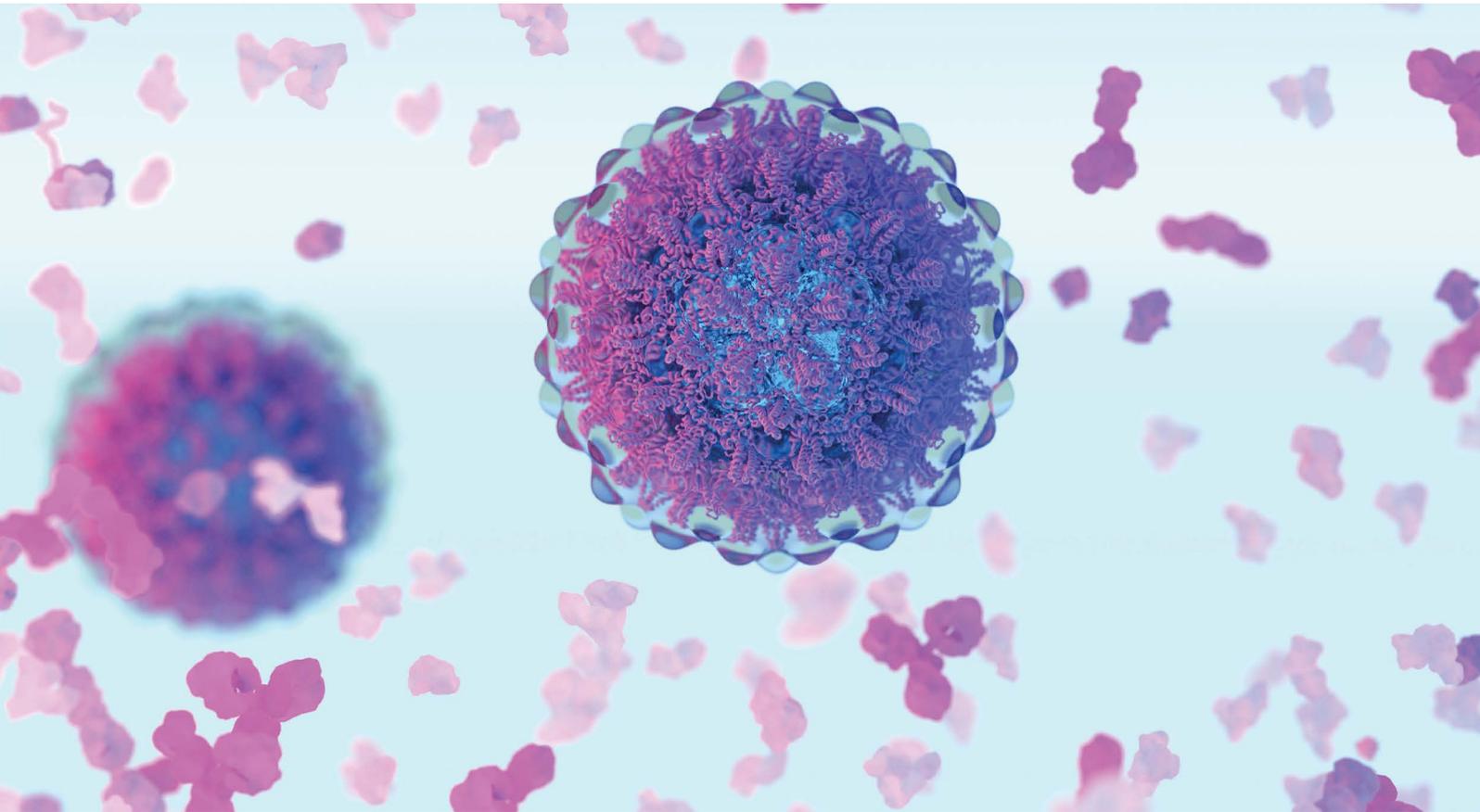




# ICE-HBV

International Coalition to Eliminate HBV

PROMOTING GLOBAL COLLABORATION IN HBV CURE RESEARCH



Worldwide, more than 257 million people are chronically infected with hepatitis B virus (HBV) and even though a prophylactic vaccine and effective antiviral therapies have been developed, there is no cure.

