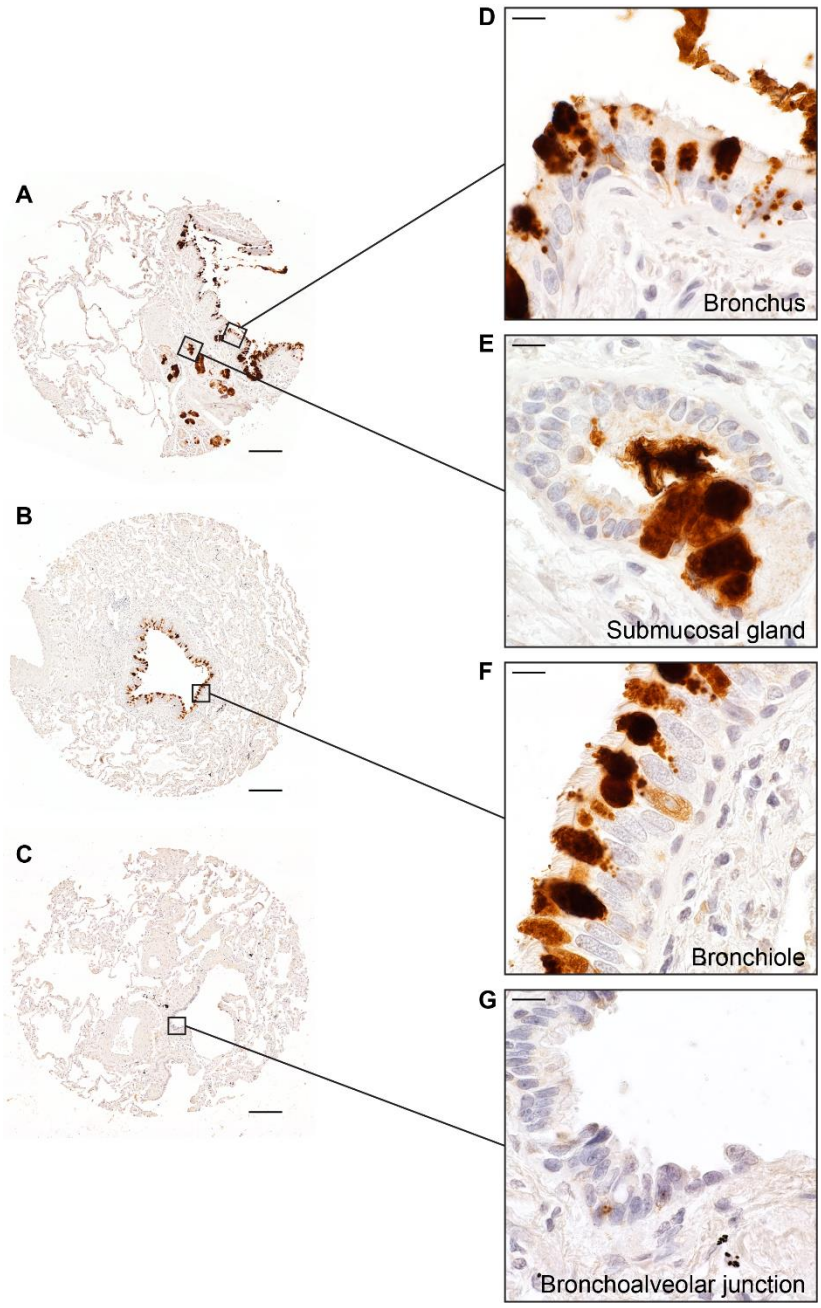
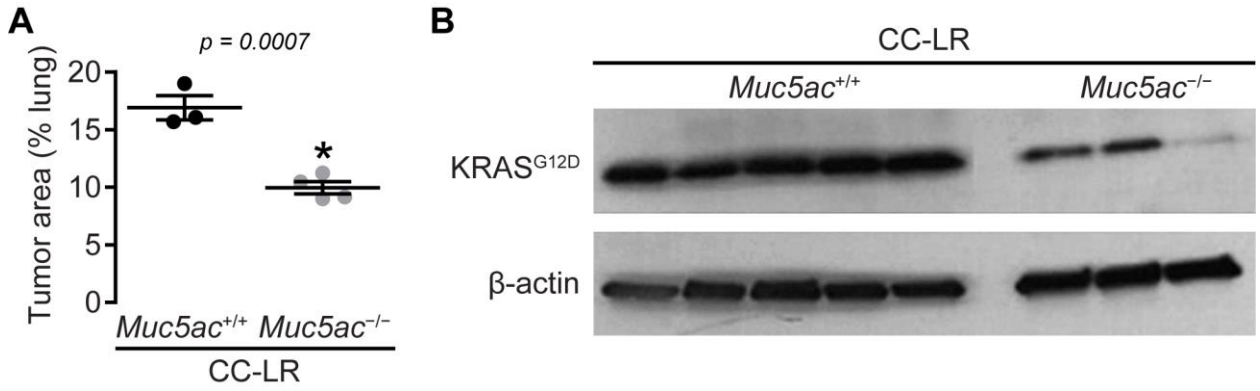
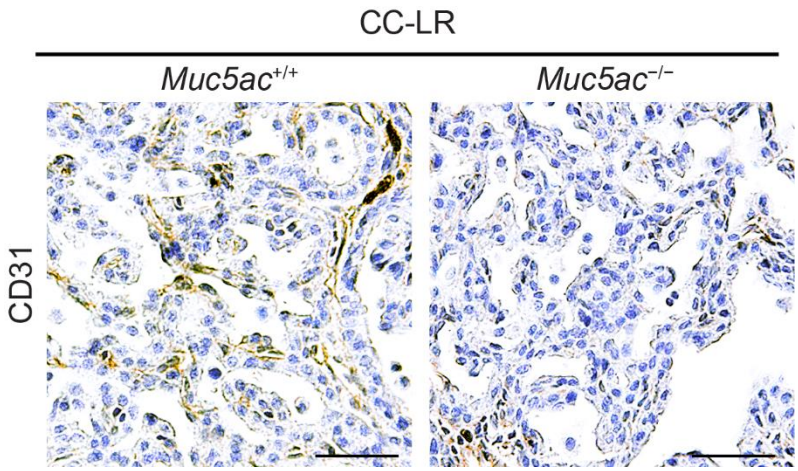


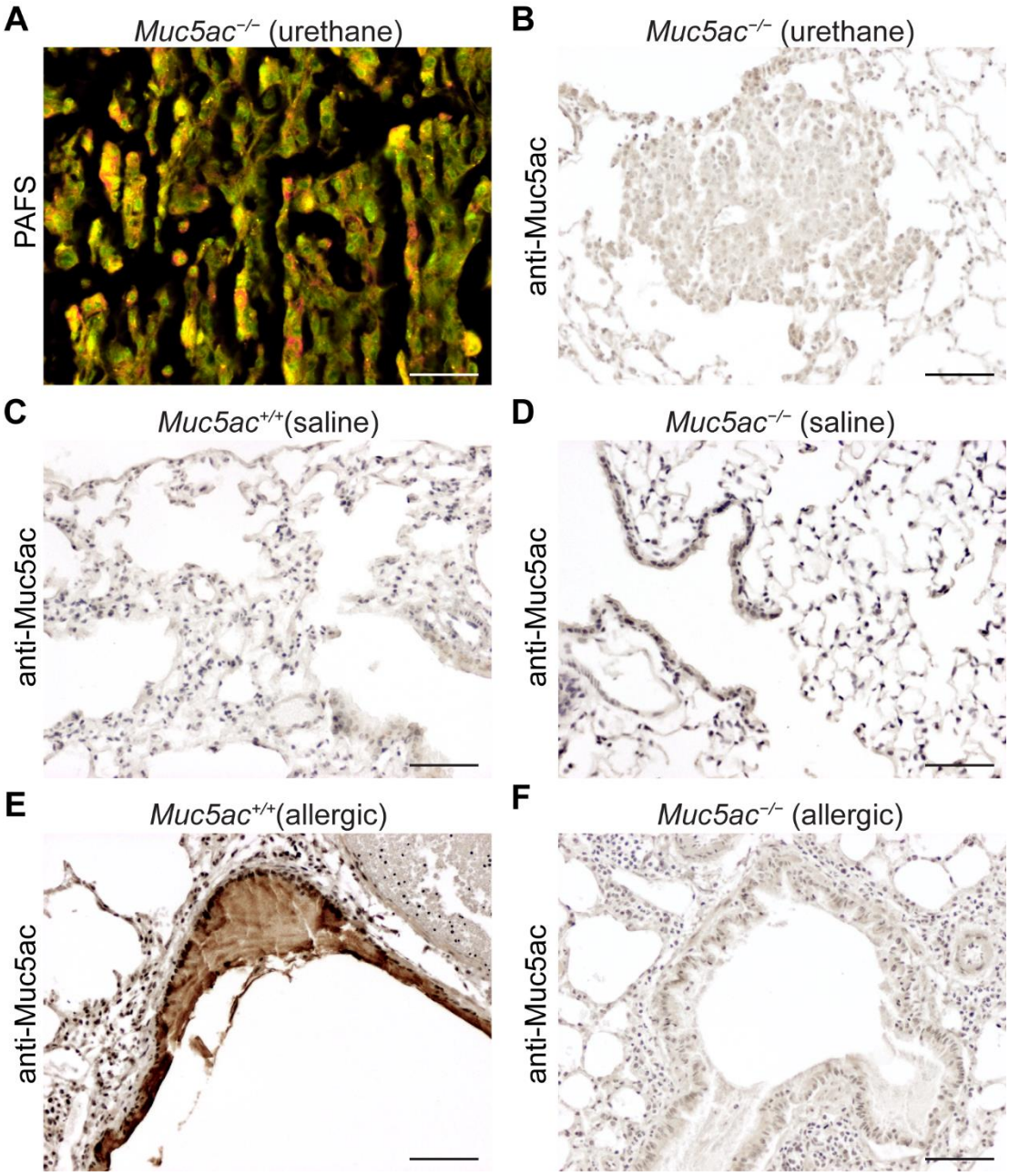
Supplemental Figure 1: MUC5AC staining in normal lung tissue. (**A**) Representative image of MUC5AC immunostaining in normal bronchus and submucosal gland regions. (**B**) Representative image of MUC5AC immunostaining in normal bronchiole. (**C**) Representative image of MUC5AC immunostaining in normal bronchoalveolar junction. Higher magnification images in show MUC5AC localization in bronchial (**D**), submucosal gland (**E**), bronchiole (**F**), and bronchoalveolar duct regions (**G**). Scale bar, 100 μm in **A-C**, 10 μm in **D-F**.



