Forum in Focus

WINTER 2013

President's Letter

Happy New Year!

Julie Zacher

You will be reading this letter sometime in early 2013; however, as I sit down to write this I have Thanksgiving on my mind. In all of the hustle and bustle of the holidays it's easy to lose perspective about the things that really matter. The stress of shopping, cooking, planning, etc. seems to become the focus – until someone brings it back home. This was the case for me on Thanksgiving when my 8 year old daughter said during the blessing, "I'm just *thankful* for us all being together and for our health." This coming from my "preemie" who at birth weighed almost 3 pounds and spent the first 11 weeks of her life (along with her twin brother) in the NICU. Remarkably they are both perfectly healthy today. Also remarkably, one of the reasons they are healthy today is the surfactant therapy they were given for their lungs, as well as a high frequency ventilator – both of which were developed and tested for efficacy right here at Texas Biomed. Of course, she probably didn't have that on her mind that day. More likely she was thinking of her grandfather across the country who that very week was, thankfully, recovering from a procedure to treat atherosclerosis, a result of genetically inherited cardiovascular disease. Or perhaps it was her other grandfather, holding her hand at that very moment, who has already endured a quadruple by-pass surgery.

Our health. One of those things we tend to take for granted when all seems well.

The purpose of the Texas Biomedical Forum is to support the Texas Biomedical Research Institute through community relations, volunteer service and fundraising.

However, every one of us has been affected by disease and sickness in some way; our parents, a friend, relative, child or ourselves. And when that diagnosis comes, we find ourselves desperately trying to learn everything we can about this unwelcome disease or illness. Suddenly, nothing else seems to matter. What exactly is it? What causes it and what are the effects? How can it be treated?

These are the very answers that the scientists at Texas Biomed are researching and often providing. Long before we can get a medical treatment, we must understand the causes, intricacies and implications of diseases. Texas Biomed has made major advances that contribute this kind of information to the scientific community that ultimately help improve health and save lives.

Later in the newsletter you will read about some of the amazing accomplishments that are happening right now at Texas Biomed. Many of the scientists have been recipients of Forum grants for pilot studies, allowing them to obtain additional funding for some of these groundbreaking studies.

The Forum is truly helping Texas Biomed in making a difference in people's lives all over the world. Something we can ALL be thankful for.

We've had a fantastic fall! In September **Julian Gold** hosted a fashion show for our benefit showcasing fall's hottest trends. Ten percent of sales for the day accompanied with a raffle raised $5,000 for the Forum! See inside for some photos! Thanks to **Tracee Feik, Raven Labatt** and of course, **Juilan Gold** for making this event happen!

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President's Letter

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In October we had our second annual Roundtable Discussion, coordinated by **Gretchen Hermann a**nd **Victoria Roca**. Eighty Forum members and guests gathered at the Argyle for a cocktail reception before dividing into small discussion groups with Texas Biomed Scientists to learn about some of the research projects currently underway.

On November 12th **Cathryn LeVrier** and **Leslie Miller** coordinated a lovely fall lecture luncheon at the Argyle. Texas Biomed scientist, Robert Davey, PhD, spoke about West Nile and other African viruses and their impact on our lives.

Also in November, **Neiman Marcus** and **David Yurman** hosted an event in our honor with a special champagne and dessert reception and show of Mr. Yurman's fabulous jewelry. Both Neiman Marcus San Antonio and David Yurman made generous contributions to the Forum gala grants in the amount of $2500 each! Speaking of the gala, plans are underway for another fantastic party this May 4th! Tables are sold out!! Contact **Melissa Morgan** and **Courtney Duphorne** if you would like to be added to the waiting list. This is one party you do not want to miss!

On the education front, we have a record number of high schools signed up for student tours of Texas Biomed this year. We hosted 4 this fall, have 6 scheduled in the spring and have over 10 schools on the waitlist. It's wonderful to see such an interest from our city's high school teachers and students. Perhaps some will be inspired to be future scientists! Many thanks to **Ann Cross, DVM, Monica Iacobucci** and **Sonya Medina Williams** for their dedication to this project!