HBV kills more people than malaria. Chronic HBV (CHB) infection results in 887,000 deaths per year from cirrhosis and liver cancer<sup>1</sup>. No cure for CHB exists due in part to the continued presence of a viral reservoir which is not targeted by current therapies. CHB persists despite the best treatment, and risks of liver cancer remain. Current treatments must generally be taken for life to remain effective and fewer than 8 per cent of people who would benefit from current treatments have access to them.

This high burden of disease, in spite of the availability of effective interventions to prevent infection and treat adverse outcomes in those affected, warrants a coordinated international effort to cure CHB.

RESEARCH

EDUCATION

COLLABORATION

INNOVATION

## WHY DO WE NEED TO CURE HBV?

The World Health Organization considers viral hepatitis as an international public health challenge comparable to other major communicable diseases<sup>2</sup>. While these have become less lethal, the number of viral hepatitis-related deaths is increasing.

Hepatitis B is responsible for 40 per cent of all cases of liver cancer - which is the 2nd most common cause of cancer death worldwide - and 30 per cent of all cirrhosis<sup>3,4</sup>.

Experts estimate that liver cancer deaths will substantially increase in coming decades while deaths from most other cancers are decreasing.

Not all people chronically infected with HBV fall within the current treatment guidelines. Even among those who achieve viral suppression, the risk of cancer is still significant. Existing treatments must generally be taken for life, which represents a substantial burden on societies and individuals. Treatment today does not cover all categories of infected patients and it is not accessible worldwide.

## WHY NOW?

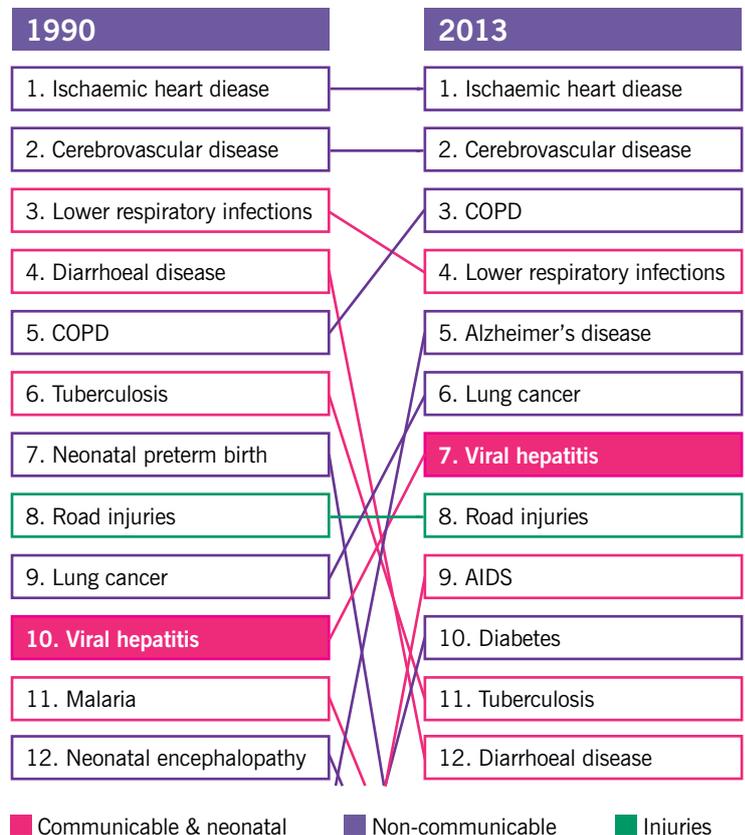
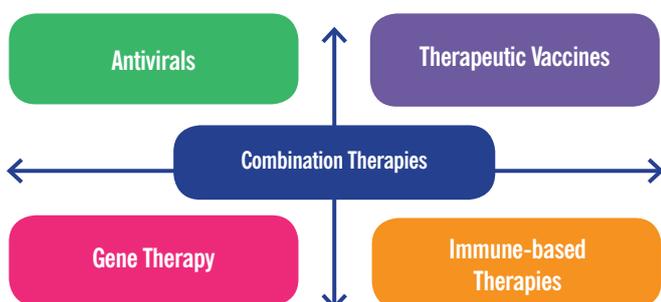
The push for a cure for CHB infection is particularly timely and builds upon a solid foundation.

