

# HEPLISAV-B Vaccine Elicits Effective HBs-Reactive Immune Responses to Reduce HBV DNA and Suppress HBsAg in Chronic HBV Carrier Mice

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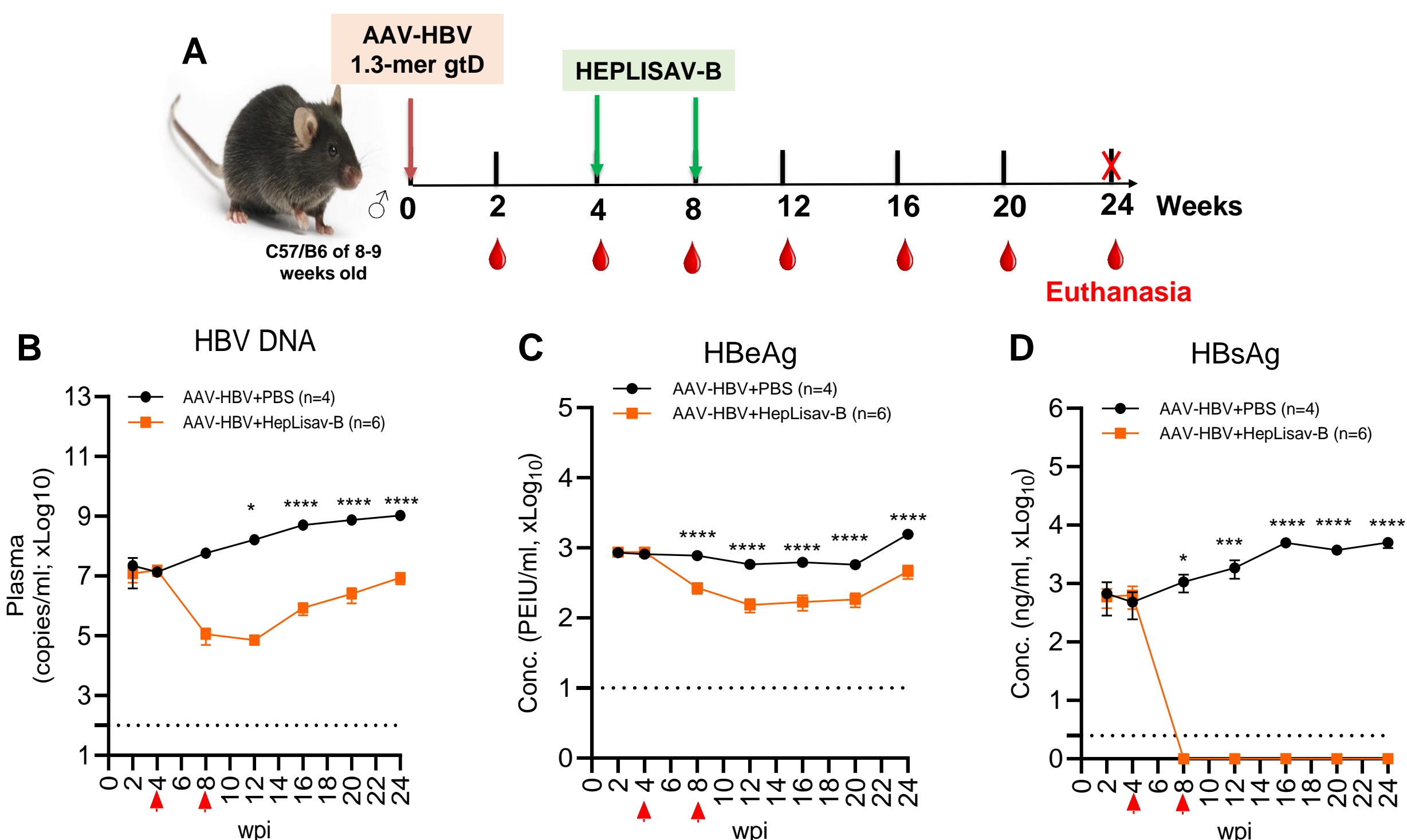
## Background & Aims

Chronic hepatitis B virus (HBV) infection, a global health burden affecting over 250 million individuals, significantly increases the risk of liver fibrosis and hepatocellular carcinoma. Despite existing treatments, an effective HBV cure (HBsAg loss) remains elusive. This study investigated the therapeutic potential of HEPLISAV-B, a newly FDA-approved HBV vaccine with CpG adjuvant, in a chronic HBV mouse model. We focused on these key questions:

