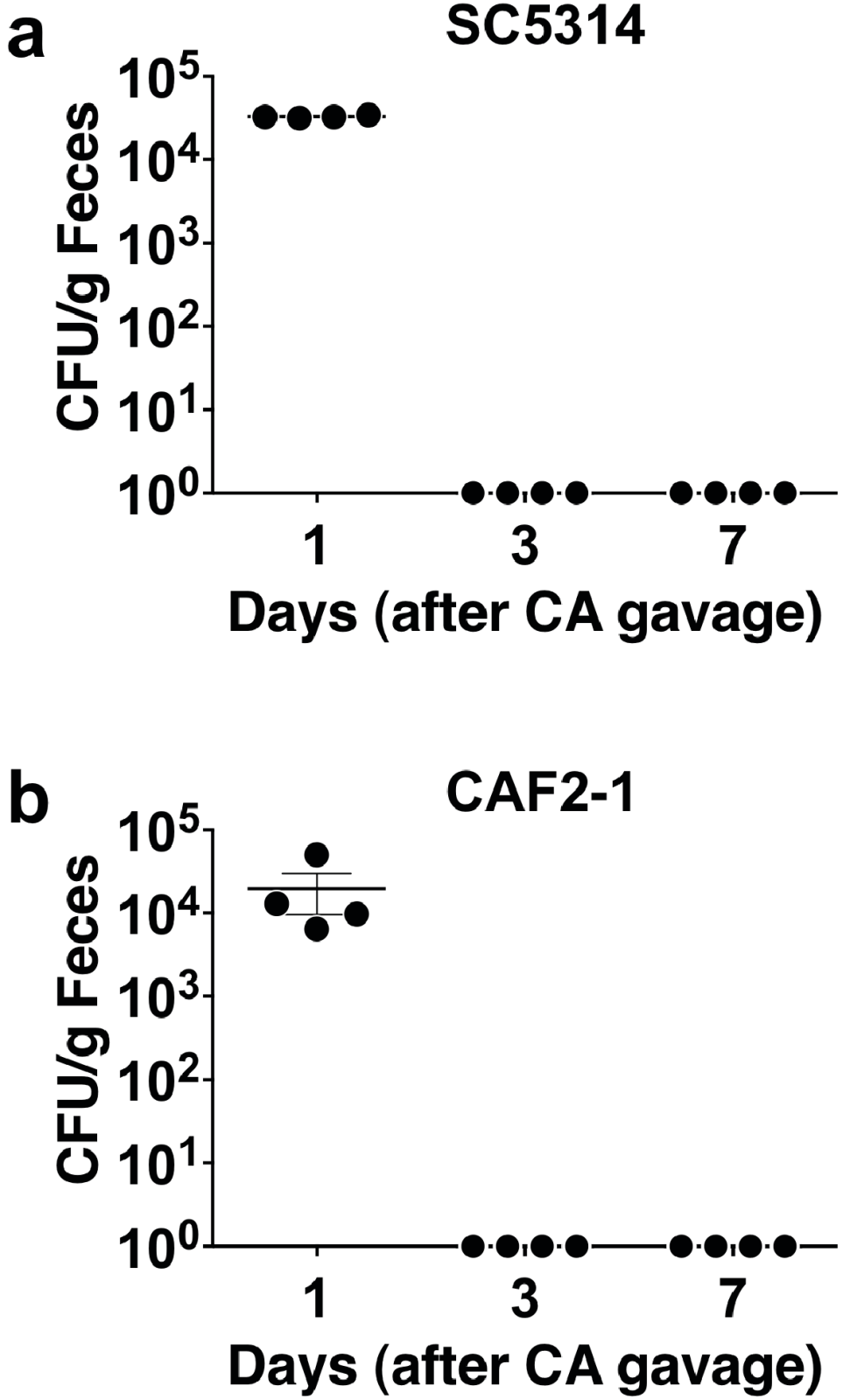
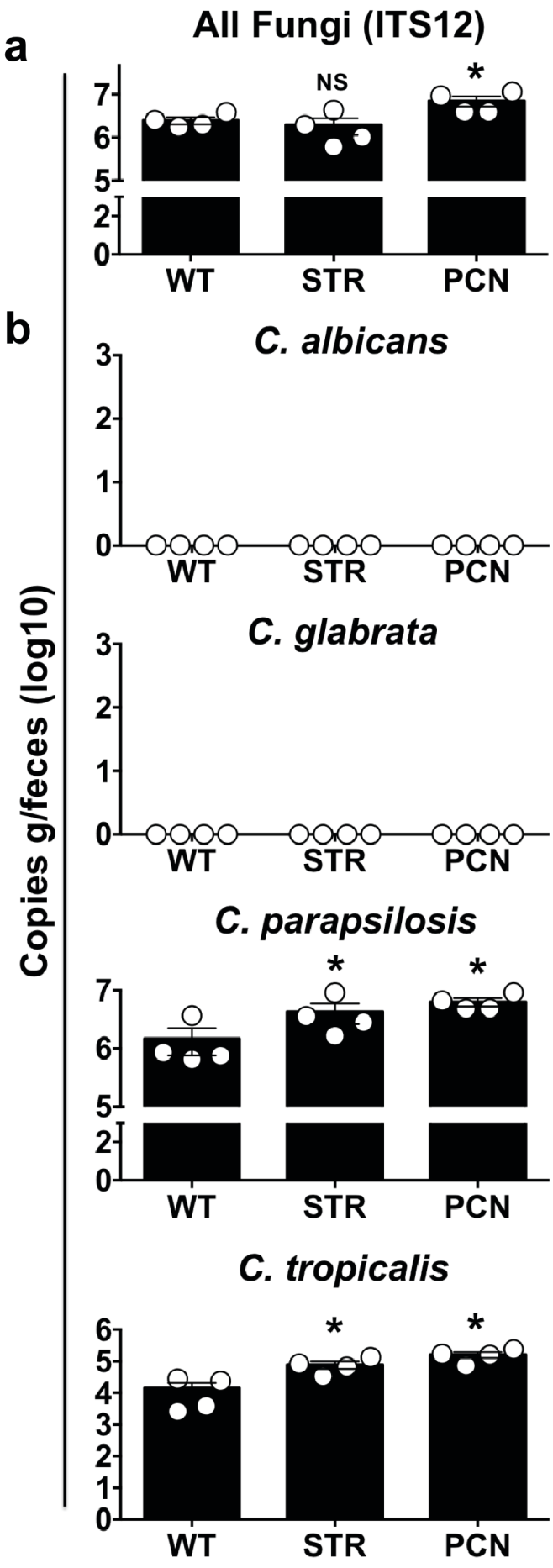
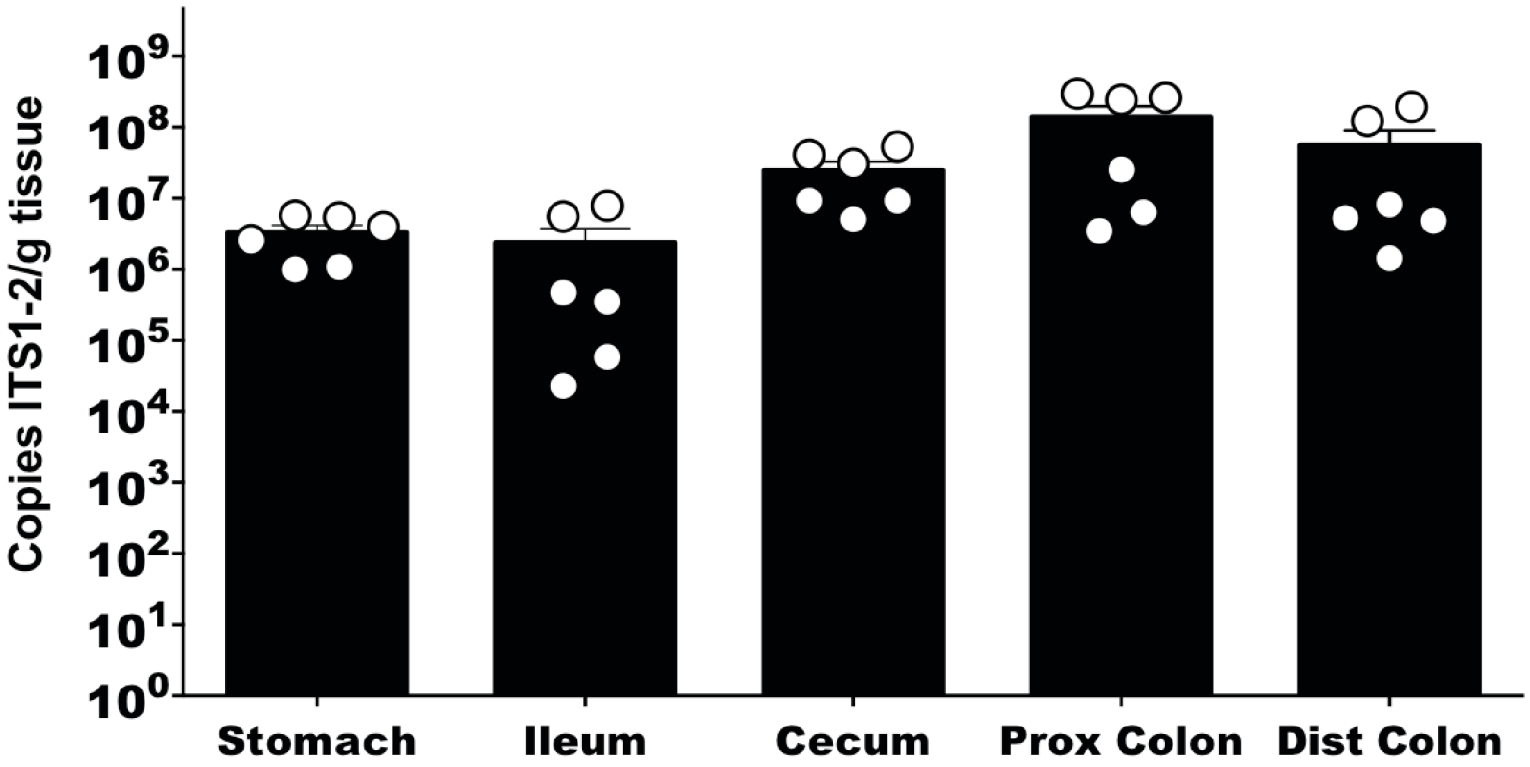


