THE NEWSLETTER OF THE HEPATITIS B FOUNDATION | SPRING 2017

B INFORMED

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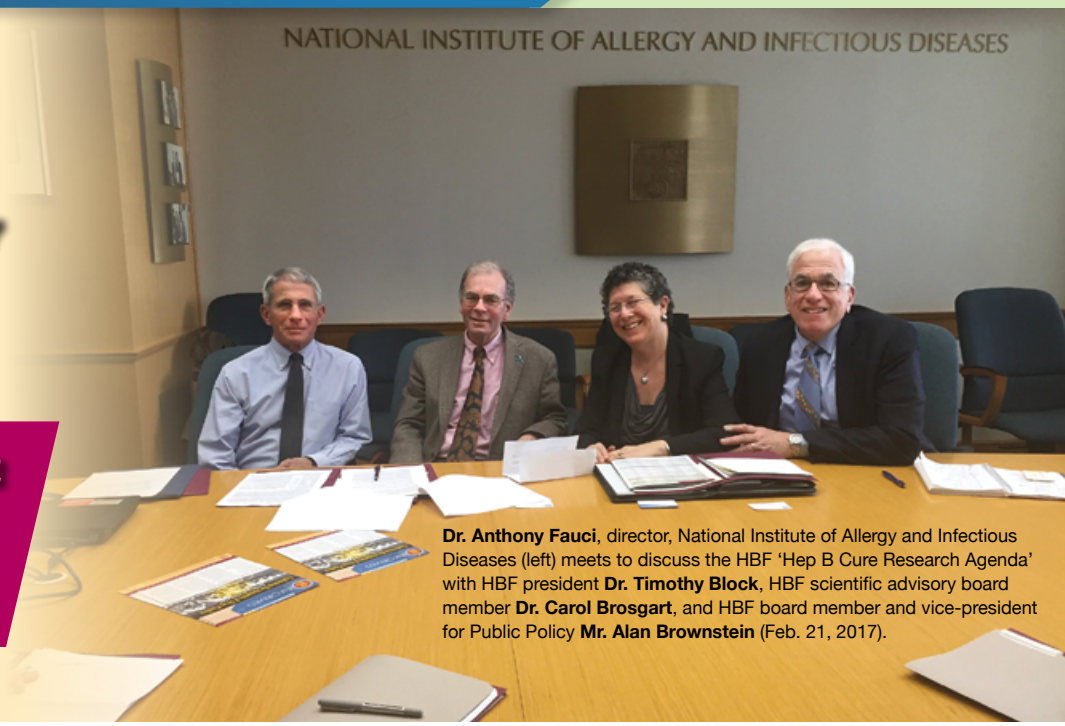
Science + Advocacy = Cure

Hepatitis B Foundation Launches Hep B Cure Campaign



Dr. Anthony Fauci, director, National Institute of Allergy and Infectious Diseases (left) meets to discuss the HBF 'Hep B Cure Research Agenda' with HBF president **Dr. Timothy Block**, HBF scientific advisory board member **Dr. Carol Brosgart**, and HBF board member and vice-president for Public Policy **Mr. Alan Brownstein** (Feb. 21, 2017).

Worldwide there are more than 240 million people chronically infected with the hepatitis B virus (HBV), which is the leading cause of primary liver cancer that kills almost 1 million people each year. In the U.S., there are 2 million Americans chronically infected, and liver cancer is one of the nation's deadliest cancers, growing rapidly every year.

Now the good news. There is tremendous momentum around hepatitis B as evidenced by the global call for its elimination and increased investment in drug discovery.

- The U.S. National Academies and World Health Organization declared that, with appropriate action, the elimination of HBV is possible by 2030;
- Scientists have found a cure for hepatitis C, so they believe a cure for HBV can be found, too;
- Biotech and pharmaceutical companies are investing significant resources to find a cure; and
- The U.S. National Institutes of Health (NIH) convened in 2016 its first workshop to discuss *Cures for Chronic HBV*.

There is now a perfect storm of opportunity to leverage our scientific knowledge and advocacy to make a cure for HBV a reality.

The Hepatitis B Foundation (HBF) launched its national *Hep B Cure Campaign* to sharpen the focus on finding a cure. The first step mobilized the scientific community to create a research blueprint, and the second step will mobilize the advocacy community to take this message to our policy makers.

Mobilizing the Scientific Community

A panel of more than 30 of the world's leading experts was surveyed by the HBF to consider the possibility of a cure for hepatitis B, and related liver cancer. Guided by **Timothy Block, PhD**, president of the HBF and its Baruch S. Blumberg Institute, each expert was asked to identify specific research priorities needed to achieve a cure. Based on the responses, HBF prepared a comprehensive report titled, *Closing in on a Cure for Hepatitis B: Priority Areas for Chronic Hepatitis B and Liver Cancer Research Identified by a Survey of Experts,* which will be published for wide dissemination and serve as a valuable blueprint for the scientific community.

