Advancing the Treatment Paradigm for Serious Viral Diseases

March 2026

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The information in this presentation contains forward-looking statements that are subject to certain risks and uncertainties that could cause actual results to materially differ. These risks and uncertainties include: Assembly Bio's ability to realize the potential benefits of its collaboration with Gilead Sciences, Inc. (Gilead), including all financial aspects of the collaboration and equity investments; Assembly Bio's ability to initiate and complete clinical studies involving its therapeutic product candidates, including studies contemplated by Assembly Bio's collaboration with Gilead, in the currently anticipated timeframes or at all; safety and efficacy data from clinical or nonclinical studies may not warrant further development of Assembly Bio's product candidates; clinical and nonclinical data may not differentiate Assembly Bio's product candidates from other companies' candidates; Assembly Bio's ability to maintain financial resources and secure additional funding necessary to continue its research activities, clinical studies, and other business operations; potential effects of changes in government regulation; results of nonclinical studies may not be representative of disease behavior in a clinical setting and may not be predictive of the outcomes of clinical studies; and other risks identified from time to time in Assembly Bio's reports filed with the U.S. Securities and Exchange Commission (the SEC). You are urged to consider statements that include the words may, will, would, could, should, might, believes, hopes, estimates, projects, potential, expects, plans, anticipates, intends, continues, forecast, designed, goal or the negative of those words or other comparable words to be uncertain and forward-looking. Assembly Bio intends such forward-looking statements to be covered by the safe harbor provisions contained in Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. More information about Assembly Bio's risks and uncertainties are more fully detailed under the heading "Risk Factors" in Assembly Bio's filings with the SEC, including its most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Except as required by law, Assembly Bio assumes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

Assembly Bio:
Advancing the Treatment Paradigm for Serious Viral Diseases

4 CLINICAL STAGE INVESTIGATIONAL THERAPIES

- Focused on areas with high unmet medical need and significant market opportunity
- Rapid advancement of portfolio towards multiple clinical readouts

EXPERIENCED LEADERSHIP AND VIROLOGY-FOCUSED R&D ORGANIZATION

- R&D team with over 15 approved drugs in viral disease and hepatitis

INDUSTRY LEADING PARTNER IN GILEAD

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

Differentiated Development Programs Targeting Herpesviruses and Viral Hepatitis

Program	Indication	Mechanism	IND/CTA enabling	Phase 1	Phase 2	Partner
ABI-6250	Hepatitis D	Entry inhibitor				Gilead opt-in rights
ABI-4334	Hepatitis B	Next-generation CAM				
ABI-7272	Transplant-associated herpesviruses	NNPI				Gilead opt-in rights
Undisclosed	Research programs against multiple antiviral targets					Gilead opt-in rights
Partner Directed						
ABI-5366	Recurrent genital herpes	Long acting HPI				GILEAD
ABI-1179	Recurrent genital herpes	Long acting HPI				GILEAD

CAM: Capsid assembly modulator; NNPI: Non-nucleoside polymerase inhibitor; HPI: Helicase-primase inhibitor

Four Clinical Studies with Data Readouts in 2025

RECURRENT GENITAL HERPES

ABI-5366

PHASE 1B
in participants with RGH

ABI-1179

PHASE 1B
in participants with RGH

HSV long-acting helicase-primase inhibitors

Interim data from ABI-5366 released **Q3 2025**

Further interim data from both studies released **Q4 2025**

HEPATITIS B AND D

HBV
next-gen CAM

Data released
JUNE 2025

ABI-4334

PHASE 1B
in participants with chronic HBV

ABI-6250

PHASE 1A
in healthy participants

HDV
entry inhibitor

Interim data released
Q3 2025

CAM: Capsid assembly modulator; RGH: Recurrent genital herpes; HBV: Hepatitis B virus; HDV: Hepatitis D virus; HSV: Herpes simplex virus

Advancing life-changing antiviral medicines

Strong cash position supporting planned clinical development in 2026 + beyond

Recurrent Genital Herpes

- Gilead exercised its option to license ABI-5366 and ABI-1179 after positive interim Phase 1b results reported in 2025
- Assembly received a $35M payment and is eligible for up to ~$330M in milestones plus tiered royalties on net sales
- Assembly may elect to share 40% of costs and profits in lieu of milestones/royalties in the US
- Phase 2 initiation anticipated by end of 2026 under Gilead collaboration

Viral Hepatitis Portfolio

- HDV (ABI-6250): Positive interim Phase 1a data; Phase 2 preparation underway with initiation expected Q4 2026
- HBV (ABI-4334): Favorable Phase 1b safety and antiviral activity; evaluating partnering opportunities

Pipeline Expansion / Strategic & Corporate

- Discovery & early development: Advancing potentially best-in-class small-molecule antivirals to broaden pipeline
- Execution & partnerships: Continued HSV clinical progress and advancement of programs under Gilead collaboration

~$248M cash position[1] supports operations into 2028

1. Cash, cash equivalents, and marketable securities as of December 31, 2025

Gilead Collaboration

OVERVIEW

- Long-term collaboration with Gilead entered into in **October 2023**
- Brings together two teams' knowledge and expertise in antiviral research, clinical development and commercialization
- Gilead holds **option rights** on **all programs** at **end of Phase 1 or Phase 2**
- Assembly may **advance internally or partner externally** programs upon Gilead opt-out

OPTION STRUCTURE

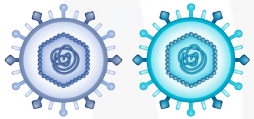
- **Assembly** primarily **responsible** for **R&D before opt-in**
- **Upon opt-in, Gilead leads** all development and commercialization **at its cost**
- **Global milestones and royalties** or **40% U.S. profit/cost share option** and ex-U.S. milestones and royalties

ECONOMICS

- **$100M upfront** received (~$85M cash / ~$15M equity)
- **~$20M additional equity** received at a premium
- ≥ **$45M opt-in fee per program** (depends on stage at opt-in)
- Up to **~$330M milestones per program**
- **Royalties:** high single-digits to high-teens (depends on stage at opt-in)
- Potential for **$75M collaboration extension payments** in years 3/5/7

GILEAD
Creating Possible

ABI-5366 and ABI-1179



Long-Acting HSV Helicase-Primase Inhibitors (HPIs) for Recurrent Genital Herpes

ABI-5366 and ABI-1179 – Phase 1b completed

HPI program licensed to Gilead with Phase 2 initiation anticipated in 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)
- No new therapies approved since 1995[1]
- 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]

ABI-5366 and ABI-1179: INNOVATIVE POTENTIAL

- **Superior efficacy**
  Targeting superior efficacy to SOC; much greater potency demonstrated preclinically
- **Long-acting**
  Evaluating weekly (and for ABI-5366, the potential for monthly) 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: Transmission prevention, patients currently treated episodically, oro-facial herpes, injectable formulations

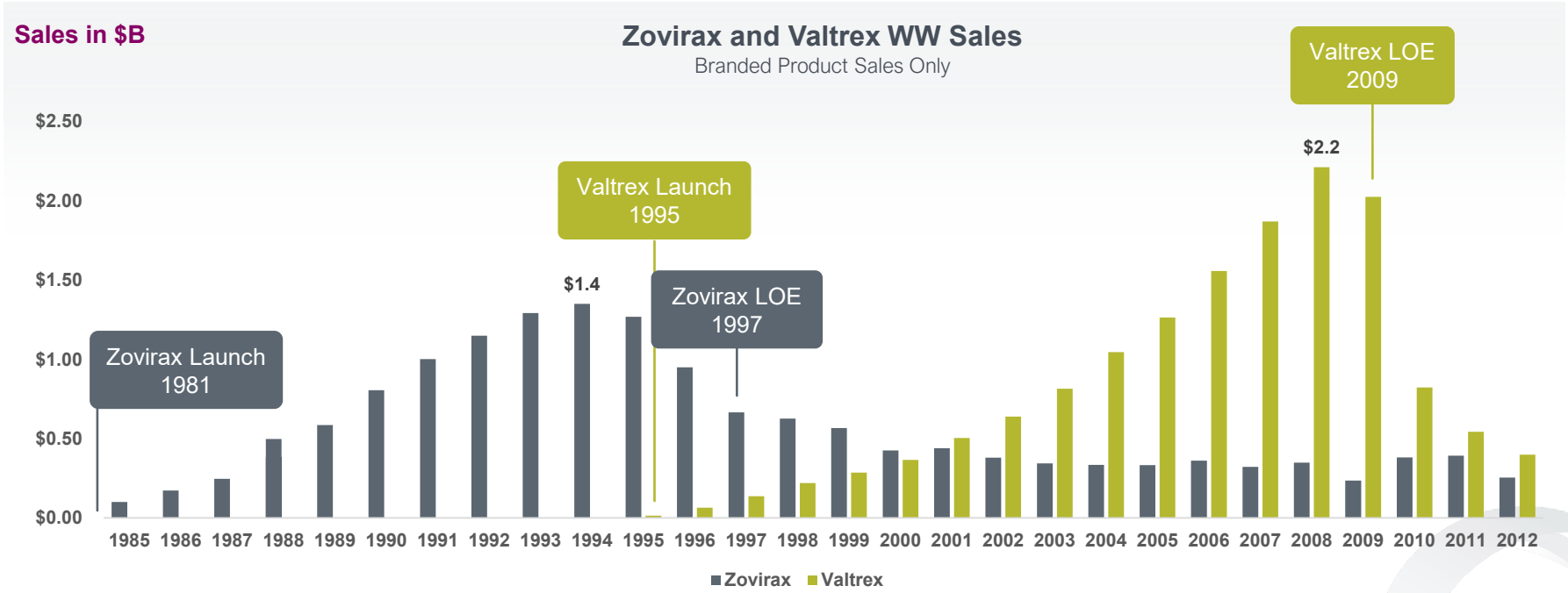
THERE IS AN URGENT NEED FOR INNOVATIVE THERAPIES that offer improved efficacy and greater convenience