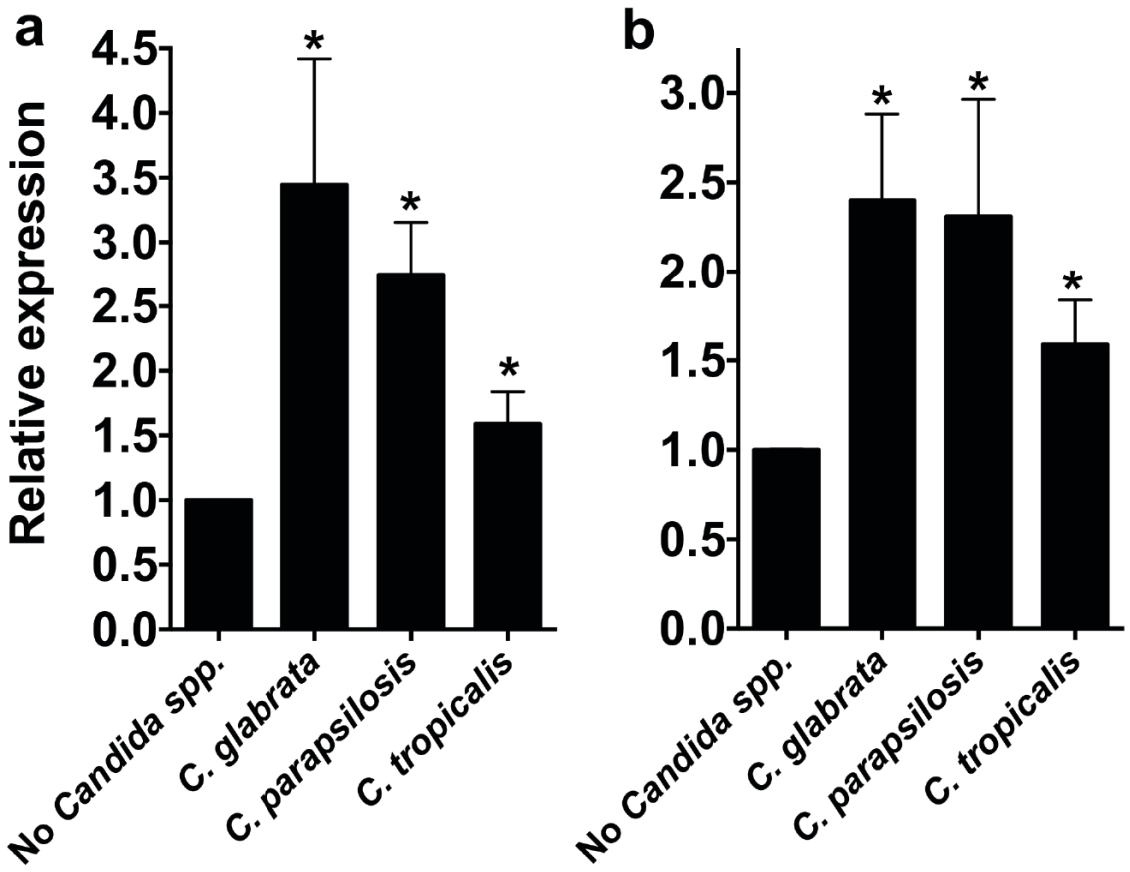
Supplementary Figure 1. Murine-adapted *Candida albicans* GI colonization levels in adult mice. Murine-adapted *C. albicans* strains (**a**) SC5314 and (**b**) CAF2-1 GI colonization levels in untreated (no antibiotics) C3H/HeN adult mice (Harlan, female, 6-8 weeks). n=4. Points represent results from individual animals, and horizontal lines with bars representing the median with interquartile range.



Supplementary Figure 2. Quantification of endogenous fungal flora in the GI tracts of C3H/HeN Mice
(**a**) ITS1-2 rDNA levels of gDNA recovered from fecal specimens of C3H/HeN mice (Harlan, female, 6-8 weeks old) treated with sterile water (WT), streptomycin (STR) or penicillin G (PCN) in the drinking water for 5 days. (**b**) *C. albicans*, *C. glabrata, C. parapsilosis*, and *C. tropicalis* levels as determined by qPCR on microbial gDNA recovered from fecal specimens of C3H/HeN adult mice pre-treated with or without antibiotics in the drinking water for 5 days. Points represent results from individual animals, and horizontal lines with bars representing the mean with SEM. n=4. Statistical analysis was performed by Mann-Whitney test. * $p < 0.05$; ns, not significant.

