May 13, 2025

Excision BioTherapeutics Presents Data from HBV and HSV Programs at the ASGCT 2025 Annual Meeting

- *Poster presentation to demonstrate EBT-107's potential to reduce clinically-relevant biomarkers and HBV DNA integration toward functional remission of chronic hepatitis B*
- *Oral presentation to highlight significant reduction in HSC-1 viral load in the latent HSV-1 reservoir and near elimination of ocular viral shedding in a preclinical HSV-1 keratitis model, achieved through intravenous delivery of all-in-one AAV9 vectors*
- *Residual HSV-1 DNA in the latent reservoir contained mutations and large genomic deletions, indicating effective disruption of the latent HSV-1 reservoir*

WATERTOWN, Mass., May 13, 2025 (GLOBE NEWSWIRE) -- Excision BioTherapeutics, Inc. ("Excision" or the "Company"), a biotechnology company developing CRISPR-based therapies to cure viral infectious diseases, today announced new data presentations from its preclinical programs, hepatitis B virus (HBV), EBT-107 and herpes simplex virus (HSV-1) keratitis, EBT-104 at the 2025 American Society of Gene & Cell Therapy (ASGCT) Annual Meeting, taking place May 13–17 in New Orleans, Louisiana.

Chronic hepatitis B caused by infection of hepatitis B virus (HBV) is one of the most prevalent infectious diseases worldwide that lacks curative therapies. While existing antiviral and immunomodulator treatments slow progression of liver disease by reducing viral load, they fail to eliminate covalently closed circular DNA (cccDNA) that enables persistent viral infection. Excision's lead product candidate for the treatment of HBV infection, EBT-107, uses dual guide RNAs to excise large sections of viral DNA and effectively deactivate the virus.

"A series of *in vitro* and *in vivo* studies indicate our dual guide-RNA-mediated editing strategy eliminates intrahepatic HBV DNA levels and suppresses HBV DNA integration that may contribute to hepatocarcinogenesis," said Jennifer Gordon, Ph.D, Chief Scientific Officer of Excision. "We believe that these data further validate our HBV program and will help progress EBT-107 toward an anticipated IND."

EBT-104 is a CRISPR-based gene therapy designed to potentially eliminate HSV-1 keratitis by inactivating latent HSV-1 in the latent HSV-1 reservoirs. The candidate utilizes a multiplexed CRISPR/Cas9 editing approach to excise critical regions of the HSV-1 viral genome.

"This research represents a major step forward in our efforts to develop a one-time treatment for sustained suppression of HSV-1 keratitis," said Daniel Dornbusch, Chief Executive Officer of Excision. "The high *in vivo* efficacy and specificity observed with EBT-104 underscore the promise of our gene editing platform to address latent viral infections. We're excited to share these important findings at ASGCT."

Presentation Details:

Title: Preclinical Safety Assessment of Anti-Viral Gene Editing in Chronic Hepatitis B Models
Excision Program: EBT-107 (HBV)
Session Type: Poster presentation
Abstract: 1136
Presenter: Ryo Takeuchi, Excision BioTherapeutics
Location: Poster Hall
Date/Time: May 14, 2025, 5:30 to 7:00 pm (CDT)

Standard care for chronic hepatitis B infection reduces hepatitis B virus (HBV) load, but fails to block low-level viral replication, leading to long-term HBV persistence in infected hepatocytes. We showed that HBV DNA targeting by Excision's unique dual-guide CRISPR/Cas9 system led to rapid reduction in clinical biomarkers and intrahepatic HBV DNA copies in multiple disease models. Subsequent deep sequencing analyses demonstrated our anti-HBV treatment introduced DNA editing that inactivated viral gene expression and replication in persistent viral DNA copies. These assays also suggested that our therapeutic approach suppressed random HBV DNA integration without nuclease-induced chromosomal translocations.

Title: Preclinical Development of a CRISPR-Cas9-Based Therapeutic for the Treatment of Herpes Keratitis
Excision Program: EBT-104 / HSV-1 Keratitis
Session Type: Oral presentation
Session Title: Novel Therapeutic Gene Editing Applications
Abstract: 223
Presenter: Elvin Ruan, Excision BioTherapeutics
Location: New Orleans Theater A
Date/Time: May 15, 2025, 4:45 PM - 5:00 PM (EST)

The data highlights a CRISPR-SaCas9 strategy targeting two critical HSV-1 genes,*ICP0* and *ICP27*, to induce large deletions in the HSV-1 genome and disrupt latent viral reservoirs. GUIDE-seq and hybrid capture analysis confirmed the high specificity of the selected guide RNAs, with no detectable off-target editing.

Preclinical efficacy was evaluated using a latent HSV-1 rabbit keratitis model that closely mimics recurrent HSV-1 infection in humans. AAV9 vectors containing either a minimal CMV (minCMV) or neuron-specific CaMKIIα0.4 promoter were delivered intravenously.

- The AAV9-minCMV vector eliminated viral shedding in 83–100% of treated eyes and reduced HSV-1 DNA in TG by 64–81%.
- The AAV9-CaMKIIα0.4 vector eliminated viral shedding in 90% of treated eyes and reduced TG HSV-1 DNA by 51%.
- Residual HSV-1 genomes contained Indel mutations at CRISPR target sites and large deletions in the HSV-1 genome.

These findings support the potential of EBT-104 to eliminate latent HSV-1 infection and significantly reduce the risk of recurrence in patients with HSV-1 keratitis. The same approach may also be applicable to other HSV-1- and HSV-2-related diseases.

The presentations can be accessed on the Excision website at https://www.excision.bio/technology/publications following the event.

About Herpes Simplex Keratitis
Herpes Simplex Keratitis (HSK) caused by the infection of herpes simplex virus type 1 (HSV-1) in the cornea is a major cause of blindness worldwide. Although current anti-HSV-1 therapies interfere with viral DNA replication, they do not eliminate latent HSV-1 reservoirs or prevent recurrence. CRISPR/Cas-mediated gene editing can potentially address the underlying causes of the disease by directly eliminating the latent HSV-1 reservoirs.

About Excision BioTherapeutics, Inc.
Excision BioTherapeutics, Inc. develops CRISPR-based medicines as potential cures for serious viral infectious diseases. The Company's proprietary, multiplexed gene editing platform unites CRISPR technologies with a novel gene editing approach which demonstrated the ability to stop viral replication. Excision's pipeline targets large, underserved markets including hepatitis B virus (HBV), herpes simplex virus (HSV-1 keratitis), and human immunodeficiency virus-1 (HIV-1). Excision's platform has been tested and demonstrated safety in a human clinical study in the United States. Excision's foundational technologies were developed in the laboratories of Dr. Kamel Khalili at Temple University and Dr. Jennifer Doudna at the University of California, Berkeley. For more information, please visit www.excision.bio.

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