Arbutus

Arbutus BIOPHARMA

Curing Chronic Hepatitis B

A Leading HBV Therapeutics Company

Corporate Overview | July 2018

NASDAQ: ABUS www.arbutusbio.com

Forward-Looking **Statements**

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, and forward looking information within the meaning of Canadian securities laws (collectively, "forward-looking statements"). Forward-looking statements in this presentation include statements about, among others: meeting a significant unmet medical need and market opportunity; a cash runway beyond key clinical milestones; developing a curative regimen for HBV and unlocking significant market growth opportunities; the potential of our drugs to improve patient outcomes; the ability of Genevant and our LNP asset to drive value; interim results from ARB-1467 in 2H18; an IND (or equivalent) filing in 1H19 for AB-729; IND (or equivalent) filings in mid-2018 and patient studies in 2019 for AB-452; clinical development of AB-506 in mid-2018, with potential inclusion in a combination regimen for HBV in 2019; AB-506's potential to be a "best in class" capsid inhibitor; an expected US and EU launch for Alnylam's patisiran in 2H18, with potential royalties in 2018; and multiple partnership opportunities for Genevant.

With respect to the forward-looking statements contained in this presentation, Arbutus has made numerous assumptions regarding, among other things: the timely receipt of expected payments; the effectiveness and timeliness of preclinical and clinical trials, and the usefulness of the data; the continued demand for Arbutus' assets; and the stability of economic and market conditions. While Arbutus considers these assumptions to be reasonable, these assumptions are inherently subject to significant business, economic, competitive, market and social uncertainties and contingencies. Forward-looking statements herein involve known and unknown risks, uncertainties and other factors that may cause the actual results, events or developments to be materially different from any future results, events or developments expressed or implied by such forward-looking statements. Such factors include, among others: anticipated pre-clinical and clinical trials may be more costly or take longer to complete than anticipated, and may never be initiated or completed, or may not generate results that warrant future development of the tested drug candidate; Arbutus may not receive the necessary regulatory approvals for the clinical development of Arbutus' products; economic and market conditions may worsen; and market shifts may require a change in strategic focus. A more complete discussion of the risks and uncertainties facing Arbutus appears in Arbutus' Annual Report on Form 10-K and Arbutus' continuous disclosure filings which are available at www.sec.gov and at www.sedar.com. Arbutus disclaims any obligation to update any forward-looking statements or to publicly announce the result of any revisions to any of the forward-looking statements contained herein to reflect future results, events or developments, except as required by law.

Arbutus' **Investment Highlights**

Singular therapeutic focus - curing chronic Hepatitis B Virus (HBV)

Focus on **Chronic HBV**

A significant global unmet medical need, including NA and Europe

Global HBV prevalence **double that of HCV**, offering an even larger market opportunity.

Proven **Leadership** Team

Team with antiviral expertise that resulted in HCV blockbuster cure

Applying knowledge gained from **HCV success** to find HBV cure through drug combinations.

Most Robust HBV **Pipeline**

HBV assets generating clinical data, poised for clinical combination

Each asset, individually, could complement and **improve cure rates** in combination with SOC.

Strong **Financial** Position

$ 170M cash Q1 extends beyond all oral combo data

Patisiran royalty represents further non-dilutive **runway extension**

Genevant Creating Value for Arbutus

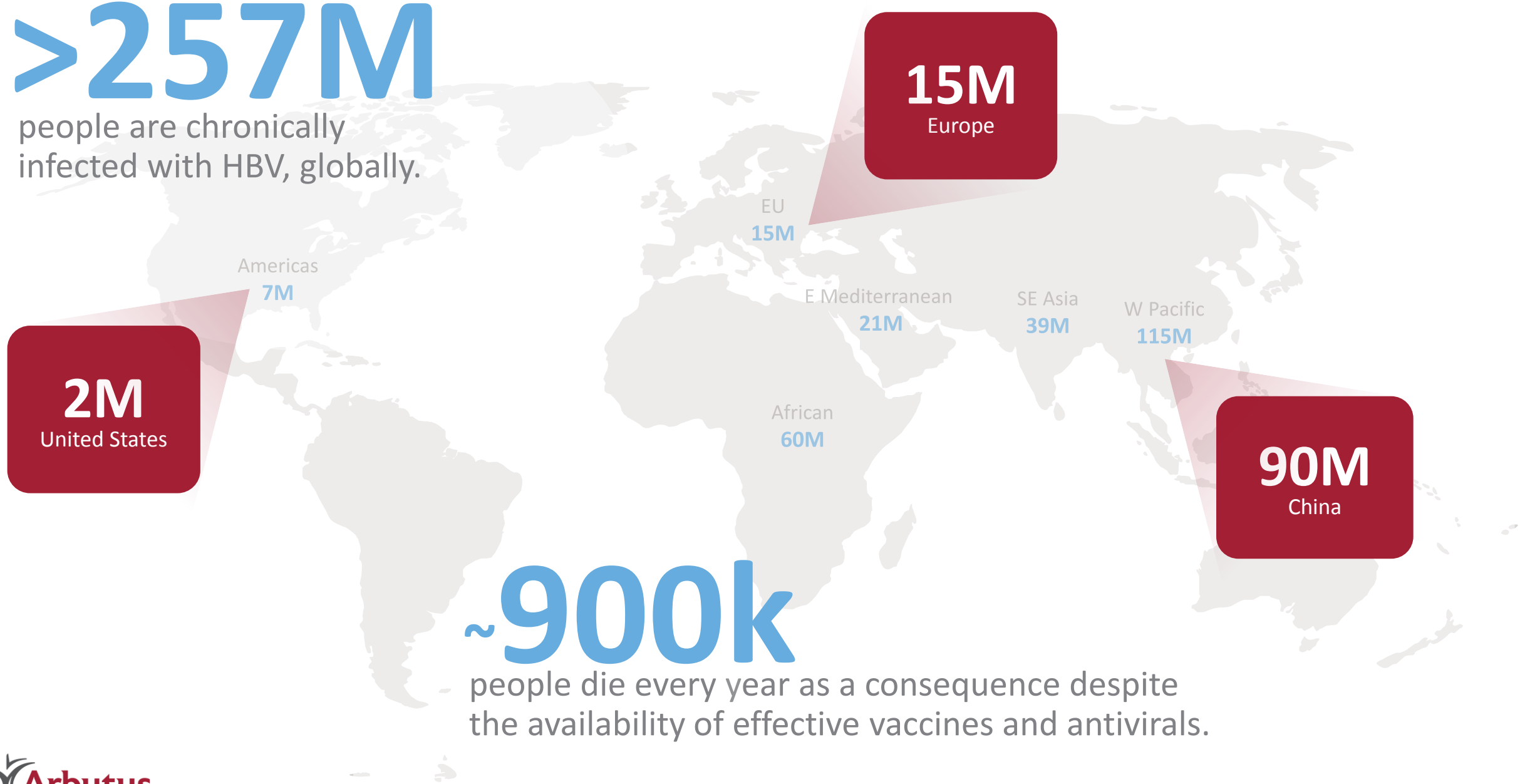
Arbutus is a principle owner of new RNA therapeutics company

LNP and conjugate delivery technologies supporting multiple **RNA therapeutics**

HCV: Hepatitis C Virus | **SOC:** Standard Of Care | **LNP:** Lipid Nanoparticle

>257M

people are chronically infected with HBV, globally.



~900k

people die every year as a consequence despite the availability of effective vaccines and antivirals.

Source: Hepatitis B. WHO (2017) http://www.who.int/mediacentre/factsheets/fs204/en/

Significant Opportunity to Improve HBV Cure Rates

HBV cures are achievable with today's SOC in **<5% of patients**. **Sustained** HBsAg and HBV DNA* loss off-treatment is rare.

***HBsAg & HBV DNA:** endpoints accepted as a cure.

SOC THERAPIES FOR CHRONIC HBV

	Pegasys (PegIFN)	Baraclude (Entecavir)	Viread (Tenofovir)
Dosing Duration	48-weeks	Chronic	Chronic
HBV DNA Undetectable *(<60-80 IU/ml)*	14-19%	67-90%	76-93%
HBsAg Loss	**~3-4%**	**~1-2%**	**~1-3%**

New HBV Therapies

rate of **Undetectable HBV DNA**

+

rate of **HBsAg Loss**

=

HIGHER **CURES RATES**

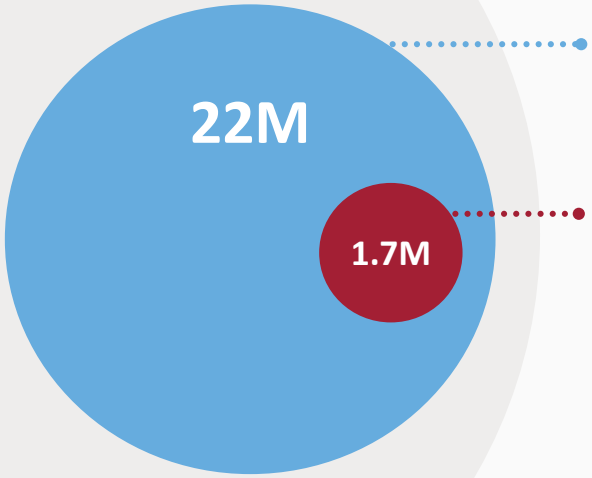
Achievable **HBV Cure Rates** with Current SOC

SOC: Standard Of Care | **HBsAg**: HBV Surface Antigen | **PegIFN:** Pegylated Interferon
Source: EASL HBV Clinical Practice Guidelines, 2012 - Pegasys, Baraclude and Viread Package Inserts

Compelling Growth Opportunity in the HBV Market

257M chronic HBV

2017[1]



9% Diagnosed

8% Treated

Low due to sub-optimal SOC + asymptomatic nature.