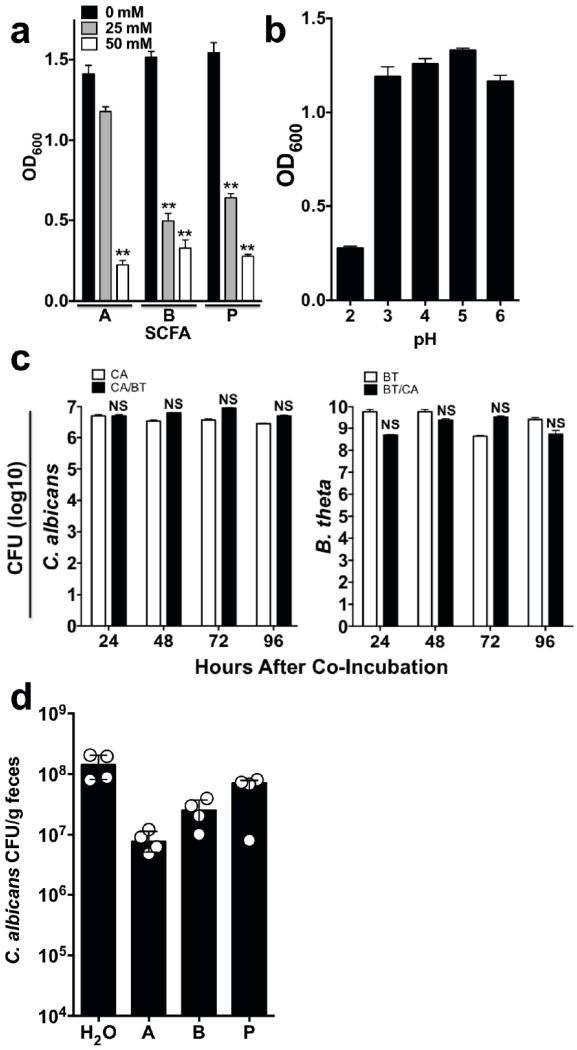


Supplementary Figure 3. Quantification of fungi in mucosa isolated from stomach, ileum, cecum, proximal and distal colon of mice. ITS1-2 rDNA level of intestinal segments of C3H/HeN mice (Harlan, female, 6-8 weeks old) treated with penicillin/streptomycin and colonized with *C. albicans* strain SC5314. Data was generated by qPCR and normalized to 18S rDNA. Points represent results from individual animals, and horizontal lines with bars representing the mean with SEM. n=6.

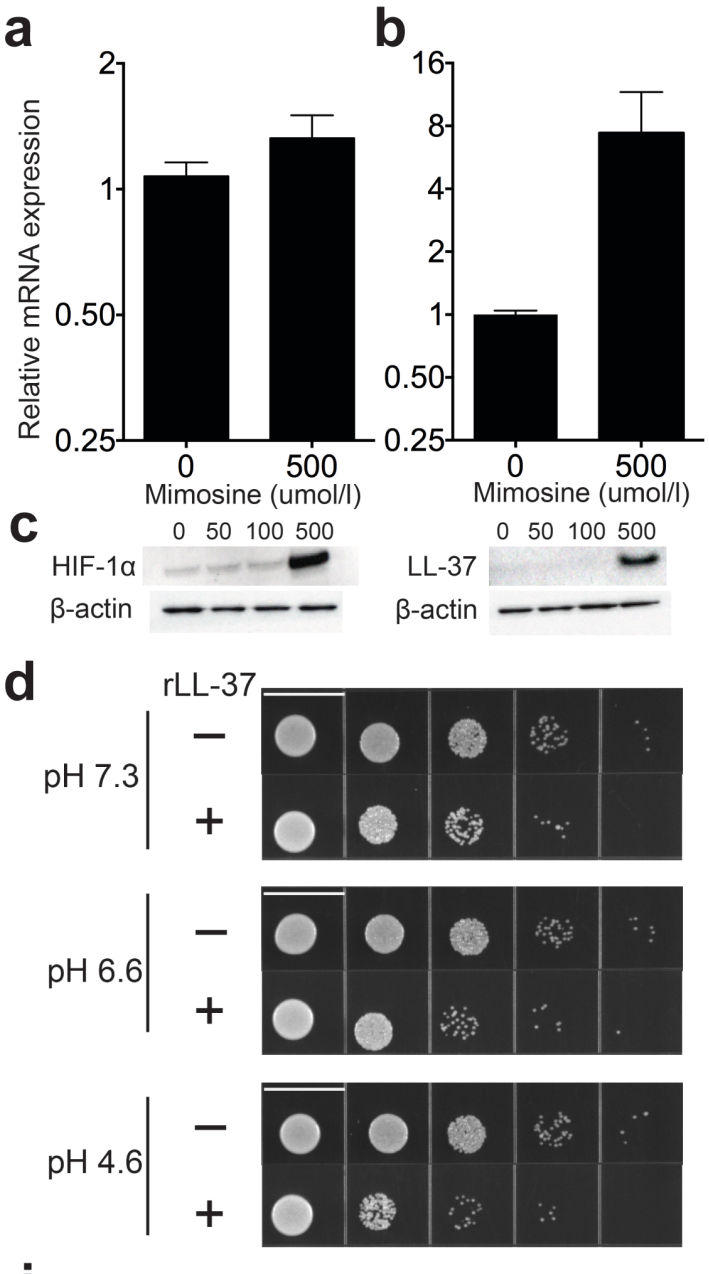


Supplementary Figure 4. ***C. glabrata*, *C. parapsilosis,* and *C. tropicalis* induce *Hif1a* and *Cramp* expression in colons of antibiotic-treated mice.**

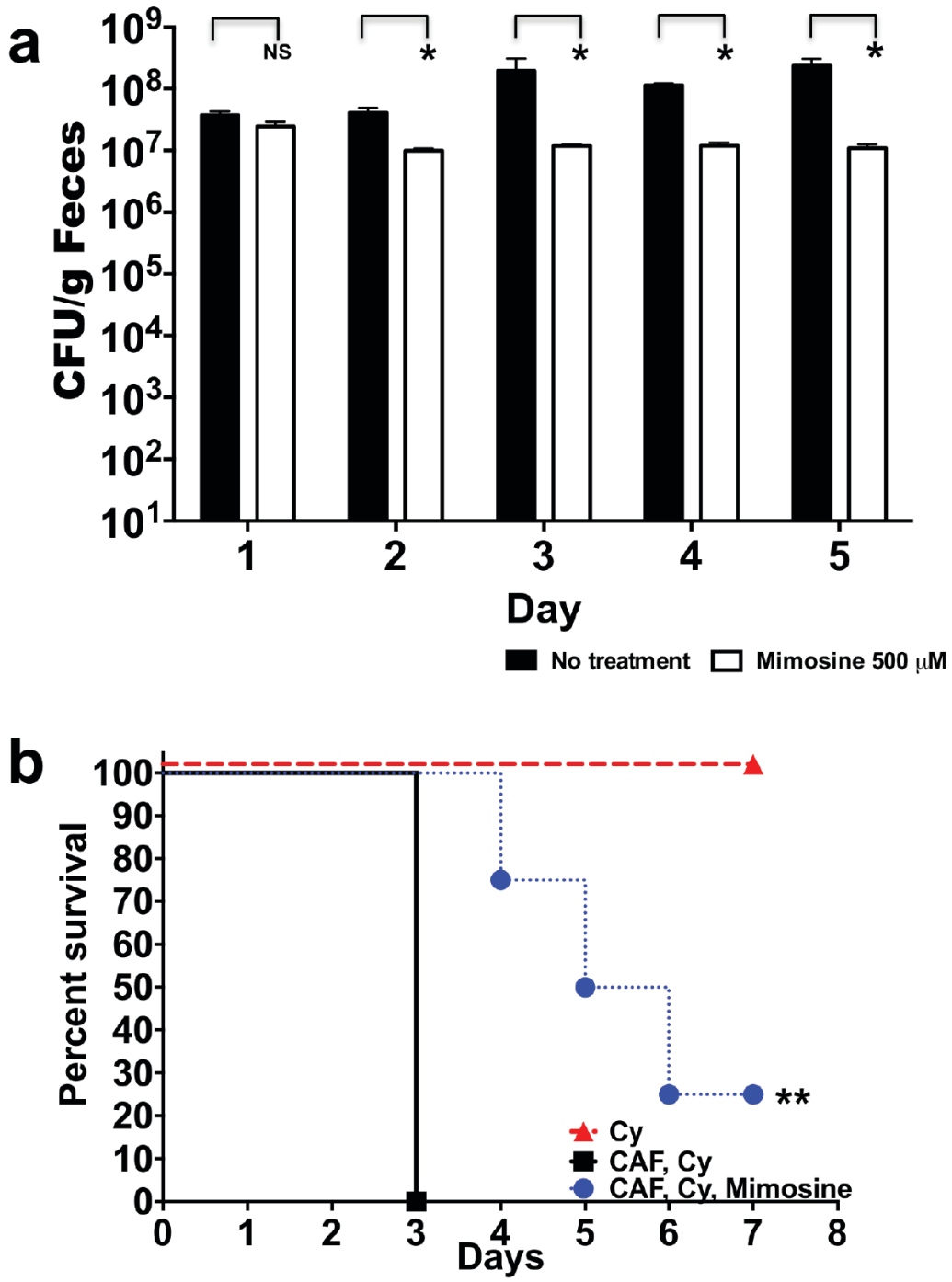
(**a**) *Hlf1a* and (**b**) *Cramp* gene expression in colons of antibiotic (PS)-treated mice +/- oral gavage with *Candida spp.* (2×10^8 cfu). *Candida spp.*: *C. glabrata*, ATCC 15126; *C. parapsilosis*, clinical isolate; and *C. tropicalis*, ATCC 66029. Mice (C3H/HeN, Harlan, female, 6-8 weeks) were maintained on PS water, and colons were resected 7 days after Candida gavage. For all experiments, n=4 . All data shown are means ± SEM. Assays were performed in triplicate. Statistical analysis was performed by Mann-Whitney test. * $p < 0.05$; ** $p < 0.01$; ns, not significant.