The success of the fall has created great momentum for which to start of the New Year for us. I hope you were able to attend some of our events, and encourage you to come to our spring events! We will be having a lecture luncheon in March as well as another special event – look for details later in this newsletter! As always, thank you for your continued support.

I wish you all happiness and health in 2013. I hope to see you around!

Julie Zacher
President

Julian Gold's Fabulous Fall Fashion Show

Come on a Journey to . . . La Gloria Havana!

Wear your best Cuban attire! Abandon all preconceived notions and get ready for excitement, enjoyment and eye-opening surprises . . . all for an amazing cause: funding for the pilot studies at the Texas Biomedical Research Institute!

The 2013 Gala Committee has been hard at work! Committee Chairs gave generously of their time on August 29th to pre-plan, organize and brainstorm all things Gala! Truly fabulous ideas came out of these meetings thanks to the wonderful people involved in this venture!

Officially, the 2013 Gala Committee held its kick-off meeting and breakfast on September 19th at The Argyle. Committee members enjoyed Cuban-inspired treats – guava and cream cheese empanadas and ham croquettes . . . pure deliciousness! Everyone in attendance was excited and energized to make this a wonderful and successful gala!

As you may know, the 2013 Gala La Gloria Havana will be on Saturday, May 4th at The Argyle from 6:00 pm to 12:00 am and will celebrate Cuba's rich culture. So think mojito lounge, cigars, rum bar, salsa music and then some! Melissa Morgan, Chair, Courtney Duphorne, Co-Chair and Daniela Serna, Assistant, are truly grateful to ALL the volunteers for their continued efforts in organizing and executing this very special event in our community.

One of the most exciting reports to share about this year's Gala: all 54 tables are SOLD! Kathleen LeFlore, Wendy Garcia and Monica Iacobucci, Table Co-Chairs, have been awe-inspiring and truly dedicated volunteers. Table sponsorship letters were promptly mailed and the sales were quickly made! We can't thank them enough for their efforts and their amazing work that has resulted in selling out the Gala in record time! Stay tuned for further details on added table sales and individual tickets.

Another truly exceptional report involves the Forum Grant donations: we have received over $20,000 and hope to achieve and surpass our $40,000 goal. Ashley Hixon, Grants Chair, sent out timely Grant Donation letters and kicked off this effort at the Nov. 14th Fall Lecture Luncheon. Attendees at this luncheon, as well as the San Antonio community, have generously supported the Forum Grants effort thus far. We hope you too will consider making a donation that directly supports the Institute's research efforts.

And now keep reading to check out a list of 5 fun facts about this year's Gala . . .

1) Gaming is back! So bring your pesos (American dollars, that is) to gamble away for fabulous prizes, all while supporting the Institute. Elizabeth Carrington, Jody Lutz and Sarah Moore, Gaming Co-Chairs are getting the gambling started!

2) Remember to visit the Gala photo booth with your significant other and/or friends to make this a truly memorable event! Pictures say 1,000 words . . .

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FALL LECTURE LUNCHEON

On November 14, at the Fall Lecture Luncheon, over 100 guests were treated to the dry wit and intelligence of Dr. Rob Davey, Scientist and Ewing Halsell Scholar Virology and Immunology at the Texas Biomedical Institute. His lecture focused on the recent report of West Nile virus in San Antonio, how it got here, what to do about it and other African virus that could come into play in our own backyard. His lecture confirmed for us all that the power of knowledge is the key to staying safe.

After an intriguing lecture during lunch, guests had the opportunity to ease their worries with a very interactive question and answer session during the dessert portion of the meal. Dr. Davey alleviated any fears that may have been

caused by media sensationalism by giving us the cold hard facts and arming us with plenty of prevention tips.

