Advancing Life-Changing Therapies for Patients with Serious Diseases

November 2026

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Assembly Bio
Pipeline, People & Partner: Setting the Stage for Success



PIPELINE INCLUDES MULTIPLE CLINICAL STAGE INVESTIGATIONAL THERAPIES

- Focused on areas with high unmet medical need and significant market opportunity
- Portfolio entering Phase 2, with first study underway and two additional studies initiating through early 2027



EXPERIENCED LEADERSHIP AND R&D ORGANIZATION

- R&D team with over 15 approved drugs in viral and liver diseases



INDUSTRY LEADING PARTNER IN GILEAD

- Collaboration brings together the teams' expertise in virology and provides funding opportunities and an established partner for late-stage development and commercialization

Developing Differentiated Approaches for Treating Serious Diseases

Program	Indication	Mechanism	Preclinical	IND/CTA enabling	Phase 1	Phase 2	Partner
ABI-6250	Hepatitis D	NTCP inhibitor					Gilead opt-in rights
	PBC and PSC						
ABI-7272	Transplant associated herpesviruses	NNPI					Gilead opt-in rights
ABI-8914	Respiratory virus	Undisclosed					Gilead opt-in rights
Undisclosed	Research programs against multiple targets						Gilead opt-in rights
Partner Directed – GS-1179 selected to advance							
GS-1179	Herpes simplex virus	Long-acting HPI					GILEAD *ASMB: 40% U.S. profit/cost share*
GS-5366							
Exploring Partnering Opportunities							
ABI-4334	Hepatitis B	Next-generation CAM					

PBC: Primary Biliary Cholangitis; PSC: Primary Sclerosing Cholangitis; NTCP: Sodium taurocholate cotransporting polypeptide; CAM: Capsid assembly modulator; NNPI: Non-nucleoside polymerase inhibitor; HPI: Helicase-primase inhibitor

Projected Clinical Milestones and Data Readouts

LIVER DISEASES

Phase 2 initiated **4Q 2026**

Data expected **4Q 2027**

ABI-6250

HDV
NTCP inhibitor

ABI-6250

PBC/PSC
NTCP inhibitor

Phase 2 initiation expected **1Q 2027**

Data expected **1H 2028**

HERPES SIMPLEX VIRUS

GS-1179

Long-acting helicase-primase inhibitor

Advancing under collaboration with Gilead with Phase 2 initiation in recurrent genital herpes expected **4Q 2026**

Cash Runway into 2029 – backed by a ~$314.3M cash position as of September 30, 2026, plus $75M Gilead collaboration extension payment received Q4 2026

HSV: Herpes simplex virus; HDV: Hepatitis D virus; PBC: Primary Biliary Cholangitis; PSC: Primary Sclerosing Cholangitis; NTCP: Sodium taurocholate cotransporting polypeptide

Gilead Collaboration

KEY MILESTONES ACHIEVED TO DATE



STATUS TODAY

- **Gilead exercised its option on the HSV HPI program in Dec 2025** and controls its development and commercialization
- **Assembly Bio elected the 40% U.S. Profit-Share** for HSV HPI program in Sept 2026
- **Assembly Bio leads R&D on its other programs** until Gilead's option exercise

OPTION STRUCTURE

- **Standard option:** Gilead may exercise through a specified Phase 1 study for a $45M fee, or pay a $25M deferral fee to retain the option through a specified Phase 2 study for an additional $75M
- **ABI-6250:** amended Dec 2024 to a single exercise period through Phase 2, with a $90M fee upon exercise
- **Assembly Bio option:** share 40% of U.S. costs and profits on exercised programs, plus co-promotion option on future programs not identified at original signing

ECONOMICS

$75M EXTENSION PAYMENTS



- **Up to ~$330M milestones** per program; up to ~$280M with the 40% U.S. Profit-Share
- **Royalties:** high single-digits to high-teens, depending on timing of option exercise

HSV: high single-digits to low teens ex-U.S.

GILEAD
Creating Possible

HSV: Herpes simplex virus; HPI: Helicase-primase inhibitor

GS-1179 (formerly ABI-1179)

Long-Acting HSV Helicase-Primase Inhibitor (HPI) for Recurrent Genital Herpes

Phase 1b completed

Phase 2 initiation anticipated by year-end 2026

Genital Herpes is a Serious Condition that Impacts Millions of Individuals in the US/EU

MILLIONS AFFECTED IN US/EU5



4M+
recurrent (3+/yr) genital herpes [1,2]

8M+
diagnosed with genital herpes[3]

60M+
people living with HSV-2[4,5]

SERIOUS HEALTH IMPACTS

PROLONGED PAIN AND SYMPTOMS
Painful lesions, lymphadenopathy and urinary problems that can persist 2-3 weeks[6]

FREQUENT RECURRENCES
Most people with an initial symptomatic genital HSV-2 infection experience frequent recurrences (3-15 times in a year)[1,2]