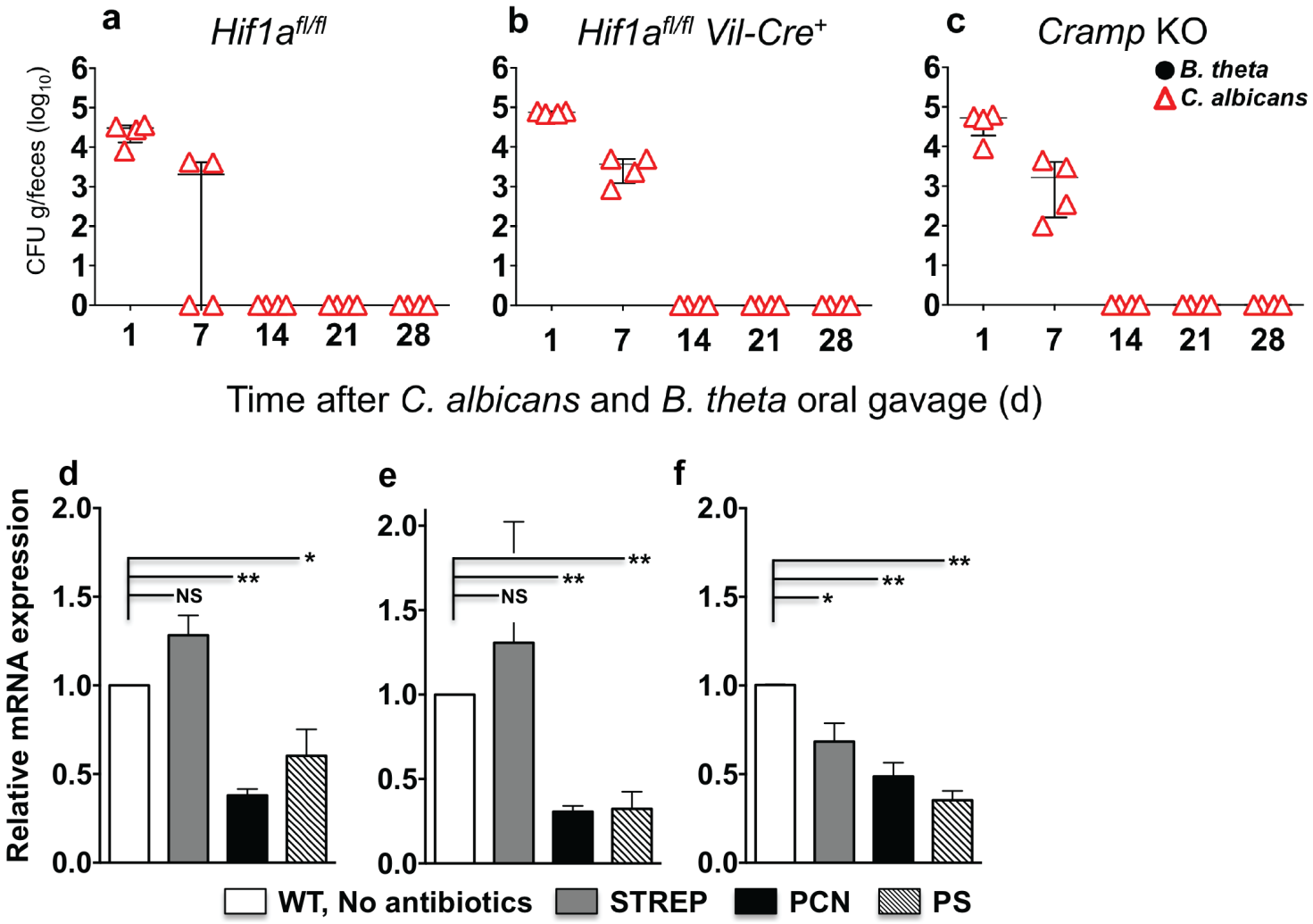
Supplementary Figure 5. Small-chain fatty acids (SCFAs) inhibit *C. albicans* growth *in vitro* and decrease *C. albicans* colonization in mice. OD_{600} readings of *C. albicans* grown (**a**) aerobically ± SCFA in YPD media (pH 3-6) at 30°C for 12 hours and (**b**) aerobically in YPD media (pH 2-6, adjusted by HCl) at 30°C for 12 hours. A = acetic, B = butyric, P=propionic acid. Means ± SEM. Assays were performed in triplicate. Mann-Whitney test. * $p< 0.05$; ** $p<0.01$ (**c**) Quantification of *C. albicans* strain SC5314 and *B. theta* grown in TYG media at 37°C under anaerobic conditions. CA and *B. theta* were first grown individually in TYG media at 37°C under anaerobic conditions. Cultures were then diluted to an OD_{600} = 0.2 for the initial time point (0 hours). CA and *B. theta* co-cultures were created by combining equivalent volumes of CA and B. theta individual diluted cultures. Cultures were samples at selected time points and CA and *B. theta* (CFU) were enumerated by plating on YVG agar (aerobically) and BHI/Blood agar (anaerobically), respectively. Bars represent means ±SEM. Assays were performed in triplicate. Mann-Whitney test. ns, non-significant. (**d**) C. albicans GI colonization levels in mice pre-treated with antibiotics (PS water), colonized with C. albicans, and then treated with PS water ± 50 mM SCFAs. Colonization levels were checked after 14 days of SCFA water treatment. n=4. Points represent results from individual animals. Horizontal lines with bars represent the median with interquartile range. Mann-Whitney test. * $p<0.05$. A= acetic, B= butyric, P=propionic acid, H20 = PS water adjusted for pH. (**Supplementary Table 2**).