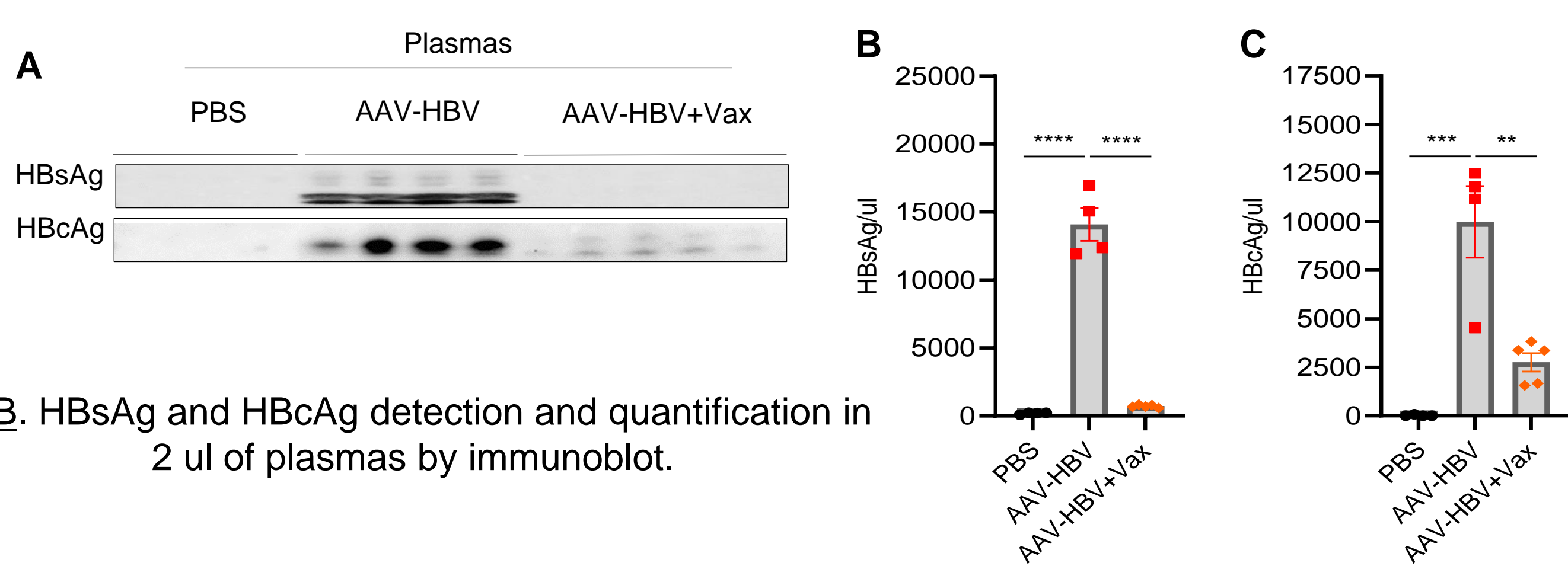
1. Can HEPLISAV-B overcome HBV-induced immune tolerance by eliciting a seroconversion to HBsAg in chronic HBV infection?
2. Can HEPLISAV-B enhance HBV-specific T and B cell responses leading to viral clearance in chronic HBV carriers?
3. Immune mechanism of HEPLISAV-B effect on seroconversion and HBV/HBsAg clearance?