PSYCHOSOCIAL IMPACT
Significant impairment to quality of life through anxiety, concerns about transmission, depression, and social stigma[7]

INCREASED RISK OF HIV ACQUISITION
30% of incident HIV infections acquired via sexual transmission attributable to HSV-2 infection[8]

1 .Benedetti et al. 1994 ; 2. Benedetti et al. 1999; 3.Fanfair et al. Sex Transm Dis. 2013; 4. McQuillan et al. NCHS Data Brief. 2018;
5. Alareeki et al. The Lancet Regional Health, 2022; 6. Corey et al Amer. Coll. Phys. 1983; 7. Catotti et al. Sex Transm. Dis. 1993; 8. Looker et al Lancet Inf Dis. 2020

HSV-2: herpes simplex virus type 2, cause of majority of recurrent genital herpes cases

Recurrent Genital Herpes: Urgent Need for Innovative Therapies

CURRENT STANDARD OF CARE

- Daily chronic suppressive therapy with viral polymerase inhibitors (e.g., acyclovir, valacyclovir)
- Only one new therapy approved in 25+ years, and only for the treatment of acyclovir-resistant HSV in immunocompromised adults
- Wide treatment pattern variability seen in claims data[4]

LIMITED EFFICACY



Only 1/3 with frequent outbreaks achieve recurrence prevention[1]

HIGH TRANSMISSION



Less than 50% transmission reduction[2]

HIGH PILL BURDEN



Lifelong daily treatment: Up to 1 gram, 1-3x/day [1,3]

TREATMENT VARIABILITY



Many seeking care may not receive suppressive therapy consistently [4]

GS-1179: INNOVATIVE POTENTIAL

- **Superior efficacy**
  Targeting superior efficacy to SOC; much greater potency demonstrated preclinically
- **Long-acting**
  Evaluating weekly oral dosing, with the goal of improving efficacy, adherence, and clinical outcomes
- **>$2 billion**
  Market opportunity for recurrent genital herpes for profile of weekly dosing with superior efficacy to SOC

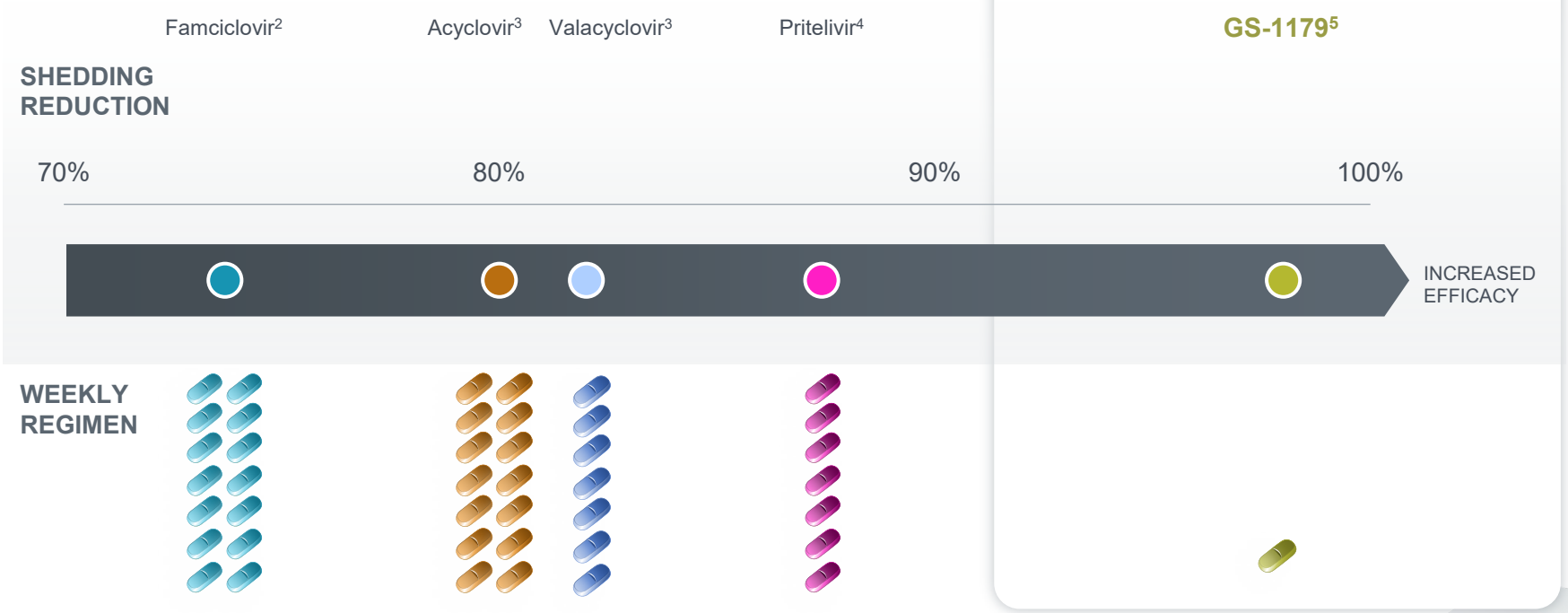
Additional opportunities: Combination strategies with HIV pre-exposure prophylaxis (PrEP), transmission prevention, patients currently treated episodically, oro-facial herpes, injectable formulations