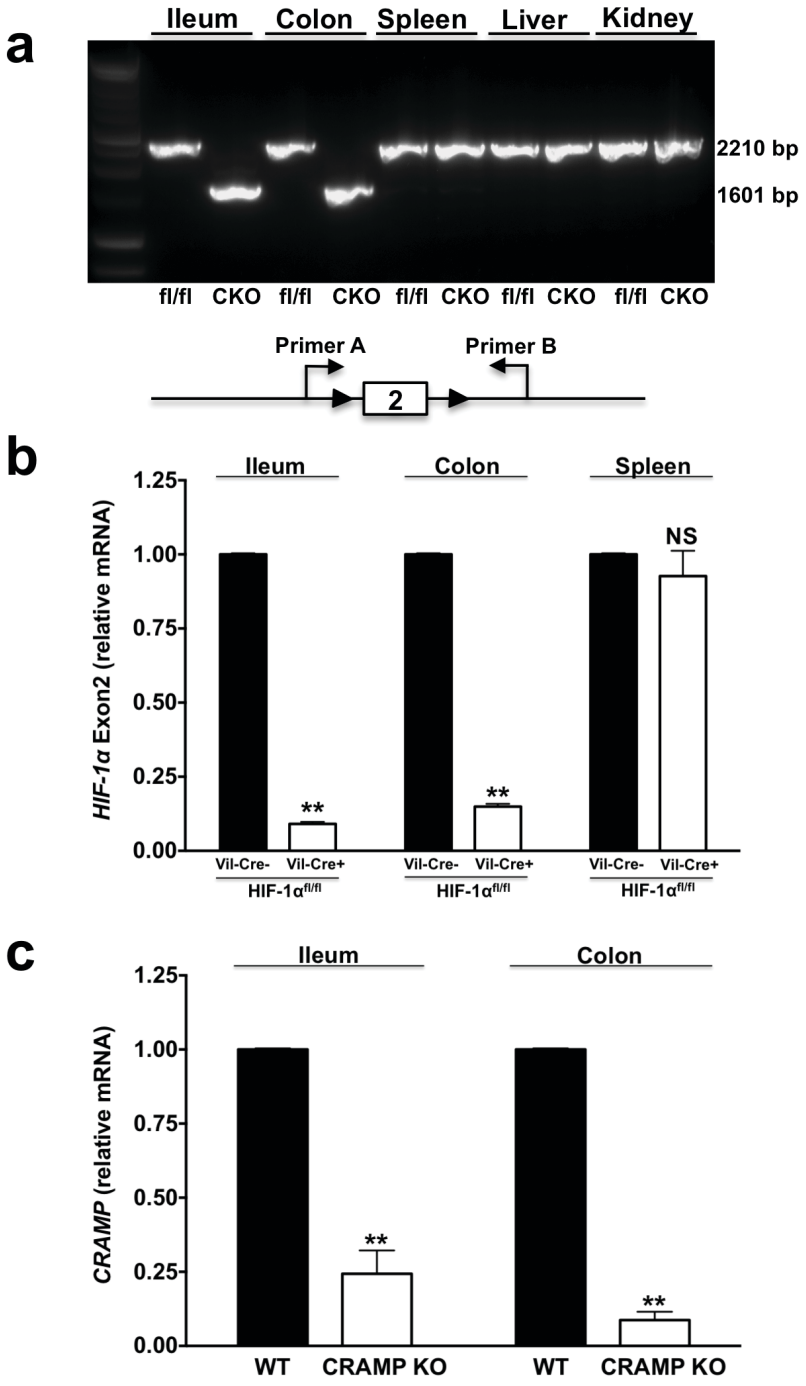
Supplementary Figure 6. Pharmacologic activation of HIF-1α induces LL-37 expression and boosts *C. albicans* clearance by human colonocytes. (**a**) HIF1a and (**b**) LL-37 mRNA and (**c**) protein expression in HT-29 human colonocytes treated with L-mimosine. (**d**) Spot assay to determine Candidacidal activity of recombinant LL-37 (30 ug/ml) in the setting of varying pH. Scale bar, 13 mm. (**e**) Extracellular killing of *C. albicans* strain SC5314 (multiplicity of infection, 1 yeast per cell) by HT-29 cells incubated with 0-500 μM L-mimosine. Three separate experiments with three replicates per experiment were conducted. (**f**) HIF1a and (**g**) LL-37 gene expression in human colonocytes treated with siRNAHIF1a while concurrently being exposed to L-mimosine ± *C. albicans*. Assays were performed in triplicate. (**h**) Extracellular killing of *C. albicans* strain SC5314 by HT-29 cells incubated with 0-500 μM L-mimosine and then transfected ± siRNAHIF1a. Three separate experiments with three replicates per experiment were conducted. For all experiments, statistical analysis by Mann-Whitney test, * $p< 0.05$, ** $p<0.01$, *** $p<0.001$. (**i**) Quantification of *Candida albicans* strain SC5314 grown in RPMI-1640 with 10% FCS ± L-mimosine at 37°C for 8 hours. Bars represent means ± SEM. Assays were performed in triplicate. Statistical analysis was performed by unpaired Student's t-test. * $p< 0.05$; ** $p<0.01$; ns, not significant.



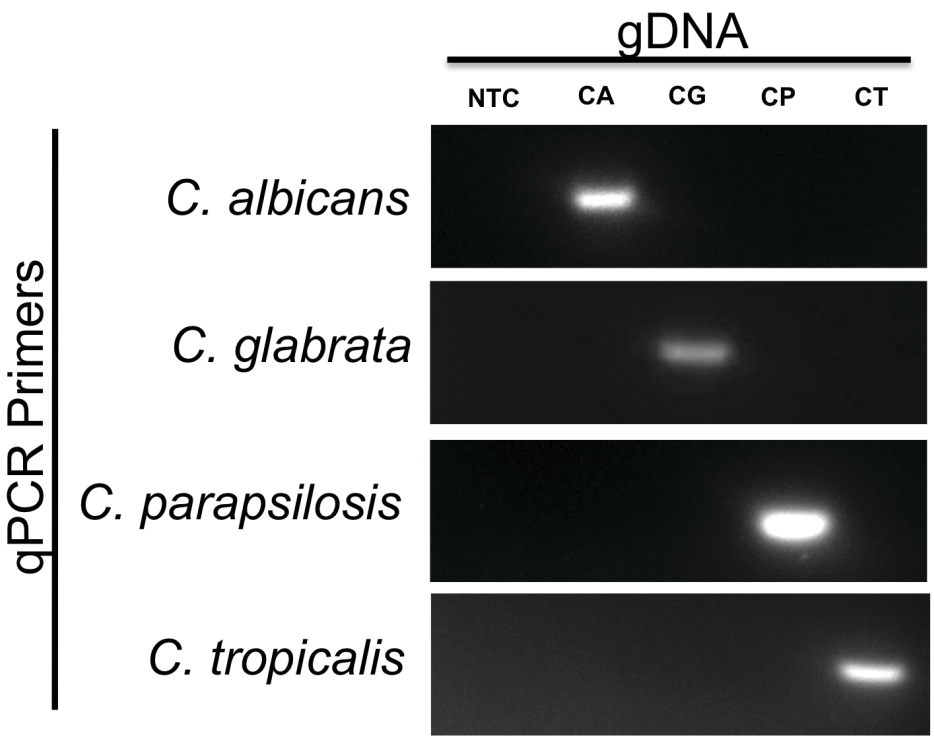
Supplementary Figure 7. L-mimosine treatment decreases *Candida albicans* CAF2-1 GI colonization and decreases dissemination. (**a**) *C. albicans* strain CAF2-1 GI colonization levels in *Hlf1a*$^{fl/fl}$ mice treated ± L-mimosine. n=8. Bars represent the mean with SEM. Statistical analysis was performed by Mann-Whitney test. * $p<0.05$; ** $p<0.001$; ns, not significant. (**b**) Survival curves of *Hlf1a*$^{fl/fl}$ mice treated ± L-mimosine after the administration of cyclophosphamide. n=8. Statistical analysis was performed by log-rank test. * $p< 0.05$; ** $p<0.01$; ns, not significant.