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

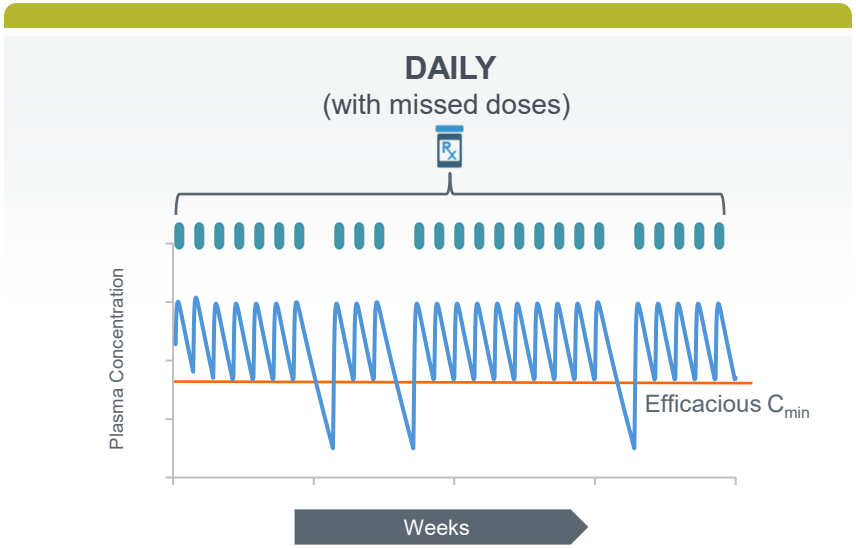
Valtrex Launch in HSV Shows the Market Potential of a Novel, Longer-Acting Medicine

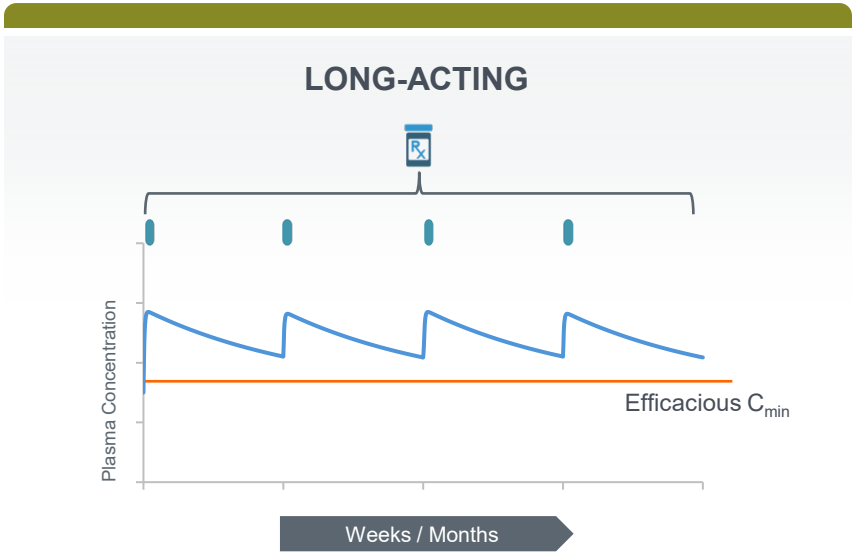
VALTREX TOOK CONSIDERABLE SHARE OVER TIME DESPITE GENERIC ACYCLOVIR AS CONVENIENCE AND ACCEPTANCE OF CHRONIC THERAPY DROVE ADOPTION



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

Long-Acting Therapies Can Improve Uptake, Adherence, and Efficacy





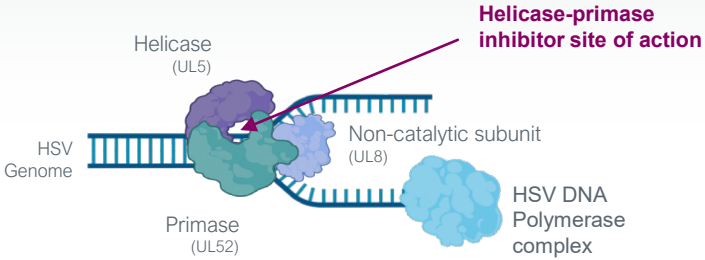
- 72% of HSV patients with recurrent outbreaks prefer suppressive therapy to episodic treatment[1]
- Long-acting therapy ⟶ consistent drug levels, better compliance[2]
  - Medication adherence for chronic illness is only ~50% with stigma, AE anxiety, high dosing frequency being common barriers[3]
  - Superior efficacy shown for long-acting therapy in HIV in individuals with a history of adherence challenges[4]

1. Romanowski, et al. Sex Trans Dis. 2003; 2. Okoli, et al. Mental Health Nurs. 2021; Engel, et al. JAMA. 1990; 3. WHO. Adherence to Long-Term Therapies: Evidence for Action; 4. Rana AI, et al. NEJM 2026

ABI-5366 and ABI-1179:
Two Highly Potent Long-Acting HPIs in Clinical Development

HSV HELICASE-PRIMASE COMPLEX

An essential HSV enzyme complex with no host equivalent



HPI class: Clinically-validated efficacy in RGH

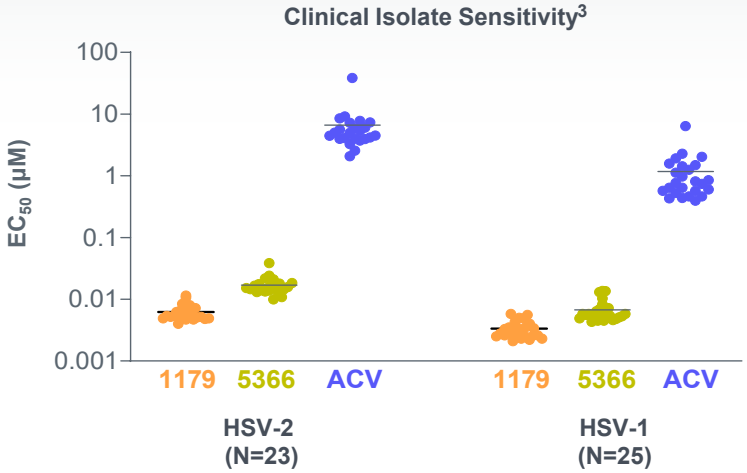
- Pritelivir showed greater reductions in HSV shedding, fewer days with lesions & pain vs. approved SOC in investigational studies[1]

HPI class: Derisked safety profile

- Amenamevir, approved for use in Japan in herpes zoster and for episodic HSV, has treated over 1.2M people[2]

ABI-1179 AND ABI-5366

Highly potent against HSV-1 and HSV-2 in antiviral assays



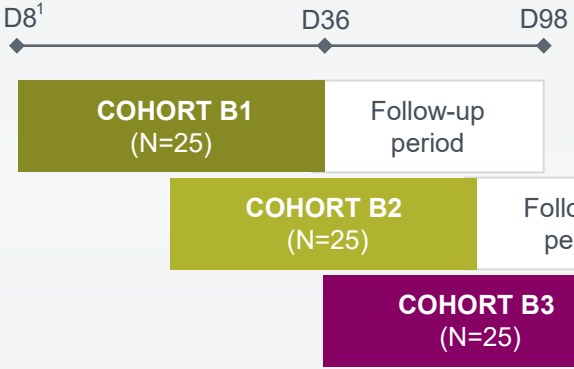
ABI-1179 and ABI-5366
1000- and 400-fold more potent than acyclovir, respectively, against HSV-2 isolates

1. Wald, et al. JAMA 2016; 2. Shiraki, et al. Viruses 2021; 3. Contreras. et al. IHW 2025

ACV, acyclovir; HPI, helicase-primase inhibitor; RGH, recurrent genital herpes; SOC, standard of care