Recent scientific discoveries herald an exciting new era in HBV research. These include:

- identification of the NTCP receptor, the point of entry the virus uses to infect cells;
- improved cell culture and animal models;
- characterization of the function of HBx, the viral protein that favours replication of the virus;
- increased knowledge of HBV minichromosome biology.

Significant momentum in the global response to viral hepatitis and effective curative treatments for hepatitis C create fertile ground for a global push for an HBV cure.

## HBV CURE STRATEGIES



**Leading causes of mortality and trends, 1990-2013.** The global burden of viral hepatitis from 1990 to 2013: findings from the Global Burden of Disease Study 2013. Stanaway, Jeffrey D et al. The Lancet, Volume 388 NB: HBV causes approximately half of all viral hepatitis-related deaths.

“ Thanks to recent technological breakthroughs, the HBV scientific community finally has a chance to discover a durable cure for chronic HBV infection. Everyone involved in the ICE-HBV initiative is fully committed to achieving that goal. I look forward to doing everything I can to encourage global cooperative research focused on eradication and/or permanent silencing of the viral cccDNA transcriptional template and development of innovative immunological approaches that prevent viral spread and selectively eliminate HBV-infected cells. ”

Frank Chisari, ICE-HBV Honorary President, Emeritus Professor of Virology and Immunology at The Scripps Research Institute (TSRI), La Jolla, California.



## HOW WE CAN CURE HBV

A combination of strategies that target the virus and enhance the immune response will most likely be required to cure the infection<sup>5</sup>.

## DISCOVERY SCIENCE

Following an inclusive nomination process, ICE-HBV formed international multidisciplinary scientific working groups consisting of leaders in HBV virology, immunology, technology and clinical research who have collaborated to identify current strengths in the HBV field that can be built upon, as well as knowledge gaps that must be addressed to achieve a cure. Together, they have developed the first Global Scientist Strategy for an HBV Cure, which will be published in 2018. Members of working groups will collaborate with other academic and industry researchers on the scientific priorities identified together based on their feasibility, impact and urgency. Priorities will be reviewed regularly and progress reports will be given at international meetings.

ICE-HBV participates in the DZIF-ANRS international research project on the standardisation of quantitative cccDNA measurements. The objective of this project is to develop reliable laboratory protocols for cccDNA quantification by comparing head-to-head different methodologies and by exploring new strategies to improve specificity of cccDNA qPCRs.

## TRANSLATION & IMPLEMENTATION

ICE-HBV collaborates with key HBV stakeholders from around the world to ensure appropriate HBV cure preparedness and the timely and effective translation of scientific discovery into health outcomes for people living with HBV. The ICE-HBV Stakeholders' Consulting Group gathers regularly to provide input on ICE-HBV scientific agenda, coordinate HBV-focused events as well as identify potential synergies. The Group discussions are articulated around three pillars:

- Better clinical care
- Community engagement (scientific literacy and clinical trials liaison)
- Policy changes