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Prof. Mario Rizzetto honored with 2017 Blumberg Prize! *page 6*

Cause for a Cure

The Hepatitis B Foundation is a national nonprofit organization dedicated to finding a cure and improving the quality of life for those affected by hepatitis B worldwide through research, education and patient advocacy.

Joan M. Block, Co-Founder and Executive Director

From the Editor's Desk

This *B Informed* will be my last newsletter since I will be stepping down in June as Executive Director of the Hepatitis B Foundation after 26 years of helping my co-founders— *Paul and Janine Witte, and my husband Tim Block* — create the nation's leading nonprofit research and disease advocacy organization for hepatitis B.

With HBF celebrating its 25th Anniversary last year, the time is right to pass the torch to a new leader who will inherit an organization well-positioned to move forward into another exciting phase of growth.

During this period of change, HBF's progress will not falter since the Board of Directors has a solid transition plan and a national search for my replacement is underway. Additionally, Dr. Timothy Block as President will ensure valuable continuity and momentum.

This decades-long journey has been immensely challenging, yet inspiring. And to share it with such a dedicated Board of Directors, talented scientists and outreach-public health professionals, and donors and funders who give us the means to fulfill our mission, has been the most rewarding part of my experience.

Although I am stepping down, my commitment is unwavering to the 240 million people who suffer from hepatitis B worldwide. So, I ask everyone to continue to generously support the HBF because we truly are so close to making hepatitis B history!

With gratitude and appreciation,

Joan

The Hepatitis B Foundation is honoring Joan's passionate commitment to the cause by establishing the Joan Block Improving Lives Fund of the Hepatitis B Foundation.

Donors who want to celebrate and perpetuate Joan's legacy have set a bold goal of raising $250,000 to help the HBF continue to do what she did – directing resources where the opportunity is greatest or the need is most critical to improve the lives of those affected by hepatitis B.

To contribute to this Fund or to learn more about how the funds will be used, go to *www.hepb.org/joanfund.*

IN THE NEWS

World-Renowned Cancer Physician-Scientist Dr. Richard G. Pestell Joins the Baruch S. Blumberg Institute

World-renowned cancer researcher **Richard G. Pestell, MD, PhD, MBA**, has joined the Hepatitis B Foundation's Baruch S. Blumberg Institute, with seven additional faculty and their staff and students, to serve as head of the Pennsylvania Cancer and Regenerative Medicine Research Center (PCARM) at the Blumberg Institute.

Dr. Pestell's research in cell cycle, prostate cancer, oncology and stem cells is highly cited. He was previously director of the Sidney Kimmel Cancer Center and executive vice president at Thomas Jefferson University in Philadelphia. Prior to 2005, Dr. Pestell was the director of the Lombardi Comprehensive Cancer Center and chairman of the Department of Oncology at Georgetown University.

"The PCARM will function as a hub-and-spoke model for regenerative medical inquiry, spearheading research and collaborating with similar centers around the country and the world," said Dr. Pestell. "The interface between cancer, stem cells, and regeneration is at an historic moment. Creating a culture in which biotechnology companies are a vehicle to unlock value is key to bringing benefits rapidly to our patients."

"Dr. Pestell's recruitment will go a long way toward helping us achieve our goal of finding a cure for diseases associated with hepatitis B and liver cancer," said **Timothy Block, PhD**, president of the HBF and its Blumberg Institute. "His research complements the work conducted at our research institute, which aims to find a cure for hepatitis B and liver cancer."

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The Hepatitis B Foundation is a national nonprofit organization dedicated to finding a cure and improving the quality of life for those affected by hepatitis B worldwide through research, education and patient advocacy.

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In Memoriam
Baruch S. Blumberg, MD, DPhil (2011)
HBF Co-Founder and Nobel Laureate

Bud Tennant, DVM (2016)
HBF Scientific Advisory Board

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A Liver Specialist's Advice

Empowering Patients to Avoid Potentially Deadly Hepatitis B Reactivation

By Robert Perrillo, MD, FAASLD

HBF Scientific & Medical Advisory Board; Senior Clinical Investigator, Baylor University/Scott and White Medical Center; and Adjunct Professor of Medicine, University of Texas Southwestern, Dallas, TX

HEPATITIS B IS A SERIOUS LIVER INFECTION THAT IS A LEADING CAUSE OF CIRRHOSIS, LIVER FAILURE, AND LIVER CANCER WORLDWIDE. Approximately 240 million people are chronically infected with the hepatitis B virus (HBV) and most do not have specific symptoms. The infection may remain active indefinitely or it can resolve spontaneously or by antiviral therapy.

Even in cases where the infection appears to have resolved, however, small amounts of virus are found in the liver. This is usually not a health problem unless the patient's immune system becomes compromised. When this happens, though, there may be a sudden increase in the growth of the virus that is accompanied by abnormal liver tests.

