Supplemental Figure Legends

Supplemental Figure 1: GI carriage of *P. aeruginosa* obtained with various regimens of vancomycin treatment. Mice received daily injections of vancomycin for various times before and after orogastric gavage ("x + y days" with x = the number of days of vancomycin injections prior to and on the day of orogastric gavage, and y = the number of days of vancomycin injections after the bacterial inoculation). Orogastric gavage was performed with $10^{5.8+/-0.2}$ CFU of strain PABL048. Each symbol represents one mouse.
Solid horizontal lines indicate medians. The experiment was performed twice (combined results shown; n = 10)). The dotted line indicates the limit of detection. *p ≤ 0.05, **p ≤ 0.01 (t-tests). Significant differences were not detected for any of the time points between mice treated with 5 + 2 days and 3+ 2 days of vancomycin.

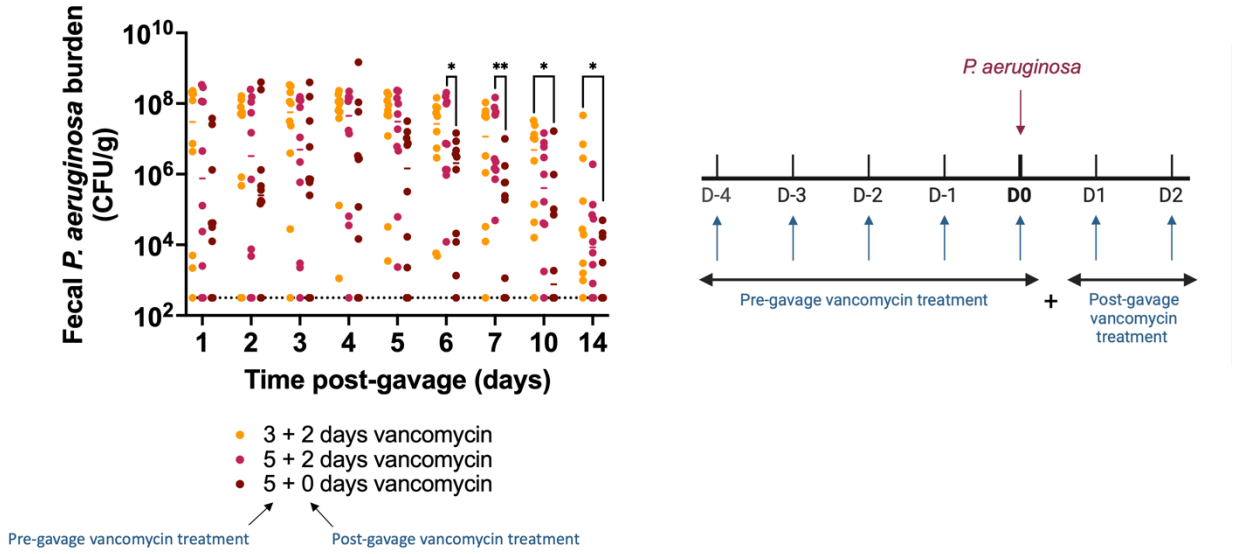
Supplemental Figure 2: Fecal burden of strain PABL048 at day 3 post-inoculation. Mice were treated with either PBS (pink) or vancomycin (black and teal) for 7 days. On the fifth day of treatment, mice received either PBS (black) or $10^{7.1}$ CFU of PABL048 through orogastric gavage (pink and teal). The experiment was performed once (n=3-4 animals/group). Each symbol represents one mouse. Lines indicate medians. The dotted line indicates the limit of detection.

Supplemental Figure 3: Recovery of *P. aeruginosa* from the GI tract at early times following inoculation. *P. aeruginosa* burden in GI tissues of mice gavaged with PABL012. Mice were sacrificed at (A) 1 h (n = 5) or (B) 6 h (n = 5) post-orogastric gavage with $10^{6.1}$ CFU of PABL012, and bacterial CFU in the organs were enumerated by plating. Experiment performed once. Red circles represent the inoculums. Each black circle represents one mouse. Solid horizontal lines indicate medians. The horizontal dotted line indicates the limit of detection. Open circles represent tissues with CFU bellow the limit of detection.