ABI-5366-101 Phase 1b Study Design

- **Double-blind, placebo-controlled sequential cohorts**
- **All participants seropositive for HSV-2 with recurrent genital herpes**
- **Each cohort with 20 patients receiving ABI-5366 and 5 patients receiving placebo**



COHORT	REGIMEN	LOADING DOSE	WEEKLY DOSE
B1	Weekly	150 mg	30 mg
B2	Weekly	350 mg	350 mg
B3	Monthly	350 mg x5	-

KEY EFFICACY ASSESSMENTS

- Anogenital swabs (Day 8-36); e.g., viral shedding rate
- Daily diary of symptoms; e.g., days with lesions

DATA IN CURRENT ANALYSIS

- Diary data through D36
- 100% Shedding data
- Complete safety data for cohorts B1 and B2
- Safety data up to Day 43 for cohort B3

Interim ABI-5366 Phase 1b data as of November 25, 2025. Interim ABI-5366 Phase 1b data for cohorts B1 and B2 as of July 29, 2025 was previously presented
1. Dosing begins on Day 1 with swab and diary evaluations beginning on Day 8

Executive Summary:
ABI-5366 Phase 1b Interim Update

ABI-5366 PH1B STATUS UPDATE

Two weekly (B1, B2) and one monthly (B3) dosing cohorts completed

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**

PHASE 1B COHORT B2 (350 MG, QW) RESULTS

- **94% reduction** in HSV-2 shedding ($p<0.01$)
- **98% reduction** in high viral load swabs ($p<0.05$)
- **97% reduction** in virologically confirmed[2] genital lesions ($p<0.05$)
- **No safety signals identified** to date
  - Chronic Toxicology: Studies complete and support proposed Phase 2 dosing

Interim ABI-5366 Phase 1b data as of November 25, 2025.; 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.

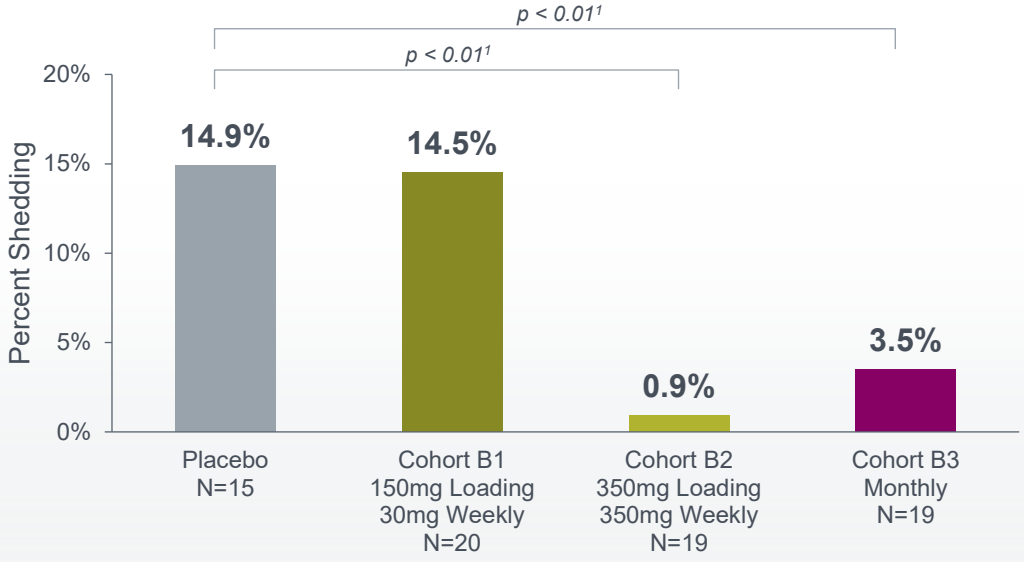
ABI-5366 Phase 1b:
Baseline Demographics and Disease Characteristics

BASELINE DEMOGRAPHICS AND DISEASE CHARACTERISTICS	PBO (N=10)	ABI-5366 30mg weekly (N=20)	ABI-5366 350mg weekly (N=20)	ABI-5366 Monthly/PBO (N=26)
Age, median (range)	44 (35 – 59)	37 (26 – 60)	41 (25 – 60)	35 (25 – 59)
Male, N (%)	5 (50)	10 (50)	13 (65)	8 (31)
Race, N (%)				
White	9 (90)	16 (80)	16 (80)	25 (96)
Black/African American	0	0	1 (5)	0
Native Hawaiian/Pacific Islander	0	2 (10)	1 (5)	0
Asian	1 (10)	2 (10)	2 (10)	1 (4)
Other	0	0	1 (5)	4 (15)
BMI, median (range)	24.1 (20.3 – 27.8)	26.4 (21.4 – 31.4)	28.3 (20.8 – 32.6)	25.9 (18.1 – 29.7)
Years since HSV Diagnosis, median (IQR)	10.9 (7.2 – 12.8)	9.4 (5.8 – 15.4)	9.3 (5.4 – 17.2)	10.6 (5.5 – 18.5)
Number of Lesions in past 12 months or prior to suppressive treatment, median (IQR)	5 (5.0 – 6.0)	5.8 (4.8 – 7.0)	5.0 (4.8 – 6.0)	6.0 (5.0 – 6.5)
Suppressive Treatment at Screening, N (%)	6 (60)	12 (60)	12 (60)	15 (58)

Interim ABI-5366 Phase 1b data as of November 25, 2025. The 30mg and 350 mg weekly cohorts are unblinded; the monthly/placebo cohort is in follow up and remains blinded
IQR, interquartile range

ABI-5366 Phase 1b:
Cohorts B2 and B3 with Significant Reduction in HSV-2 Shedding

94%
reduction in HSV-2 shedding rate for cohort B2[2]

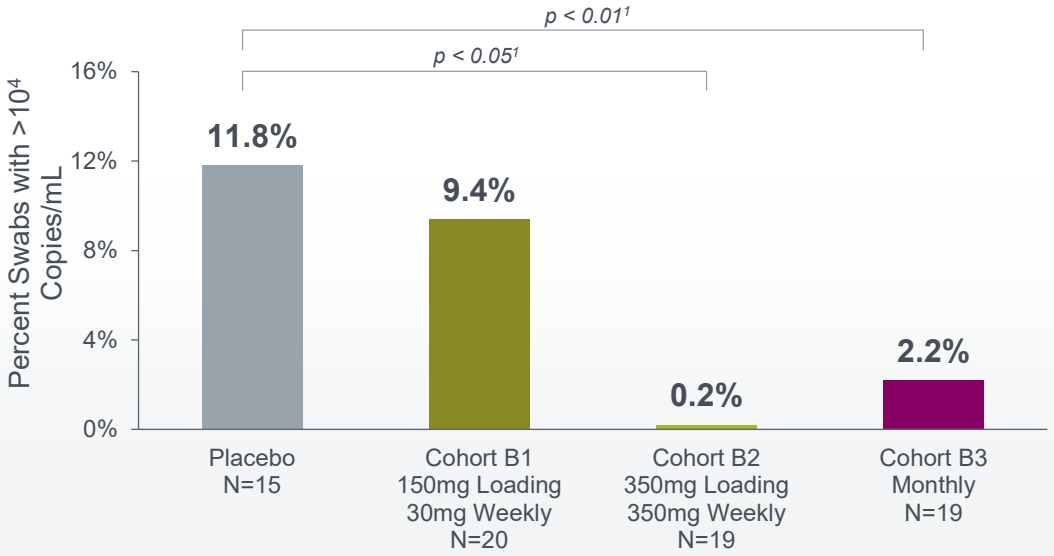


- Significant reduction in HSV-2 shedding rate for Cohorts B2 and B3 compared to Placebo

Interim ABI-5366 Phase 1b data as of November 25, 2025
1. Poisson regression analysis; 2. Data are interim estimates based on pooled placebo patients from these cohorts and may change with additional cohorts

ABI-5366 Phase 1b:
Reduction in HSV-2 High Viral Load Shedding in Cohorts B2 and B3

98%
reduction in HSV-2 high viral load shedding for cohort B2[3]