This event is referred to as hepatitis B "reactivation." Reactivation can be potentially serious and accompanied by fatigue, jaundice, need for hospitalization, liver failure and even death.

The highest risk for HBV reactivation occurs when a patient with active or past infection is placed on cancer chemotherapy or undergoes bone marrow transplantation. However, individuals treated for solid organ malignancies such as breast, colon, pancreatic, and thyroid cancer are also at increased risk.

Another worrisome situation occurs when biologically active drugs that suppress the immune system are used for a variety of rheumatic, gastrointestinal, dermatologic, or neurologic disorders.

A good example are drugs referred to as 'TNF inhibitors' (Humira®, Enbrel®, Remicade® and others). It has been estimated that more than 3 million people in the U.S. are taking TNF inhibitors. As they can be remarkably effective, these drugs are often used long term during which time the patient presumably remains at risk.

Many patients on TNF inhibitors also take 2nd or even 3rd immune suppressive drugs which increases the risk of reactivation further. Reactivation can be serious enough to lead to early discontinuation of the immune suppressive agent(s) which can have serious negative effects.

Liver specialists have become alarmed by the growing number of cases of HBV reactivation they see because it could have been prevented by HBV screening of patients prior to taking immune suppressive drugs followed by the early use of prophylactic antiviral medication, which are very safe and effective in blocking the virus and preventing reactivation in more than 85% of cases.

The problem is that health providers who prescribe immune suppressive medication often do not test for HBV.

For example, it has been estimated that only 30% of oncology doctors routinely screen their patients for HBV before starting cancer chemotherapy. Low rates of screening have been observed in other medical specialties - 60% for rheumatologists and 40-50% for dermatologists.

The medical society practice guidelines for these specialty providers do not recommend universal HBV screening of every patient (as has been long advised by the Centers for Disease Control and Prevention, all international liver associations, and the American Gastroenterology Association). Instead, the practice guidelines either suppose that the prescriber has knowledge of the patient infected with HBV or recommend targeted screening of patients with high-risk behavior (e.g. injecting drug use) or birth in a high-risk region of the world. Targeted screening has been shown to miss the detection of active or past HBV infection in many instances.

Thus, I recommend that you discuss the need for HBV screening with your health provider or the provider who prescribes the immune suppressive treatment. If the blood tests show an active HBV infection or past infection, then you should be referred to a liver specialist who can decide whether antiviral therapy is indicated and for how long.

ASKING ABOUT SCREENING BEFORE STARTING CHEMOTHERAPY OR IMMUNE SUPPRESSIVE THERAPY WILL EMPOWER YOU TO SAFEGUARD AGAINST HBV REACTIVATION AND ITS MANY HARMFUL EFFECTS.

Risk of HBV Reactivation with the Major Types of Immunosuppressive Medications and Indications

*High risk (>10%)**	*Indication*
Corticosteroids if >20 mg a day for 4 weeks or more	Autoimmune disorders‡
Cancer chemotherapy	Blood and solid organ cancer
Rituximab (Rituxan®)	Rheumatoid arthritis/other autoimmune disorders, lymphoma, leukemia

Intermediate risk (>1% to 10%)	*Indication*
TNF inhibitors (Humira®, Enbrel®, Remicade®)	Rheumatoid arthritis, psoriasis, inflammatory bowel disease
Monoclonal antibodies to components of the immune system	Autoimmune disorders, multiple sclerosis
Corticosteroids if 10-20 mg daily for 4 weeks or more	Autoimmune disorders, severe asthma or obstructive pulmonary disease
Anti-rejection drugs	Organ transplantation

Low risk (<1%)	*Indication*
Azathioprine when used alone**	Organ rejection, autoimmune disorders
Methotrexate when used alone**	Rheumatoid arthritis and other autoimmune disorders
Corticosteroids if 10 mg or less for < 4 weeks	Asthma, obstructive pulmonary disease

Safe to use
Topical corticosteroids
Inhaled corticosteroids
Corticosteroid injection of joints

*Figures In parentheses refer to proportion of HBV-infected persons who have been reported to reactivate when treated with these medications; lower risk applies if patient has past HBV infection.

‡ Includes autoimmune liver disease, inflammatory bowel disease, various skin disorders and various forms of arthritis.