THERE IS AN URGENT NEED FOR INNOVATIVE THERAPIES that offer improved efficacy and greater convenience

1. Valtrex (Valacyclovir) US package insert; Recurrence free for a year on treatment in patients with 6 or more annual recurrences; does not include discontinued, withdrawn, or lost in follow-up;
2. Corey, et al. NEJM, 2004; 3. Physician interviews commissioned by Assembly Bio ; 4. Liu, et al. ESCMID, 2025

SOC: Standard of Care

GS-1179 Phase 1b Efficacy:
Comparisons to Historical Placebo-Controlled Phase 1b Studies[1]

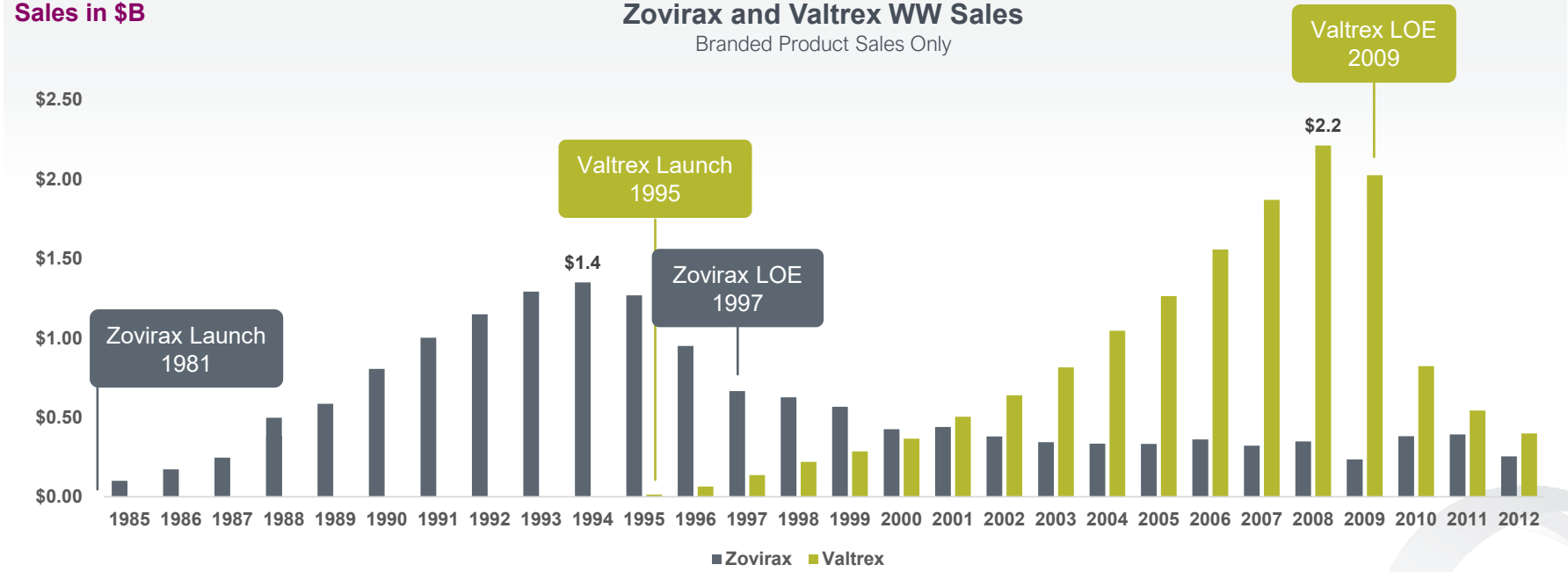


Note: Length of evaluation of studies differs by compound. Famciclovir=14 days, Acyclovir/Valacyclovir=42 days, Pritelivir/GS-1179=29 days

1. Not head-to-head studies; 2. Leone P et al. Sexually Transmitted Diseases, 34 (11), 2007; 3. Gupta et al. JID 190, 2004; 4. Wald A et al. NEJM 370 (3) 2014; 5. Edwards, et.al. IDWeek, 2026

Valtrex Launch in HSV Shows the Market Potential of a Novel, Longer-Acting Medicine

VALTREX TOOK CONSIDERABLE SHARE OVER TIME DESPITE GENERIC ACYCLOVIR AS CONVENIENCE AND ACCEPTANCE OF CHRONIC THERAPY DROVE ADOPTION



EvaluatePharma worldwide branded product sales for Zovirax (acyclovir) and Valtrex (valacyclovir) from 1985 to 2012.

