

**Supplementary Fig. 4.** Alcian blue (pH, 2.5) and high-iron diamine (HID) staining. (A–C) Three representative images of resected ileum from a patient with ulcerative colitis. Almost all goblet cells were negative for HID (blue). (D–F) Three representative images of resected colon from a patient with ulcerative colitis. Almost all goblet cells were positive for HID (black). Scale bar =  $100 \mu m$ .