**These drugs are often used with other drugs that suppress the immune system.

HBV DRUG WATCH

HBV Compounds in Development • SPRING 2017

www.hepb.org/drugwatch

FAMILY/DRUG NAME	MECHANISM	COMPANY	WEBSITE	USA STATUS
Interferons	Mimic naturally occurring infection-fighting immune substances produced in the body			
Intron A *(Interferon alfa-2b)*	Immunomodulator	Merck, USA	merck.com	Approved 1991
Pegasys *(PegInterferon alfa-2a)*	Immunomodulator	Genentech, USA	gene.com	Approved 2005
Nucleos(t)ide Analogues	Interfere with the viral DNA polymerase enzyme used for hepatitis B virus reproduction			
Epivir *(Lamivudine)*	Inhibits viral DNA polymerase	GlaxoSmithKline (GSK)	gsk.com	Approved 1998
Hepsera *(Adefovir Dipivoxil)*	Inhibits viral DNA polymerase	Gilead Sciences, USA	gilead.com	Approved 2002
Baraclude *(Entecavir)*	Inhibits viral DNA polymerase	Bristol-Myers Squibb, USA	bms.com	Approved 2005
Tyzeka *(Telbivudine)*	Inhibits viral DNA polymerase	Novartis, Switzerland	novartis.com	Approved 2006
Viread *(Tenofovir)*	Inhibits viral DNA polymerase	Gilead Sciences, USA	gilead.com	Approved 2008
Vemlidy *(TAF or tenofovir alafenamide)*	Prodrug of tenofovir	Gilead Sciences, USA	gilead.com	Approved 2016
Levovir *(Clevudine)*	Inhibits viral DNA polymerase	Bukwang, S. Korea	bukwang.co.kr	Approved 2006 in S. Korea
Zadaxin	Immunomodulator	SciClone, USA	sciclone.com	Approved outside USA
DIRECT ACTING ANTIVIRALS	Targets the virus and interferes with specific steps in the HBV life cycle to prevent replication			
TDF Pro Drugs	Targets the virus and interferes with specific steps in the HBV life cycle to prevent replication			
TXL *(CMX 157)*	Prodrug of tenofovir	ContraVir, USA	contravir.com	Phase II
Silencing RNA's (siRNAs)	Interferes and destroys viral RNA			
ARB-1467	RNAi gene silencer (1.0)	Arbutus Biopharma, Canada	arbutusbio.com	Phase II
ARB-1740	RNAi gene silencer (2.0)	Arbutus Biopharma, Canada	arbutusbio.com	Phase II
ALN-HBV	RNAi gene silencer	Alnylam, USA	alnylam.com	Preclinical
Hepbarna *(BB-HB-331)*	RNAi gene silencer	Benitec, Australia	benitec.com	Preclinical
Lunar-HBV	RNAi gene silencer	Arcturus, USA with Janssen	arcturusrx.com	Preclinical
ARO-HBV	RNAi gene silencer	Arrowhead Pharmaceuticals, USA	arrowheadpharma.com	Preclinical
Entry Inhibitors	Interferes with HBV getting into liver cells			
Myrcludex B	Entry inhibitor	Hepatera, Russia with MYR GmbH, Germany	myr-pharma.com	Phase II
Capsid Inhibitors	Interferes with the viral DNA protein shield			
Morphothiadin *(GLS4)*	Capsid inhibitor	HEC Pharma, PR China	pharm.hec.cn/en	Phase II
NVR 3-778	Capsid inhibitor	Janssen, USA	janssen.com	Phase II
AIC 649	Capsid inhibitor	AiCuris, Germany	aicuris.com	Phase I
JNJ56136379	Capsid inhibitor	Janssen, USA	janssen.com	Phase I
ABI-H0731	Capsid inhibitor	Assembly Biosciences, USA	assemblybio.com	Phase I
AB-423	Capsid inhibitor	Arbutus Biopharma, Canada	arbutusbio.com	Phase I
HBsAg Inhibitors	Interferes with production of HBV surface antigen (sAg)			
Rep 2139	sAg inhibitor	REPLICor, Canada	replicor.com	Phase II
Rep 2165	sAg inhibitor	REPLICor	replicor.com	Phase II
RO7020322 *(RG7834)*	sAg inhibitor	Roche	roche.com	Phase I
Antisense Molecules	Binds to the viral mRNA to prevent it from turning into viral protein			
IONIS-HBVRx *(GSK3228836)*	Viral protein inhibitor	Ionis Pharma with GSK	ionispharma.com	Phase I
IONIS-HBVLRx *(GSK33389404)*	Viral protein inhibitor	Ionis Pharma with GSK	ionispharma.com	Phase I
Ribonuclease H Inhibitor	Inhibit degradation of viral RNA			
RNaseH Inhibitor	Viral RNase inhibitor	Arbutus Biopharma, Canada	arbutusbio.com	Preclinical
INDIRECT ACTING ANTIVIRALS	Targets the human immune system to attack the HBV virus			
Therapeutic Vaccines	Vaccine technology used to stimulate the immune system as a treatment			
GS 4774	Therapeutic vaccine	GlobeImmune, USA	globeimmune.com	Phase II
INO-1800	Therapeutic vaccine	Inovio, USA	inovio.com	Phase I
HB-110	Therapeutic vaccine	Ichor Medical Systems with Janssen, USA	ichorms.com	Phase I
TG1050	Therapeutic vaccine	Transgene, France	transgene.com	Phase I
HepTcell	Therapeutic vaccine	Altimmune, USA	altimmune.com	Phase I
TomegaVax HBV	Therapeutic vaccine	TomegaVax, USA	tomegavax.com	Preclinical
Innate Immune Defense Pathway	Compounds that activate the innate immune system			
GS 9620	TLR-7 agonist	Gilead Sciences	gilead.com	Phase II
RO6864018 *(RG7795/ANA773)*	TLR-7 agonist	Roche	roche.com	Phase II
SB9200	RIG -1 and NOD2 agonist	Spring Bank Pharmaceuticals, USA	springbankpharm.com	Phase II
Host Acting Pathway	Compounds that induce programmed cell death (apoptosis)			
EYP001	FXR agonist	Enyo Pharma, France	enyopharma.com	Phase I
CRV 431 *(CPI 431-32)*	Ciclofillin inhibitor	ContraVir, USA	contravir.com	Preclinical
HEPATITIS DELTA VIRUS (HDV)				
Myrcludex B	Entry inhibitor	MYR-GmbH, Germany	myr-pharma.com	Phase II
Lonafarnib	Prenylation inhibitor	Eiger Biopharma, USA	eigerbio.com	Phase II
Pegylated interferon lambda	Immune response stimulator	Eiger Biopharma	eigerbio.com	Phase II
Rep 2139	HBsAg inhibitor	REPLICor, Canada	replicor.com	Phase II
ALN-HDV	RNAi gene silencer	Alnylam, USA	alnylam.com	Preclinical

