of the SEPS1 gene and this particular variant.

"These experiments showed that this genetic variation affects how the cell responds to stress," Dr. Curran said. "The more common variant – the one most people have – is the 'good form' of SEPS1 that is more efficient at perceiving and responding to cellular stress. The alternative, rarer variant weakens SEPS1 and puts it at a disadvantage in dealing with cellular stress."

Dr. Blangero explained, "Basically, this rarer form of SEPS1 gives you a lazy cellular 'garbage truck' that doesn't properly do its job of clearing out the misfolded proteins that lead to inflammation."

As further confirmation of their study results with the Wisconsin population, the researchers looked to see if they would replicate their findings in a distinct group of Texas families. A team of SFBR scientists led by Dr. Jean MacCluer is conducting a long-term, National Institutes of Health-sponsored study on the genetics of heart disease, diabetes and obesity in 1,400 Mexican Americans from 90 San Antonio families.



The SBC Genomics Computing Center and its 1,500 parallel processors played a vital role in the search for the genetic variant that weakens SEPS1.

> Researchers studied an additional 500 individuals from 20 families of this San Antonio Family Heart Study and performed the same genetic analysis that was previously done with the Wisconsin families. "Once again, we obtained the same results," said Dr. Blangero. "We replicated our findings in another study with a different population of a different ethnic group, which is rare in human genetics. This adds to other clear evidence that SEPS1 is a good target in defeating inflammation, which plays an important role in virtually every disease of major public health importance."

# Vaccine shown to protect against Lassa fever



hemorrhagic fever virus and potential bioterror agent that already kills 5,000 people per year could soon be much less threatening.

That is because an SFBR research team led by Drs. Jean Patterson and Ricardo Carrión Jr. has found great success with a Lassa fever vaccine

designed by Dr. Igor Lukashevich at the Institute for Human Virology at the University of Maryland Biotechnology Institute (UMBI).

Working in collaboration with Dr. Lukashevich, Dr. Maria Salvato and their team at UMBI, the SFBR scientists tested the vaccine in guinea pigs and found that it showed 100 percent efficacy in protecting the animals from infection with the Lassa virus. Additional tests showed the vaccine to be safe for non-human primates.

Details of the group's significant findings were recently published in the second November issue of the *Journal of Virology* (Volume 79, Issue 22).

### How deadly is Lassa fever, and how is it spread?

Although better-known hemorrhagic fevers, such as Ebola and Marburg, have higher fatality rates, they are relatively rare compared to Lassa. Lassa kills more people each year because far more people are exposed and become infected with the virus.

Lassa fever infects an estimated 100,000 to 300,000 people each year in West Africa, with an estimated 5,000 deaths and thousands of others who suffer hearing loss or even deafness from the virus, according to the Centers for Disease Control and Prevention. Lassa was named after the Nigerian village where it was discovered after the death of two missionary nurses in 1969.



Dr. Jean Patterson and other SFBR researchers are testing a promising vaccine for Lassa fever.

The mastomys rodent, or "multimammate rat," carries the Lassa virus and sheds it in urine and droppings. Infection in people usually occurs when they come into contact with these materials or eat food contaminated with them. Infection also can occur from inhalation of tiny airborne particles carrying the virus.

The virus' ability to be carried through the air, its potential to cause deadly hemorrhagic fever, and the fact that there currently is no effective treatment or vaccine against Lassa are all reasons why the federal government has classified it as a "select agent," or potential weapon of bioterror, Dr. Patterson explained. But scientists are hopeful that this candidate vaccine could be a safe and effective defense against it.

### How does the vaccine work?

Dr. Lukashevich and his research team created the vaccine by co-infecting cells with Lassa and a closely related but non-pathogenic arenavirus, Mopeia. The result was the reassortment of genetic material to create a third virus, Clone ML29, which replicates but does not cause disease.

"Using Clone ML29, we created a live, attenuated vaccine



that produces the normal body responses to a real viral infection with Lassa," Dr. Lukashevich said. "The idea is that the body's immune system will respond to Clone ML29 as it would to an infection with Lassa, stop the infection and clear it, and give the vaccinated individual life-long immunity."

In tests conducted in the biosafety level 4 (BSL-4), maximum containment laboratory at SFBR, the vaccine appeared to do just that. Vaccinated guinea pigs challenged with 1,000 times the lethal dose of Lassa remained healthy and showed no signs of infection 70 days later.

"In tests with guinea pigs bred to be especially sensitive to hemorrhagic fever, the vaccine was 100 percent effective in conferring protective immunity," said Dr. Patterson.