Many thanks to Dr. Davey for his participation and from Corbett Christie for coordinating Dr. Davey's participation. Thanks also to Ken Trevett for his attendance and continued support of the Forum. Keep your eyes and ears open as things develop for the Spring Lecture Luncheon, which will be hosted on March 27, also at The Argyle.

La Gloria Havana!

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3) Buy LOTS of raffle tickets! Raffle Chairs, Jennifer McLiney and Amy White, are working on amazing raffle packages that include a variety of themes. Prizes for the raffle tickets are $50.

4) Enjoy a hand-rolled cigar! This is a special treat for all those who enjoy cigars.

5) DJ Lucy returns, which equals a fabulous After Party. After Party Chairs, Kate Crawford and Kim Johnson, invite you to a fun, post-dinner celebration starting at 9:00 p.m. The ticket price is $100 per person and you will not be disappointed!

For more information on the 2013 Gala, visit www.txbiomed.org/forum.

Melissa, Courtney and Daniela are truly grateful for the committee's time, ideas and dedication to this event. As the countdown continues, we take time to remember that everything that we are doing to make this event successful benefits a great cause. Our efforts directly impact and fund the pilot studies for the great scientists at the Texas Biomedical Research Institute (TBRI). The Institute is a unique and special place that calls San Antonio home.

So, we look forward to spending an evening with you and one that you won't want to miss . . .

La Gloria Havana!

TEXAS BIOMEDICAL RESEARCH INSTITUTE ROUNDTABLE DISCUSSION

On October 18, 2012, Forum members and their guests were treated to an evening of roundtable discussions at the Argyle with eight scientists from the Texas Biomedical Research Institute. The evening began with opening remarks by Corbett Christie of the Texas Biomedical Research Institute, followed by an introduction by Julie Zacher, President of the Texas Biomedical Forum. Gretchen Herrmann and Victoria Roca, with the gracious assistance of Terry Gouger, hosted the event.

Following the opening remarks, each scientist was seated with a small table of guests in order to engage in an in-depth conversation about their research. The format allowed for guests and the scientists to engage in a two-way informative conversation, and not simply a lecture. The guests were able to ask questions, interact and learn. After the first thirty-minute session, the scientists then exchanged seats so that each table was able to have a second session with a different scientist. Some of the fascinating topics discussed included the difference between embryo and adult stem cells, deadly viruses used as weapons and much more.

The host scientists were as follows: from Genetics – Dr. Matt Johnson, Dr. Heather Coan, Dr. Michael Mahaney, Dr. Frederic Chevalier; from Virology and Immunology – Dr. Ricardo Carrion, Dr. Rob Davey, Dr. Anthony Griffiths; from Southwest National Primate Center Dr. Melissa De La Garza. Many thanks to all of them, as the evening was a great success and all of the guests walked away from the event with a better understanding of the exciting research being conducted at the Texas Biomedical Research Institute.

School Tours

From learning about genetics to virology to immunology – the School Tours had a fun and successful Fall! Many thanks to the 2012 Fall School Tour volunteers – Daniela Serna, Elizabeth Carrington, Lisa Miller, Jody Lutz, Amanda Bezner, Christina Mayer, Sarah Moore, Tracy Williams, Monica Iacobucci, Ann Cross, and Sonya Medina Williams.

As a result of great interest from local and surrounding participating schools, the 2013 Spring School Tour slots have been filled – almost a year in advance! The 2013 Spring dates include: January 8th, 15th, 22nd & 29th and February 5th & 12th.

Once again, thanks to all the School Tour volunteers!

Texas Biomed Updates

NOVEL PROCESS IS FASTER AND ECONOMICAL ROUTE FOR DEVISING BIOTHREAT COUNTERMEASURES

Texas Biomedical Research Institute scientists have developed a faster, less expensive route to screen suitable tests for bioterror threats and accelerate the application of countermeasures.

The new process screens for pairs of affinity reagents – molecular magnets that bind to and hold on to their targets, be they toxins, viruses or bacteria. That will enable countermeasures to be selected and utilized much faster than the current practice.