Hep B Cure Campaign

Continued from page 1

U.S. Senator Tammy Duckworth meets HBF executive director Joan Block in Washington, D.C. (Feb. 20, 2017).

The Hepatitis B Foundation has prepared a comprehensive research report, Closing in on a Cure for Hepatitis B: Priority Areas for Chronic Hepatitis Band Liver Cancer Research Identified by a Survey of Experts. *Drs. T. Block, A. Brownstein, C. Brosgart, C. Cohen, R. Gish, J. Glenn, H. Guo, Y. Hoshida, J. Liang, A. Lok, W. Mason, B. McMahon, R. Perrillo, P. Revill, C. Seeger, J. Tavis, and F. Zoulim. With Contributions from H. Alter, N. Brown, KM Chang, PJ Chen, H. El-Serag, D. Lau, J. Feld, T. Greten, JT Guo, J. Hu, R. Koshy, W. Li, S. Locarnini, A. Mehta, C. Rice, J. Rinaudo, K. Shetty, R. Schinazi. And a special thank you to Dr. F. Chisari for his comments.*

Mobilizing the Advocacy Community

Built on the creation of a clear research agenda from the scientific community (see above), HBF is working to mobilize community partners to campaign for doubling of federal funds for hepatitis B. Our *Hep B Cure Campaign* has launched with the help of Madison Associates in Washington, DC, and we have several notable successes:

- Assisted in drafting report language to support increased federal funding for HBV research and public health;
- Visited 20 key Senate and House congressional offices to secure support for HBV appropriations report language;
- Met with leaders from the National Institutes of Health (NIH): **Dr. Anthony Fauci**, director, National Institute of Allergy and Infectious Diseases; **Dr. Griffin Rodgers**, director, National Institute for Diabetes and Digestive and Kidney Diseases; and **Dr. Doug Lowy**, director, National Cancer Institute, were all briefed on our research agenda and asked for their support;
- Developed follow-up action plans to establish ongoing partnerships with the NIH directed at implementing the HBV research agenda; and,
- Initiated a meeting with the U.S. Food and Drug Administration to establish standards for evaluating the effectiveness of new HBV treatments in the pipeline and potential combination therapies.

There is still much more to do and the base is fired up! During *May Hepatitis Awareness Month*, HBF will host a Congressional Briefing to formally announce the launch of our *Hep B Cure Campaign*, share highlights from the HBV research agenda, and premiere our *#justB storytelling* videos of people sharing their personal stories about hepatitis B.

Moving forward, we will continue to leverage our scientific knowledge and advocacy momentum to keep the pressure on our federal partners in Congress and the NIH to find a cure and make hepatitis B history.

*Thanks to the **HBF Scientific and Medical Advisory Board** and other donors who have contributed generously to the Hep B Cure Campaign. A special thanks to **Dr. Raymond Schinazi** who gave the lead donation to kick-off the campaign, and to **The Carol and Edmund Blake Foundation** for their major support.*

Dr. Bud Tennant (2nd from right) received the *Baruch S. Blumberg Prize* from HBF president **Dr. Timothy Block** (far left), HBF vice-president **Dr. W. Thomas London**, and **Mrs. Jean Blumberg** at the 2016 Crystal Ball.