An HBV curative regimen

would substantially increase **diagnosis** and **treatment** rates to unlock significant **market growth opportunities.**

HBV SOC: ANNUAL COSTS (USD)

Pegasys (PegIFN)	$37,000
Baraclude (Entecavir)*	$13,000
Viread (Tenofovir)*	$13,000

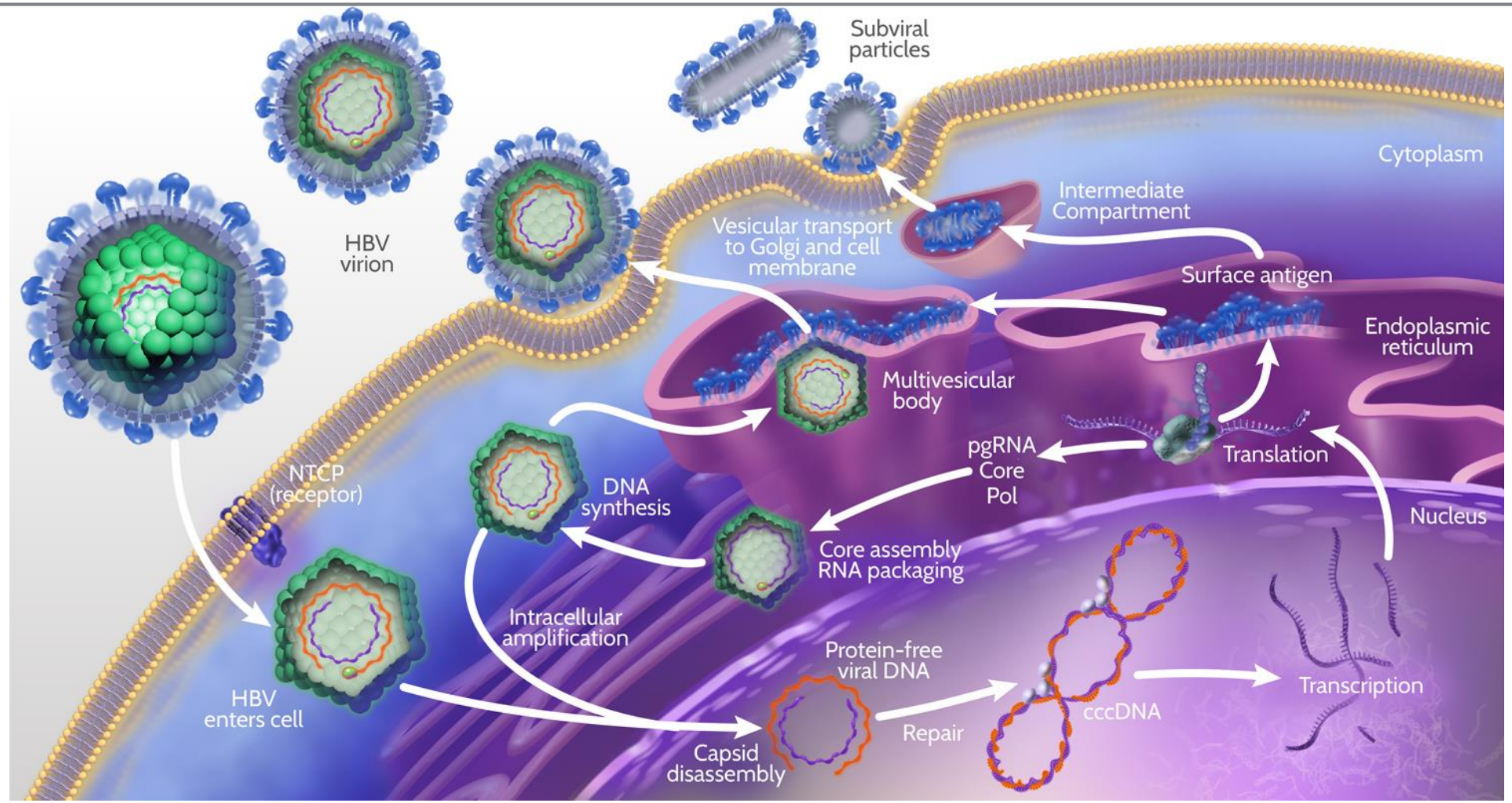
2015[2]

NA: Nucleot(s)ide Analog | **PegIFN:** Pegylated Interferon
SOC: Standard Of Care

1. Hepatitis B. WHO (2017), http://www.who.int/mediacentre/factsheets/fs204/en/
2. Biotechnology Report. TrendForce (2016), http://press.trendforce.com/press/20160829-2601.html

HBV Lifecycle

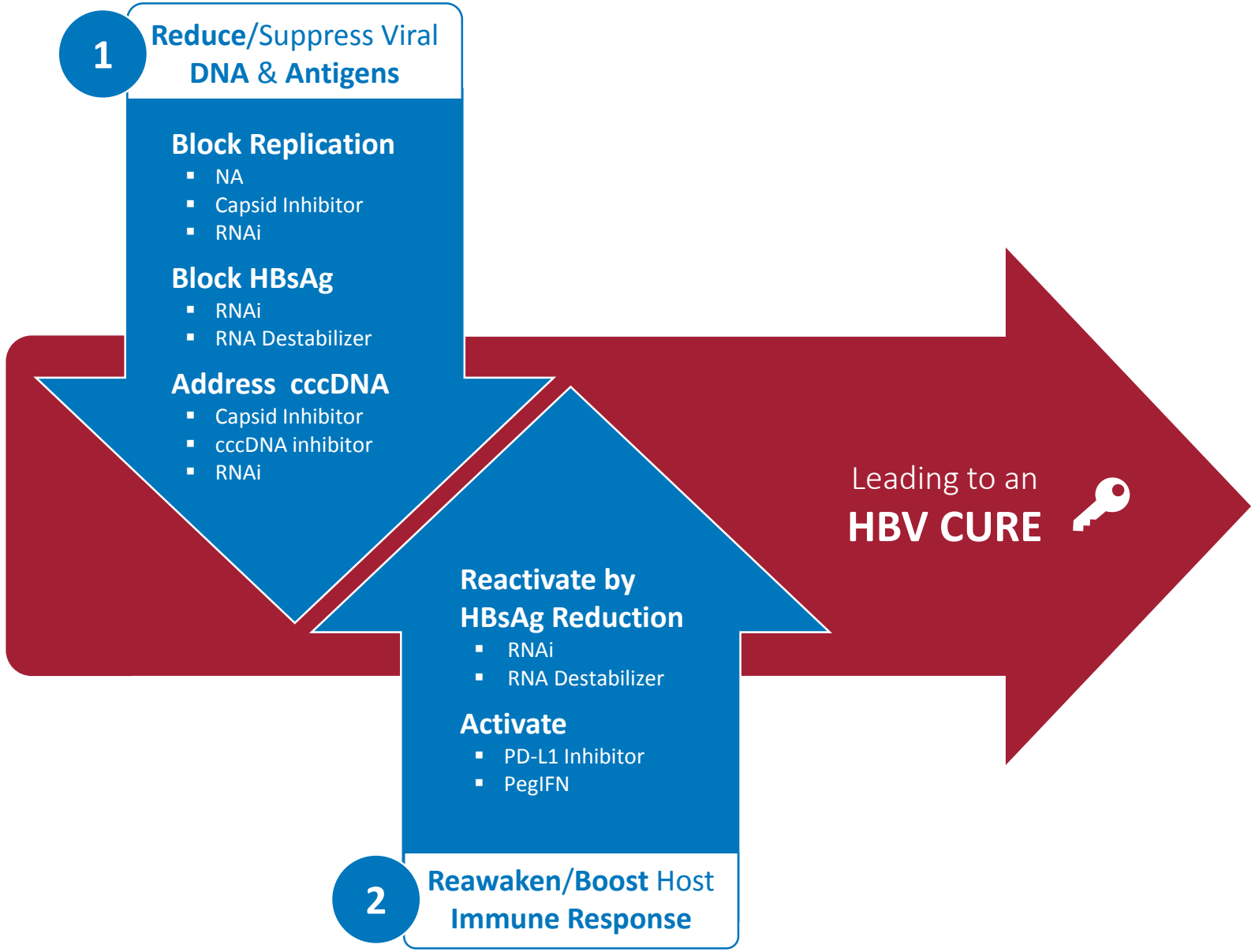
Illustrates key points for intervention and combination of agents with complementary MOA