## Methods & Results

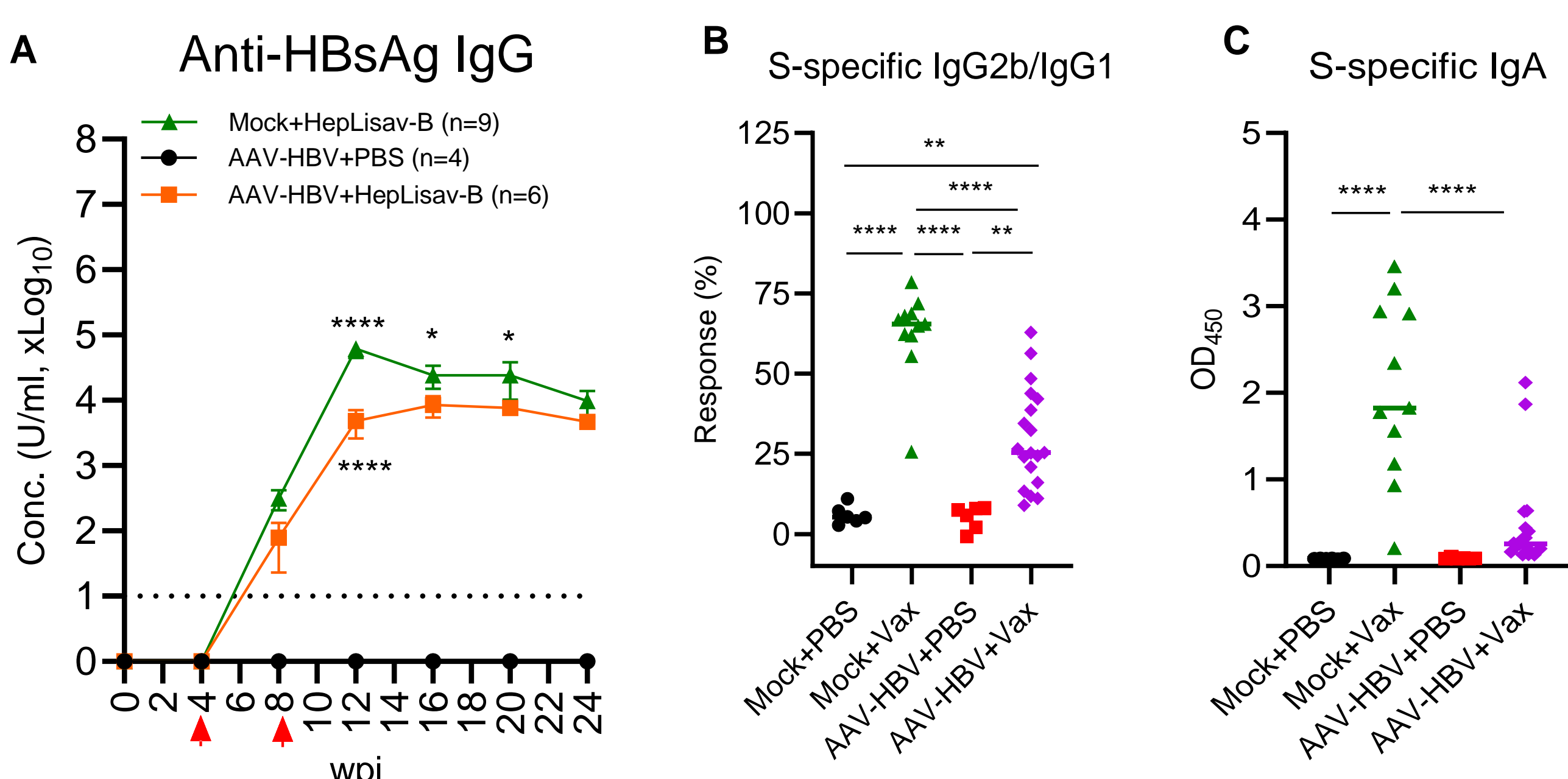
### 1. HEPLISAV-B inhibits HBV DNA, HBe and HBs in chronic HBV mice