In Memoriam: DR. BUD TENNANT

HBF Scientific and Medical Advisory Board

The Hepatitis B Foundation mourns the loss of ***Bud C. Tennant, DVM***, a pioneer in developing the woodchuck animal model for the study of hepatitis B, and distinguished member of the HBF's *Scientific and Medical Advisory Board* who passed away in November 2016. He was the retired *James Law Professor of Comparative Medicine* from the Cornell University College of Veterinary Medicine.

Dr. Tennant leaves an enormous scientific legacy of contributions for which he was publicly recognized with the prestigious *Baruch S. Blumberg Prize* by the HBF at its annual Crystal Ball in April 2016.

Dr. Tennant's work with hepatitis B infection in woodchucks led to the development of the first and only animal model successfully used to definitively identify potential and approved therapeutics for hepatitis B. The woodchuck model he developed was used on nearly every drug licensed by the U.S. FDA for hepatitis B treatment and for most of the new drug candidates in the research pipeline.

#justB Storytelling

A National Resource to End the Silence Around Hepatitis B

The Hepatitis B Foundation has unveiled its ***#justB Storytelling*** program, featuring real people sharing their stories about hepatitis B. Our new initiative aims to put a human face on hepatitis B to increase public awareness, decrease stigma and discrimination, and promote testing and treatment that will ultimately save lives.

Nearly 20 individuals from across the U.S. have participated in two interactive workshops facilitated by StoryCenter, a nonprofit organization that pioneered the digital storytelling movement.

Participants ranged from 21 to 76 years old and each shared their stories that included being newly diagnosed, grieving the loss of a parent from liver cancer, facing the pain of stigma and discrimination, as well as finding the courage to be 'bigger than their diagnosis.'

Each story is a powerful reflection of the enormous impact that hepatitis B has on the lives of more than 240 million people around the world. In addition, each *#justB* storyteller will participate in further training to share their story publicly and become community advocates to end the silence around hepatitis B.

The HBF's *#justB Storytelling* program was made possible by educational grants from Arbutus Biopharma, Dynavax Technologies, and a private family foundation.

To view the videos, visit our website at *hepb.org/justB*.

Hepatitis B Foundation Bets For a Cure at Crystal Ball Gala

Over 230 leaders from academia, industry, government and the community came together to support the mission of the Hepatitis B Foundation and try their luck at the casino-themed Crystal Ball on Friday, April 7 at the PineCrest Country Club in Lansdale, PA.

Prof. Mario Rizzetto (second from left) was awarded the *2017 Baruch S. Blumberg Prize* for his discovery of the hepatitis delta virus by **Dr. Thomas London**, HBF board vice president (left); **Dr. Timothy Block**, HBF president and co-founder (second from right) and **Mrs. Jean Blumberg**, wife of the late Dr. Blumberg.

All photos courtesy of Allure West Studios.

The highly successful event raised a record $138,000 to help fund the Foundation's valuable research, outreach, public health, and patient advocacy programs.

The *2017 Baruch S. Blumberg Prize* was presented to **Mario Rizzetto, MD**, honorary professor of Gastroenterology, University of Torino, Italy, with the HBF's highest award. Dr. Rizzetto was recognized for his pioneering research that included the discovery of the hepatitis delta virus, which was a major scientific breakthrough. Hepatitis delta only infects those already infected with hepatitis B, and this co-infection is a deadly health problem worldwide.

Marvin and Dee Ann Woodall (center) were honored with the *2017 Community Commitment Award*, presented by **Joel Rosen**, HBF Board Chairman (left) and **Dr. Timothy Block.**

HBF Executive Director **Joan Block** (second from right) was recognized with the *Distinguished Founders' Award* by her fellow co-founders **Paul and Janine Witte** (left) and **Dr. Timothy Block.**

Marvin and Dee Ann Woodall were honored with the *2017 Community Commitment Award* for their contributions to improving the community through their significant financial support and board service for over 30 years. Among their numerous charitable endeavors, they have supported the HBF's Summer College Research Internship Program, and Mr. Woodall serves on the Leadership Council of the PA Biotechnology Center, which was created in 2006 to be the home of the HBF and is managed by its Baruch S. Blumberg Institute.

In a special presentation, **Joan Block**, HBF co-founder and executive director, was recognized with the *Distinguished Founders' Award* for her extraordinary leadership. During her 20-year tenure, the HBF has grown into a professional organization with a global reach, touching millions of lives each year. In June 2017, Ms. Block will step down and pass the torch to a new leader who will inherit a strong research and disease advocacy organization.

Major sponsors for the gala included **Presenting Sponsor** Univest; **Platinum Sponsors** Arbutus Biopharma, ContraVir Pharmaceuticals, Gilead Sciences, Janssen Pharmaceutica NV, and The Norwood Company; **Diamond Sponsors** Arrowhead Pharmaceuticals, High Swartz LLP, and Penn Community Bank; **Emerald Sponsors** Allure West Studios, de Art Folio, and Inovio Pharmaceuticals, and the Bucks County Herald as our **Media Sponsor**.