Keys to **Therapeutic Success**

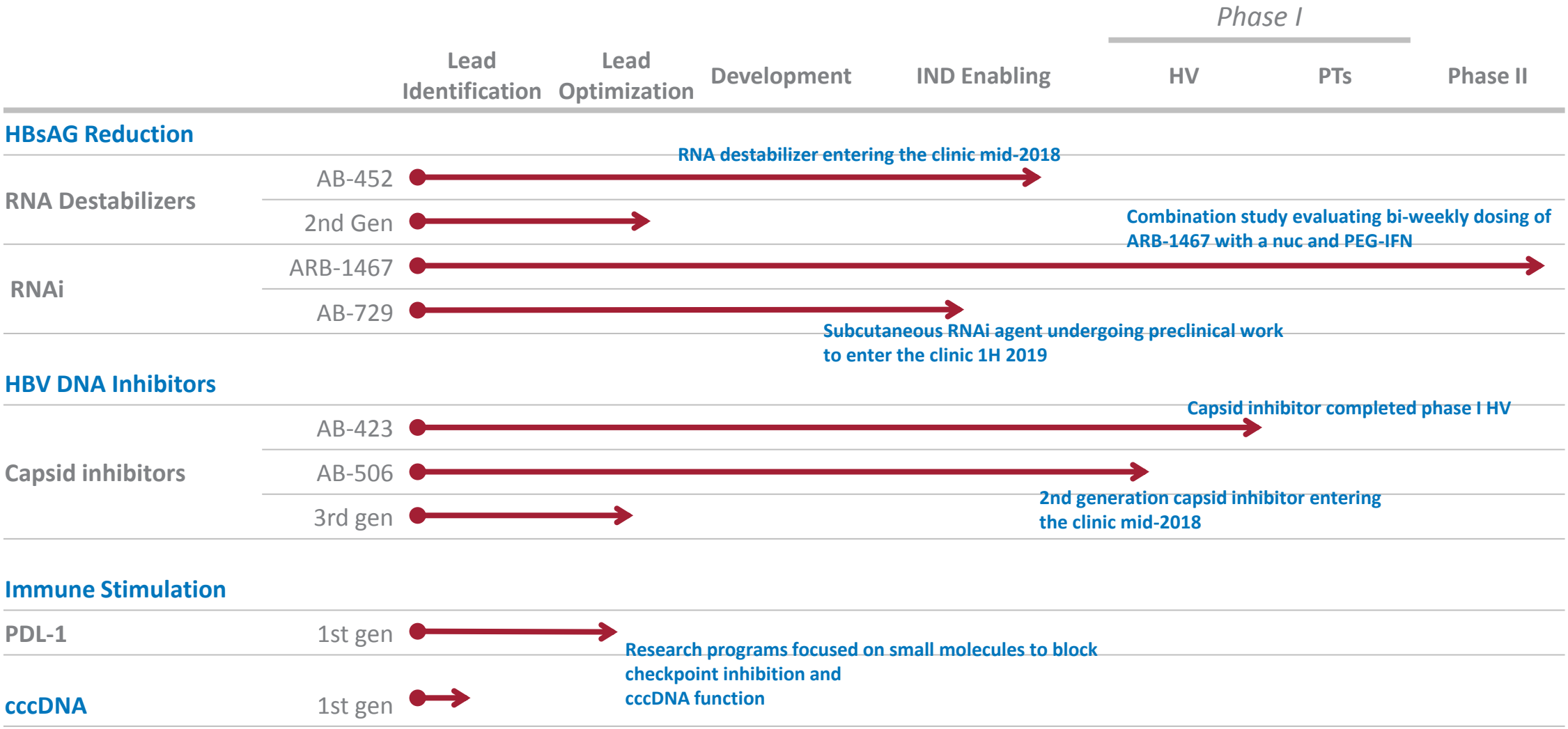
- Suppress HBV DNA and viral antigens
- Enable an immune response

Therapeutic success will *combine* drugs with *complementary MOAs.*



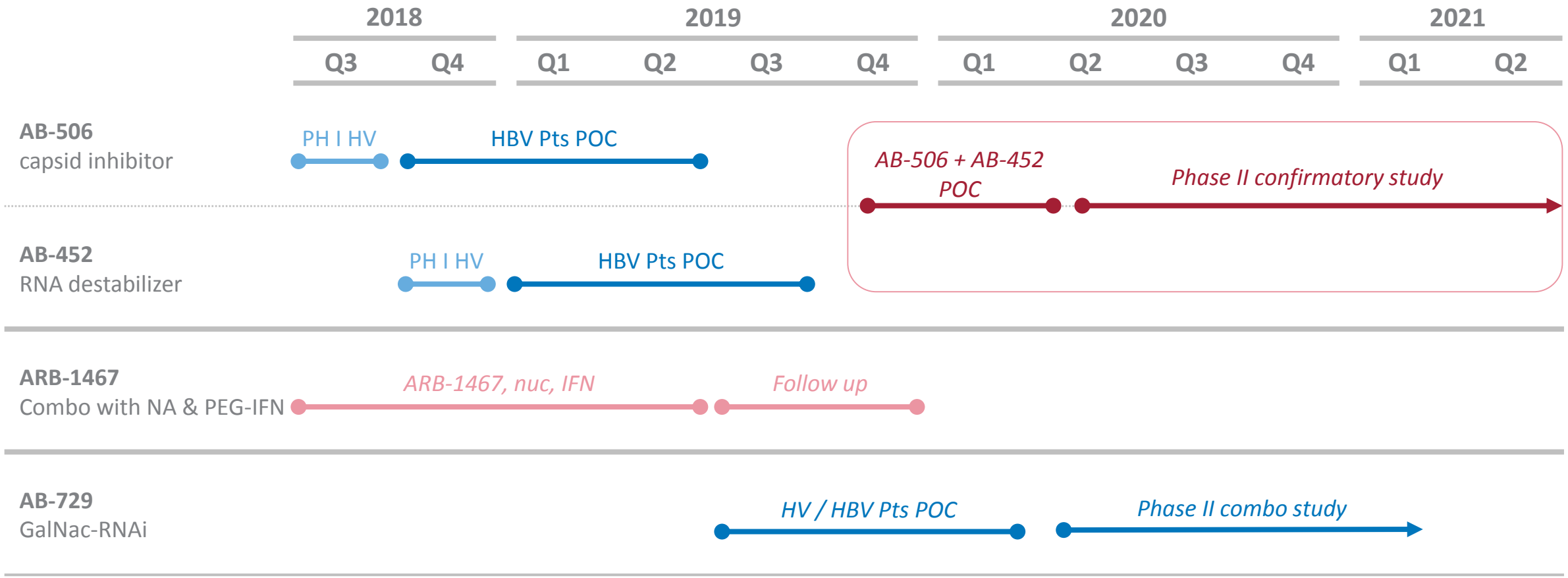
MOA: Mechanism Of Action | **NA:** Nucleot(s)ide Analog |**PegIFN:** Pegylated Interferon | **HBsAg**: HBV Surface Antigen

Arbutus HBV Pipeline



Path to an **Oral Combination Cure**

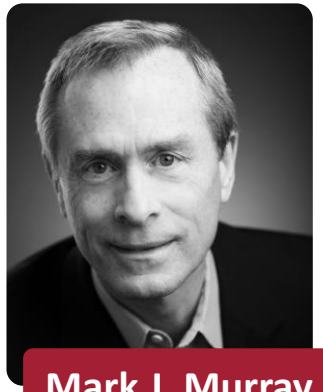
Drive to undetectable HBV DNA and HBsAg



Proven **Leadership Team**

Successful track record in antivirals, including inventor & developer of blockbuster HCV cure: ***Sovaldi®*** *— most successful drug launch in history.*

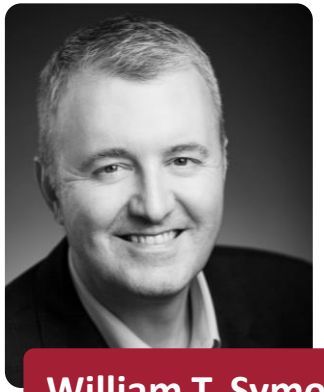
Focused on developing a cure for chronic HBV.



Mark J. Murray, PhD

President & CEO

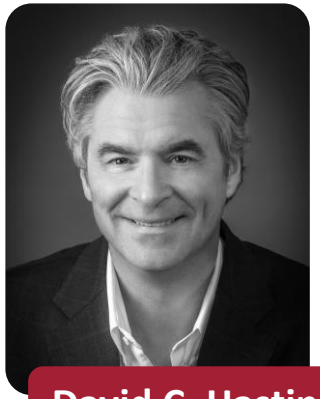
Tekmira · Protiva · ZymoGenetics · Xcyte



William T. Symonds, PharmD

Chief Development Officer

Pharmasset · Roivant Sciences · Gilead



David C. Hastings

Chief Financial Officer

Incyte · ArQule · Unilife

Michael J. Sofia, PhD

Chief Scientific Officer

Pharmasset · OnCore Biopharma, Inc. · Gilead · Bristol-Myers Squibb

HCV: Hepatitis C Virus | **HBV:** Hepatitis B Virus

Research Team & Capabilities

A Team of unparalleled experience and success: Inventors of Sofosbuvir, Daclatasvir and Indinavir
as well as several novel HBV agents

CHEMISTRY (17)

- *Medicinal Chemistry
- Process Research
- Computational Chemistry
- Cheminformatics
- Kilo Lab

BIOLOGY (17)

- Virology
- *Immunology
- Molecular Biology
- Cell Biology
- Clinical Virology
- *Clinical Immunology
- HTS
- Flow cytometry
- Cell sorting