"Using crude extracts from E. coli, the workhorse bacterium of the biotechnology laboratory, the new route bypasses the need for purification and complex equipment, enabling screening to be performed in under an hour," said Andrew Hayhurst, Ph.D., a Texas Biomed virologist.

> "Being able to respond quickly to known biological threats will better prepare us for combating emerging and engineered threats of the future."
>
> – Andrew Hayhurst

Normally, he said, such screening requires sophisticated costly equipment to purify and analyze the affinity reagents. Such analysis becomes a huge burden when hundreds of reagents need to be checked and can take weeks to months.

The process – funded primarily by Texas Biomed and the San Antonio Area Foundation, and in part by the Defense Threat Reduction Agency and the National Institutes of Health (NIH) – was described online in Nature *Scientific Reports.*

Andrew Hayhurst

"We need an inexpensive route to screen libraries of affinity reagents. It had to be simple and self-contained as we eventually needed it to work in the space-suit lab or hot zone," said Hayhurst.

His surprisingly simple scheme allows scientists to make stop-gap tests to any given biological threat in a matter of days, with the screening step completed in an hour. The goal now is to speed up the entire process to work within a single day.

Hayhurst initially developed the pipeline using llama antibodies as the affinity reagents to botulinum neurotoxins, known as the world's most poisonous poisons – 100 billion times more toxic than cyanide and handled in a specialized biosafety cabinet at biosafety level 2. Satisfied that the system was working, he then took it into the biosafety level 4 laboratory with his assistant, Laura Jo Sherwood, and they generated a stop-gap test for Ebolavirus Zaire in days. This virus has been shown to be 95 percent lethal in outbreak settings and with no vaccine or therapeutic it is a risk to the U.S. through importation. Botulinum neurotoxins and Ebolavirus are among a handful of threats now categorized as Tier 1 agents, presenting the greatest risk of deliberate misuse with the most significant potential for mass casualties or devastating effects to the economy, critical infrastructure; or public confidence.

"Being able to respond quickly to known biological threats will better prepare us for combating emerging and engineered threats of the future," Hayhurst said. "However, the great thing about this test pipeline is that it can be applied to almost any target of interest, including markers of diseases like cancer."

Texas Biomed has applied for a patent on the process. It potentially could be licensed to companies for developing diagnostics to specific medical conditions, tests for environmental monitoring, or to accelerate in-house research programs.

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Antibody prevents hepatitis C infection in animal model

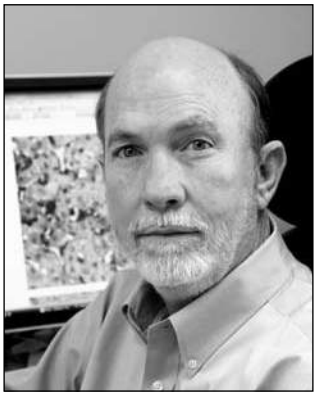
A monoclonal antibody developed by MassBiologics of the University of Massachusetts Medical School (UMMS) and tested in an animal model at the Texas Biomedical Research Institute prevents infection by the hepatitis C virus (HCV).

In a study conducted at Texas Biomed's Southwest National Primate Research Center, researchers found that the human monoclonal antibody targeting the virus protected chimpanzees from HCV infection in a dose-dependent manner. Chimpanzees are the only species other than humans that can be infected by HCV and therefore the results from this study were critical in the development of the monoclonal antibody.

The new report by scientists from MassBiologics, Texas Biomed, the National Institutes of Health (NIH) and Merck Research Laboratories, funded by MassBiologics and NIH, appeared in the August 30th issue of *PLOS Pathogens*. Researchers had previously demonstrated that the monoclonal antibody, called HCV1, blocks HCV from infecting liver cells in laboratory tissue culture.