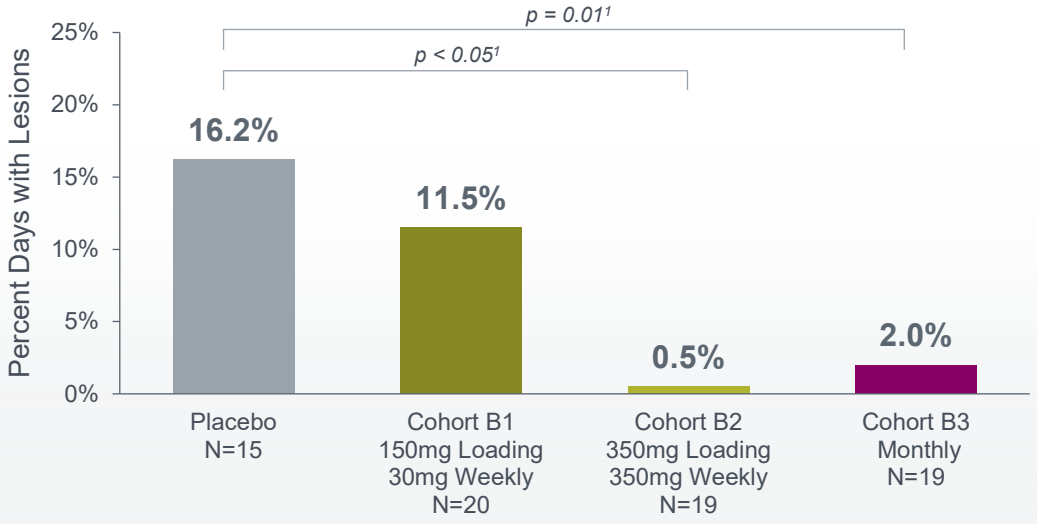
- Significant reduction in HSV-2 high viral load shedding for Cohorts B2 and B3 compared to Placebo
- Near complete elimination of HSV-2 high viral load swabs >10^4 copies/mL for Cohort B2
  - Shedding >10^4 copies/mL a surrogate for increased HSV-2 transmission[2]
- All (N=2) observed viral loads >10^4 copies/mL in Cohort B2 were in the presence of a genital lesion

Interim ABI-5366 Phase 1b data as of November 25, 2025
1. Poisson regression analysis; 2. Schiffer JT et al. J.R.Soc.Interface 11, 2014; 3. Data are interim estimates based on available placebo patients and may change with subsequent cohorts

ABI-5366 Phase 1b: Cohorts B2 and B3 with Significant Reduction in Virologically Confirmed Lesion Rate

97%

reduction in virologically confirmed[2] lesion rate for cohort B2[3]



- Significant reduction in virologically confirmed lesion rate for Cohorts B2 and B3 compared to Placebo

Interim ABI-5366 Phase 1b data as of November 25, 2025

1. Poisson regression analysis; 2. Virologically confirmed lesions include lesions with any positive HSV-2 swab taken during the duration of the lesion; 3. Data are interim estimates based on pooled placebo patients from these cohorts and may change with additional cohorts

ABI-5366 Phase 1b:
Safety Summary – Adverse Events Cohorts B1, B2 & B3

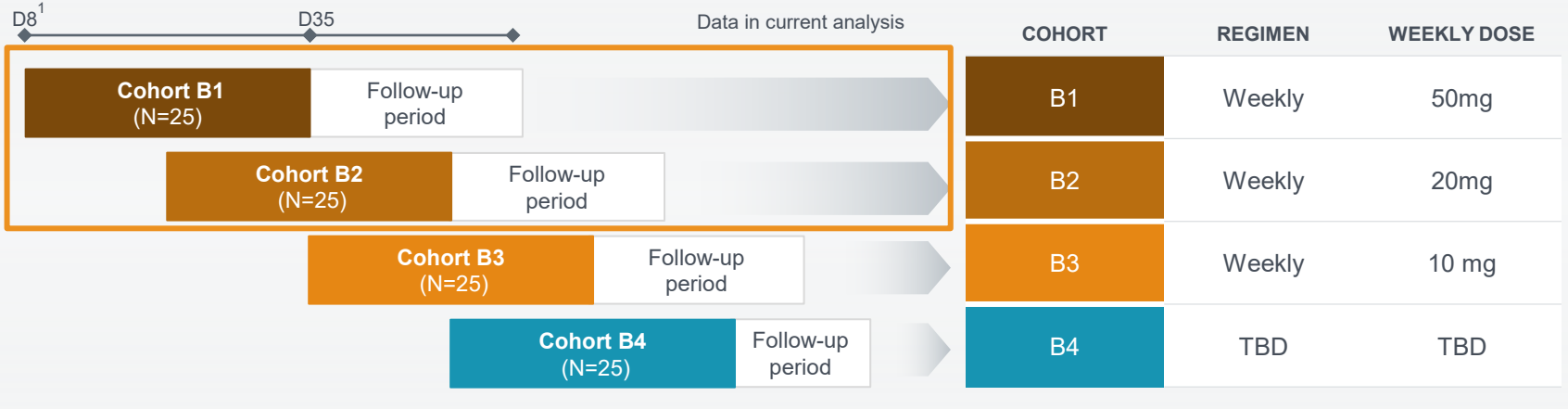
ADVERSE EVENTS AND LABORATORY ABNORMALITIES	PBO N=10	ABI-5366 30mg weekly N=20	ABI-5366 350mg weekly N=20	ABI-5366 Monthly/ PBO[1] N=26
Subjects with any Treatment Emergent Adverse Events (TEAE) (max grade), N (%)	9 (90%)	18 (90%)	19 (95%)	26 (100%)
Grade 1, N (%)	5 (50%)	12 (60%)	10 (50%)	12 (46%)
Grade 2, N (%)	4 (40%)	6 (30%)	9 (45%)	14 (54%)
Grade 3, N (%)	0	0	0	0
Grade 4, N (%)	0	0	0	0
TEAE Related to Study Drug, N (%)	4 (40%)	6 (30%)	3 (15%)	9 (35%)
TEAE Leading to Study Drug Discontinuation, N (%)	0	0	0	0
Serious Adverse Event	0	0	0	0
Death	0	0	0	0
Treatment Emergent Lab Abnormalities, N (%)	9 (90%)	14 (70%)	15 (75%)	14 (54%)
Grade 1, N (%)	7 (70%)	12 (60%)	12 (60%)	14 (54%)
Grade 2, N (%)	3 (30%)	3 (15%)	5 (25%)	2 (8%)
Grade 3, N (%)	1 (10%)[2]	1 (5%)[2]	1 (5%)[2]	0
Grade 4, N (%)	0	0	0	0

Safety data complete for cohorts B1 and B2; for cohort B3, includes safety data up to day 43

Interim ABI-5366 Phase 1b data as of November 25, 2025. Cohorts B1 and B2 are unblinded; cohort B3/placebo is in follow up and remains blinded; 1. Blinded safety data as cohort ongoing; 2. All Grade 3 lab abnormalities considered unrelated to treatment: participant with decreased neutrophils (PBO), exercise-associated elevation in creatine kinase (30mg weekly), and elevation of cholesterol in follow up in participant that had a grade 2 elevation at baseline (350mg weekly)

ABI-1179-101 Phase 1b Study Design

- **Double-blind, placebo-controlled sequential cohorts**
- **All participants seropositive for HSV-2 with recurrent genital herpes**
- **Each cohort with 20 patients receiving ABI-1179 and 5 patients receiving placebo**



COHORT	REGIMEN	WEEKLY DOSE
B1	Weekly	50mg
B2	Weekly	20mg
B3	Weekly	10 mg
B4	TBD	TBD

KEY EFFICACY ASSESSMENTS

- Anogenital swabs (Day 8-35); e.g., viral shedding rate
- Daily diary of symptoms; e.g., days with lesions

DATA IN CURRENT ANALYSIS

- Diary data through D35
- 100% Shedding data
- Safety data through Day 57

Interim ABI-1179 Phase 1b data as of November 25, 2025
1. Dosing begins on Day 1 with swab and diary evaluations beginning on Day 8

Executive Summary:
ABI-1179 Phase 1b Interim Update

ABI-1179 PH1B STATUS UPDATE

Three weekly dosing cohorts completed

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**

PHASE 1B COHORT B1 (50 MG, QW) RESULTS

- **98% reduction** in HSV-2 shedding ($p<0.01$)
- **>99% reduction** in high viral load swabs
- **91% reduction** in virologically confirmed[2] genital lesions ($p<0.01$)
- **No safety signals identified** to date

Interim ABI-1179 Phase 1b data as of November 25, 2025

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.

