**FIGURE S1: Optimization of the model of severe colitis:** (A) Experimental design. Severe colitis was induced in the treatment group (black triangles; N = 7) by the intrarectal application of two doses of Dinitrobenzene-sulfonic acid (DNBS): a full dose on Day 1 (58 mg/mL) and a half dose on Day 4 (29 mg/mL), both in 50% ethanol. The control group (grey diamonds; N = 7) received only 50% ethanol. (B) TNFα relative gene expression during the severe colitis. Expression is relation to the ubiquitin C housekeeping gene and calculated using the method of (Pfaffl, 2001). Differences between groups calculated with Welch’s t-tests followed by Benjamini-Hochberg correction. (C) Weight rapidly decreases during DNBS induced colitis. % weight loss was calculated by comparing to weight at Day 20, and differences between groups calculated with Welch’s t-tests followed by Benjamini-Hochberg correction. Error bars are standard error. \* p=0.05 – 0.01, \*\* p=0.01 – 0.001, \*\*\* p<0.001.

**FIGURE S2: Bacterial composition visualized with NMDS plots for each day.** Bray-Curtis dissimilarity. Differences between treatment groups analyzed with PERMANOVA analysis for each day. \* p=0.05–0.01, \*\* p=0.01-0.001. See Table S2 for full results.

**FIGURE S3. Microbiota composition and richness for experiment 1C**: effects of immature *H. diminuta* on severe colitis. (A) Chao 1 metric of richness over time. Thin lines are individual rats; thick line represents the mean. Dashed vertical lines indicate DNBS colitis induction. (B) Taxonomic composition of individual rats over time at the family level, which individual and cage noted.

**FIGURE S4. Bacterial composition across experiments with NMDS.** Bray-Curtis dissimilarity. Data for all experiments processed at the same time with MED. Rarefied to 10,000 seqs/sample.