Executive Summary:
GS-1179 Showed Strong Phase 1b Antiviral Activity

PHASE 1B TRIAL GOALS

- **80 to 85% reduction** in HSV-2 shedding vs placebo
- **Significant reduction** in high viral load swabs[1]
- **Directional reduction** in genital lesions
- **Clean safety profile**

GS-1179 COHORT B1 (50 MG, QW) RESULTS

- **97% reduction** in HSV-2 shedding (p=0.002)
- **100% reduction** in high viral load swabs
- **92% reduction in virologically confirmed[2]** genital lesions (p=0.004)
- **No safety signals identified** to date
  - Chronic toxicology studies underway

Edwards, et al. IDWeek, 2026.
1. Surrogate for HSV-2 transmission; Schiffer JT et al. J.R.Soc.Interface 11, 2014; 2. Virologically confirmed lesions include lesions with any positive HSV-2 swab taken during the duration of the lesion.
QW: weekly.

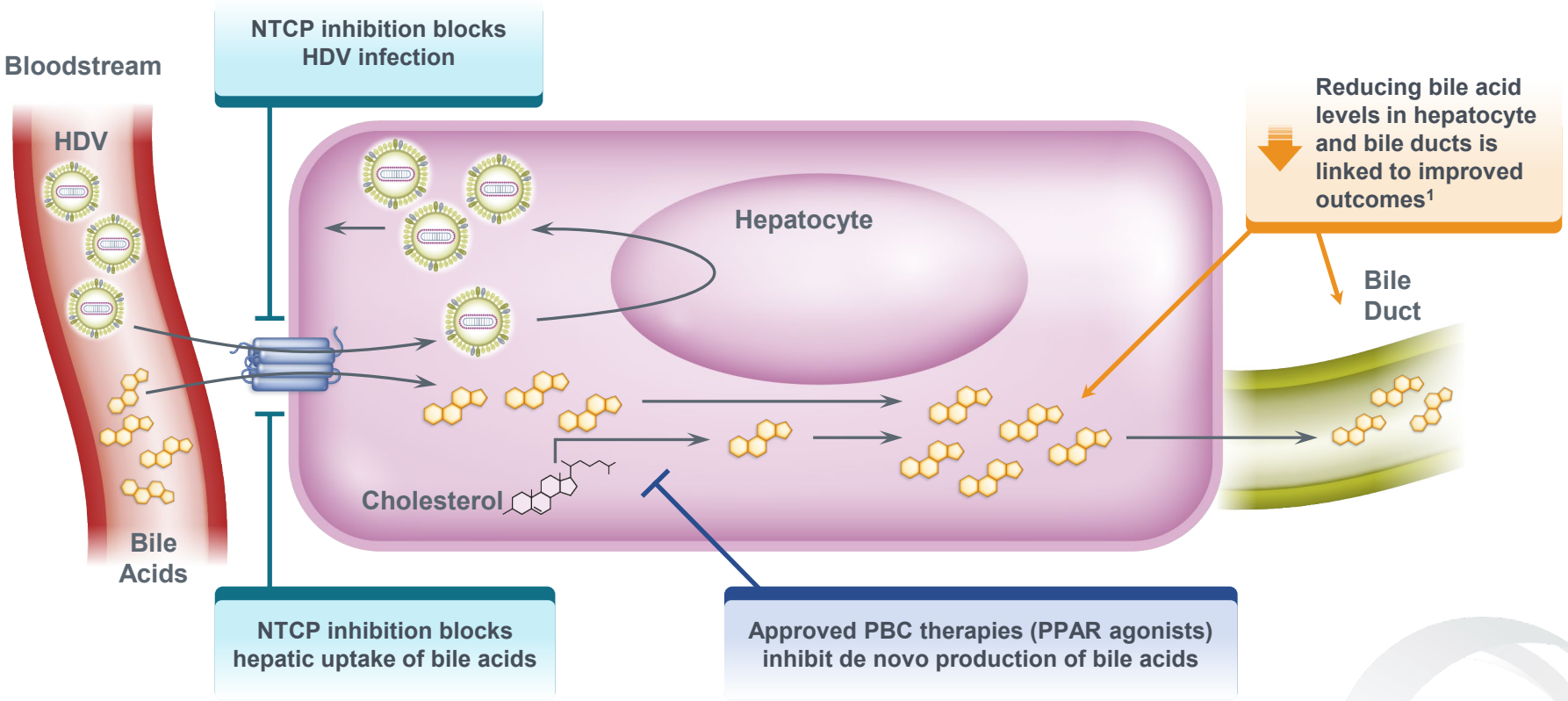
ABI-6250

Oral NTCP Inhibitor for Hepatitis D and Cholestatic Liver Diseases (CLD)