Bruce Witte Distinguished Lecturer 2017

James Ou, PhD, professor of Molecular Microbiology & Immunology, Keck School of Medicine, University of Southern California (center), delivered the HBF's *2017 Bruce Witte Distinguished Lecture* on the role of the immune system in hepatitis B infection on April 6th. This named lecture was established by **Paul and Janine Witte**, HBF co-founders.

31st Annual International HBV Meeting
Sept. 21-24, 2016 in Seoul, Korea

The International HBV Meeting was held at Yonsei University in Seoul, South Korea and was co-chaired by **Drs. Wang-Shick Ryu** (Yonsei Univ., S. Korea) and **Aleem Siddiqui** (Univ. California San Diego, USA), and organized by the Hepatitis B Foundation. More than 400 scientists from around the world attended, with 75 travel grants awarded to allow trainees and younger scientists to participate.

The 2016 HBV Meeting kicked off with a pre-symposium of keynote presentations that amplified how basic and translational science underlies and drives the effort to cure hepatitis B.

A few highlights from the 2016 HBV Meeting relevant to drug development include the following presentations:

S. Urban et al. *reported that half of the patients in a phase 2 trial of entry inhibitor Myrcludex B experienced >1 log10 decline in viremia in 24 weeks*. The ability of an entry inhibitor to reduce viremia indicates that HBV infection is more dynamic than had been assumed, and curative therapies employing direct-acting inhibitors may take less time than is widely believed.

Chemin et al. (INSERM) and **Hu** et al. (Penn State U.) *reported efforts of a multi-group consortium to optimize and standardize methods for quantifying cccDNA*, which is important because eliminating cccDNA is a key goal of curative therapies, but measuring cccDNA levels is notoriously prone to variation and artifacts.

T.J. Liang (NIH) and **R. Bartenschlager** (Heidelberg U.) *provided compelling evidence that HBV infection of hepatocytes does not activate innate immune response*. However, studies from S. Urban's laboratory indicate that HDV infection of hepatocytes activates MDA5-mediated innate immune response.

F. Guo et al. (**J-T Guo**, Baruch S. Blumberg Institute) *reported that although HBV replication in hepatocytes doesn't activate cGAS-STING pathway, pharmacological activation of STING in hepatocytes efficiently suppresses HBV replication*, which could be a valuable immunotherapeutic target of HBV infection.

The first International HBV Meeting was held in 1985 in Cold Spring Harbor, USA and today it rotates between North America, Europe, and Asia. The Hepatitis B Foundation is proud to be the official sponsor of this scientific meeting.

2017 HBV Meeting Registration Open!
September 3-7 in Washington, DC
Co-chairs: Drs. Jake Liang (USA) and Anna Kramvis (South Africa)
Register at www.HBVmeeting.org

SPEAKING PERSONALLY

The Personal Cost of Hepatitis B Discrimination

By Christine Kukka, HBF Senior Writer and Blogger

Around the world, millions of people living with hepatitis B face wrenching discrimination.

- A Vietnamese woman working in a hotel in Dubai is found to have hepatitis B and is fired, isolated, deported and banned from ever re-entering the country.
- A young college student in China is diagnosed with hepatitis B so the school moves her to an isolation room and she loses her friends; ultimately, she commits suicide.
- Two American students are accepted into medical school and their offers are rescinded when they test positive for hepatitis B on their physical entrance exams.
- A young man is given 24 hours to leave a U.S. military educational institution after he tests positive for hepatitis B.

Discrimination is especially severe in some Middle Eastern countries. The young woman exiled from Dubai, wrote to the Hepatitis B Foundation for support:

> ***"When I was 21, I had my internship in Dubai and needed to undergo a blood test. I was not aware of the rules in that country so when I tested positive, the hotel where I worked isolated me. I was going through a very hard time because I was completely alone in a foreign country. My work visa was canceled, they brought me to a place that looked like a jail, and I was deported with a lifetime ban. That was the most horrible memory in my life. I am still scared every time I think about it. Sometimes I cannot sleep at night, I keep blaming, cursing myself for having this kind of virus inside my body."***

In the U.S., progress has been made to end hepatitis B discrimination. In 2012, prompted by the Hepatitis B Foundation and the many stories of discrimination against healthcare students they were fielding, the Centers for Disease Control (CDC) updated its guidelines for infected healthcare workers and students and clearly stated that, "hepatitis B infection alone should not disqualify infected persons from the practice or study of surgery, dentistry, medicine, or allied health fields."

The updated CDC guidelines were the cornerstone of a successful U.S. Department of Justice (DOJ) settlement with a New Jersey medical school that rescinded their acceptance offers to two students who tested positive for hepatitis B on their physical exams. Because of the DOJ settlement, hepatitis B is now a protected condition under the Americans With Disabilities Act (ADA).

