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A novel broadly cross-neutralizing epitope of Human Papillomavirus (HPV) 16 L2

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Objective:

In contrast to L1 Virus-like particle vaccines, HPV16 L2 induces antibodies that neutralize not only the same papillomavirus type but also other divergent genital HPV types from different phylogenetic clades, e.g. HPV types 6, 16 and 18. The current study is aimed at characterizing the conserved, cross-neutralizing epitopes of HPV 16 L2 that could be utilized in designing a peptide vaccine that targets a broad range of medically significant HPV types. **METHODS:** We immunized mice with full length L2 protein and obtained a panel of monoclonal antibodies. The positive clones were selected based on their reactivity to either L2 protein or L1/L2 empty capsids. All the reactive hybridoma supernatants were further screened by pseudovirus-based neutralization assays. **RESULTS:** An IgG2a-producing clone was able to neutralize HPV16. This monoclonal antibody reacted with peptide comprising amino acid (aa) 17-36. We also raised anti-sera to the HPV 16L2 17-36 aa peptide in rabbits. The sera reacted strongly with full length L2 proteins derived from 6,11,16,18, and Bovine papillomavirus (BPV) on a western blot. Furthermore, *in vitro* the sera neutralized both HPV16 and BPV pseudovirions as well as the real HPV11 virus. **DISCUSSION:** Since this novel 17-36 epitope from L2 is conserved among several different HPV types, induces highly cross reactive neutralizing antibodies, we believe that it has potential for the development of a simple, broadly protective HPV peptide vaccine.