Supplemental Figure 2: Tumor size, tumor area, and mutant Kras expression are higher in wild type versus CC-LR-*Muc5ac*$^{-/-}$ **mice. (A)** Tumor size in CC-LR-*Muc5ac*$^{-/-}$ mice were significantly reduced compared to CCLR/*Muc5ac*$^{+/+}$mice. (**B**) Mutant Kras protein expression in whole lung lysate from CCLR/*Muc5ac*$^{+/+}$ and CC-LR-*Muc5ac*$^{-/-}$ mice at the age of 14 weeks. Data are means ± SEM in **A**; '*' signifies statistical significance between groups by t test.



Supplemental Figure 3: CD31 immunostaining is reduced in CC-LR-*Muc5ac*$^{-/-}$ mice. Representative photomicrographs of anti-CD31 stained tumors in lung tissue of CCLR/*Muc5ac*$^{+/+}$ and CC-LR-*Muc5ac*$^{-/-}$ mice at ages 14 weeks. Scale bars, 50 μm.



Supplemental Figure 4: Mucin staining in control tissues. **(A)** PAFS labeling of an adenocarcinoma in urethane treated *Muc5ac*$^{-/-}$ lung tissue. **(B)** Anti-Muc5ac labeling of a lung adenocarcinoma tissue in a *Muc5ac*$^{-/-}$ mouse. **(C-D)** Anti-Muc5ac labeling of normal wild type *Muc5ac*$^{+/+}$ **(C)** and *Muc5ac*$^{-/-}$ **(D)** mouse bronchioles following i.p. saline treatments to control for urethane. **(E-F)** Anti-muc5ac labeling of wild type *Muc5ac*$^{+/+}$ (**E**) and *Muc5ac*$^{-/-}$ (**F**) mice exposed to nebuliuzed allergen used as technical controls for Muc5ac immunolabeling (26). Scale bars, 50 μm in **A** and 100 μm **C-F**.