"This is an important preclinical proof-of-concept study demonstrating a high dose of neutralizing antibody can protect the liver from HCV infection using monoclonal antibodies in a study that was designed to mimic the transplantation setting," said study co-author Robert E. Lanford, Ph.D., of Texas Biomed.

"One can envision improving on these results with a cocktail of antibodies or by using this antibody with some of the newer antivirals currently in clinical trials. Infection of the new donor liver by residual virus in the patient is one of the major obstacles preventing a full recovery in these patients," Lanford added.



Robert Lanford

MassBiologics has been pursuing the development of HCV1 as a therapy for patients with end-stage liver disease undergoing liver transplantation as a result of HCV infection. HCV1 is a monoclonal antibody that binds to the surface of the HCV virus and blocks the ability of the virus to enter liver cells.

HCV damages the liver and is the leading indication for liver transplantation, diagnosed in about half of the 6,000 patients who receive liver transplants each year in the United States. According to the US Centers for Disease Control and Prevention (CDC), 3.2 million Americans are chronically infected with HCV and approximately 10,000 die annually of the disease. Globally, as many as 170 million people are estimated to suffer from HCV infection. The CDC recently recommended that everyone born from 1945 to 1965 should be screened for HCV regardless of whether they have known risk factors.

For patients with end-stage liver disease from HCV infection, liver transplantation is the only option. While it can be a life-saving treatment, transplantation does not cure the disease. In nearly all cases, the patient's new liver is eventually infected by HCV because the virus remains in the patient's bloodstream during surgery. The course of recurrent HCV disease is accelerated after transplantation and up to 20 percent of transplant patients develop cirrhosis within five years. Unfortunately, the standard antiviral drugs currently used to treat HCV prior to the onset of end-stage liver disease are poorly tolerated after liver transplantation, leaving these patients with few options.

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NEW ANIMAL MODEL MAY LEAD TO TREATMENTS FOR LIVER DISEASE THAT AFFECTS MILLIONS IN U.S.

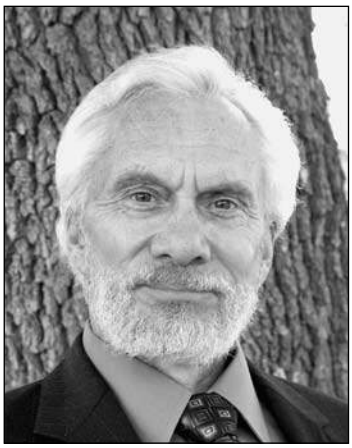
Scientists at Texas Biomed have developed the laboratory opossum as a new animal model to study the most common liver disease in the nation – afflicting up to 15 million Americans – and for which there is no cure.

The condition, nonalcoholic steatohepatitis (NASH), resembles alcoholic liver disease, but occurs in people who drink little or no alcohol. The major feature of NASH is accumulation of fat in the liver, along with inflammation and functional damage. Most people with NASH feel well and are not aware that they have a liver problem. Nevertheless, NASH can progress to cirrhosis, in which the liver is permanently damaged and no longer able to work properly. NASH-related cirrhosis is the fourth most common indication for liver transplantation in the U.S.

NASH affects 2 to 5 percent of Americans – roughly six million to 15 million people. An additional 15 to 30 percent of Americans have excess fat in their livers, but no inflammation or liver damage, a condition called "fatty liver" or the non-progressive form of nonalcoholic fatty liver disease (NAFLD).

The study, published in the July issue of the American Journal of Physiology-Gastrointestinal and Liver Physiology, was supported by the National Institutes of Health and the Robert J. Kleberg, Jr., and Helen C. Kleberg Foundation.

"This is the type of model in which to develop mechanism-based therapies," writes Geoffrey C Farrell, M.D., of the Australian National University Medical School in Canberra, in a journal editorial.