A separate experiment was then conducted with rhesus monkeys to test the vaccine's safety in primates. Researchers did not expose the monkeys to the virus, but inoculated them with the vaccine and monitored their health. Detailed exams of the vaccinated animals revealed no signs of disease or other negative side effects.

"While the first experiment showed the vaccine to be efficacious, the second study indicates that it is safe and harmless for whoever receives it," said Dr. Carrión. Dr. Ricardo Carrión Jr. leads Lassa vaccine studies in the Foundation's BSL-4 laboratory.

### What happens now?

With these findings in hand, the SFBR team is conducting cross-protective studies on the vaccine. "There are four different subtypes of Lassa, and we've shown this vaccine to be efficacious against one of those strains," Dr. Carrión said. "Now we're testing to see if it will protect against the other three."

If this next phase of research is successful, investigators hope the vaccine will eventually go into human clinical trials. "With potential vaccines against many other select agents, you can't conduct human trials because the disease does not naturally affect a large number of people," Dr. Patterson explained. "But there are enough cases of Lassa fever each year that you could actually vaccinate a population and know in a reasonable amount of time whether the vaccine is effective."

Research supporting these findings is funded by the National Institute for Allergy and Infectious Diseases and by the Western Regional Center of Excellence for Biodefense and Emerging Infections. r. Andrew Hayhurst is on a quest to develop a new generation of devices that would equip frontline defenders in the field to detect a wide variety of terrorist threats, such as chemical and biological agents in our shopping malls, airports and subways.

Dr. Hayhurst, a virologist and

antibody engineer at Southwest Foundation for Biomedical Research, recently received a contract from the Naval Research Laboratory to support efforts to develop portable, reusable biosensors able to withstand extreme field conditions, such as high temperatures.

The two-year contract for \$150,000 per year, awarded by the Naval Research Laboratory (NRL) under the auspices of the Office of Naval Research, is titled "Development and Testing of Recombinant Single Domain Antibodies." In collaboration with Dr. Ellen Goldman at NRL, Dr. Hayhurst is exploring novel methods for biosensor development, and in the process he's using antibodies taken from llama blood samples.

### From TNT to biothreats

Dr. Hayhurst previously worked with the NRL's Dr. Goldman to develop a biosensor for detecting the presence of the explosive material TNT using an antibody specific for the explosive. While this biosensor was a significant improvement upon other types of explosive sensors previously available, it still had some limitations. Because these types of antibodies are relatively fragile, they require refrigeration during storage, cannot be re-used and can fail in extreme environments encountered in the field.

# Blood from llamas could help fight bioterror

Scientists use antibodies to develop improved detection methods

For their new project, Drs. Hayhurst and Goldman are working with a recently discovered type of antibody, called single-domain antibodies, found in only a handful of animals, such as llamas, camels, and sharks. The researchers believe single-domain antibodies will lead to the development of biosensors that are less expensive to deploy, because they won't require refrigeration, will be reusable, and will be tough enough to keep working in harsh environments, such as the desert.

"It's all about durability and reusability," Dr. Hayhurst said.

### **Proof of concept**

The initial phase of the research is designed to determine the feasibility of this idea by using a library of some 1 billion single-domain antibodies that Hayhurst has created from small blood samples taken from llamas. He is currently using that library, which he calls Little Nomad, to deliver more durable antibodies than those currently available for various bio-threat agents.

The standard, more complex antibody molecules typical in most animals break apart under stress and cannot return to their original shape.

Single-domain antibodies have the inherent capacity to refold and reassemble their original shape, making them durable and reusable for a variety of purposes.

"We're trying to prove that we can develop reusable antibodies against anything," Dr. Hayhurst said.

He envisions single-domain antibodies deployed in "multiplex" sensors with reusable arrays that are able to detect a wide range of substances, from toxic chemicals to dangerous bacteria and viruses.



Joining SFBR's mission to

improve human

he Southwest Foundation for Biomedical Research would not be in its position of international leadership in biomedical research without the contributions of many corporations, foundations and individuals throughout the community.

Philanthropic partnership has played a momentous role in the Foundation's success. Unlike universities and many hospitals, SFBR cannot depend on state budget financing, patient revenue or tuition to support innovative and progressive expansion. Instead, SFBR must rely on private philanthropic investment.

SFBR researchers benefit tremendously from the contributions given by its support groups: the Golden Circle, The Argyle, the Southwest Foundation Forum, and the Founder's Council.

**The Golden Circle.** Members of the Golden Circle, Benefactor Circle, President's Circle, and Chairman's Circle are among SFBR's closest friends and supporters. Each year, they make contributions of \$1,000, \$2,500, \$5,000, and \$10,000, respectively, to assist SFBR in carrying out its mission. These donations are used by the Foundation to purchase new scientific equipment and other resources necessary to its life-saving research projects.