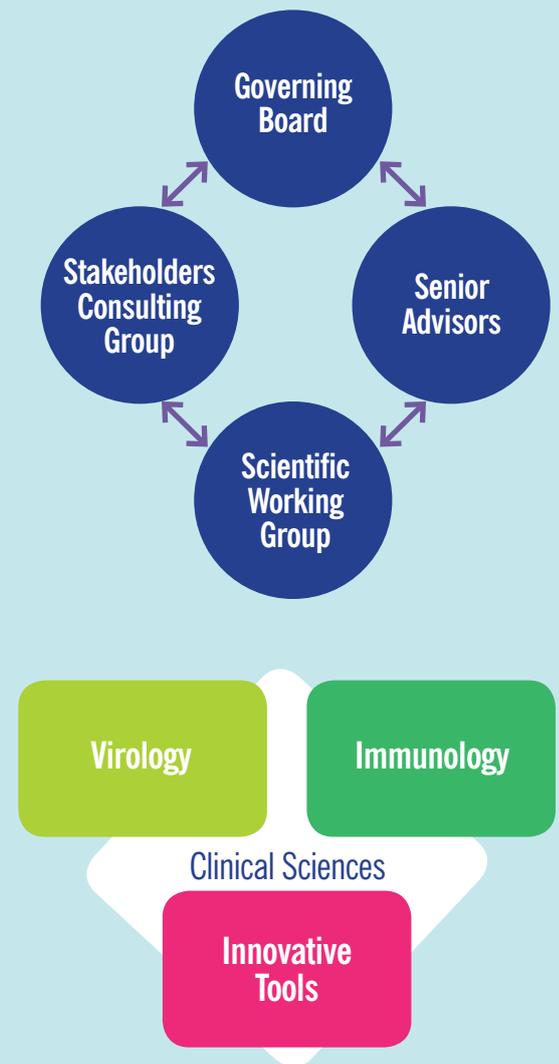
Group members collaborate to undertake specific projects relevant to these three pillars, such as the development of an HBV cure cost-effectiveness model.

The Group is co-chaired by Timothy Block (The Hepatitis B Foundation), Veronica Miller (The HBV Forum) and Ulrike Protzer (DZIF), with every continent represented.

## WHAT YOU CAN DO

- 1 Support ICE-HBV activities: by funding our working groups, donating towards one of our young investigators projects, sponsoring our meetings.
- 2 Raise awareness and advocate for an HBV cure, asking your government to fund life-saving research on CHB.

## ICE-HBV STRUCTURE



“ Our aim is to inspire and support the discovery of a safe, scalable and effective cure for the benefit of all people living with CHB. To achieve this, we have created an international research-driven forum, which is coordinating, promoting and fostering collaborative partnerships among researchers and stakeholders, to accelerate the discovery of a CHB cure. ”

Peter Revill, ICE-HBV Chair,  
Peter Doherty Institute for  
Infection and Immunity  
(Doherty Institute)



# HBV PREVENTION, CARE, TREATMENT, AND CURE

ICE-HBV supports the Global Health Sector Strategy on Viral Hepatitis (WHO, 2016). By no means should the strengthening of HBV cure research direct resources away from scaling-up effective HBV prevention, care and treatment programmes. However, the HBV scientific community believes that governments, foundations and other research sponsors should work together to make a substantial investment in HBV cure research now. HBV research has been largely underfunded compared to other diseases; enhanced investments could make a big difference and create important resource savings by 2030<sup>6</sup>. Furthermore, scaling-up deployment of current treatments is not enough to prevent adverse outcomes in all patients; a substantial risk of liver cancer remains<sup>7</sup>. Coupled with the implementation of the 2016 Global Health Sector Strategy on Viral Hepatitis, an HBV cure could help fully eradicate HBV thus saving millions of lives.

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“The time is right for a coordinated and international research campaign such as ICE-HBV to find a cure. The almost 1 million deaths from hepatitis B worldwide each year is unacceptable, but recent advances in science make this a winnable battle. I am optimistic that a cure is possible and within reach if we all work together to make hepatitis B history!”

Joan Block, Co-Founder and Senior Advisor, Hepatitis B Foundation

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