Objective: The present study aims to determine whether oral immunity can be established with prophylactic HPV vaccination. While it has been shown that prophylactic vaccination can induce genital immunity, there is inadequate information on HPV vaccine-induced oral immunity, which is of particular interest due to HPV-associated oropharyngeal malignancies.

Study Design: Pre-clinical scientific investigation

Methods: C57BL/6 mice were vaccinated three times at 2-week intervals with either Gardasil (50 µl i.m.) or a pan-HPV L2 vaccine with alum adjuvant (25 µg s.c.). An in vitro neutralization assay confirmed vaccine efficacy. Additional mice were immunized with passive transfer of either Gardasil human antisera or non-immunized sera (100 µl i.p.). All vaccinated and naïve control mice were then challenged with HPV16 E6E7 Luciferase pseudovirus in the oral mucosa. Visualization of HPV infection was monitored through luciferase activity using the IVIS Spectrum Imaging System.

Results: Virus neutralization could be detected in the Gardasil mouse sera collected two weeks after final vaccination. Oral Luciferase-expressing HPV infection was not detected in Gardasil, Gardasil human antisera and L2-immunized mice. All control mice showed significant oral Luciferase-expressing HPV infection. Samples images are provided in Figures 1, 2 and 3.

Conclusions: Oral HPV infection in mice was completely prevented with all methods of prophylactic HPV immunization. These findings provide preliminary evidence that human vaccines induce protection against oral HPV infection, which has significant public health implications for HPV-associated oropharyngeal malignancies.

REFERENCES