***IN VIVO* PHARMACOLOGY (3)**

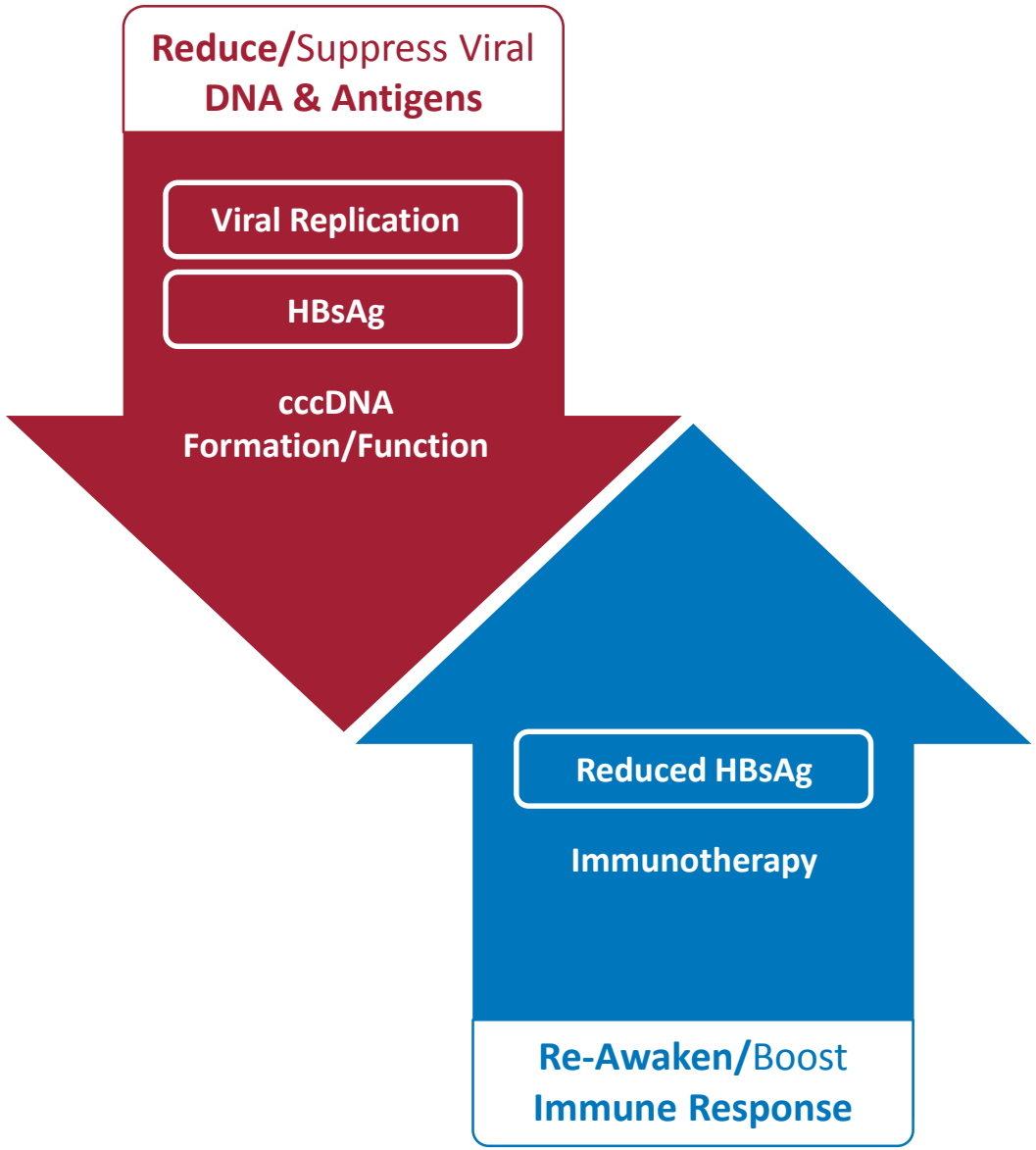
- HDI HBV Model
- AAV HBV Model
- PXB HBV Model
- HBV & Immune Marker Analysis

DMPK & NON-CLINICAL TOX (9)

- *In Vitro* ADMET Profiling
- Bioanalytical Analysis (3 LC/MS/MS)
- GMP Tox

Driving Down HBsAg

Is A Key to Therapeutic Success in HBV



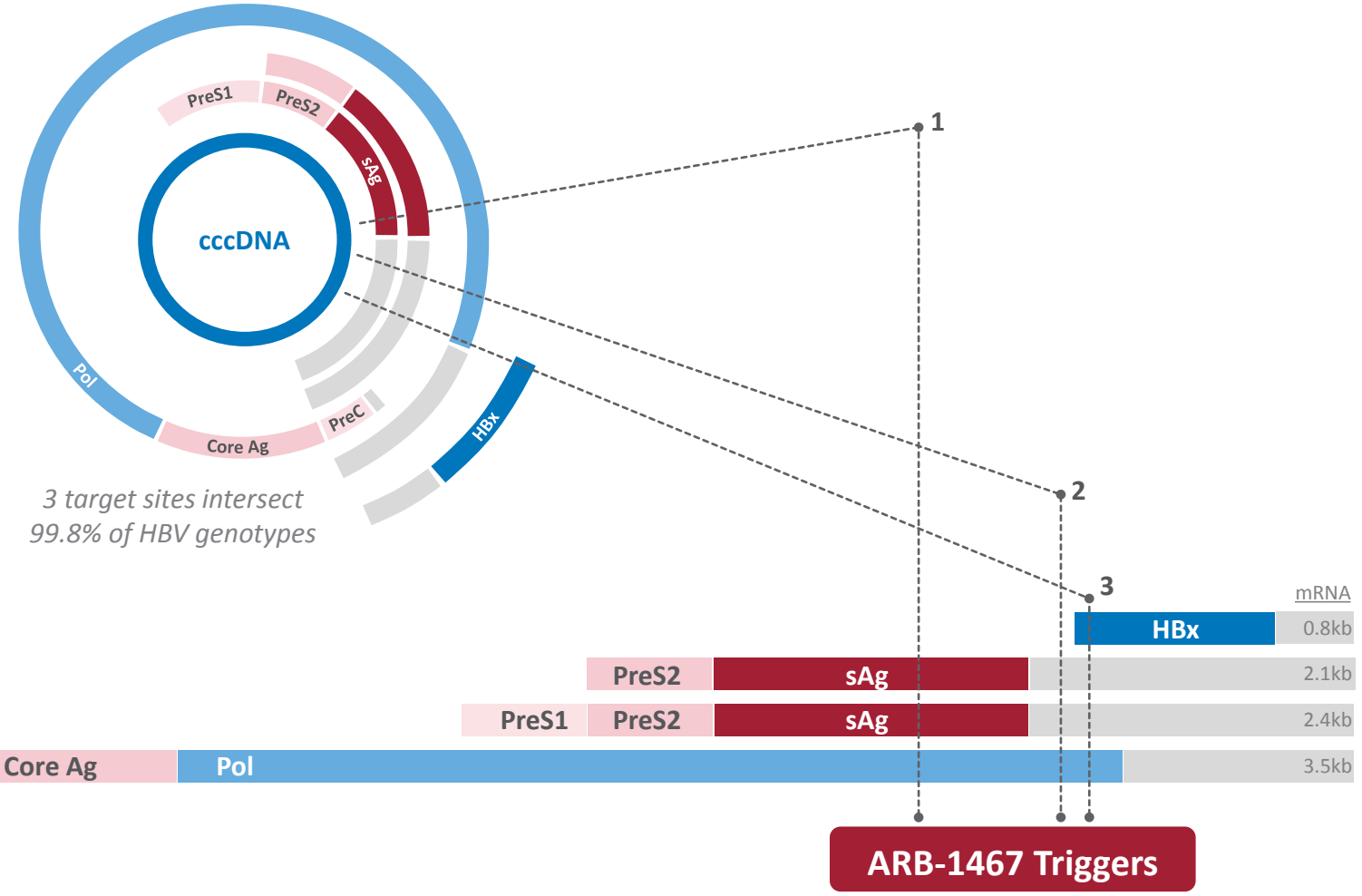
ARB-1467 targets multiple HBV messenger RNAs and reduces HBsAg

Novel RNA interference (RNAi) product.

Unique 3-trigger design
inhibits HBV replication,
reduces all HBV transcripts,
and lowers all HBV antigens.