Supplemental Figure 4: Ratio of bacterial recovery vs. founding population in GI sites. Tissues were harvested at 24 (purple, n = 5), 48 (blue, n = 4) or 72 hours (green, n = 3) after orogastric gavage with $PABL012_{pool}$. Fecal samples were collected at 24 hpi ("feces 24 hpi") regardless of the ending timepoint. Additional terminal fecal sample timepoints were available for animals that had organs harvested at 48 or 72 hpi ("feces late"). CFU/N_s ratios were calculated. Squares represent medians, and error bars represent the 95% confidence intervals.

Supplemental Figure 5: Barcode frequency distributions of *P. aeruginosa* bacteria recovered from mice following orogastric inoculation. The frequencies of unique barcodes in each bacterial population from different sites are shown. (A) Inoculum samples. Barcode frequency was analyzed in the 26 bacterial aliquots that were each used to inoculate a different mouse in the STAMP experiment. Six representative frequency distributions are shown. (B-D) Barcode frequency distributions after noise removal for the output samples from mice sacrificed at (B) 24, (C) 48 or (D) 72 hours post-orogastric gavage. Each dot represents the frequency at which one specific

935 barcode was detected. For each mouse ("M#"), dots representing the most frequent
936 clones identified in the stomach are colored blue in all organs, and dots representing the
937 most frequent clones identified in the small intestine are colored red.
938



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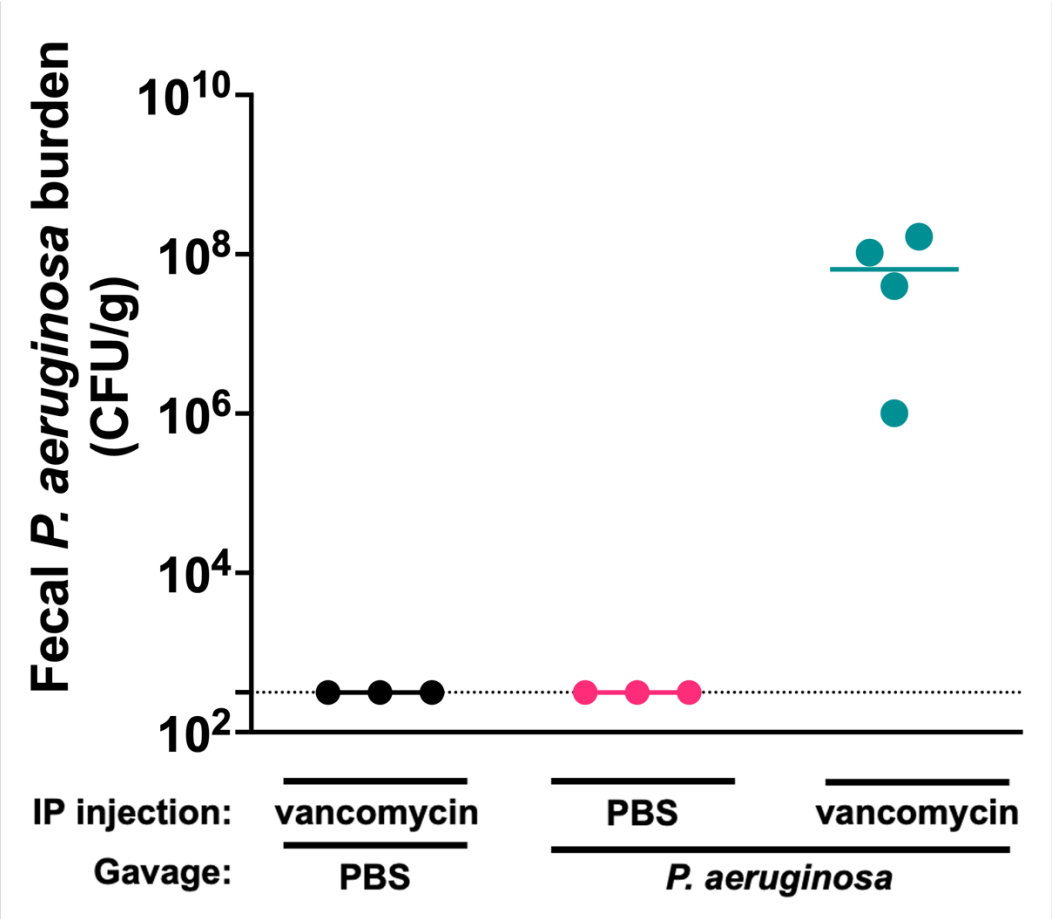

