

SpyBiotech publishes preclinical SpyVector findings in JHEP Reports

Study supports the potential to combine HBV- and HDV-neutralising antibodies with HBV-specific T-cell responses in a single vaccine

Oxford, UK | 19 October 2026: SpyBiotech, a clinical-stage biotechnology company developing next-generation vaccines using its proprietary protein “superglue” technology, today announced the publication of new preclinical data supporting its SpyVector platform as a potential therapeutic vaccine approach for chronic hepatitis B virus (HBV) and hepatitis D virus (HDV) infection.

Published in JHEP Reports, the study, “Therapeutic vaccination strategy targeting the PreS1 region of L-HBsAg for HBV/HDV co-infection,” was conducted by researchers from SpyBiotech, the University of Oxford and King’s College Hospital.¹

The study provides preclinical evidence for SpyVector, SpyBiotech’s recombinant adenoviral platform designed to combine two complementary immune mechanisms in a single vaccine: antibodies that neutralise virus entry and T-cell responses against HBV antigens.¹

Combining antibody and T-cell immunity

The approach targets PreS1, a region of the large hepatitis B surface antigen (L-HBsAg) required for HBV and HDV to enter liver cells. Using SpyBiotech’s DogTag/DogCatcher protein conjugation technology, researchers displayed PreS1 on the surface of a recombinant adenoviral vector while also encoding HBV antigens within the vector.¹

Screening samples from a cohort of 61 patients with chronic hepatitis B revealed minimal evidence of naturally occurring anti-PreS1 responses, supporting further investigation of PreS1 as a therapeutic vaccination target. The vaccine’s immunogenicity was assessed in mice, not in these patients.¹

In mice, the PreS1-decorated vaccine induced anti-PreS1 antibodies, with serum demonstrating neutralising activity against both HBV and HDV. In contrast, an undecorated adenoviral vector encoding L-HBsAg failed to neutralise HBV in the reported comparison, supporting the importance of displaying PreS1 on the vector surface.¹

The vaccine also generated CD4+ and CD8+ T-cell responses against multiple HBV antigens encoded by the vector. Together, these findings support combining targeted antigen display with genetic antigen expression to engage both antibody-mediated and cellular immunity.¹

1. Russell RA et al. JHEP Reports. <https://doi.org/10.1016/j.jhepr.2026.101997>

Dr. Matthew Dicks, who leads the SpyVector programme at SpyBiotech, said: “These findings demonstrate an important capability of the SpyVector platform — the ability to combine antigen display with antigen expression in the same vaccine construct, with the potential to generate complementary antibody and T-cell responses. For chronic infections such as HBV and HDV, where effective treatment may require both suppression of virus replication and restoration or enhancement of antiviral cellular immunity, we believe this approach warrants further development.”

Addressing an unmet need in chronic HBV

The findings support further development of an approach intended to complement existing treatments for chronic hepatitis B, including in HBV/HDV co-infection. Combining antibodies that inhibit viral entry with HBV-specific T-cell responses offers a rationale for investigating this strategy alongside other therapeutic approaches.¹

These are preclinical findings and do not establish a functional cure or therapeutic benefit in people. Further studies will be required to assess safety, immunogenicity and therapeutic benefit in humans.

Prof. Jane McKeating, Professor of Molecular Virology at the University of Oxford and an author of the study, said: “The ability to target preS1 and to generate neutralising antibodies, thereby expanding the B-cell repertoire seen with conventional S-HBs vaccines, together with a broad CD4 and CD8 T cell response offers great promise.”

Prof. Sumi Biswas, CSO and Co-founder of SpyBiotech, said: “These findings reinforce our confidence in the versatility of the platform and its potential to address significant unmet medical needs, while demonstrating the broader value of SpyBiotech’s proprietary technology in advancing next-generation vaccines.”

Read the paper:

<https://doi.org/10.1016/j.jhepr.2026.101997>

About SpyBiotech

SpyBiotech is a clinical-stage biotechnology company developing next-generation vaccines against infectious diseases and cancer using its proprietary protein “superglue” technology.

Its SpyTag/SpyCatcher and other related technologies enable antigens to be precisely attached to vaccine delivery platforms. SpyBiotech is developing multiple vaccine and therapeutic platforms, including SpyVLP, a virus-like-particle platform, and SpyVector, a recombinant adenoviral platform combining antigen display with genetic antigen expression.

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