Delivered via **proprietary LNP technology.**

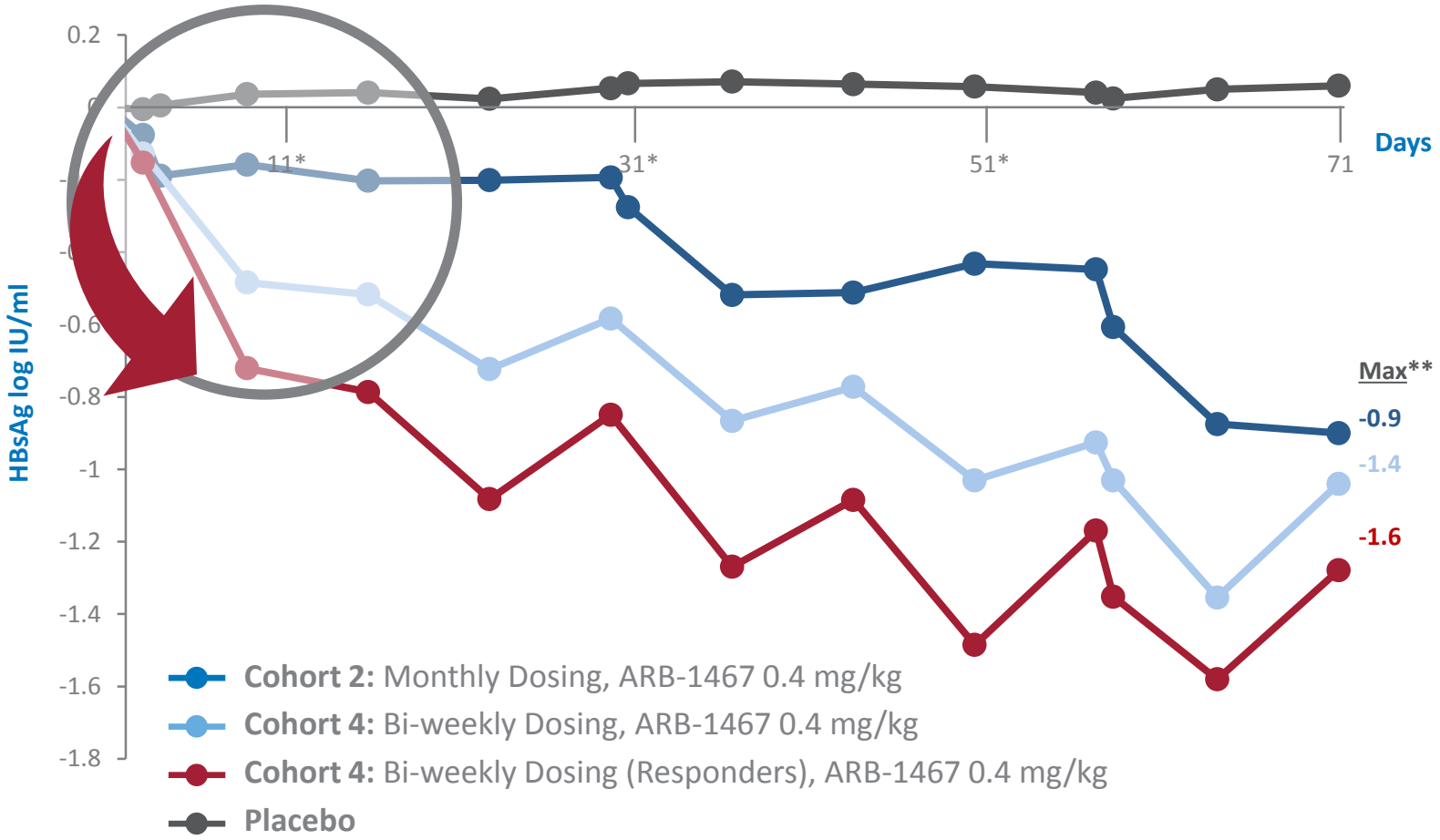
Generally **safe and well tolerated.**



ARB-1467 Bi-Weekly Dosing

Drives Deep HBsAg Reduction

Responders experienced the greatest reductions in HBsAg with continued bi-weekly dosing vs. monthly dosing.

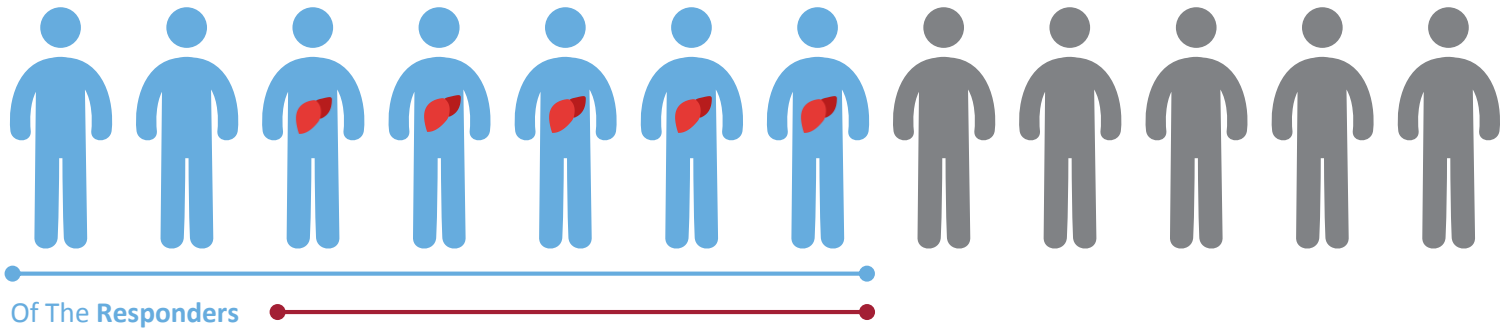


*Dosing Day | **Maximum HBsAg reduction is the best single reduction among all patients in a cohort

ARB-1467 Results with Bi-Weekly Dosing

100% of Patients Achieved Reductions in **HBsAg** *(avg. 1.4 log_{10})*

- Well tolerated with no SAEs -



7/12

met response criteria*

*>1 log_{10} & <1000 IU/ml HBsAg reduction at/before Day 71

5/7

Achieved low HBsAg levels**

**absolute HBsAg levels <50 IU/mL

CURRENT STUDY

A triple combination study utilizing bi-weekly dosing of ARB-1467 in combination with TDF and Peg-IFN

GOAL – Drive HBV DNA and HBsAg to low / undetectable levels. Inform oral combinations studies

DATA – Interim 6-wk data in Q4, final data 2019

SAE: Serious Adverse Events | **SOC:** Standard Of Care | **TDF:** Tenofovir | **PegIFN:** Pegylated Interferon

AB-452 – Potent Small Molecule Targeting HBsAg

The only HBV RNA Destabilizer molecule currently in development, offering Arbutus a competitive advantage in advancing towards regulatory approval of the 1st combination regimen for HBV.

Novel Small Molecule HBV RNA destabilizer - direct acting antiviral.

Destabilizes pgRNA and **all viral mRNA transcripts** with potent inhibition of HBsAg, HBeAg, and viral replication.

Active against all HBV genotypes in preclinical models.

Favorable PK profile offering potential for **once daily oral dosing.**

*** Complementary when combined** with SOC and capsid inhibitors.

in 2018 - 2019

Mid-2018: AB-452 IND/CTA filing to enable Phase 1 study start

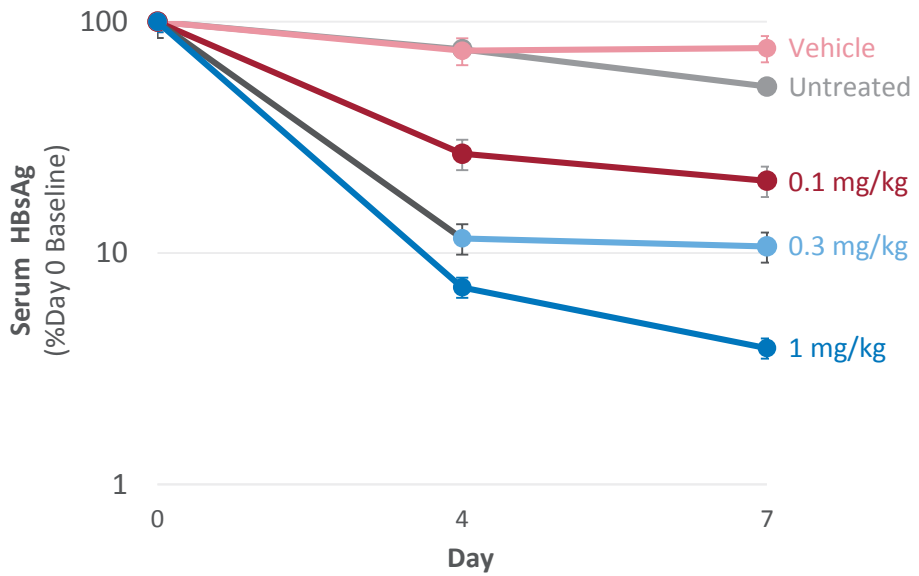
1H 2019: HBV patient monotherapy data

PK: Pharmacokinetics | **IND:** Investigational New Drug | **HV:** Healthy Volunteers

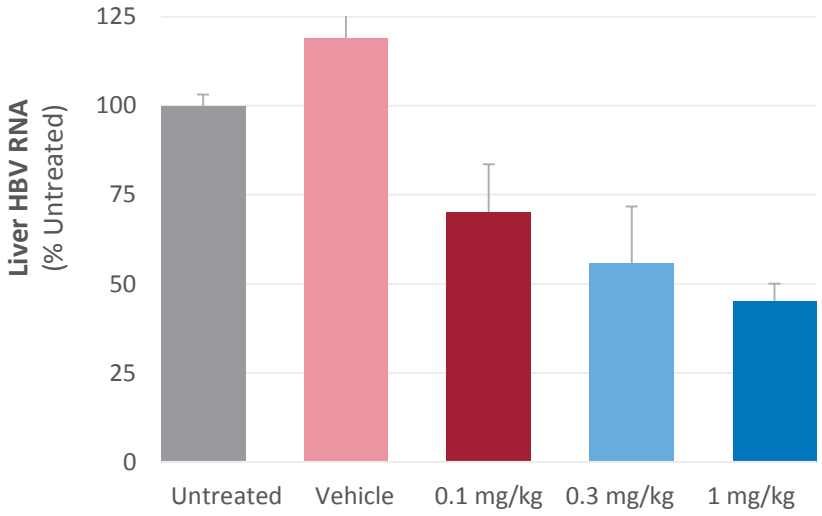
AB-452 Potent Activity Against All HBV RNAs / Antigens