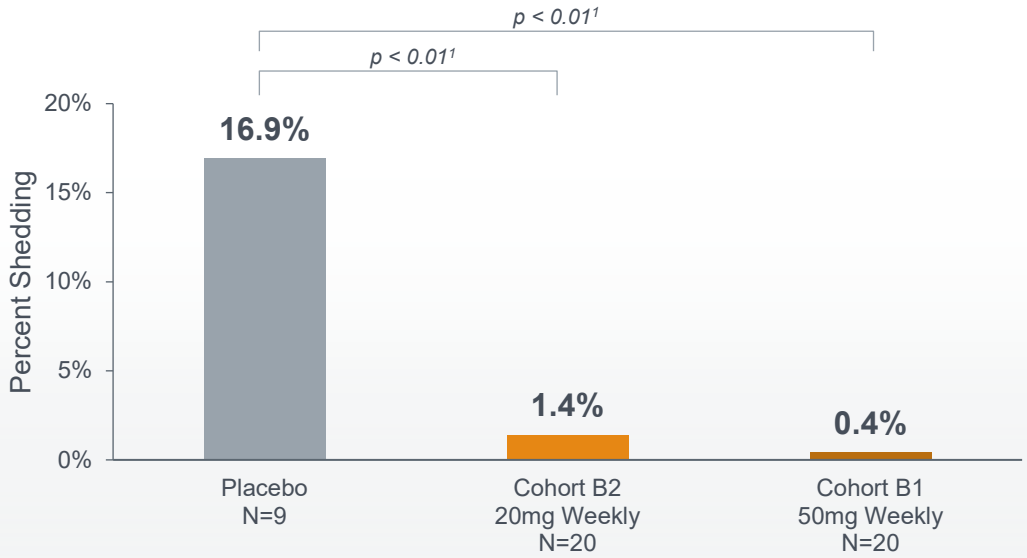
QW, weekly.

ABI-1179 Phase 1b:
Baseline Demographics and Disease Characteristics

BASELINE DEMOGRAPHICS AND DISEASE CHARACTERISTICS	ABI-1179 20mg weekly/PBO (N=24)	ABI-1179 50mg weekly/PBO (N=25)
Age, median (range)	40 (24-61)	40 (23 – 60)
Male, N (%)	13 (54%)	7 (28%)
Race, N (%)		
White	21 (88%)	23 (92%)
Black/African American	0	1 (4%)
Native Hawaiian/Pacific Islander	0	3 (12%)
Other	3 (13%)	2 (8%)
BMI, median (range)	25.4 (20.1 – 30.2)	26.7 (18.9 – 31.4)
Years since HSV Diagnosis, median (IQR)	6.9 (3.2 – 17.3)	8.0 (4.6 – 10.6)
Number of Lesions in past 12 months or prior to suppressive treatment, median (IQR)	5.5 (5.0 – 6.0)	6.0 (5.0 – 7.0)
Suppressive Treatment at Screening, N (%)	18 (75%)	20 (80%)

ABI-1179 Phase 1b:
Cohorts B1 and B2 with Significant Reduction in HSV-2 Shedding

98%
reduction in HSV-2 shedding rate for cohort B1[2]



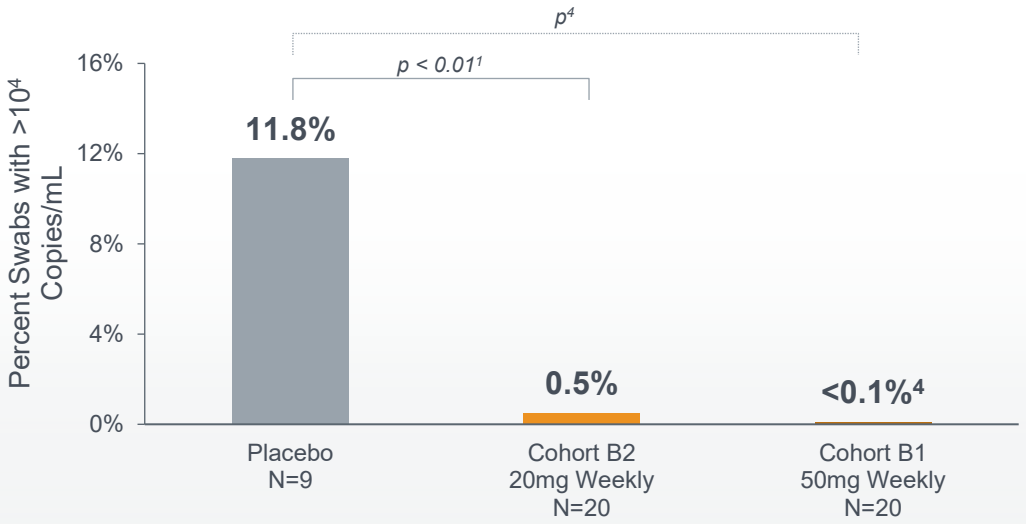
- Significant reduction in HSV-2 shedding rate for Cohorts B1 and B2 compared to Placebo

Interim ABI-1179 Phase 1b data as of November 25, 2025
1. Poisson regression analysis; 2. Data are interim estimates based on pooled placebo patients from these cohorts and may change with additional cohorts

ABI-1179 Phase 1b:
Reduction in HSV-2 High Viral Load Shedding in Cohorts B1 and B2

>99%

reduction in HSV-2 high viral load shedding for cohort B1[3,4]

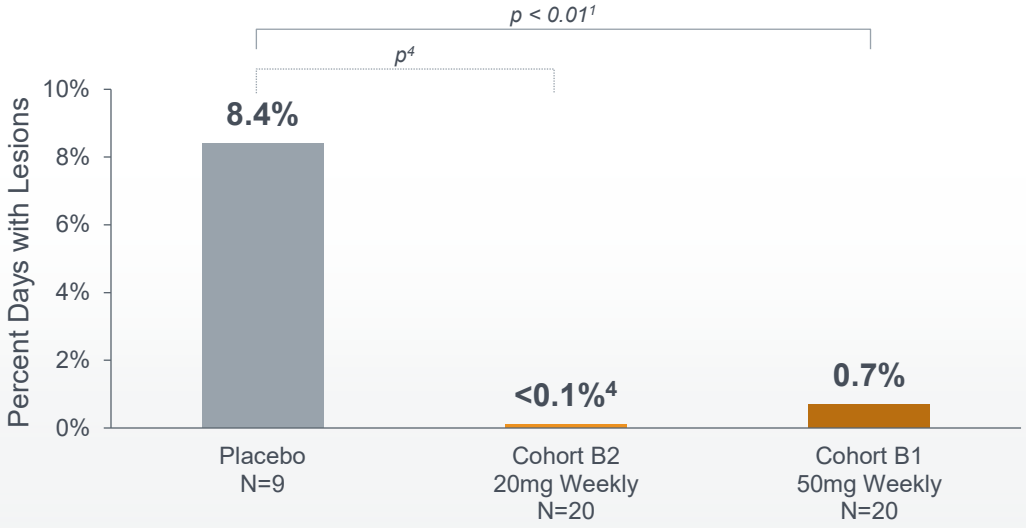


- Significant reduction in HSV-2 high viral load shedding for Cohorts B1 and B2 compared to Placebo
- Near complete elimination of HSV-2 high viral load swabs >10^4 copies/mL for both cohorts
  - Shedding >10^4 copies/mL a surrogate for increased HSV-2 transmission[2]

Interim ABI-1179 Phase 1b data as of November 25, 2025. 1. Poisson regression analysis; 2. Schiffer JT et al. J.R.Soc.Interface 11, 2014; 3. Data are interim estimates based on available placebo patients and may change with subsequent cohorts; 4. P-value cannot be reliably calculated given the >99% reduction compared to placebo. The observed difference is consistent with a highly significant effect.

ABI-1179 Phase 1b: Cohorts B1 and B2 with Significant Reduction in Virologically Confirmed Lesion Rate

91% reduction in virologically confirmed[2] lesion rate for cohort B1[3]



- Significant reduction in virologically confirmed lesion rate for Cohorts B1 and B2 compared to Placebo