Phase 2 initiated in HDV 4Q 2026

Phase 2 initiation in PBC/PSC anticipated 1Q 2027

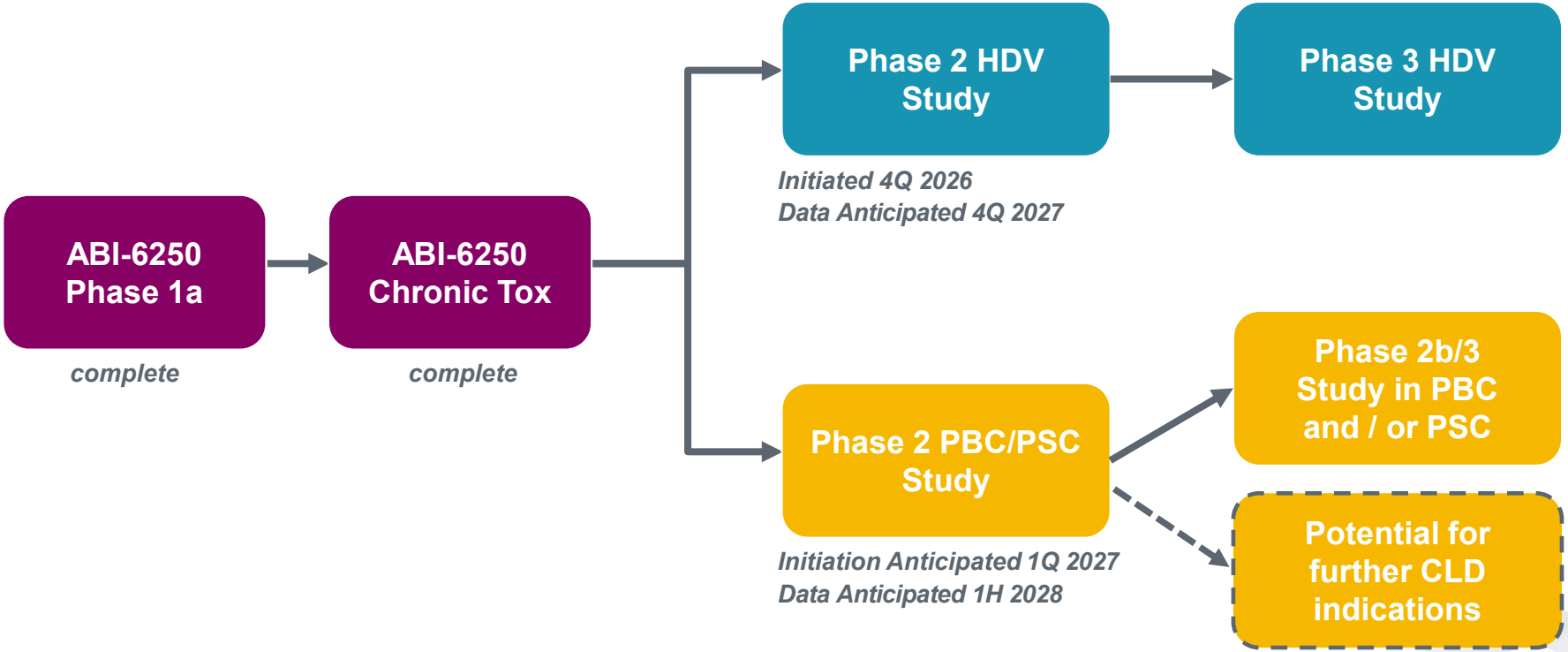
NTCP: A Shared Target Across HDV and CLD



1. Hirschfeld GM et al. NEJM 390 (9) 2024; Levy C et al. J. Hep 84, 2026

NTCP: sodium taurocholate cotransporting polypeptide; PBC: primary biliary cholangitis; PPAR: Peroxisome Proliferator-Activated Receptor

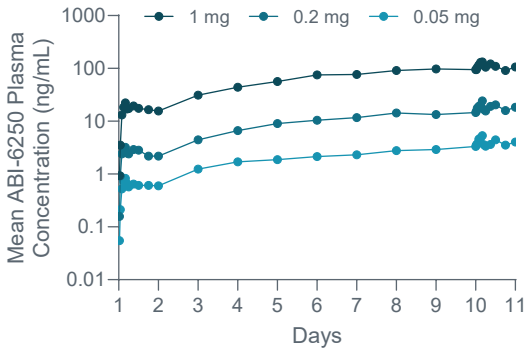
ABI-6250 Overall Strategy:
Parallel Development Strategy Across HDV and CLD



HDV: Hepatitis D virus; CLD: Cholestatic liver diseases; PBC: Primary Biliary Cholangitis; PSC: Primary Sclerosing Cholangitis

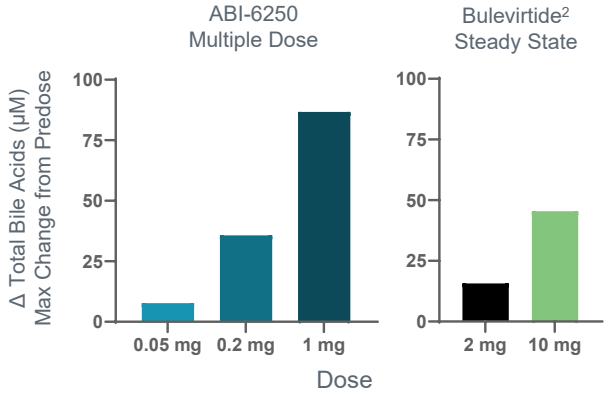
ABI-6250 Shows PK/PD/Safety in Phase 1a to Support Phase 2