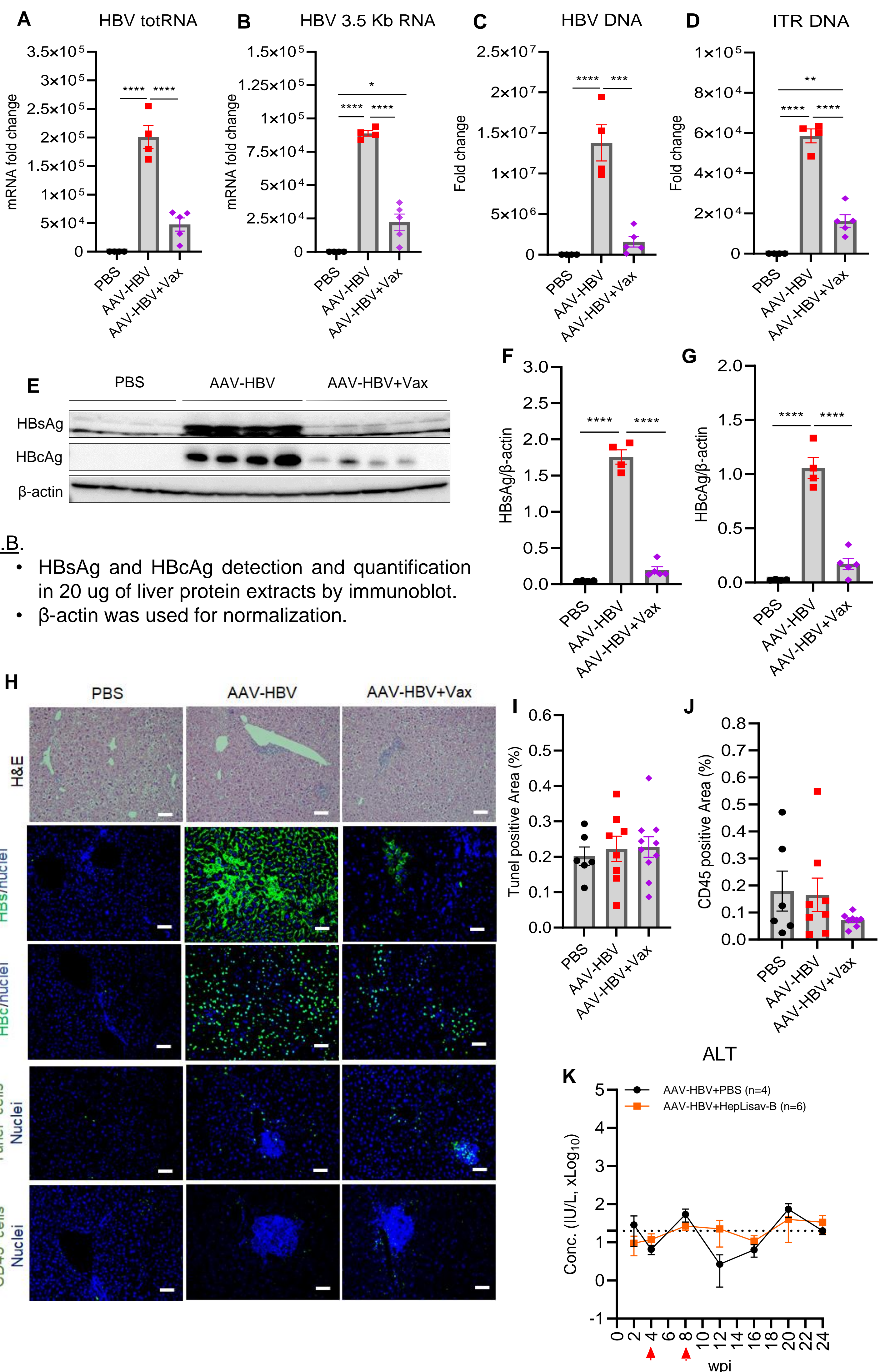
### 2. Effective clearance of HBs/HBc in chronic HBV mice by HEPLISAV-B



### 4. HEPLISAV-B elicits a strong and sustained S-specific immune response in chronic HBV carrier mice



### 3. HEPLISAV-B suppresses HBV episomal DNA without hepatolysis



N.B.

- HBsAg and HBcAg detection and quantification in 20 ug of liver protein extracts by immunoblot.
- $\beta$ -actin was used for normalization.

## Conclusions & Perspectives

HEPLISAV-B, a CpG-adjuvanted prophylactic HBV vaccine, demonstrates promising therapeutic effects in a chronic HBV mouse model.

Key findings include:

- Significant inhibition of HBV DNA and proteins (HBsAg, HBeAg, and HBcAg) in the blood.
- Non-cytopathic elimination of episomal AAV-HBV from the liver.
- Induction of a robust Th1, IgG and IgA immune response to HBsAg, resulting in sustained HBsAg clearance in chronic carrier mice.

Ongoing research is focused on:

1. Detailed characterization of S-specific CD4 and CD8 T cell responses ex vivo.
2. Investigating the role of immune cell subsets, including plasmacytoid dendritic cells (pDCs), CD4, and CD8 T cells, in HEPLISAV-B's therapeutic efficacy through depletion experiments.