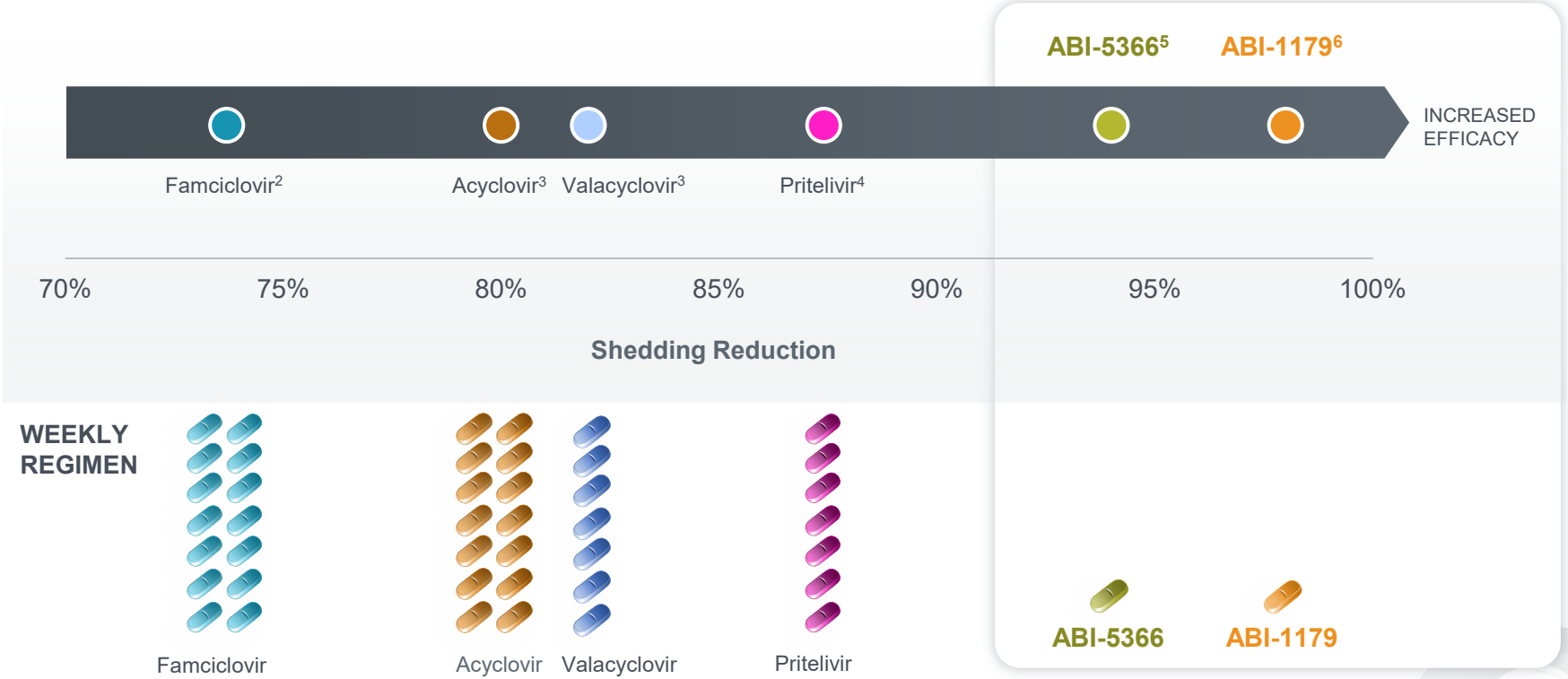
Interim ABI-1179 Phase 1b data as of November 25, 2025 1. Poisson regression analysis; 2. Virologically confirmed lesions include lesions with any positive HSV-2 swab taken during the duration of the lesion; 3. Data are interim estimates based on pooled placebo patients from these cohorts and may change with additional cohorts; 4. P-value cannot be reliably calculated given the >99% reduction compared to placebo. The observed difference is consistent with a highly significant effect.

ABI-1179 Phase 1b:
Safety Summary – Adverse Events Cohorts B1 & B2

PARAMETER	ABI-1179 20mg weekly/PBO N=24	ABI-1179 50mg weekly/ PBO N=25
Subjects with any Treatment Emergent Adverse Events (TEAE) (max grade), N (%)	17 (71%)	23 (92%)
Grade 1, N (%)	12 (50%)	9 (36%)
Grade 2, N (%)	5 (21%)	13 (52%)
Grade 3, N (%)	0	1 (4%)[1]
Grade 4, N (%)	0	0
TEAE Related to Study Drug, N (%)	8 (33%)	10 (40%)
TEAE Leading to Study Drug Discontinuation, N (%)	0	0
Serious Adverse Event	0	0
Death	0	0
Treatment Emergent Lab Abnormalities, N (%)	9 (38%)	8 (32%)
Grade 1, N (%)	8 (33%)	6 (24%)
Grade 2, N (%)	2 (8%)	3 (12%)
Grade 3, N (%)	0	0
Grade 4, N (%)	0	0

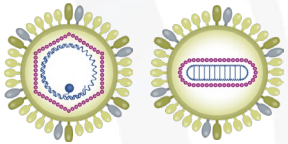
Safety data includes patients through Day 57

ABI-5366 & ABI-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/ABI-5366/ABI-1179=28 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. ABI-5366 Phase 1b data as of November 25, 2025; 6. ABI-1179 Phase 1b data as of November 25, 2025



ABI-6250: Oral Hepatitis D Virus Entry Inhibitor

Phase 1a completed

Phase 2 initiation anticipated by end of 2026

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

12 – 72 million

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

70% progress to cirrhosis within 10 years[2]

Very limited treatment options

BULEVIRTIDE, LARGE MOLECULE ENTRY INHIBITOR, ONLY APPROVED DRUG (EU, AU, and Canada ONLY)

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

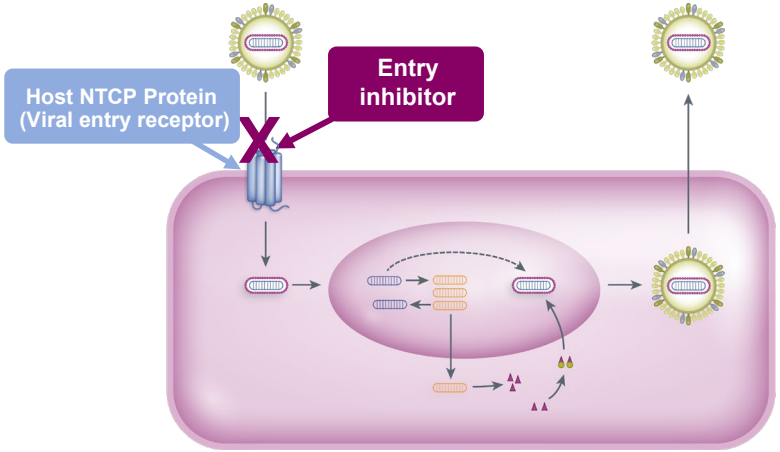
An oral treatment is expected to further enhance treatment uptake and diagnosis rates

1. Negro & Lok 2023; 2. WHO 2023

ABI-6250 Targets Inhibition of HDV Entry

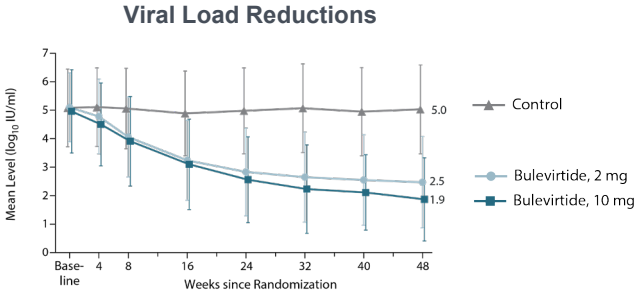
Clinically Validated Mechanism That Has Been Shown to Lower Viral Load and Normalize ALT

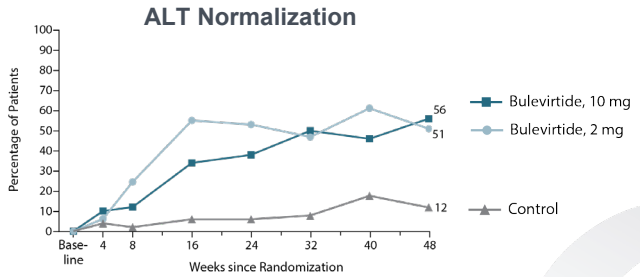
BLOCKING ENTRY HAS BEEN DEMONSTRATED TO PREVENT INFECTION OF LIVER CELLS



ABI-6250: an orally bioavailable small molecule NTCP inhibitor with demonstrated high preclinical potency against multiple HDV strains[2]

ENTRY INHIBITION: A CLINICALLY VALIDATED TARGET[1]



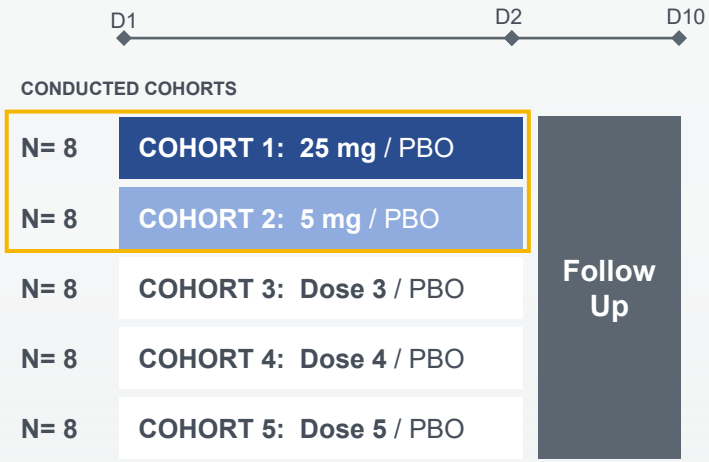


1. Wedemeyer et al., NEJM 2023; 2. Windisch et al. EASL ILC 2025

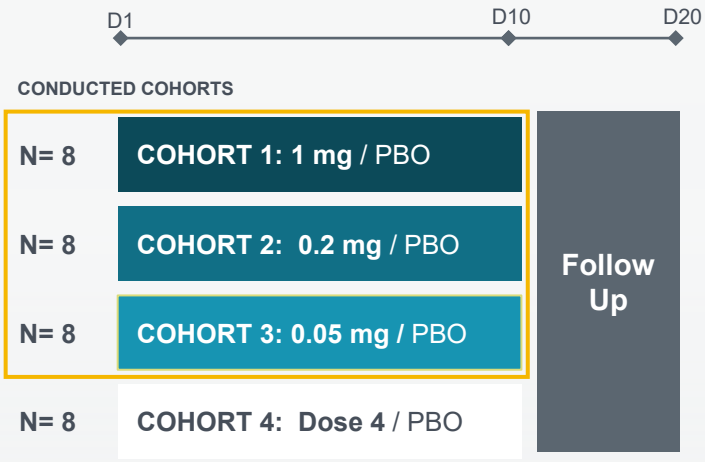
ALT, alanine transaminase; NTCP, Sodium taurocholate cotransporting polypeptide