Pharmacokinetics[1]



- Half-life estimate of 4 days
- ~7-fold accumulation with repeated oral daily dosing

Pharmacodynamics[1]



- Dose dependent increase in serum bile acids
- Fold increase in bile acids matched or exceeded those by bulevirtide (BLV)

Safety

- Well tolerated, no serious TEAEs or deaths, no AEs of pruritis observed
- Grade 1-2 ALT elevations observed at similar frequency across all dosing levels, including in placebo subjects
  - Similar findings observed in early BLV studies
- Chronic toxicology studies complete

1. Adapted from Gane et al. EASL 2026;
2. BLV is approved at a 2 mg once-daily dose in the EU, AU and Canada and 8.5mg in the US. The 10 mg dose has been evaluated in clinical studies but is not an approved dose in any jurisdiction

ABI-6250: Oral Hepatitis D Virus Entry Inhibitor

Phase 2 initiated Q4 2026

Chronic HDV is a Serious Life-Threatening Disease and Major Unmet Need with Limited Treatment Options



12 million

PEOPLE ESTIMATED TO BE CHRONICALLY INFECTED WITH HDV GLOBALLY[1, 2]

Considered the most severe form of chronic viral hepatitis, with more rapid progression to liver cancer and liver-related death



Very limited treatment options

BULEVIRTIDE, LARGE MOLECULE ENTRY INHIBITOR, ONLY APPROVED DRUG (EU, AU, and Canada; US approved 2026)[3]

Shown to be safe and highly effective in long-term clinical trials, but requires daily injection and cold storage



ABI-6250, an opportunity to simplify treatment

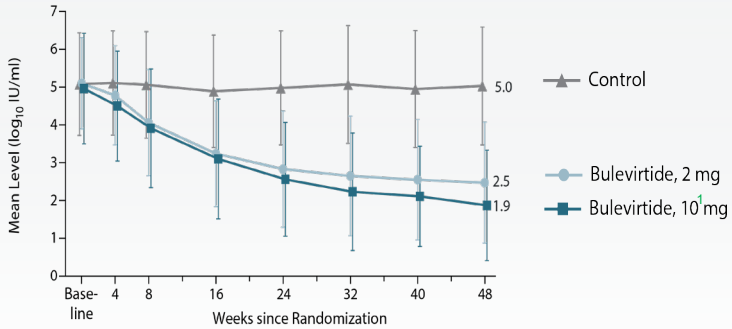
SMALL MOLECULE TARGETING SAME MECHANISM AS BULEVIRTIDE

An oral treatment is expected to further enhance treatment uptake and diagnosis rates

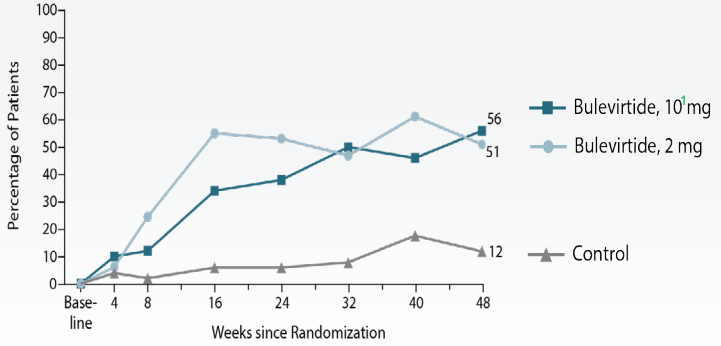
1. WHO 2026. 2. Only ~20–50% of people with HDV have been diagnosed (Negro & Lok, JAMA 2023). 3. Gilead HDV product sales for Hepcludex (bulevirtide): ~$206M over the trailing twelve months through Q3 2026; $53M in Q3 2026 (Gilead Q3 2026 earnings presentation).

Inhibition of HDV Entry by Blocking NTCP is Clinically Validated to Lower Viral Load and Normalize ALT