Supplementary Figure 8 ***HIf1a*** and ***Cramp*** **are not necessary for** ***C. albicans*** **GI colonization resistance in wild-type mice.** *Candida albicans* (red triangle) GI colonization levels of (**a**) *Hif1a*$^{fl/fl}$, (**b**) *Hif1a*$^{fl/fl}$ *Vil-Cre*$^{+}$, and (**c**) *Cramp* KO mice not pre-treated with antibiotics and orally gavaged with *C. albicans* strain SC5314. n=4. Points represent results from individual animals. Horizontal lines with bars represent the median with interquartile range. (**d**) mouse β-defensin 1 (*mBD-1*), (**e**) mouse β-defensin 2 (*mBD-2*), and (**f**) *Il17a* gene expression in murine colons. Colonic expression of *mBD-1*, *mBD-2*, and *Il17a* in C3H/HeN mice treated with sterile water (WT), streptomycin (STREP), penicillin G (PCN), or penicillin/streptomycin (PS). Mice deficient in *Mmp7* (thus deficient in beta-defensins) or *Il17a* still maintain resistance to CA colonization in the absence of antibiotics (data not shown). n=4. All data shown are means ± SEM. Statistical analysis was performed by Mann-Whitney. * $p< 0.05$; ** $p<0.01$; ns, not significant.



Supplementary Figure 9. Molecular characterization of *Hif1a*$^{fl/fl}$, *Hif1a*$^{fl/fl}$ *Vil-Cre*$^{+}$, and *Cramp* KO mice. (a) Deletion of *Hif1a* Exon 2 is confirmed in the small and large intestines, but is absent in the spleen, liver, and kidney of *Hif1a*$^{fl/fl}$ *Vil-Cre*$^{+}$ (CKO) mice. Primer pair A/B amplifies a 1601 bp product when exon 2 is deleted (ileum, colon) and a 2210 bp product when exon 2 is intact (spleen, liver, and kidney). (b) *Hif1a* Exon 2 mRNA levels in ileums, colons, and spleens of *Hif1a*$^{fl/fl}$ and *Hif1a*$^{fl/fl}$ *Vil-Cre*$^{+}$ mice as determined by qPCR. n=4. *Hif1a* Exon 2 expression levels were normalized to both *Hif1a* Exon 9 (which is not deleted) and 18s rRNA. (c) *Cramp* mRNA levels in ileums and colons of *Cramp* KO and WT (C57/BL6J) mice. n=4. Bars represent means ±SEM. Assays were performed in triplicate. Statistical analysis was performed by unpaired Student's t-test. * $p< 0.05$; ** $p<0.01$; ns, not significant.



Supplementary Figure 10. Specificity of *Candida spp.* qPCR. *Candida spp.* specific qPCR (e.g. *C. albicans* qPCR) generates PCR products of the appropriate size when genomic DNA of corresponding *Candida spp.* (*C. albicans* gDNA) is used but not with gDNA of other *Candida spp*. (i.e. *C. glabrata*, *C. parapsilosis*, *C. tropicalis*). NTC, no template control; CA, *C. albicans*; CG, *C. glabrata*; CP, *C. parapsilosis*; CT, *C. tropicalis*.

Supplementary Table 1. Mouse strains used in this study

Strain	**Source**	**Sex and Age**	**Experiments** (n= number of mice used)
C57/BL6	Harlan	Female, 7 d to 8 weeks old	Fig. 1a (n=48)
Swiss Webster	Harlan	Female, 6-8 weeks old	Data not shown (n=4)
Balb/c	Harlan	Female, 6-8 weeks old	Data not shown (n=4)
C57/BL6	Taconic	Female, 6-8 weeks old	Data not shown (n=4)
C57/BL6J	Jackson	Female, 6-8 weeks old	Fig. 1b (n=4, germ-free) Fig. 2g (n=4, germ-free) Fig. 2h (n=4, germ-free) Fig. 3i-j (n=12, germ-free)
C3H/HeN	Harlan	Female, 6-8 weeks old	Fig. 1d (n=36), 1e (n=36) Supplementary Fig. 1 (n=8) Fig. 2a, 2c (n=32) Fig. 2b (n=3) Fig. 2d-3 (n=5) Fig. 2f (n=64) Supplementary Fig. 2 (n=12) Fig. 3a-b; Supplementary Fig. 8d-f (n=16) Fig. 3c-d (n=8) Fig. 3e-h (n=24) Supplementary Fig. 3 (n=6) Supplementary Fig. 4 (n=16) Supplementary Fig. 5d (n=16) Supplementary Fig. 6 (n=24)
Hif1a$^{fl/fl}$	Jackson	Sex-matched, 6-8 weeks old	Fig. 4a (n=16) Fig. 4c (n=24; 16 from Fig. 4a and 8 additional for *Hif1a*$^{fl/fl}$, Cy control) Fig. 4e-f (n=8) Fig 4g (n=6) Supplementary Fig. 8a (n=4) Supplementary Fig. 9 (n=4)
Hif1a$^{fl/fl}$ *Vil-Cre*$^{+}$	Jackson	Sex-matched, 6-8 weeks old	Fig. 4a (n=8) Fig. 4c (n=8; 8 from Fig 4a) Fig. 4e-f (n=4) Fig. 4g (n=5) Supplementary Fig. 8b (n=4) Supplementary Fig. 9 (n=4)

Cramp KO	Jackson	Sex-matched, 6-8 weeks old	Fig. 4b (n=16) Fig. 4d (n=24; 8 from Fig 4b and 8 additional for *Cramp* KO, Cy control) Fig. 4e-f (n=4) Fig. 4g (n=6) Supplementary Fig. 8b (n=4) Supplementary Fig 9 (n=4)

Supplementary Table 2. *Candida albicans* and Bacterial GI Colonization Levels

Antibiotic Experiments (Fig. 1a)	**Median (cfu/g feces)**	**First Quartile (cfu/g feces)**	**Third Quartile (cfu/g feces)**
No antibiotics (WT)	0	0	0
Streptomycin (STR)	0	0	0
Penicillin (PCN)	1.70×10^7	1.34×10^7	2.52×10^7
Penicillin/Streptomycin (PS)	2.52×10^7	1.04×10^7	4.07×10^7
Clindamycin (C)	7.27×10^4	4.97×10^4	8.55×10^4
Metronidazole (M)	1.38×10^4	5.23×10^3	8.37×10^4
Germ Free (Fig. 1b)			
Germ-Free Mice	1.7×10^7	1.02×10^7	2.24×10^7
Infant/Adolescent Mice (Fig. 1c)			
14 day old	2.56×10^5	4.00×10^4	7.38×10^5
28 day old	3.06×10^4	5.95×10^3	8.30×10^4
42 day old	0	0	0
Other CA (Fig. 1d*)*			
WO-1, WT	0	0	0
WO-1, STR	0	0	0
WO-1, PCN	2.59×10^6	1.31×10^6	1.49×10^7
Can098, WT	0	0	0
Can098, STR	0	0	0
Can098, PCN	1.73×10^5	7.76×10^4	7.55×10^5
3153A, WT	0	0	0
3153A, STR	0	0	0
3153A, PCN	9.62×10^6	7.84×10^6	1.42×10^7
Other *Candida spp.* (Fig. 1e)			
C. glabrata ATCC 15126, WT	0	0	0
C. glabrata ATCC 15126, STR	5.35×10^7	3.82×10^7	7.36×10^7
C. glabrata ATCC 15126, PCN	5.76×10^7	4.74×10^7	7.39×10^7