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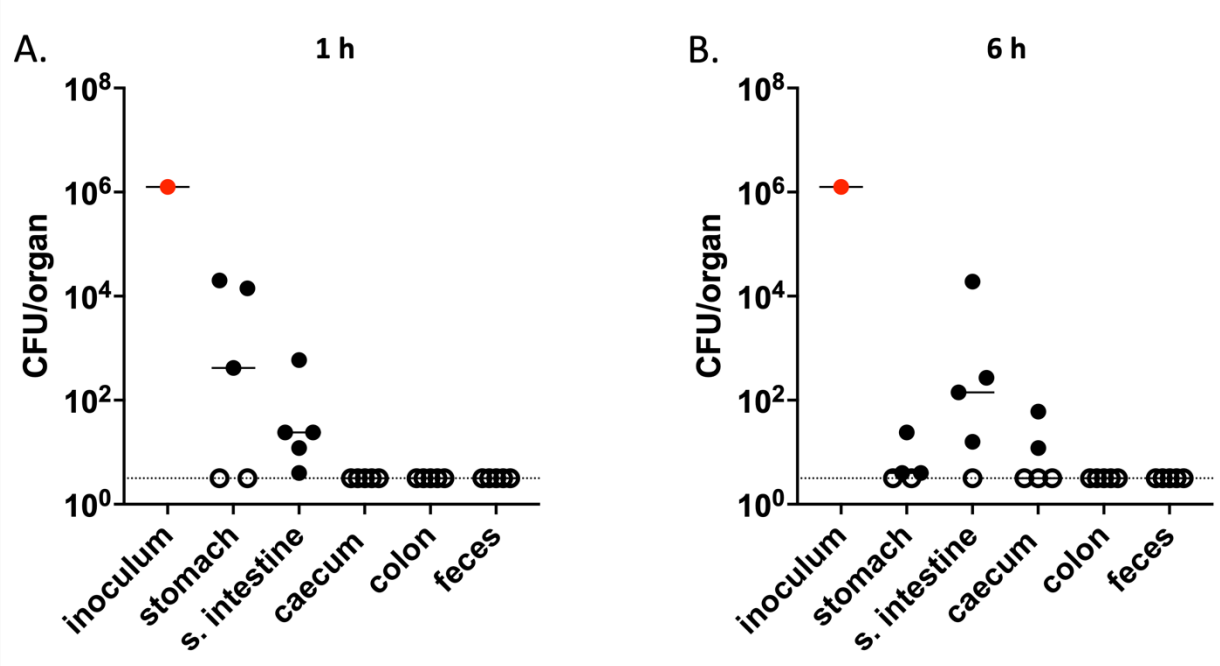

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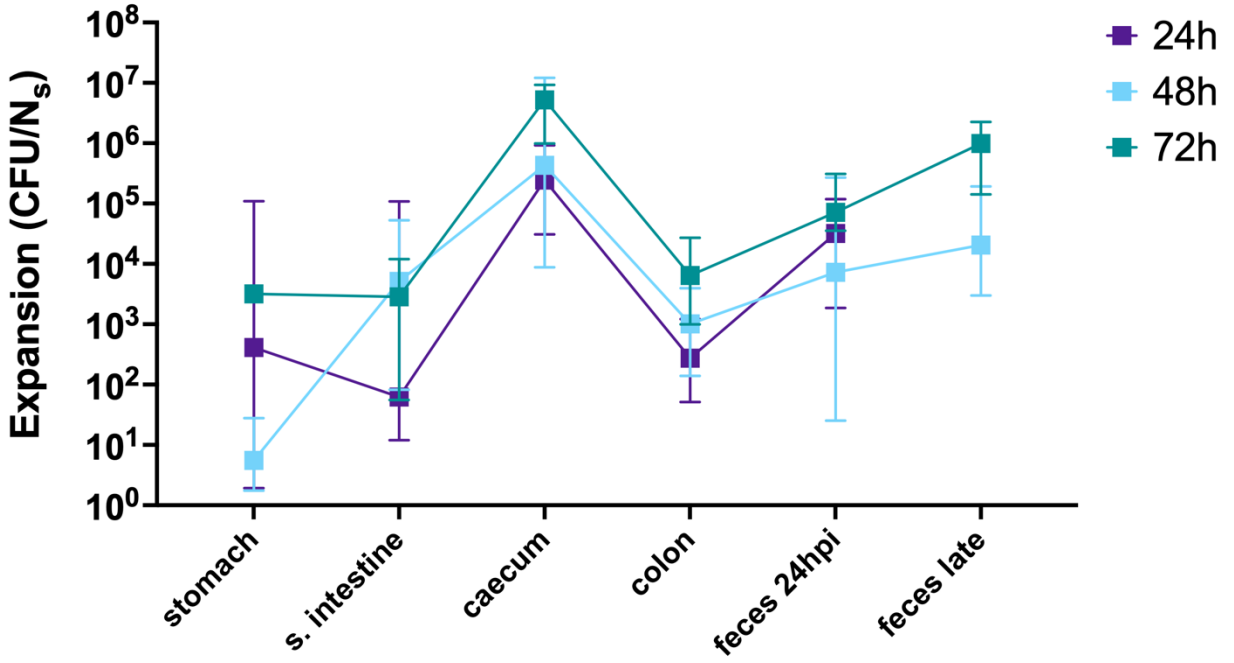