- Targets HBsAg and HBV DNA

DOSE PROPORTIONAL *IN VIVO* IMPACT ON All HBV TRANSCRIPTS



HBsAg

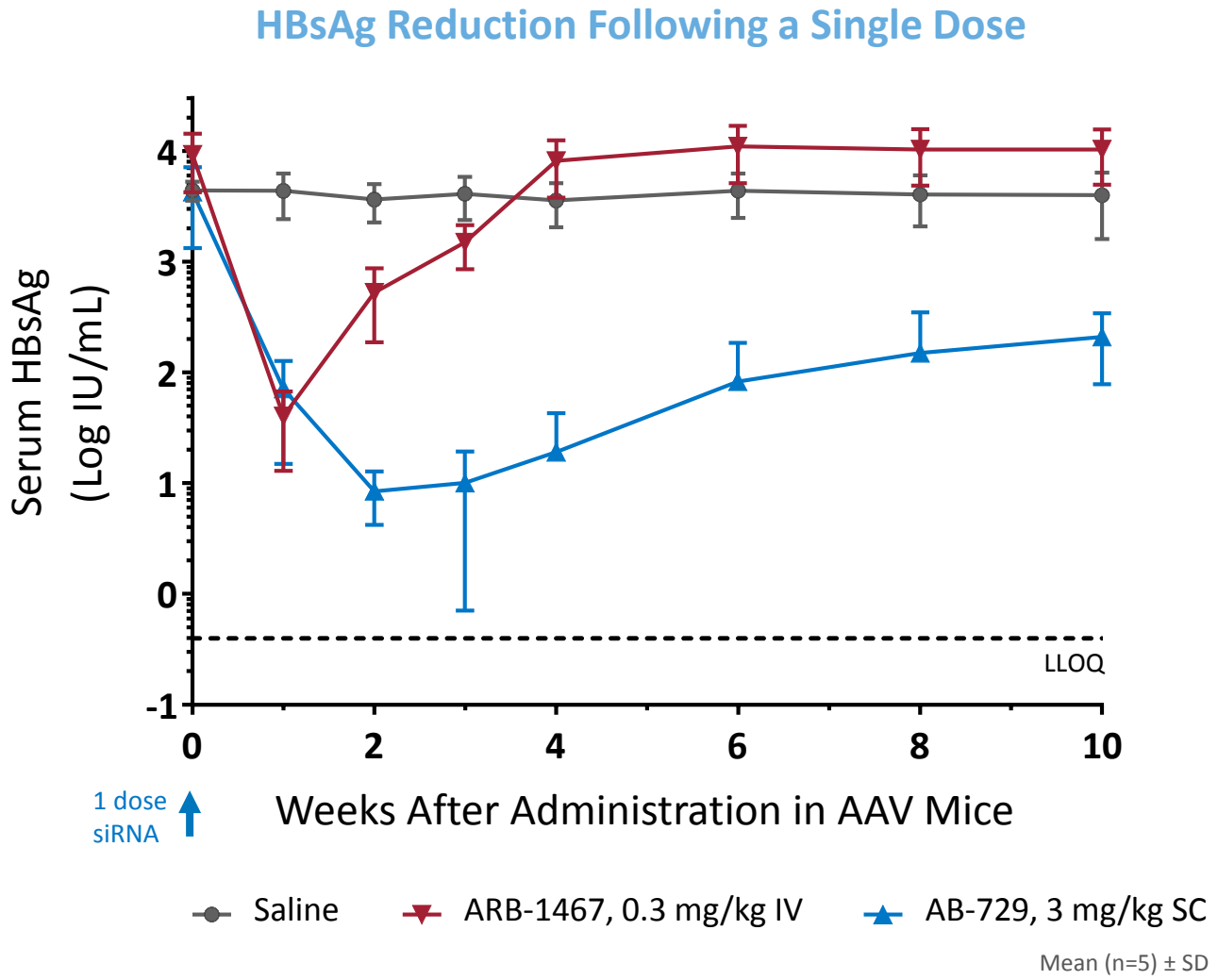


Liver HBV RNA

AAV Mouse Model

AB-729 - 2nd Gen RNAi Agent targeting HBsAg

- RNAi agent for subcutaneous administration
- AB-729 achieves **deeper, more durable** HBsAg reduction with single dose than with ARB-1467
- Complement to AB-452, our small molecule HBsAg inhibitor



AB-729 – Subcutaneous HBsAg targeting agent

Novel RNA interference agent, subcutaneous route of administration

Inhibits HBV replication**, targets all** HBV transcripts, and **reduces all** HBV antigens, including HBsAg

Proprietary GalNAc-conjugate liver targeting technology

Pan-genotypic activity, active against **all HBV genotypes**

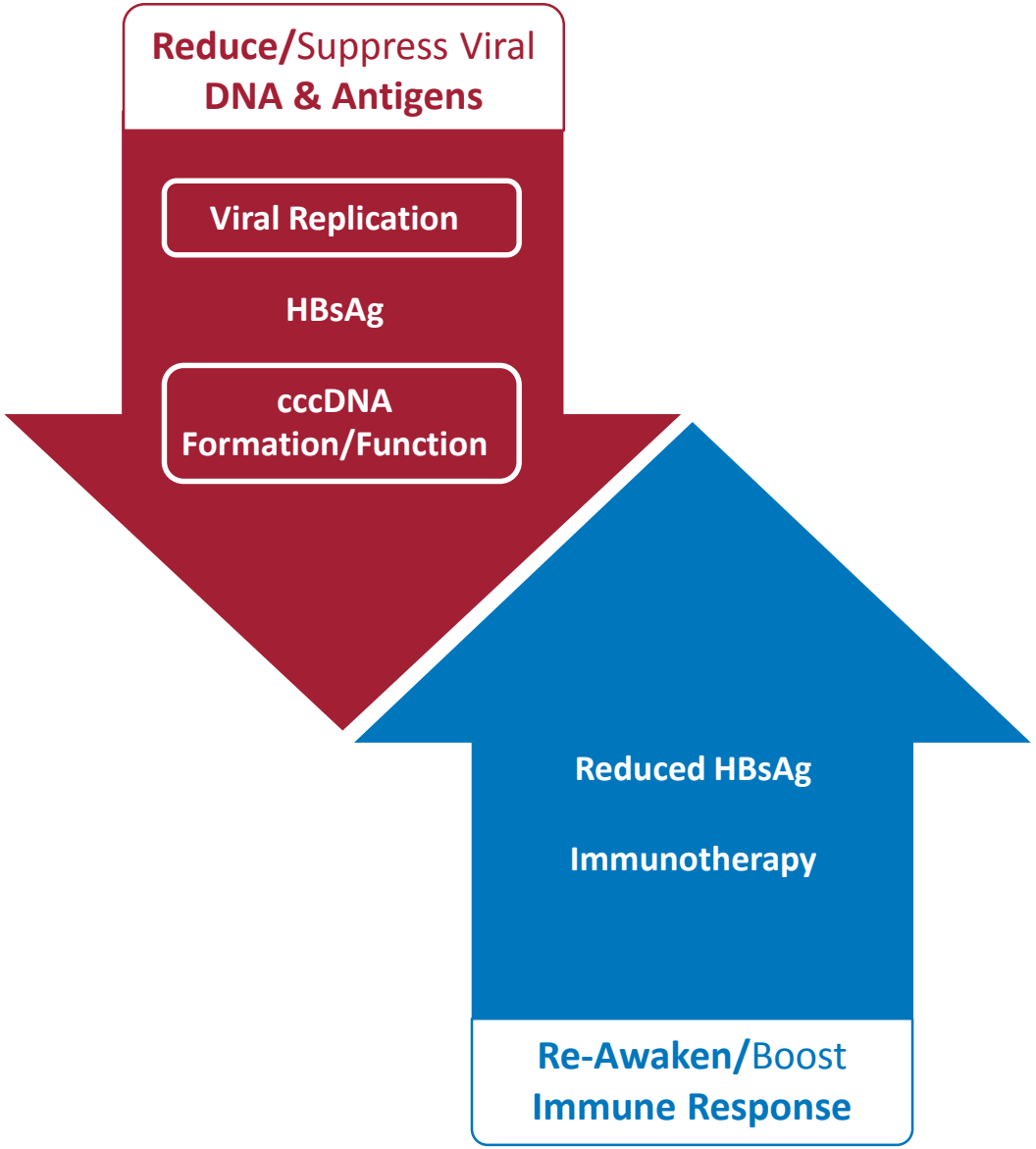
Multi-month duration of HBsAg **reduction after a single subcutaneous dose**

Next Steps:

- IND enabling work underway
- Regulatory filing – 1H 2019
- Phase I/II HV /Pt study 2H 2019

Capsid Inhibitor: Blocking Viral Replication

Driving HBV DNA to undetectable is a key to Therapeutic Success in HBV



Capsid Inhibitors – Dual Action HBV Antiviral Agent

MOA, distinct from but complementary to approved SOC NAs.