C. parapsilosis, clinical, WT	0	0	0
C. parapsilosis, clinical, STR	9.62×10^6	9.62×10^6	9.62×10^6
C. parapsilosis, clinical, PCN	9.62×10^6	9.62×10^6	9.62×10^6
C. tropicalis ATCC 66029, WT	0	0	0
C. tropicalis ATCC 66029, STR	0	0	0
C. tropicalis ATCC 66029, PCN	2.49×10^7	2.05×10^7	4.13×10^7
Bacterial Add Back (Fig. 2f)			
No Bacteria			
C. albicans	9.27×10^3	1.81×10^3	4.75×10^5
E. coli			
E. coli	1.47×10^8	7.64×10^7	7.55×10^8
C. albicans	7.33×10^4	6.76×10^2	2.00×10^5
P. aeruginosa			
P. aeruginosa	2.52×10^7	1.53×10^7	1.03×10^8
C. albicans	1.02×10^5	5.10×10^3	1.47×10^5
B. fragilis			
B. fragilis	7.22×10^8	2.03×10^8	1.88×10^{10}
C. albicans	1.83×10^4	5.14×10^3	2.77×10^4
B. thetaiotamicron			
B. thetaiotamicron	5.27×10^9	1.68×10^9	6.15×10^9
C. albicans	0	0	0
B. producta			
B. producta	9.98×10^7	6.40×10^6	3.69×10^8
C. albicans	0	0	0
L. acidophilus			
L. acidophilus	4.40×10^9	3.07×10^8	2.94×10^{10}
C. albicans	1.52×10^4	3.21×10^3	1.59×10^5
L. reuteri			
L. reuteri	2.37×10^8	3.70×10^7	5.28×10^8

C. albicans	0	0	1.78×10^3
Bacterial Add Back Germ-free Mice (Fig. 2g-h) Day 20			
B. producta			
B. producta	6.03×10^{10}	4.93×10^{10}	6.73×10^{10}
C. albicans	0	0	0
B. thetaiotamicron			
B. thetaiotamicron	2.08×10^{10}	1.06×10^{10}	2.78×10^{10}
C. albicans	3.72×10^2	2.22×10^2	4.56×10^2
Mimosine Mouse Experiments *C. albicans* GI Colonization Levels (Fig. 4a)			
Day 1			
Hif1a$^{fl/fl}$	1.50×10^7	1.18×10^7	2.02×10^7
Hif1a$^{fl/fl}$, Mimosine	2.07×10^7	1.21×10^7	2.34×10^7
HIF-1α$^{fl/fl}$ Vil-Cre+, Mimosine	1.70×10^7	8.15×10^6	2.17×10^7
Day 2			
Hif1a$^{fl/fl}$	1.54×10^7	1.06×10^7	2.70×10^7
Hif1a$^{fl/fl}$, Mimosine	7.61×10^6	5.75×10^6	8.64×10^6
HIF-1α$^{fl/fl}$ Vil-Cre+, Mimosine	1.35×10^7	7.69×10^6	2.00×10^7
Day 3			
Hif1a$^{fl/fl}$	1.59×10^7	1.40×10^7	2.02×10^7
Hif1a$^{fl/fl}$, Mimosine	9.25×10^6	8.09×10^6	1.05×10^7
Hif1a$^{fl/fl}$ *Vil-Cre*+, Mimosine	1.53×10^7	8.81×10^6	2.07×10^7
Day 4			
Hif1a$^{fl/fl}$	1.60×10^7	1.25×10^7	1.98×10^7
Hif1a$^{fl/fl}$, Mimosine	1.01×10^7	7.10×10^6	1.10×10^7
Hif1a$^{fl/fl}$ *Vil-Cre*+, Mimosine	1.29×10^7	1.10×10^7	2.05×10^7
Day 5			
Hif1a$^{fl/fl}$	4.04×10^7	3.57×10^7	5.74×10^7
Hif1a$^{fl/fl}$, Mimosine	4.66×10^5	1.69×10^5	6.80×10^5
Hif1a$^{fl/fl}$ *Vil-C*re+,	2.21×10^7	1.72×10^7	3.04×10^7

Mimosine			
***C. albicans* GI Colonization Levels in HIF and CRAMP KO mice (ANTIBIOTICS) (Fig. 4f)**			
Hif1a$^{fl/fl}$			
Day 1, CA	4.43×10^6	2.62×10^6	9.92×10^6
Day 1, *B. theta*	4.39×10^{10}	1.36×10^{10}	6.49×10^{10}
Day 7, CA	2.00×10^4	8.23×10^5	4.21×10^4
Day 7, *B. theta*	2.21×10^{10}	1.78×10^{10}	2.89×10^{10}
Day 14, CA	0	0	0
Day 14, *B. theta*	1.06×10^{10}	8.50×10^{19}	1.53×10^{10}
Day 21, CA	0	0	0
Day 21, *B. theta*	4.25×10^9	2.5×10^9	9.59×10^9
Day 28, CA	0	0	0
Day 28, *B. theta*	8.54×10^9	4.11×10^9	1.61×10^{10}
Hif1a$^{fl/fl}$ *Vil-Cre+*			
Day 1, CA	1.55×10^7	9.93×10^6	2.51×10^7
Day 1, *B. theta*	4.32×10^{10}	2.01×10^{10}	5.24×10^{10}
Day 7, CA	1.05×10^7	8.85×10^6	1.27×10^7
Day 7, *B. theta*	1.69×10^{10}	1.32×10^{10}	2.96×10^{10}
Day 14, CA	3.55×10^6	1.71×10^6	1.68×10^7
Day 14, *B. theta*	6.61×10^9	2.65×10^9	9.19×10^9
Day 21, CA	4.73×10^6	1.67×10^6	1.42×10^7
Day 21, *B. theta*	4.42×10^{10}	2.62×10^{10}	9.91×10^{10}
Day 28, CA	1.24×10^6	8.80×10^5	1.18×10^7
Day 28, *B. theta*	2.11×10^{10}	1.25×10^{10}	2.35×10^{10}
C*ramp* KO			
Day 1, CA	2.01×10^7	1.10×10^7	5.29×10^7
Day 1, *B. theta*	4.39×10^{10}	1.36×10^{10}	6.49×10^{10}
Day 7, CA	2.40×10^7	2.31×10^7	2.82×10^7
Day 7, *B. theta*	2.21×10^{10}	1.78×10^{10}	2.89×10^{10}
Day 14, CA	1.01×10^7	6.39×10^6	1.98×10^7
Day 14, *B. theta*	4.34×10^9	2.25×10^9	8.18×10^9
Day 21, CA	5.17×10^6	3.34×10^6	1.67×10^7
Day 21, *B. theta*	7.10×10^9	4.63×10^9	3.68×10^{10}
Day 28, CA	1.25×10^7	8.24×10^6	2.14×10^7
Day 28, *B. theta*	1.85×10^{10}	1.67×10^{10}	3.02×10^{10}
***C. albicans*/ *B. th*eta GI Colonization Levels in HIF and**			

CRAMP KO mice (NO ANTIBIOTICS) (Supplementary Figure 8a)			
Hif1a$^{fl/fl}$			
Day 1, CA	3.07×10^4	1.31×10^4	3.56×10^4
Day 7, CA	2.03×10^3	0	4.19×10^3
Day 14, CA	0	0	0
Day 21, CA	0	0	0
Day 28, CA	0	0	0
Hif1a$^{fl/fl}$ *Vil-Cre+*			
Day 1, CA	7.45×10^4	6.93×10^4	7.96×10^4
Day 7, CA	3.67×10^3	1.22×10^3	4.99×10^3
Day 14, CA	0	0	0
Day 21, CA	0	0	0
Day 28, CA	0	0	0
Cramp KO			
Day 1, CA	5.29×10^4	1.89×10^4	6.11×10^4
Day 7, CA	1.66×10^3	1.63×10^2	4.12×10^3
Day 14, CA	0	0	0
Day 21, CA	0	0	0
Day 28, CA	0	0	0
C. albicans* GI Colonization Levels after SCFA treatment (Supplementary Figure 5d*)			
Water	1.43×10^8	8.20×10^7	2.05×10^8
Acetic Acid	7.7×10^6	5.20×10^6	1.14×10^7
Butyric Acid	2.53×10^7	1.28×10^7	3.75×10^7
Propionic Acid	7.10×10^7	2.32×10^7	7.89×10^7