ABI-6250-101 Phase 1a Study Design

SINGLE-ASCENDING DOSE



MULTIPLE-ASCENDING DOSE

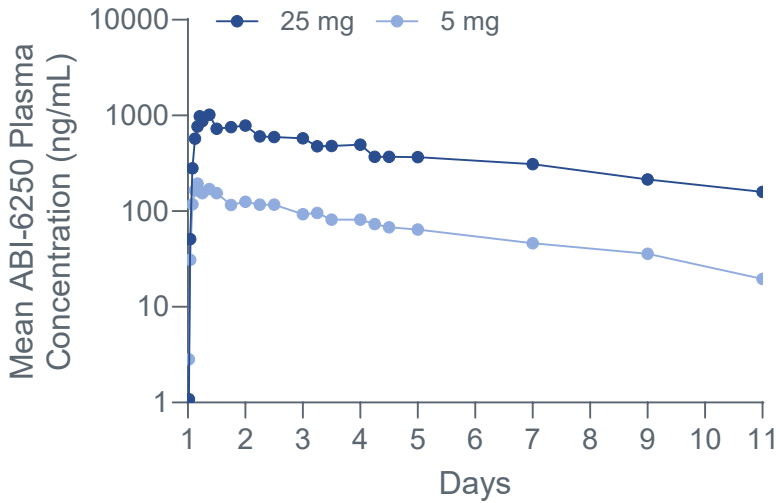


KEY OUTCOMES

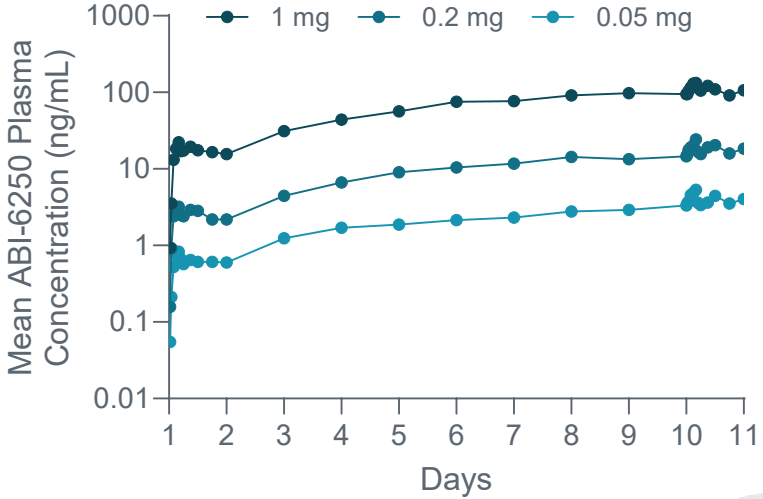
- Safety and pharmacokinetics
- Biomarker of target engagement (serum bile acid levels) with single and multiple doses

ABI-6250 Phase 1a: Pharmacokinetics

HALF LIFE ESTIMATE OF 4 DAYS WITH SINGLE ORAL DOSE

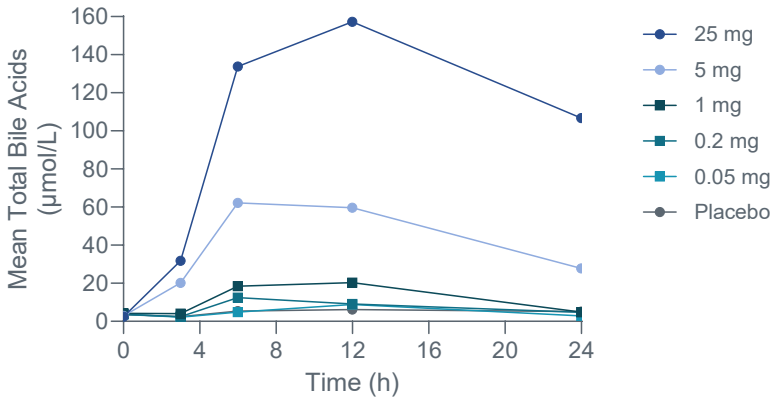


6-7-FOLD ACCUMULATION WITH REPEATED ORAL DAILY DOSING

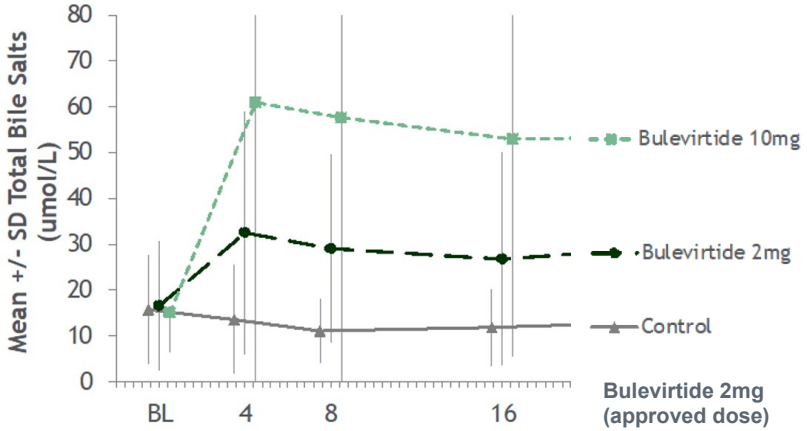


ABI-6250: Dose-Dependent Bile Acid Elevations, a Biomarker of NTCP Engagement, Observed in Healthy Participants in Phase 1a

ABI-6250: BILE ACID ELEVATIONS IN HEALTHY PARTICIPANTS[1]



BULEVIRTIDE: BILE ACID ELEVATIONS AFTER MULTIPLE SUBCUTANEOUS DOSES IN PATIENTS[2]



Bile acid elevations indicate potent engagement of NTCP

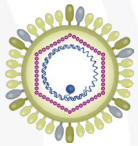
1. Interim ABI-6250 Phase 1a data as of July 7, 2025, updated November 2025
2. Wedemeyer et al ., NEJM 2023 (Supplementary Material)

ABI-6250 Phase 1a: Safety Data

	PBO SD (N=4)	5 mg SD (N=6)	25 mg SD (N=6)	PBO MD (N=6)	1 mg MD (N=6)	0.2 mg MD (N=6)	0.05 mg MD (N=6)
Subjects with any TEAE (max toxicity), N (%)	0	4 (66.7%)	2 (33.3%)	4 (66.7%)	4 (66.7%)	4 (66.7%)	6 (100%)
Grade 1, N (%)	0	4 (66.7%)	2 (33.3%)	4 (66.7%)	4 (66.7%)	2 (33.3%)	6 (100%)
Grade 2, N (%)	0	0	0	0	0	2 (33.3%)	0
Grade 3, N (%)	0	0	0	0	0	0	0
Grade 4, N (%)	0	0	0	0	0	0	0
TEAE related to study drug, N (%)	0	0	0	0	2 (33.3%)	0	1 (16.7%)
Serious TEAE, N (%)	0	0	0	0	0	0	0
TEAE leading to study drug discontinuation, N(%)	0	0	0	0	1 (16.7%)[1]	0	0
Death	0	0	0	0	0	0	0
Number (%) of subjects with any graded TE lab abnormalities[3]	2 (50%)	4 (66.7%)	3 (50.0%)	5 (83.3%)	3 (50.0%)	5 (83.3%)	3 (50%)
Grade 1, N (%)	2 (50%)	4 (66.7%)	2 (33.3%)	4 (66.7%)	3 (50.0%)	5 (83.3%)	2 (33.3%)
Grade 2, N (%)	0	0	1 (16.7%)	3 (50.0%)	0	1 (16.7%)	1 (16.7%)
Grade 3, N (%)	0	0	0	0	0	0	0
Grade 4, N (%)	0	1 (16.7%)[2]	0	0	0	0	0

[1]D/C due to Grade 1 ALT elevation; [2]Asymptomatic, self-limited Grade 4 elevation in creatinine kinase (CK) in subject with grade 2 elevated CK at baseline
[3]Self-limited ALT elevations seen in all cohorts: Grade 2: 25mg/PBO SD (N=1), Grade 1: 5mg/PBO SD (N=2), 1mg/PBO MD (N=1), 0.2mg/PBO MD (N=1), 0.05mg/PBO MD (N=1)