To thank its partners in progress for their generosity, SFBR typically hosts two special events during the year in their honor. This year, Golden Circle members gathered in June, just after Dr. Anthony Infante joined SFBR as its new president, to meet the Foundation's new leader and welcome him on board. Then, on Nov. 14, they gathered again to hear Dr. Infante speak about the Foundation's scientific progress and explain his vision for the organization's future. Some of the honored guests on hand for these events are shown below.

If you would like to become a partner in scientific progress through membership in the Golden Circle, fill out and return the form provided on the following page, or contact Corbett Christie, SFBR's chief development officer, at 210-258-9870. You also can learn more about the Golden Circle and join online at http://www.sfbr.org/pages/support\_circle.php.

4 SFBR Progress Fall 2005



by B. Corbett Christie, Chief Development Officer

What if you were so bold and motivated to improve human health that you decided single-handedly to found a research institution along the model of SFBR? Here is my best attempt to guide such an investment:

**Facilities.** Laboratories and other research facilities are expensive to build and require a great deal of space. You might need a campus of more than 200 acres and as much as 500,000 square feet of research space, not to mention the highly specialized computing needs of modern genomics, a maximum containment laboratory to safely handle many of the deadly viruses that threaten us today, and the kind of world-class nonhuman primate resources that can be found at a National Primate Research Center. A conservative estimate of campus acquisition and construction costs would be \$200 million to \$300 million.

**Gifted scientists.** Brilliant, creative people with a passion for science are the cornerstone of a successful biomedical research institution. In order to recruit and support about 30 lead scientists who could develop and manage cutting-edge research programs, one would need at least \$30 million over three years. This would cover startup costs until competitive grants could be won to support the research.

Annual support funding. A research institution will require as much as \$6 million to \$8 million in supplemental funding annually to cover real expenses and technology acquisitions that power the enterprise. A philanthropic program that focuses on building an endowment is one option. This would require an endowment of at least \$100 million, as well as a healthy income from donations.

**Time.** It would require at least 10 to 15 years of constant nurturing and investment to weather the peaks and valleys of operations in the biomedical field.

In all, it would require up to \$500 million, a healthy dose of time, and an excellent scientific and management team to realize this vision. This is not a venture for the faint of heart.

**But there is good news.** If this vision of changing the future of human health through biomedical research is one that excites you, it is not necessary for you to invest this amount. It has already been done. SFBR founder Thomas Baker Slick Jr. and a legion of philanthropists have built this institution over the last six decades.

SFBR is your institution, but it does require your support to remain vital and competitive in the future.

If you are not an investor in this vision, become one today. Join the Golden Circle.

If you are an investor-donor, you already know the rewards. Would you consider further investment?

You are investing in a winning organization and in research that will create a healthier future for all of us – both today, and for generations to come.

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Business Title		
Company or Foundat	ion Name	
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Yes, I would like to join the Golden Circle today!

Individuals, companies and foundations may become members of the Golden Circle by making an annual contribution at one of the following levels.

### Please check the appropriate box:

- Golden Circle, unrestricted contributions of \$1,000 or more to directly support indispensable biomedical research.
- Benefactor Circle, unrestricted contributions of \$2,500 or more which also fund vital biomedical research.
- President's Circle, contributions of \$5,000 or more to directly support the growing need for state-of-the-art equipment.
- ☐ Chairman's Circle, contributions of \$10,000 or more to fund strategic initiatives that require immediate investment at the discretion of the Chairman and Board of Trustees.

To join the Golden Circle online, go to www.sfbr.org and click on "Find out more" in the Golden Circle section.





Above: Ladies of the Forum present proceeds from their annual gala to support research at SFBR. Below: Guests enjoy the fabulous gala that made the donation possible.







# Southwest Foundation Forum

'A Medieval Knight' yields large pay-off for research

In addition to living up to its reputation as one of San Antonio's premier social events, the Southwest Foundation Forum's 2005 spring gala paid off in a big way for research to improve human health.

On May 14, guests at the sold-out event relished an enchanting evening of games, dinner and dancing under the stars at The Argyle as they enjoyed "A Medieval Knight: An Evening to Remember," complete with knights, horses, fair ladies and merriment.

Then, on Sept. 20, Forum representatives presented \$105,500 in gala proceeds to the Southwest Foundation for Biomedical Research (SFBR), enabling four SFBR scientists to jumpstart new research programs.

