

**Table 2. Main prophylactic HCV vaccine candidates tested in chimpanzees**

PROTOCOL	OUTCOME	Ref
<p>Recombinant gpE1/gpE2 combined with oil/water adjuvants on months 0, 1 and 7</p> <p>Challenge: 10-100 infectious doses of homologous HCV1 or heterologous HCV-H</p>	<p>21 vaccinated chimpanzees / 24 controls (pooled results)</p> <ul style="list-style-type: none"> <li>• 2/12 chronic infection after homologous challenge (pooled results)</li> <li>• 1/9 chronic infection after heterologous challenge (pooled results)</li> <li>• Strong humoral immune response</li> <li>• 15/24 chronic infection in control animals (pooled results)</li> </ul>	<p>Choo Q.L. et al. and reviewed by Houghton M. et al. [88]</p>
<p>Recombinant DNA Plasmid: truncated E2, HCV 1a</p> <p>Challenge: 100 CID50 homologous monoclonal HCV</p>	<p>2 vaccinated chimpanzees / 1 control</p> <ul style="list-style-type: none"> <li>• 2/2 vaccinees: viral clearance</li> <li>• High anti-E2 antibodies in one vaccinee</li> <li>• E2-specific CD4+ response in the second</li> </ul>	<p>Forns X. et al. [90]</p>
<p>Recombinant DNA plasmid: core- E<sub>1</sub>-E<sub>2</sub> + NS3-5, gHCV1b</p> <p>Booster: recombinant adenovirus NS3-5</p> <p>Challenge: CID50 close but <b>heterologous</b> HCV1b</p>	<p>6 vaccinated chimpanzees / 2 controls</p> <ul style="list-style-type: none"> <li>• 2/6 vaccinees: viral clearance</li> <li>• HCV specific antibody and T cell response</li> <li>• Reduced peak viral load in all animals</li> <li>• 1 sterilizing immunity: high anti-E2 and strong cellular response</li> <li>• 1/2 control: viral clearance</li> </ul>	<p>Youn J.W. et al. [91]</p>
<p>Recombinant adenovirus NS3 - NS5B, HCV BK 1b</p> <p>Booster: plasmid DNA NS3-5B</p> <p>Challenge: <b>heterologous</b> H77 1a</p>	<p>5 vaccinated chimpanzees / 5 controls</p> <ul style="list-style-type: none"> <li>• 4/5 vaccinees: viral clearance after 18 months</li> <li>• Peripheral and intra-hepatic CD8+ T Ly cross-reacting with vaccine and challenge virus</li> <li>• 3/5 control: viral clearance</li> </ul>	<p>Folgori A. et al. [92]</p>
<p>HCV-LP: core E1-E2, HCV1b</p> <p>Booster: HCV-LPs</p> <p>Challenge: 100 CID 50 homologous HCV-CG1b</p>	<p>4 vaccinated chimpanzees / 4 controls</p> <ul style="list-style-type: none"> <li>• 4/4 vaccinees: viral clearance after 12 months</li> <li>• HCV specific IFN-<math>\gamma</math>+, IL-2+ CD4+, CD8+ T cell response in all vaccinees</li> <li>• No neutralizing antibodies</li> <li>• 1/4 control: viral clearance</li> </ul>	<p>Elmowalid G.A. et al. [104]</p>
<p>Recombinant DNA plasmids: Core E1-E2 and NS3, HCV 1b J4</p> <p>Booster: MVA core E1-E2 and NS3</p> <p>Challenge: <b>heterologous</b> HCV1bJ4</p>	<p>4 vaccinated chimpanzees / 2 controls</p> <ul style="list-style-type: none"> <li>• 1/4 vaccinees: viral clearance</li> <li>• Reduction of HCV load in serum and liver</li> <li>• Strong HCV CD4+ T cell response in all vaccinees</li> <li>• Anti-E1 and anti-E2 specific antibodies in all vaccinees</li> <li>• 3/4 chronic infections with high liver PD-1</li> </ul>	<p>Rollier C. et al. [105]</p>
<p>Recombinant vaccinia virus rVV: HCV 1b Core E1-E2-P7-NS2-NS3</p> <p>Booster after 52 week: rVV</p> <p>Challenge: 24 CID50 homologous HCV</p> <p>Rechallenge: pool 20 CID50 of each 6 genotypes</p>	<p>4 vaccinated chimpanzees / 2 controls</p> <ul style="list-style-type: none"> <li>• 4/4 vaccinees: viral clearance after homologous</li> <li>• Vigorous gamma-interferon enzyme-linked immunospot responses – moderate proliferative responses</li> </ul> <p>After multigenotype rechallenge: genotype 4 predominant during the early phase and 1a during the late phase; 2 negative after 60 weeks, 2 positive (low titer viremia)</p>	<p>Youn J.W. et al. [107]</p>