Capsid inhibitors are **complementary to 'nucs'**
Combination **drives deeper HBV DNA reductions**

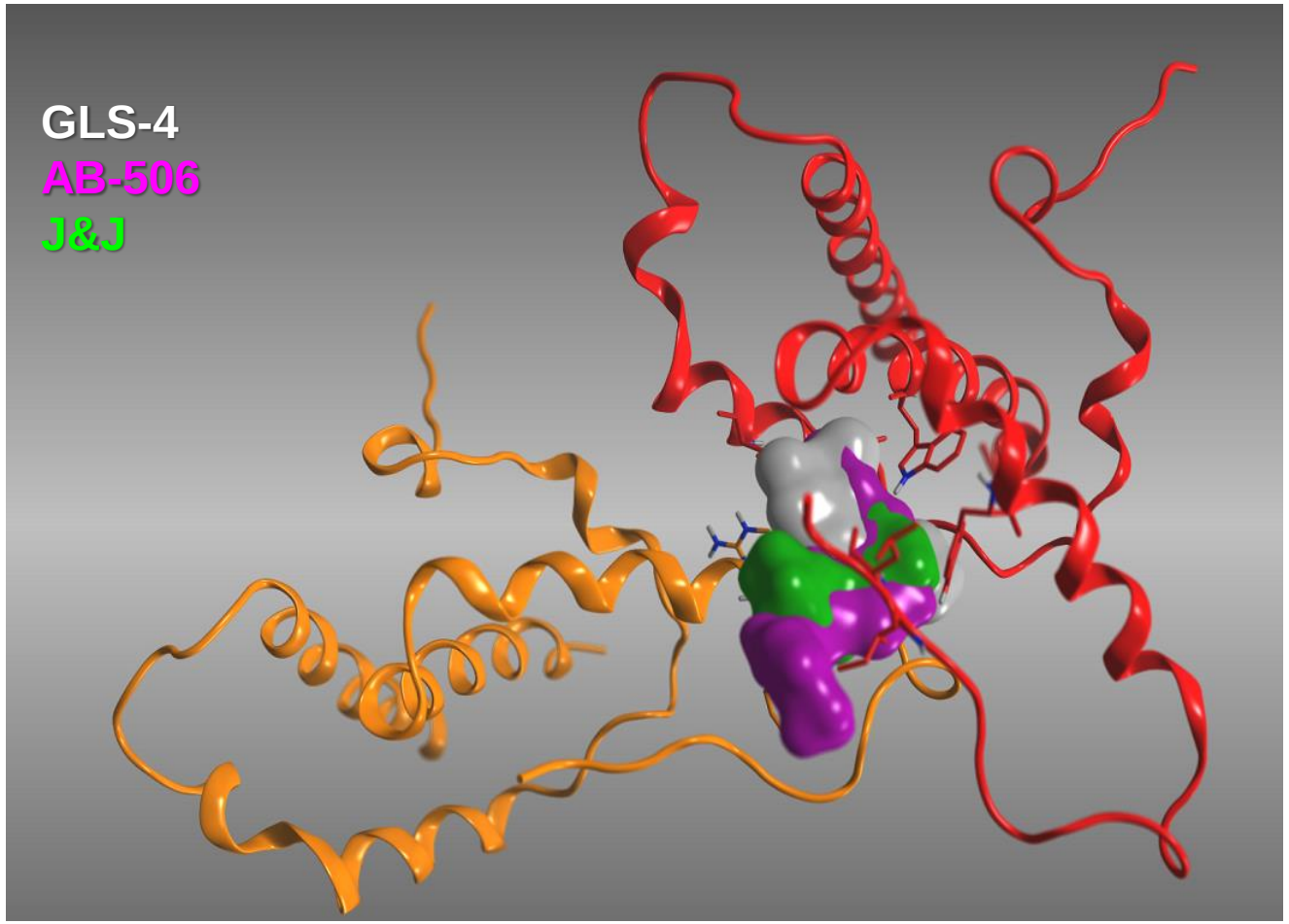
Competitive Landscape

All capsid inhibitors currently in development bind the same site on HBV Core protein

All have a dual MOA:

- **Block DNA replication** by inhibiting Capsid assembly
- **Block new cccDNA formation** by inhibiting viral uncoating
- Similar potency and pk

True differentiation will require combination with other agents – e.g. rapid HBsAg reduction



AB-506 - a Potential 'Best in Class' Capsid Inhibitor

AB-506 shows preclinical PK and potency profile consistent with best in class agents

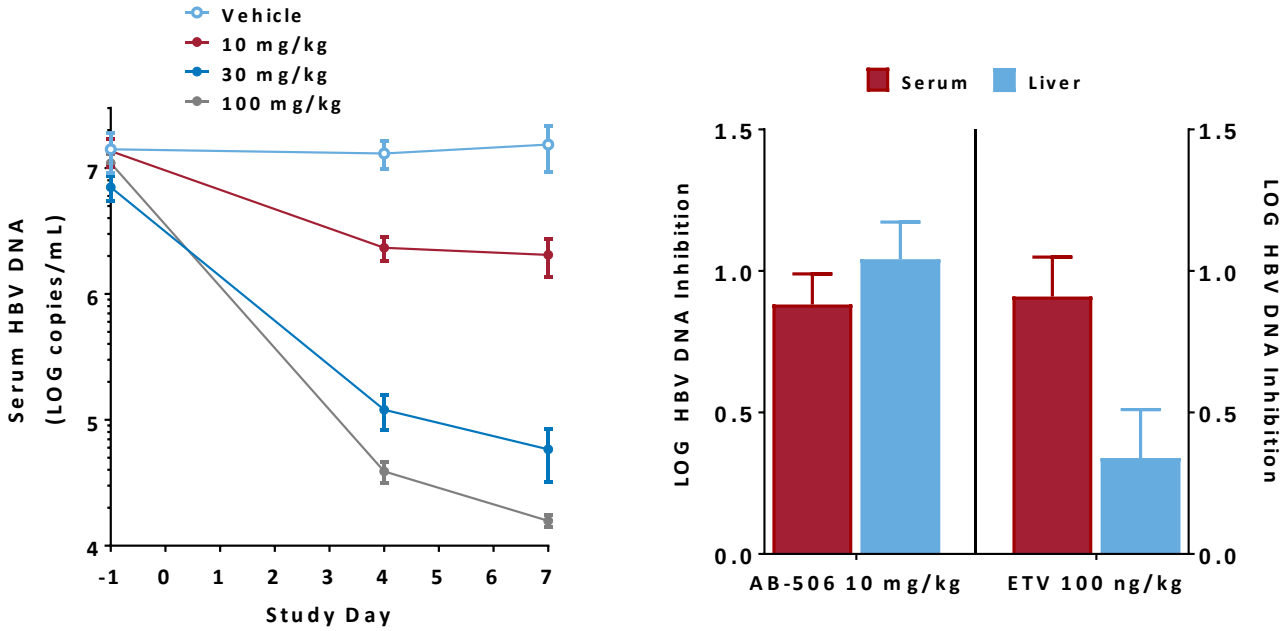
Next generation, **highly selective capsid inhibitor with promising characteristics.**

- Favorable preclinical safety profile
- Active across multiple genotypes
- Opportunity for once daily dosing
- Active against NUC resistant variants
- Additive to synergistic with complimentary mechanisms of action

On track to **advance into clinical development** in mid-2018.

Trajectory for inclusion in multi-drug combination regimen for HBV 2H 2019.

AB-506 Potently Reduces HBV DNA in Serum and Inhibits Liver HBV DNA better than ETV

