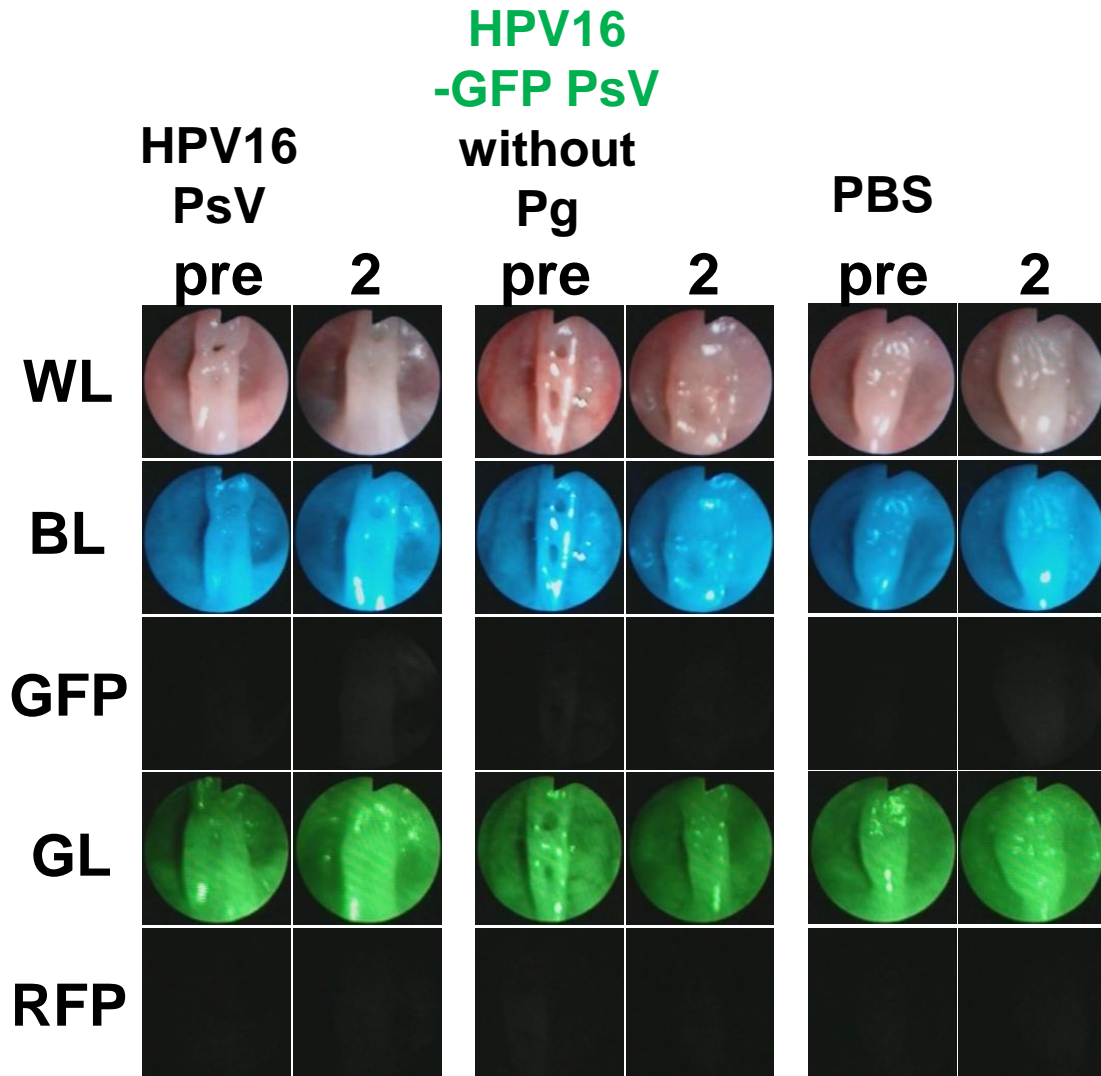


Supplemental Information

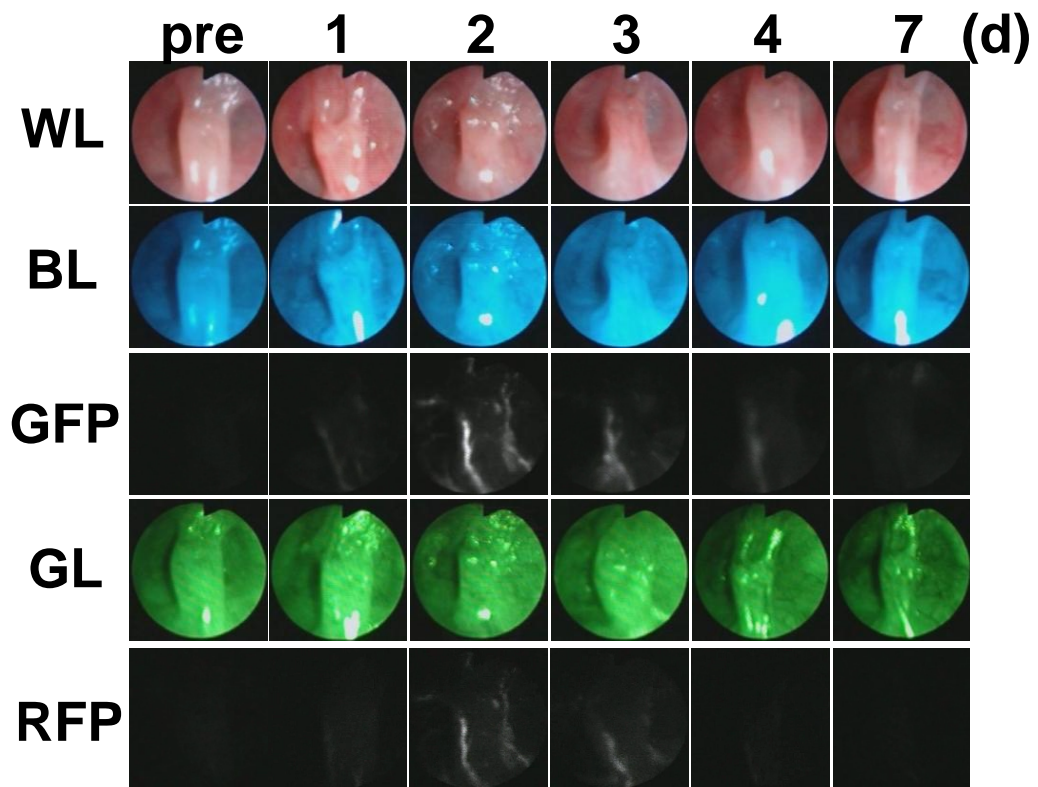


Supplemental Figure 1: Specific detection of HPV PsV infection. Infection with GFP encoding HPV PsV at 2 d demonstrates fluorescence at infected sites whereas the HPV PsV challenge without fluorescent reporter or without HPV PsV failed to demonstrate fluorescence (n = 3 mice each). In addition, pretreatment with progesterone (Pg) was required for HPV PsV infection in Balb/c mice, as there was no detectable fluorescence in mice challenged with GFP encoding HPV PsV that were not pretreated with Pg (n = 3

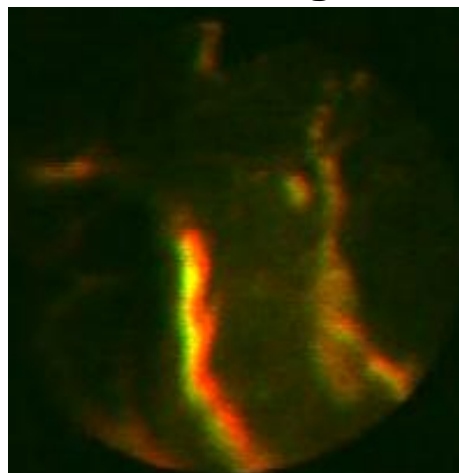
mice) .