John VandeBerg

Both NASH and NAFLD are becoming more common, possibly because of the greater number of Americans with obesity and its important health complications, type 2 diabetes, high blood cholesterol levels, high blood pressure and other risk factors for heart attack and stroke. In the past 10 years, the prevalence of obesity has doubled in adults and tripled in children. It was previously reported by other scientists that the prevalence of NAFLD and NASH in a cohort of middle-aged patients in San Antonio is 46 percent and 12 percent, respectively.

"It now seems likely that genetic factors, such as those important for diabetes and high cholesterol levels, are what determines why a small proportion of those with fatty liver develop NASH and its complications of cirrhosis and liver cancer," said Farrell.

> "The opposum is a new animal model for investigating the mechanism by which cholesterol mediates liver injury."
> – Jeannie Chan, Ph.D, of Texas Biomed

In the new study, high responding opossums developed elevated cholesterol and fatty liver disease when fed a high cholesterol and high fat diet, whereas low responding opossums did not. High responders carry a mutated ABCB4 gene, which affects their ability to secrete excess cholesterol from the liver into bile which, in turn, transports the cholesterol to the intestines for excretion from the body. As a consequence, opossums with the mutated gene accumulate cholesterol in the liver and ultimately in the blood.

"We showed that the fatty livers of high responders contain a tremendous amount of cholesterol," said first author Jeannie Chan, Ph.D., of Texas Biomed. "The opossum is a new animal model for investigating the mechanism by which cholesterol mediates liver injury, which will lead to a better understanding of the role of dietary cholesterol in the development of NASH."

Co-authors on the study included Rampratap S. Kushwaha, Ph.D., Jane F. VandeBerg, and John L. VandeBerg, Ph.D., all of Texas Biomed; and Francis E. Sharkey, M.D., of the UT Health Science Center San Antonio.

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TEXAS BIOMED TO EXPAND

The Texas Biomedical Research Institute plans to build a 70,000-square-foot building that will serve as a new front door to the 200-acre campus and allow for the enhancement of existing research programs and the creation of new ones, said Kenneth Trevett, the organization's president and CEO.

The $26.45 million building will provide eight laboratories for the institute's federally designated Southwest National Primate Research Center (SNPRC), which is where work concerning tuberculosis, heart disease, diabetes and AIDS is done. The expansion also will allow the institute to grow its research into stem cell use, Trevett added. There also will be space for an additional six virology and immunology laboratories and one biomedical safety laboratory.

"We've got real room to grow here," Trevett said. The construction of the 2-story facility, which will be named after Earl Slick, the brother of the institute's founder, is part of the first phase of a 25-year master plan that has been in the works for about a decade, Trevett said. Phase one also includes $15 million for recruitment start-up packages for 10 new researchers.

The second phase is expected to start in the next five years and will include the construction of an animal procedure holding area and renovations to about 530,000 square feet of existing buildings. Other future projects include infrastructure enhancements, more green space on the campus and a new entrance, according to the institute's 2011 annual report.

Building permits still need to be secured from the city, but construction is expected to start in June with completion by late 2013, Trevett said.

San Antonio-based Lake|Flato Architects and Houston-based FKP Architects are the designers and the builder is Houston-based Vaughn Construction. The institute is seeking a Leadership in Energy and Environmental Design designation for the new facility. To achieve that goal, the building will have a modern design that will allow natural light to diffuse into office and lab areas. The building is expected to operate 20 percent more efficiently than current building codes require, Greg Papay of Lake|Flato said in the institute's annual report.

For its master plan, the institute has raised $30 million from 53 donors. The institute plans to raise another $11 million by 2014, officials said in a news release. Nearly a dozen donors gave $1 million or more to the institute during the campaign.

"The Texas Biomedical Research Institute is an incredible organization that is critical for San Antonio, for research and for attracting the best and the brightest. What they do is significant for our town," said Jackie Moczygemba, manager for the Ewing Halsell Foundation, which donated funds for an infectious disease researcher. "We're pleased to invest in their intellectual and human capital. It's necessary to further the research effort aimed at helping humanity."

(This story was adapted from the *San Antonio Express-News*.)

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