But discrimination persists. The U.S. military prohibits people with hepatitis B from enlisting. Yet, since 2002 all recruits are vaccinated and protected against hepatitis B. Since most young people with chronic hepatitis B infections are healthy and able to perform all duties required by the military, there is no need for discrimination. The stories are heartbreaking, and despite many efforts by the Hepatitis B Foundation to work with Congressional champions to request that the Department of Defense update their policy, it's a tough, uphill battle.

Hepatitis B-related discrimination is unethical, unnecessary and a violation of human rights. The stigma that perpetuates this discrimination springs from ignorance and impacts millions daily. With advances in the prevention and control of hepatitis B, there is no reason to deny people their dreams, education, careers, and income just because they happen to live with this disease.

Giving hope to millions is as easy as giving … and we've made it easier.

Make a secure donation online at www.hepb.org

YES! I want to support the Hepatitis B Foundation with a tax-deductible gift.

Name _____

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Please charge my gift to my credit card: ☐ Mastercard ☐ Visa ☐ American Express ☐ Discover

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Please make check payable to: Hepatitis B Foundation

Use remittance envelope or mail to: 3805 Old Easton Road, Doylestown, PA 18902 USA

Donations will be acknowledged in our Annual Report unless otherwise requested.

A copy of the official registration and financial information may be obtained by calling the PA Department of State toll-free within PA at 800-732-0999 or out-of-state at 717-783-1720. Registration does not imply endorsement.

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Renowned Thought Leaders Join Hepatitis B Foundation

The Hepatitis B Foundation is pleased to announce the addition of **Nathaniel Brown, MD**, to the Board of Directors, and **Francis Chisari, MD**, and **Robert Perrillo, MD** to the Scientific and Medical Advisory Board. All three are internationally renowned leaders in viral hepatitis.

"The Hepatitis B Foundation is proud to have Drs. Brown, Chisari and Perrillo join our boards," said Dr. Timothy Block, president and co-founder of the Hepatitis B Foundation. "They are highly accomplished scientists whose involvement will strengthen our organization and improve how we serve those with hepatitis B worldwide."

Dr. Brown is an infectious disease physician with over 30 years of experience both in academic medicine at Cornell and UCLA, and as a senior executive in HBV drug development at GlaxoSmithKline, Idenix, Novira and other biotech companies. He has extensive global hepatitis B experience, including North and South America, Europe, India, Southeast Asia, and mainland China.

Dr. Chisari is former professor and head of the Division of Experimental Pathology in the Department of Molecular and Experimental Medicine at the Scripps Research Institute. His internationally renowned research focused on host-virus interactions that determine the outcome of viral infections, using the hepatitis B and C viruses as models.

Dr. Perrillo is a senior research hepatologist at the Baylor University Medical Center in Dallas, and adjunct professor of Medicine, University of Texas Southwestern. He is an internationally recognized leader and educator with nearly 40 years in clinical research around hepatitis B. He has authored more than 200 papers in the areas of viral epidemiology, natural history, clinical immunology, and antiviral therapy.

Calendar of Events 2017

May is AWARENESS HEPATITIS MONTH — FIND OUT IF YOU'RE AT RISK FOR HEPATITIS

June 2-3
The Science of HBV Cure
Singapore Hepatology Conference 2017
Suntec Singapore
allcongress.com/medical-congress/singapore-hepatitis-conference-shc-2017

July 26-28
5th Annual Hep B United National Summit
Hepatitis B Foundation and AAPCHO
Washington, DC
www.hepBunited.org

July 28
World Hepatitis Day

WORLD HEPATITIS DAY 7/28

Aug. 8-9
World Indigenous Peoples' Conference on Viral Hepatitis
Alaska Native Tribal Health Consortium & WHA
Anchorage, Alaska
www.wpicvh2017.org

Sept. 3-7
2017 International HBV Meeting
Hepatitis B Foundation
Washington, DC
HBVmeeting.org

Oct. 18
HBV CURE WORKSHOP 2017
Virology Education
Toronto, Canada
virology-education.com

Oct. 20-24
The Liver Meeting
AASLD
Washington, DC
www.aasld.org

Nov. 1-3
2nd World Hepatitis Summit
World Hepatitis Alliance
Sao Paulo, Brazil
worldhepatitissummit.org

Dec. 3-8
HepDart 2017
Virology Education
Kona, Hawaii
virology-education.com

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B Informed **and all back issues are available online at www.hepb.org/newsletters**

For More Information About Hepatitis B Foundation Programs

- **HBV Info & Support List ... HBList.net**
- **HBV Clinical Trials ... hepb.org/clinicaltrials**
- **HBV Drug Watch ... hepb.org/drugwatch**
- **Hepatitis Delta Connect ... hepDconnect.org**
- **Liver Cancer Connect ... livercancerconnect.org**