Viral Load Reductions



ALT Normalization

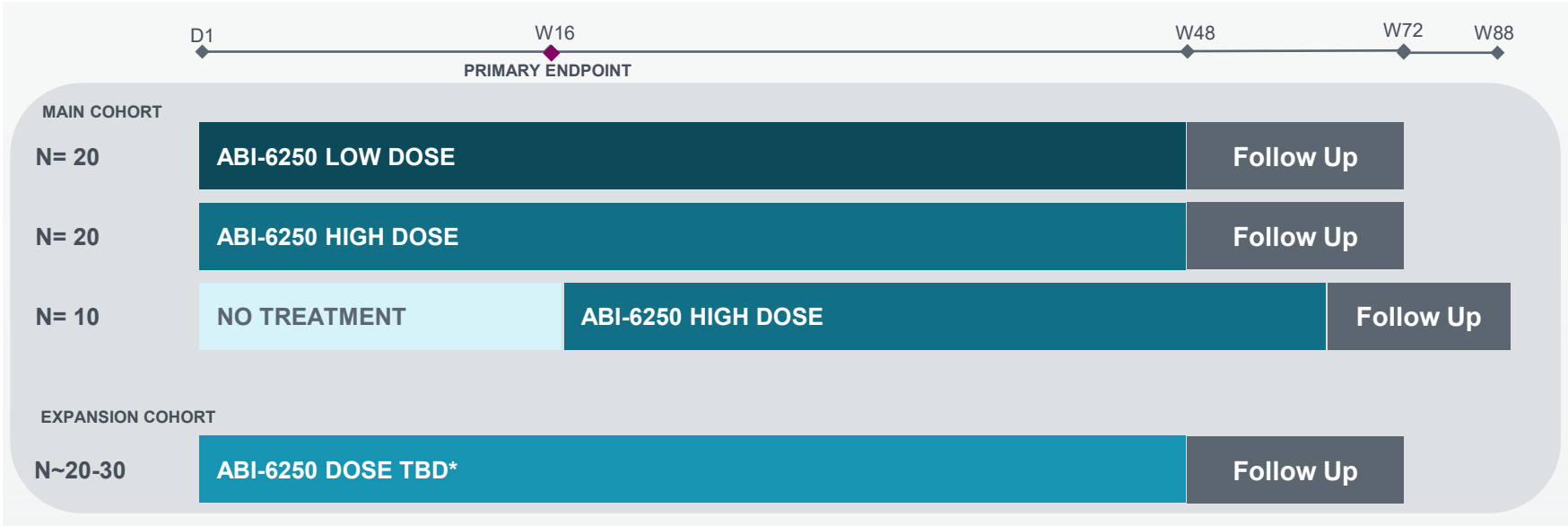


Wedemeyer et al., NEJM 2023; 2. Windisch et al. EASL ILC 2025 | ALT: alanine transaminase; NTCP: Sodium taurocholate cotransporting polypeptide

1. BLV is approved at a 2 mg once-daily dose in the EU, AU and Canada and 8.5mg in the US. The 10 mg dose has been evaluated in clinical studies but is not an approved dose in any jurisdiction

ABI-6250 HDV Phase 2 Design

STUDY INITIATED IN 4Q26



TRIAL CHARACTERISTICS

- Open-label
- Expansion cohort for additional safety data to support Phase 3
- Key efficacy endpoints of HDV RNA change from baseline and ALT change from baseline

*Dose selection for expansion cohort to occur following primary endpoint analysis of the main cohort at Week 16

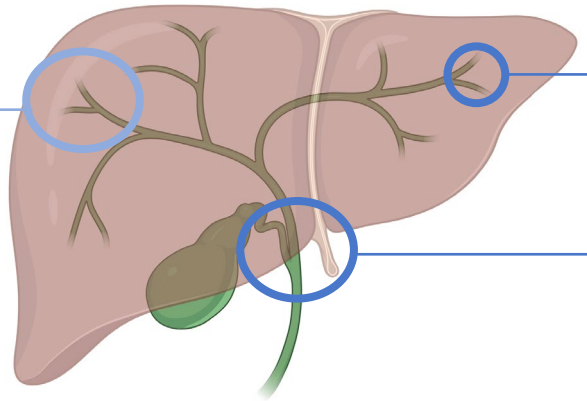
ABI-6250: Expanding Beyond HDV into Cholestatic Liver Diseases (CLD)

Phase 2 initiation anticipated Q1 2027

PBC and PSC Share a Common Pathology of Bile Acid Accumulation and Progressive Liver Injury

PBC

- Affects intrahepatic bile ducts



PSC

- Affects intrahepatic and extrahepatic bile ducts

	PBC	PSC
Associated Conditions	Sjogren's Syndrome	Inflammatory Bowel Disease
Complications	Cirrhosis, hepatocellular carcinoma	Cirrhosis, Cholangiocarcinoma, Cholangitis
Treatments	1st Line: Ursodeoxycholic Acid 2nd Line: PPAR agonist	No medical treatments available Disease progression may require liver transplant

PBC: Primary Biliary Cholangitis; PSC: Primary Sclerosing Cholangitis; PPAR: Peroxisome Proliferator-Activated Receptor

ABI-6250 Cholestatic Liver Disease Preliminary Phase 2 Design

Basket Study Design Exploring Efficacy and Safety in PBC and PSC in a Single Protocol



TRIAL CHARACTERISTICS

- Double-blind, placebo controlled
- Sentinel dosing will help select dose(s) for PBC/PSC cohorts
- Key endpoints of biochemical, pruritis and health-related quality of life improvements will be evaluated

ABI-6250 Represents a Multi-Billion-Dollar Opportunity Across PBC and PSC

PBC

~$2B+

U.S. estimated peak-year revenue

POPULATION ~150,000+ diagnosed adults in the U.S.

