William "Bill" Mason Memorial Symposium
Program-At-A-Glance
Date: June 12, 2023

10:00AM Welcome Speech (Chari Cohen)
10:05AM Opening Remarks (Tim Block)
Session 1: Moderators: Tim Block, Chen Liu
10:15AM Preparing for Bill's Questions at the HBV Meeting (Frank Chisari, virtual)
10:30AM Bill Mason, friend and colleague (Peter Vogt, virtual)
10:45AM Learning about Hepatitis B and D (John Taylor, in-person)
11:00AM Conversations with Bill (Christoph Seeger, in-person)
11:15AM Discussing (with Bill) the mechanisms of viral clearance (Luca Guidotti, virtual)
11:30AM Bill's insight on HBV therapy: targeting cccDNA (with gene editing) (Fabien Zoulim, virtual)
11:45AM Lunch
Session 2 Moderators: Ju-Tao Guo, Fabien Zoulim
13:00PM A written tribute to Bill Mason (Don Ganem, read by John Tavis)
13:05PM Structure-guided engineering of active HBV polymerase derivatives (John Tavis, in-person)
13:20PM Deciphering the Epigenetics of Hepatocellular Carcinoma: Diagnostic and Therapeutic Opportunities (Chen Liu, in-person)
13:35PM Pioneering Antiviral Strategies to Cure Chronic HBV Infections (Stephen Locarnini, pre-recorded)
13:45PM New Biology and Carcinogenesis of HBV: A Legacy from Bill (Pei-Jer Chen, pre-recorded)
13:55PM Bill: not only a virologist (Antonio Bertoletti, pre-recorded)
14:05PM Specific and precise quantification of persistent HBV DNA forms (Thomas Tu, pre-recorded)
14:15PM Pre-recorded or written tribute to Bill from his former trainees
14:30PM Break
Session 3 (all in-person) Moderator: Jianming Hu, Haitao Guo
14:45PM Uncovering the mechanism of interferon control of HBV infection, a study inspired by a collaborative work with Bill Mason more than two decades ago (Ju-tao Guo)
15:00PM HBV Capsid - Core in Assembly, cccDNA Amplification and Entry (Jianming Hu)
15:15PM Host factors promoting HBV infection (George Guangxiang Luo)
15:30PM From clonal hepatocyte expansion to changing treatment guidelines (Patrick Kennedy)
15:45PM RNA species derived from integrated HBV DNA (Severin Gudima)
16:00PM HBV cccDNA: formation and epigenetics (Haitao Guo)
16:15PM Closing remarks (Haitao Guo)

Bill Mason Memorial Symposium Organizing Committee:

Timothy Block, Hepatitis B Foundation
Haitao Guo, University of Pittsburgh
Ju-Tao Guo, Baruch S. Blumberg Institute
Jianming Hu, Penn State University
Chen Liu, Yale University
Fabien Zoulim, INSERM, France

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Endorsement

William (Bill) S. Mason, PhD was born on October 4, 1943 and passed away on September 19, 2022. Bill studied math at Stevens Institute of Technology, Hoboken, NJ for his BS degree and worked on bacteriophages at University of Chicago for his PhD in biophysics. He then did postdoctoral training with Peter Vogt, PhD, at the University of Southern California in Los Angeles where he started to work on retroviruses. Bill joined the Fox Chase Cancer Center faculty in 1973 and remained at Fox Chase until his retirement in 2010.

At Fox Chase, Bill initially continued studies on retroviruses before shifting his interest to hepadnaviruses, a group of small DNA viruses that include the human pathogen the hepatitis B virus (HBV), which chronically infects 300 million people and is the leading cause of liver cancer worldwide. John Taylor, PhD, a colleague of Bill at Fox Chase, noticed that the DNA genome, a relaxed circular DNA (rcDNA), of hepadnaviruses has structural features similar to a circular DNA replication intermediate of retroviruses. Together with John Taylor, and Fox Chase colleague and long-time collaborator, Jesse Summers, PhD, Bill made the groundbreaking discovery that the duck hepatitis B virus (DHBV) – an avian DNA hepadnavirus - replicates via reverse transcription, which had been thought to occur only in retroviruses (RNA). Bill and Jesse Summers also discovered that a nuclear viral episome, the nonreplicative, covalently closed circular DNA (cccDNA), is the viral transcriptional template that sustains viral gene expression and replication. They further showed that cccDNA is formed initially from rcDNA released from the infecting virion particle but subsequently also from rcDNA made de novo inside the infected hepatocyte using a process called intracellular recycling or cccDNA amplification. As cccDNA persistence, with contributions from infection and intracellular recycling, remains the major roadblock to achieving an HBV cure, the pioneering work of Bill and colleagues on cccDNA remains highly instructive today.

Following his pioneering work on the molecular aspects of hepadnavirus replication, Bill devoted much of his later work to understanding the mechanisms of viral pathogenesis and to developing strategies for the cure of chronic hepatitis B. To address these complex issues, he used infection of ducks and woodchucks, and employed a combination of classical virology and modern molecular technologies as well as mathematic modeling. Together with colleagues, Bill showed that extensive death of infected hepatocytes and compensatory proliferation of other infected hepatocytes occur during, and are required for resolution of acute hepadnavirus infections. Bill also demonstrated that clonal expansion of altered hepatocytes, which no longer support HBV replication but only possess viral integration, contributes not only to cccDNA clearance and thus termination of viral persistence, but also to liver carcinogenesis. Furthermore, he discovered that the carcinogenic process, including hepatocyte death and clonal expansion of hepatocytes with integrated HBV DNA, starts much earlier than previously thought, within the first years of chronic HBV infection that had been classified as the so-called “immune tolerant” stage.

Bill trained many students, post-doctoral scholars, and medical fellows over his long research career. A supportive and gracious mentor, Bill encouraged his trainees to pursue their own research interests and did his best to help them develop their independent careers. Many of his trainees have become very successful scientists themselves in academia and industry. Bill also generously donated his time and expertise in grant and manuscript reviews, journal editorial services, and conference organization. Those who have passed through Fox Chase during their virology training, and the international HBV community in general, will long remember Bill’s pointed and insightful questions, now legends in the field, at lab meetings and the annual international HBV conferences, which benefited junior scientists and the entire HBV field greatly.

With this Bill Mason Memorial Symposium, we celebrate Bill’s tremendous contributions and scientific legacy, and are honored and humbled to remember Bill as a pure, scholarly scientist and a kind, generous person.