A

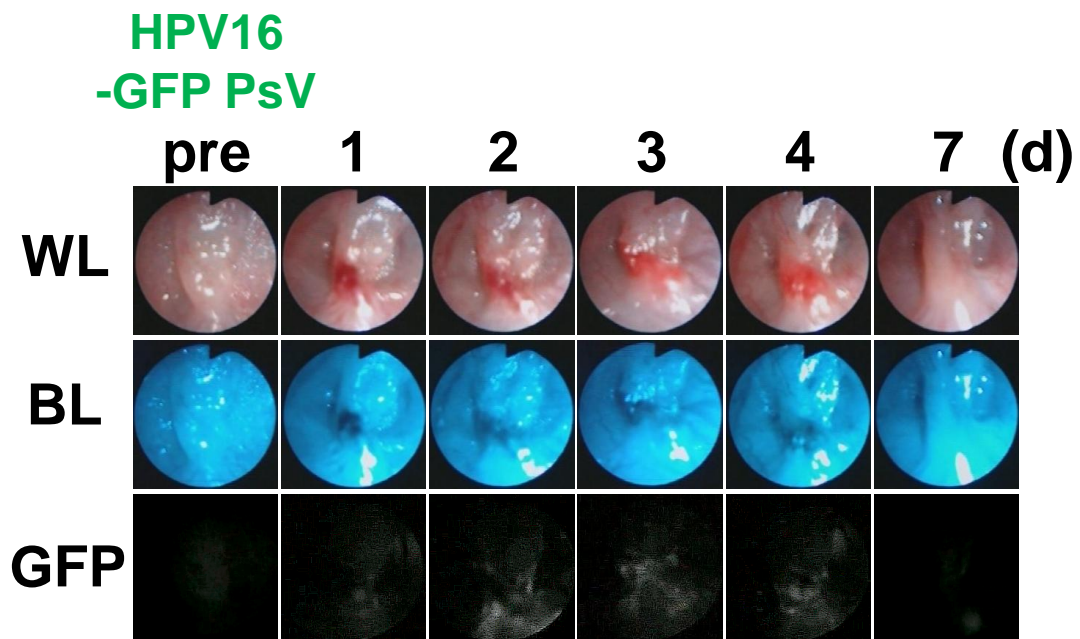
HPV16
-GFP PsV
HPV16
-RFP PsV

**B**

GFP+RFP merged 2 (d)



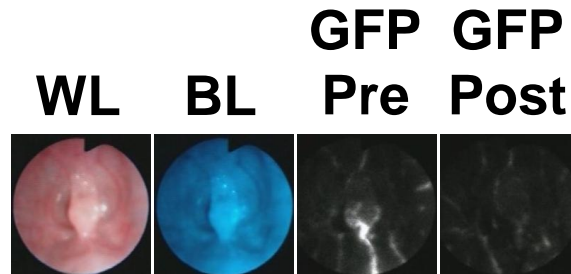
Supplemental Figure 2: Colocalization of HPV PsV infection. (A) Time course observation of Balb/c mouse coinfecting with GFP and RFP encoding HPV PsV. Both GFP and RFP expression were detected starting 1 d after HPV PsV challenge (n = 3 mice). (B) Merged green and red fluorescent image obtained starting 2 d after infection reveals colocalization of GFP and RFP fluorescence.



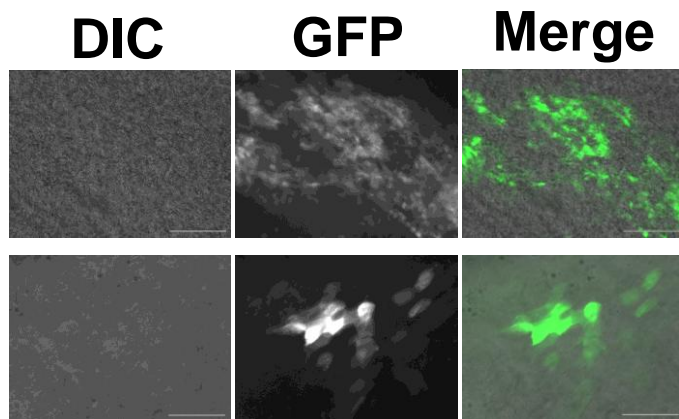
Supplemental Figure 3: HPV PsV infection pretreated with mechanical abrasion

by biopsy forceps. Dorsal side of the cervix was selectively disrupted under endoscopic imaging before PsV challenge. GFP fluorescence was observed only in the surrounding mucosa of the disrupted lesion (n = 3 mice).