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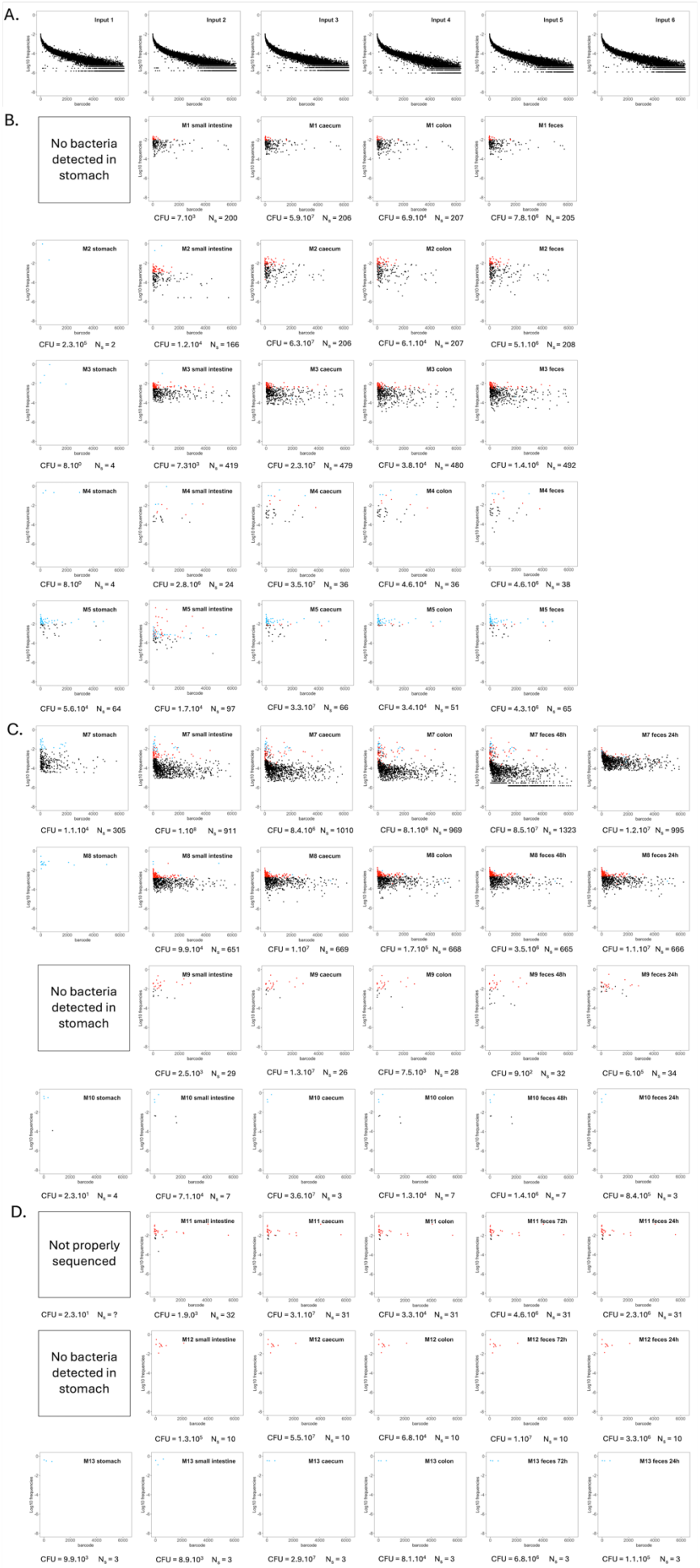

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