As part of a breakfast reception on the SFBR campus, SFBR President Dr. Anthony Infante and Scientific Director Dr. Philip LoVerde accepted the gift from Forum 2004-2005 President Francie Calgaard, 2005 Gala Chair Karen Heydenreich, Co-chair Phyllis Viola and Gala Assistant Jenny Gibson.

"We are thrilled to be able to make this gift to support Southwest Foundation, its scientists, and their life-saving work," said Calgaard. "It's wonderful that a fun event like our gala can have such a great payoff for human health."

In accepting the donation, Dr. Infante expressed the appreciation of everyone at SFBR. "This generous gift from the Southwest Foundation Forum – made possible by the hard work of volunteers and the generosity of many businesses and individuals who supported their efforts – is truly a gift that will benefit us all," he said. "SFBR scientists will use these funds to initiate innovative research projects aimed at fighting such life-threatening conditions as cardiovascular disease, diabetes, and a common pregnancy disorder called preeclampsia. Therefore, I see this as more than a gift to Southwest Foundation. It is a gift to everyone who hopes for a healthier future."

Specifically, the \$105,500 gift will be used by SFBR scientists to initiate or advance research on genetic contributors to a variety of common complex diseases.

- A grant to Dr. Jack Kent Jr. will advance his efforts to find a gene on chromosome 19 that appears to be associated with inflammation, a fundamental component of many common complex diseases such as heart disease, diabetes, cancer and Alzheimer's disease.
- Dr. Vidya Farook will follow up on a promising lead about the genetic influence on metabolic syndrome, a precursor to cardiovascular disease and diabetes.
- Dr. Joanne Curran and her colleagues will conduct further investigations on a gene that appears to play an important role in the development of insulin resistance and Type 2 diabetes.
- Dr. Eric Moses will study a large family group in Nepal to learn more about genetic contributors to preeclampsia, the most common major disorder of human pregnancy.

# The Founder's Council

## Founder's Council members enjoy the adventure of biomedical research

The Founder's Council has made the year 2005 an adventure for its members, embarking on a series of fun and educational programs about discoveries in biomedical research.

In May, members visited Southwest Foundation for Biomedical Research for an SFBR Safari that gave them a behind-the-scenes tour of the campus. Following an outdoor reception sponsored by Fisher, Herbst & Kemble, P.C., with palm trees and other decorations provided by Alfred Macdaniel and Holiday Interiors, the group hopped on a bus to tour the Southwest National Primate Research Center, one of the Foundation's most outstanding resources. Drs. Michelle Leland and Christina Grassi narrated the driving tour of the baboon and chimpanzee living areas as they discussed the ethical use of primates in research on heart disease, diabetes, AIDS and hepatitis C.

This unique tour also included a stop at the SBC Genomics Computing Center, where Dr. Laura Almasy explained how this world-class computing resource helps scientists find genes that influence a wide variety of complex diseases.

Finally, in a conference room at the Betty Slick and Lewis J. Moorman Jr. Laboratory Complex, Dr. Ricardo Carrión used photos and video to demonstrate life-saving work underway in the biosafety level four (BSL4), maximum containment laboratory at SFBR. This facility allows scientists to safely study deadly pathogens for which there are no treatments or vaccines, and as such, is an important resource for studies related to biodefense and emerging infections.

In July, Founder's Council members gathered at The Argyle for a luncheon featuring Dr. Christina Grassi, who described activities underway at the Southwest National Primate Research Center, focusing in particular on the care and enrichment activities designed for the animals' physical and psychological well-being. Attendees greatly enjoyed this fun and informative talk by one of the group's 2004 Steves Grant recipients. Thanks to PlainsCapital Bank and the law firm of Japhet + Duncan + McNelis for sponsoring this fine event.

The group's most recent activity was a lecture luncheon on Oct. 5 featuring SFBR's new scientific director, Dr. Philip LoVerde. Dr. LoVerde gave attendees an overview of scientific progress in each of the Foundation's five departments, choosing a few particular examples in each area to show how the work of SFBR scientists impacts each of our lives. Sterling Bank sponsored this highly popular event.

The Founder's Council Holiday Party is scheduled for Dec. 7 at the Tobin Estate. A highlight of the year for



Above: Founder's Council President Kevin Kennedy and his wife, Kelly, visit with now-retired SFBR President Dr. Frank Ledford (left) during a tour of SFBR. Below: Members and guests enjoy the Founder's Council's other events in 2005.



members, the event features the awarding of several grants to SFBR scientists to support their valuable research. It promises to be a memorable evening.