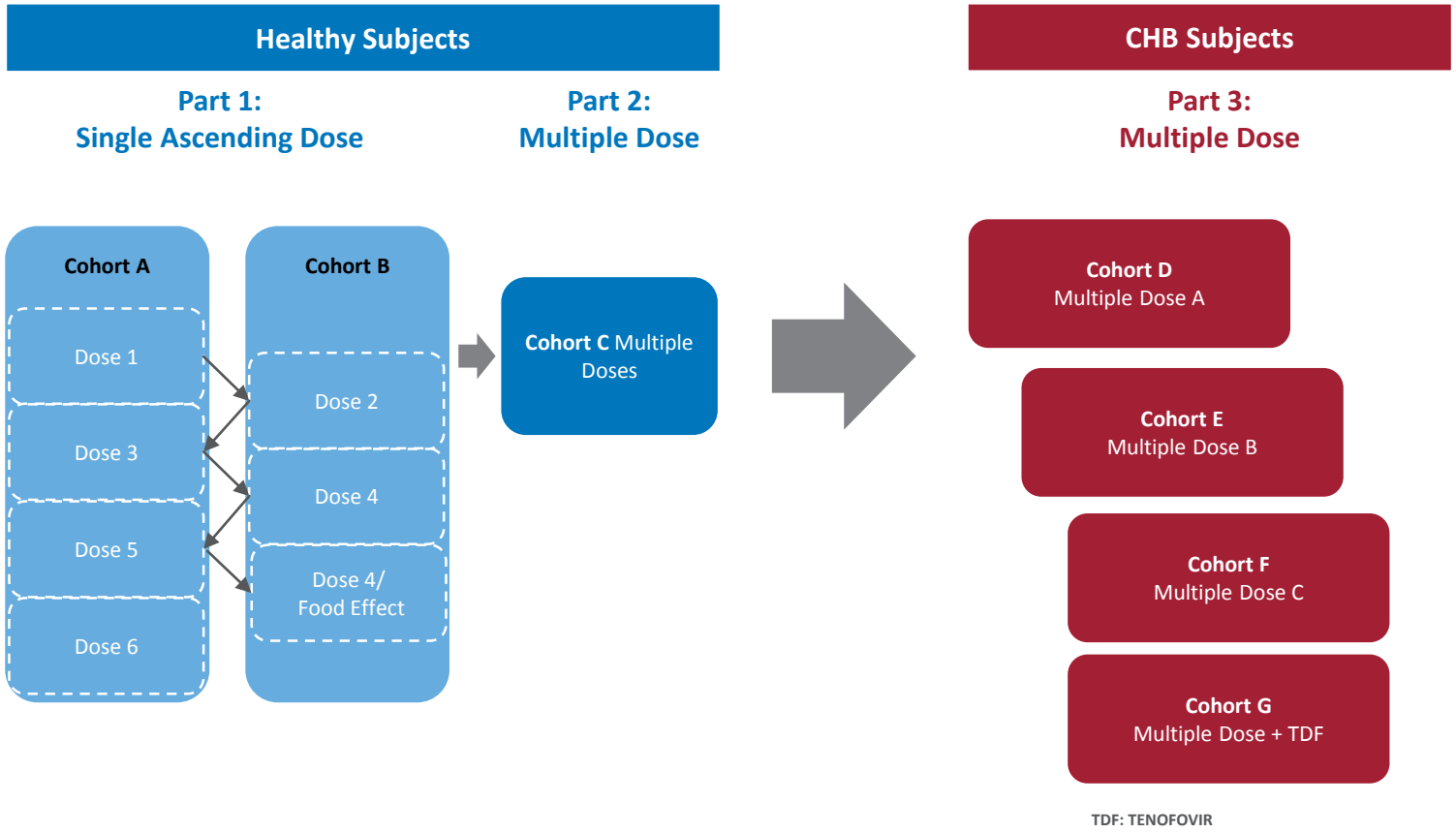


In vivo antiviral activity of AB-506. A) Reduction in serum HBV DNA is dose responsive following AB-506 administration. B) AB-506 surpassed ETV at inhibiting liver HBV DNA, at dosages where the serum HBV DNA inhibition was equivalent (data relative to vehicle at Day 7)

AB-506 Innovative First-in-Human Study Design

- Healthy Volunteers and HBV patients
- Randomized, blinded, placebo controlled
- Single umbrella protocol
- HA approval obtained
- FPFD today

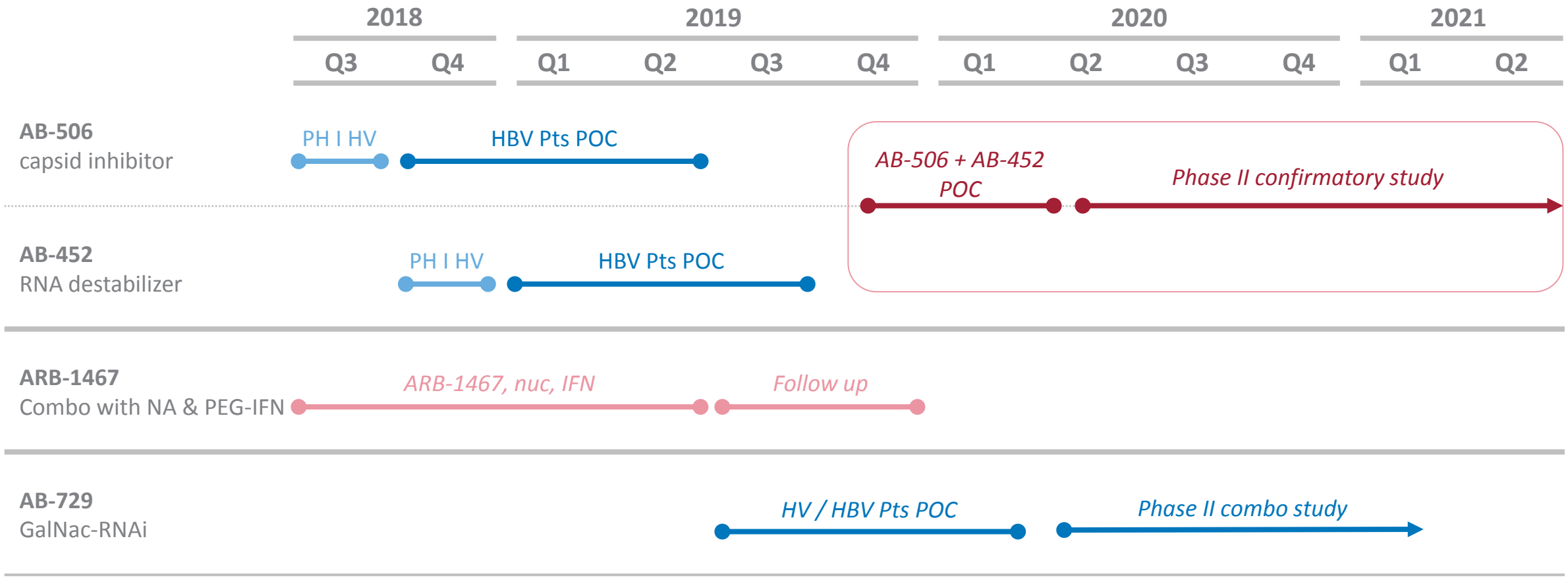
'Pharmasset – style' adaptive design



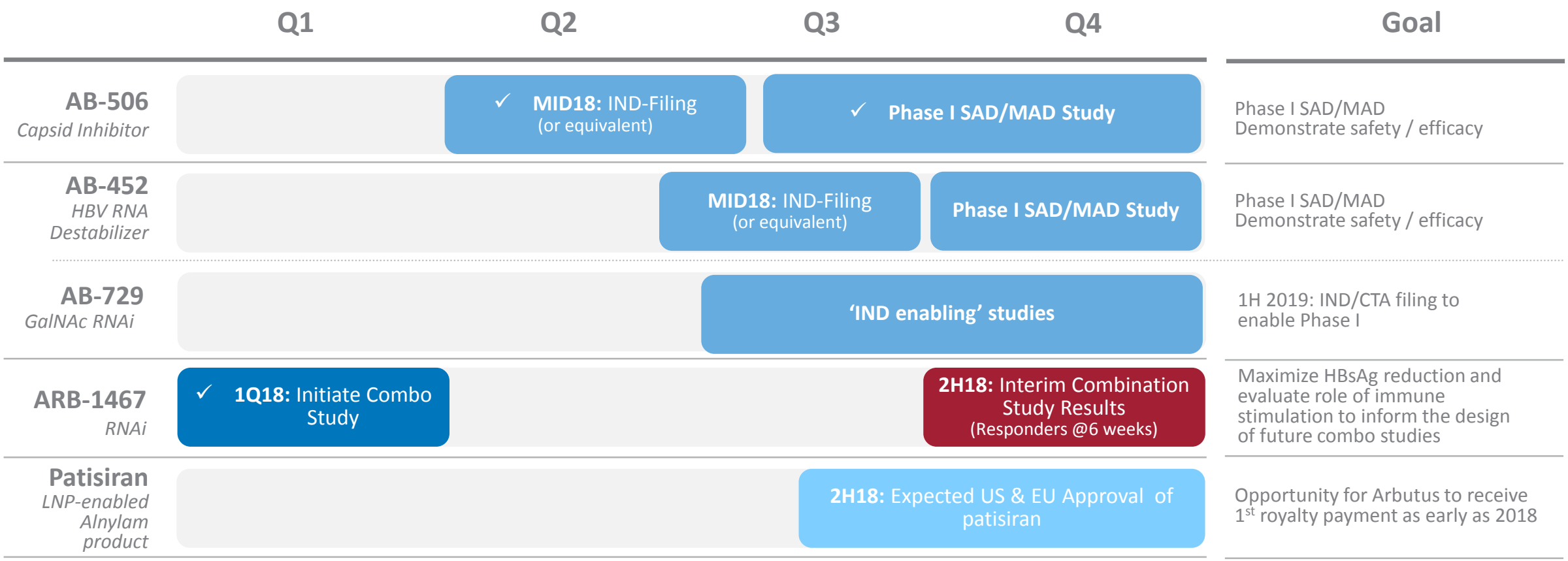
TDF: TENOFOVIR

Path to an **Oral Combination Cure**

Drive to undetectable HBV DNA and HBsAg



Upcoming **2018 Milestones**



TDF: Tenofovir | **PegIFN:** Pegylated Interferon | **SAD:** Single-Ascending Dose | **MAD:** Multi-Ascending Dose | **IND:** Investigational New Drug

Arbutus' **Investment Highlights**

Singular therapeutic focus - curing chronic Hepatitis B Virus (HBV)

Focus on **Chronic HBV**

A significant global unmet medical need, including NA and Europe

Global HBV prevalence **double that of HCV**, offering an even larger market opportunity.

Proven **Leadership** Team

Team with antiviral expertise that resulted in HCV blockbuster cure

Applying knowledge gained from **HCV success** to find HBV cure through drug combinations.

Most Robust HBV **Pipeline**

HBV assets generating preclinical and clinical data, poised for clinical combination

Each asset, individually, could complement and **improve cure rates** in combination with SOC.

Strong **Financial** Position

$ 170M cash Q1 extends beyond all oral combo POC

Patisiran royalty represents further non-dilutive **runway extension**

Genevant Creating Value for Arbutus

Arbutus is a principle owner of new RNA therapeutics company

LNP and conjugate delivery technologies supporting multiple **RNA therapeutics**

HCV: Hepatitis C Virus | **SOC:** Standard Of Care | **LNP:** Lipid Nanoparticle