ABI-4334: Next-Generation CAM for Hepatitis B



Phase 1b topline data reported June 2025

Positioned for next-phase development upon securing partner

HBV is a Major Unmet Medical Need Globally

HBV PREVALENCE:
254M[1]

DIAGNOSED:
33M[1]

TREATED:
7M[1]

Up to 1,100,000 people
DIED IN 2022[1] FROM HBV-RELATED CAUSES

Treatments are life-long
INHIBIT VIRUS BUT CURE RATES VERY LOW

Opportunity to improve outcomes
AND INCREASE NUMBER OF PATIENTS DIAGNOSED AND TREATED, with development of finite and curative therapies

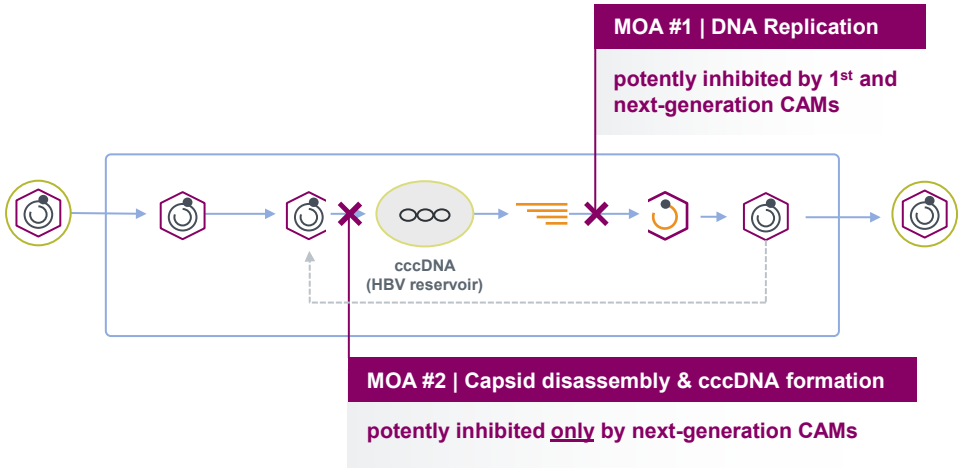
No new MOAs approved for HBV in >25 years

1. WHO (2024)

ABI-4334 is a Next-Generation Capsid Assembly Modulator Designed to Target Both MOAs for the Class

CAPSID ASSEMBLY MODULATORS (CAMs)

Direct-acting antivirals with two distinct mechanisms of action



ABI-4334 PHASE 1B PK

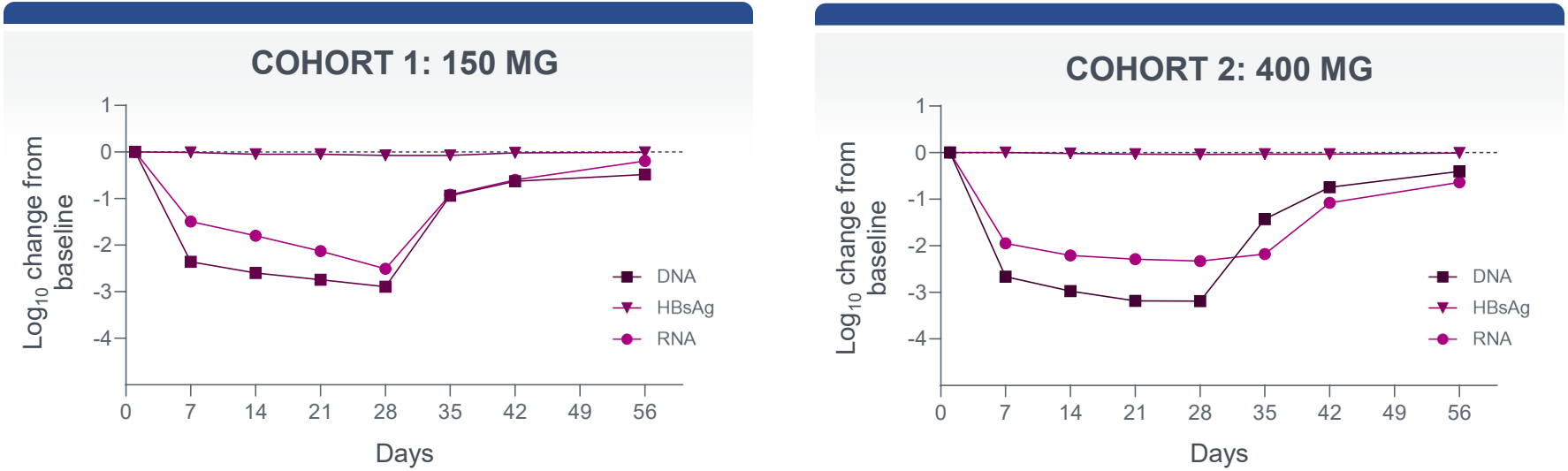
Supportive of the ability to potentially achieve double-digit multiples over $paEC_{50}$

	4334 Phase 1b Cohorts[1]	
	150mg[2]	400mg[2]
Fold of $C_{min}/paEC_{50}$ MOA #1 (antiviral)	62x	269x
Fold of $C_{min}/paEC_{50}$ MOA #2 (cccDNA)	12x	52x

1. Jucov et al. AASLD, 2025; nonclinical potency data on file
2. Based on observed data on day 28

cccDNA, covalently closed circular DNA ; Cmin, daily minimum plasma trough concentration; paEC50, protein-adjusted concentration of a drug that gives half-maximal response; PK, Pharmacokinetics

ABI-4334 Demonstrates Potent Antiviral Activity in Phase 1b



HBeAg-positive or -negative cHBV infected participants not on NrtI, randomized 8:2 active:placebo per cohort

- 2.9 and 3.2 log10 IU/mL mean decline in HBV DNA over 28 days observed in 150 mg and 400 mg cohorts, respectively, supporting ability of lower dose to potentially saturate antiviral mechanism of action
- Limited changes in HBsAg observed as expected given 28-day treatment period

ABI-4334-102:
Safety Data Supports Flexibility in Dose Range

	Placebo (N=4)	ABI-4334 150mg (N=8)	ABI-4334 400mg (N=8)
Subjects with any TEAE (max toxicity), N (%)	2 (50%)	5 (62.5%)	6 (75%)
Grade 1, N (%)	0	2 (25%)	1 (12.5%)
Grade 2, N (%)	2 (50%)	2 (25%)	5 (62.5%)
Grade 3, N (%)	0	1 (12.5%)*	0
Grade 4, N (%)	0	0	0
TEAE related to study drug, N (%)	1 (25%)	5 (62.5%)	1 (12.5%)
Serious TEAE, N (%)	0	0	0
TEAE leading to study drug discontinuation, N (%)	0	0	0
Death	0	0	0
Number (%) of subjects with any graded TE lab abnormalities	3 (75%)	6 (75%)	8 (100%)
Grade 1, N (%)	3 (75%)	5 (62.5%)	8 (100%)
Grade 2, N (%)	3 (75%)	3 (37.5%)	4 (50%)
Grade 3, N (%)	1 (25%)**	1 (12.5%)*	0
Grade 4, N (%)	0	0	0

*ALT elevation; resolved by Day 28 with continued dosing of ABI-4334
** Total Bilirubin increased

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

IND/CTA-enabling studies

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).

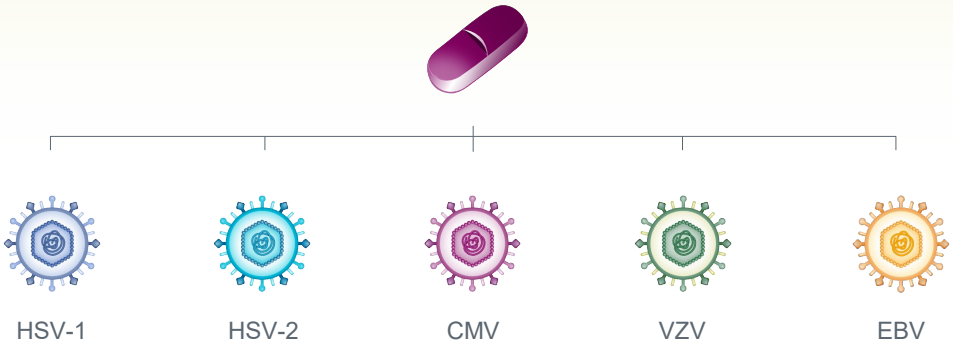
1. EBMT, OPTN, UNOS, and IRODAT (estimate for transplanted-associated herpesvirus reflects US and EU only).

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
studies ongoing

Nasdaq: ASMB