### Donor funding at work for human health

Ellison Trust provides new technology for broad range of research projects

onnie Ellison and her daughter, Tracy Calloway, recently met with Drs. Peter Nathanielsz and Natalia Schlabritz-Loutsevich to learn how Computer Assisted Stereoscopic Technology (CAST) is put to work in their perinatal research. The Ellison Trust recently awarded SFBR a \$64,000 grant toward the

aquisition of this new technology, which will be used by a variety of Foundation scientists studying cancer, polycystic ovary disease, endometriosis, brain degeneration and HIV/AIDS.

Currently, Drs. Nathanielsz and Schlabritz-Loutsevich are putting the technology to use in their investigations on fetal programming, or fetal origins of adult disease. "We pass more biological milestones before we are born than we'll ever pass again as we grow from that first cell to 100 billion cells as a newborn," said Nathanielsz. "During that process, if we don't lay down enough cells in our kidney, if we don't lay down the right cells in our brain, or if we don't



### Bonnie Ellison (center left) and her daughter Tracy Calloway (standing right) meet with Drs. Peter Nathanielz and Natalia Schlabritz-Loutsevich.

lay down the right cells in our pancreas so that they can interact with each other in the proper way, then those organs are not going to function properly later in life."

The CAST microscope builds upon the similarities of classical stereology and computer microscopy to provide refined and effective spatial analyses that also permit mapping of anatomical regions, allowing scientists to analyze tissue samples with the use of three-dimensional imaging. In the photo shown here, Nathanielsz and Schlabritz-Loutsevich demonstrate for the Ellisons how they are applying the technology to examine the placenta, brain, and heart of a developing fetus.

### Southwest Foundation for Biomedical Research **Donation Form**

Your tax-deductible donation will support SFBR's research programs in cancer, genetics, heart disease, infectious diseases, perinatal care, pulmonary diseases and many other areas of research. (Please type or print clearly, as donors and honorees are listed in our publications.)

\$ (Please My donation is for:	<pre>iclose your check made payable to Southwest Foundation for Biomedical Research.) _ Memorial In memory of</pre>
	Special Occasion (Please list occasion and honoree.) In honor of General Contribution
Name to be listed as the do Full name Street address City, State, ZIP	Please mail a copy of this form with your check to Attention: Treasurer's Office Southwest Foundation for Biomedical Research P.O. Box 760549 San Antonio, TX 78245-0549
Send an acknowledgement of Full name Mailing address City, State, ZIP	Thank you for your contribution to improve the health of humanity!

## Learn more about the man behind SFBR and its mission

'Tom Slick: Mystery Hunter' now on bookshelves



FBR's visionary and adventurous founder, Tom Slick, is someone who continues to captivate people's imagination. What sort of individual could create several scientific research foundations, develop new species of cattle and grasses, discover major oil fields, search for the veti in the Himalayas

and diamonds in the Amazon, write two books on world peace, and produce several inventions that changed the world, all before he died in 1962 at the young age of 46?



Slick's legacy includes the Southwest Foundation for Biomedical Research, Southwest Research Institute, the Mind Science Foundation, the Tom Slick Chair in World Peace at the University of Texas, the Brangus breed of cattle, and of

of Texas, the Brangus breed of cattle, and diverse

inventions like Liftslab construction and the hooded hair-dryer. Slick's niece, Catherine Nixon Cooke, has asked the same question many people ask about her uncle: "What would it be

like to peer inside the mind of this 20th century mystery hunter?" The answer to her question is now available in her new book, which was just released in November.

In "Tom Slick: Mystery Hunter," Cooke shares the biography of the remarkable man who helped shape San Antonio and the world beyond, making his story come to life through personal interviews with Slick's family and friends, portions of his letters

and diaries, and more than 75 rare, historic photos of the man and his adventures.

The book is available in San Antonio at The Twig Book Shop, located at 5005 Broadway, as well as at Borders Books & Music, or online at www.amazon.com.

Catherine Nixon Cooke is the former president and CEO of The Mountain Institute, an international nonprofit organization with four field offices in the Himalayas. She was executive director of The Mind Science Foundation for more than a decade, and editor-in-chief of Coronet Magazine. She is a fellow of the Explorers Club and, like her uncle, has journeyed to remote corners of the world. When not investigating new mysteries, she lives in San Antonio.

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Catherine Nixon Cooke

TOM SLICK Mystery Hunter

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Editor and writer: Julie Collins, director of communications Design and production: Jeffrey Heinke Design Photography: Clem Spalding, Joan Snow, Geno Loro and Larry Walther

Progress is a publication of the Southwest Foundation for Biomedical Research. If you would like to be added to our mailing list or to update your mailing information, contact Julie Collins at 210-258-9437 or jcollins@sfbr.org.