UNMET NEED ~40% of patients fail 1st line therapy

PSC

~$1B+

U.S. estimated peak-year revenue

POPULATION ~30,000+ diagnosed adults in the U.S.

UNMET NEED No approved therapy
~35% 10-year overall mortality rate in U.S.

Expansion into CLD adds meaningful upside to an established core asset

- Multiple optional pathways: PBC, PSC, both or more
- HDV execution remains unchanged
- Opportunity to generate additional long-term value from a single molecule

Wall Street research; Company filings; AASLD Practice Guidance (Hepatology 2019); Nevens et a., N Eng J Med 2016; Trivedi et al., Gastroenterol Hepatol 2022; Karlsen et al., J Hepatol 2017

ABI-7272:
Oral Broad-Spectrum Non-Nucleoside Polymerase Inhibitor (NNPI) for Transplant-Associated Herpesviruses

IND/CTA-enabling

Multiple Herpesviruses Can Cause Significant Morbidity and Mortality in Immunocompromised Transplant Recipients

95,000 PATIENTS AFFECTED[1]

AMONG TRANSPLANT PATIENTS:



~60% are CMV positive

~60% are HSV positive

~80% are VZV positive

~45% are EBV positive

Lifelong latent infections

FREQUENTLY REACTIVATE DURING IMMUNOSUPPRESSION

Uncontrolled viral replication

AND SEVERE DISEASE DURING REACTIVATION

Risk of graft loss and death

SOC antivirals are:

- **PARTIALLY EFFICACIOUS**
- **NOT BROAD-SPECTRUM**
- **HAVE TOLERABILITY AND DRUG INTERACTION LIMITATIONS**

An oral broad-spectrum herpesvirus antiviral could improve efficacy and greatly simplify treatment

Patel and Paya. Clin. Microbiol. Rev. 1997; Breuer, et al. Mol. Diagn. Ther. 2012; Clark, et al. Semin. Respir. Crit. Car Med. 2013; Haidar and Singh. Curr. Opin. Infect. Dis. 2019; Beyar-Katz et al. Clin. Microbiol. Infect. 2020; Kwon et al. Transp. Infect. Dis. 2021; Wutzler et al. Vaccine 2001; Bauer et al. BMC Infect. Dis. 2010; Reynolds et al. Public Health Rep. 2010; Lanzieri et al. Int. J. Gynaecol. Obstet. 2016; Lachmann et al. PLoS One 2018; Patton et al. Clin. Infect. Dis. 2018; Ayoub et al. BMC Med. 2019; Zuhair et al. Rev. Med. Virol. 2019; Zhang et al. Virol. J. 2022; Marty et al. NEJM 2017; Limaye et al. JAMA 2023; Witzke et al. Transp. 2012; Witzke et al. Transp. 2018; Höcker et al. Clin. Infect. Dis. 2012; Cho et al. Am. J. Clin. Pathol. (2014); Holman et al. Clin. Transplant (2012); Bamoulid et al. Am. J. Transplant. (2013); Verghese et al. Transplant. (2015).

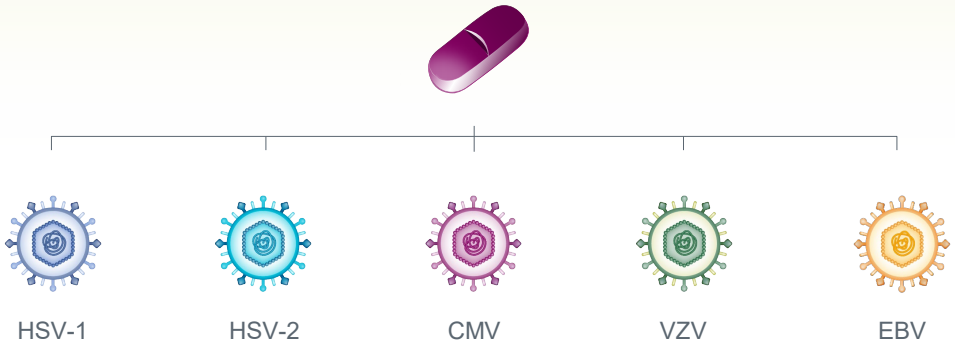
1. EBMT, OPTN, UNOS, and IRODAT (estimate for transplanted-associated herpesvirus reflects US and EU only)

ABI-7272 is Designed to Provide Significant Innovation Over Current Standard of Care

CONSERVED VIRAL POLYMERASES PROVIDE OPPORTUNITY FOR BROAD-SPECTRUM HERPESVIRUS INHIBITION

OPPORTUNITY TO ADVANCE CURRENT STANDARD OF CARE

- Improve efficacy and broaden spectrum of antiviral activity
- Simplify treatment (1 agent to target 5 viruses)
- Improve tolerability and reduce drug-drug interactions



IND/CTA ENABLING
activities ongoing

GLP toxicology studies complete

Nasdaq: ASMB

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