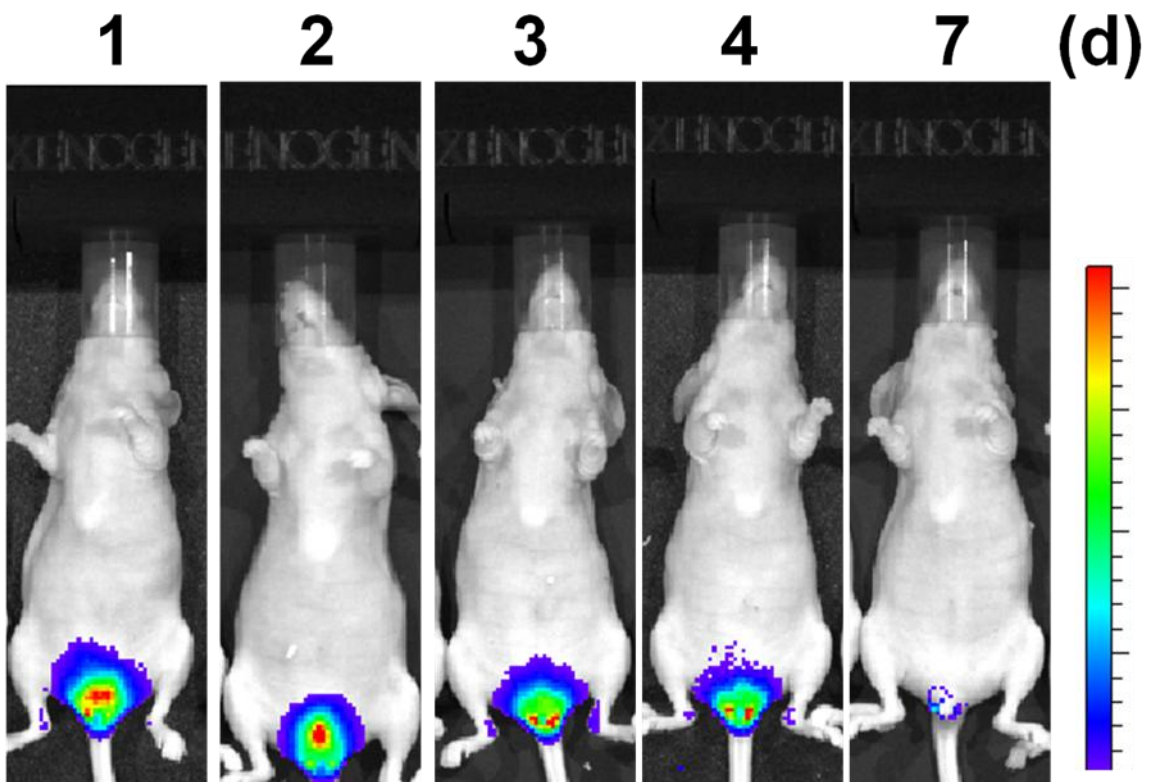
A



B



Supplemental Figure 4: Selective excision of HPV PsV infection using fluorescence endoscopically-guided biopsy. (A) GFP expressing lesion on the dorsum of the cervix was selectively removed with biopsy forceps. (see also Supplemental video 2) (B) Smears were prepared from the fresh biopsy specimens, and examined with fluorescence microscopy with low (top panel; scale bar = 50 μ m) and high (bottom panel; scale bar = 10 μ m) magnifications. GFP expressed cells were observed in the biopsy specimens (n = 3).



Supplemental Figure 5: Time course bioluminescence reporter imaging of the HPV

PsV infection. *In vivo* monitoring of the HPV PsV infection was also performed with luciferase encoding HPV PsV).

Supplemental Video 1: Real-time detection of HPV PsV infection by fluorescence endoscopy. Images were obtained 2 d after HPV PsV challenge in Balb/c mice (**A**) GFP (n = 6 mice), (**B**) RFP (n = 6 mice). Left view was white light image or excitation light image. Right view was corresponding fluorescence image demonstrating expression of the fluorescent proteins.

Supplemental Video 2: Selective excision of HPV PsV infection by fluorescence endoscopically-guided biopsy. Two days after HPV PsV challenge, fluorescence endoscopy was performed (n = 3 mice). The GFP expressing lesion was successfully removed using endoscopic biopsy forceps.