Supplementary Table 3. Bacterial and Fungal strains used in this study

Strain	**Reference**
Candida albicans SC5314	[1]
C. albicans CAF2-1	[1]
C. albicans BWP17	[2]
C. albicans SN152	[3]
C. albicans WO-1	[4]
C. albicans Can098 (Clinical isolate, blood)	This study
C. albicans 3153A (Clinical isolate, biofilm)	[5]
Candida glabrata, ATCC 15126	[6]
Candida parapsilosis, clinical isolate	This study
Candida tropicalis, ATCC 66029	[7]
Bacteroidetes fragilis ATCC 25285	[8]
Bacteroidetes thetaiotamicron VPI-5482	[9]
Blautia producta ATCC 27340	[8]
Clostridium leptum ATCC 29065	[10]
Escherichia coli ATCC 10798	[8]
Lactobacillus acidophilus ATCC 5357	[8]
Lactobacillus reuteri, clinical strain	This study
Pseudomonas aeruginosa, PAO1	[11]

References

1. Fonzi, W.A. & Irwin, M.Y. Isogenic strain construction and gene mapping in Candida albicans. *Genetics* **134**, 717-728 (1993).

2. Wilson, R.B., Davis, D. & Mitchell, A.P. Rapid hypothesis testing with Candida albicans through gene disruption with short homology regions. *Journal of bacteriology* **181**, 1868-1874 (1999).
3. Navarathna, D.H.*, et al.* Effect of farnesol on a mouse model of systemic candidiasis, determined by use of a DPP3 knockout mutant of Candida albicans. *Infect Immun* **75**, 1609-1618 (2007).
4. Butler, G.*, et al.* Evolution of pathogenicity and sexual reproduction in eight Candida genomes. *Nature* **459**, 657-662 (2009).
5. Ramage, G., VandeWalle, K., Bachmann, S.P., Wickes, B.L. & Lopez-Ribot, J.L. In vitro pharmacodynamic properties of three antifungal agents against preformed Candida albicans biofilms determined by time-kill studies. *Antimicrobial agents and chemotherapy* **46**, 3634-3636 (2002).
6. Chen, W.B., Han, Y.F., Jong, S.C. & Chang, S.C. Isolation, purification, and characterization of a killer protein from Schwanniomyces occidentalis. *Applied and environmental microbiology* **66**, 5348-5352 (2000).
7. Turenne, C.Y., Sanche, S.E., Hoban, D.J., Karlowsky, J.A. & Kabani, A.M. Rapid identification of fungi by using the ITS2 genetic region and an automated fluorescent capillary electrophoresis system. *Journal of clinical microbiology* **37**, 1846-1851 (1999).
8. Barman, M.*, et al.* Enteric salmonellosis disrupts the microbial ecology of the murine gastrointestinal tract. *Infect Immun* **76**, 907-915 (2008).
9. Goodman, A.L.*, et al.* Identifying genetic determinants needed to establish a human gut symbiont in its habitat. *Cell Host Microbe* **6**, 279-289 (2009).
10. Matsuki, T., Watanabe, K., Fujimoto, J., Takada, T. & Tanaka, R. Use of 16S rRNA gene-targeted group-specific primers for real-time PCR analysis of predominant bacteria in human feces. *Appl Environ Microbiol* **70**, 7220-7228 (2004).
11. Koh, A.Y., Priebe, G.P. & Pier, G.B. Virulence of Pseudomonas aeruginosa in a murine model of gastrointestinal colonization and dissemination in neutropenia. *Infect Immun* **73**, 2262-2272 (2005).

Supplementary Table 4: Primers used in this study

Gene	Forward Primer	Reverse Primer
Genotyping Primers		
HIF-1α$^{fl/fl}$	TGCTCATCAGTTGCCACTT	GTTGGGGCAGTACTGGAAAG
Vil-Cre	GTGTGGGACAGAGAACAAACC	ACATCTTCAGGTTCTGCGGG
Primer A, B (Figure S4A)	GAACTGAGTGAAAAAAATCCCG	GAGAGAGAGACAAAGAGATACAGGTA
qPCR Primers		
Human HIF-1α	GCCGCTGGAGACACACAATCAT	CTGGTCATCAGTTTCTGTGTCG
Mouse HIF-1α (exon 2)	ATCTCGGCGAAGCAAAGAGTC	TGGGGAAGTGGCAACTGAT
Mouse HIF-1a (exon 9)	GTGGTATTATTCAGCACGACTTG	GGAGCCAGCAGAGTGAGAG
LL-37	GCAGTCACCAGAGGATTGTGAC	CACCGCTTCACCAGCCC
CRAMP	TCTCTACCGTCTCCTGGACCTG	CCACATACAGTCTCCTTCACTCG
IL-17A	GGACTCTCCACCGCAATGA	GGCACTGAGCTTCCCAGATC
Mouse β-Defensin1	TCCTGGTGATGATATGTTTTCTTTTCT	TGTTCTTCGTCCAAGACTTGTGA
Mouse β-Defensin2	GGCATTCTCACAAGTCTTGGACGAAG	AGCTCTTACAACAGTTGGGCTTATCTGG
Human β-Defensin1	GTCGCCATGAGAACTTCCTACC	CATTGCCCTCCACTGCTGAC
Human β-Defensin2	GGTGTTTTTGGTGGTATAGGCG	AGGGCAAAGACTGGATGAC
18S rRNA	CATTCGAACGTCTGCCCTAT	CCTGCTGCCTTCCTTGGA
Bacterial 16S rRNA gene primers		
Eubacteria (all bacteria)	ACTCCTACGGGAGGCAGCAGT	ATTACCGCGGCTGCTGGC
Bacteroides	GGTTCTGAGAGGAGGTCCC	GCTGCCTCCCGTAGGAGT
Mouse Intestinal Bacteroides (MIB)	CCAGCAGCCGCGGTAATA	CGCATTCCGCATACTTCTC
Lactobacillus/Enterococcus Group (LACT)	AGCAGTAGGGAATCTTCCA	CACCGCTACACATGGAG
Eubacterium rectale/Clostridium coccoides group (EREC)	ACTCCTACGGGAGGCAGC	GCTTCTTAGTCAGGTACCGTCAT
Clostridium leptum group (CLEPT)	GCACAAGCAGTGGAGT	CTTCCTCCGTTTTGTCAA
Enterobacteriaceae (ENTERO)	GTGCCAGCMGCCGCGGTAA	GCCTCAAGGGCACAACCTCCAAG
Segmented filamentous bacteria (SFB)	GACGCTGAGGCATGAGAGCAT	GACGGCACGGATTGTTATTCA
Fungal ITS Primers		
ITS1-2	CTTGGTCATTTAGAGGAAGTAA	GCTGCGTTCTTCATCGATGC

	Forward Primer	Reverse Primer	Probe
Candida albicans	GCCTTACCACTACCGTCTTTC	ATTGCGCCCTCTGGTATTC	FAM-AGGGAGAAACGACGCTCAAACAG
Candida glabrata	CACTCACTTATCCCTCCCTAGA	CGAGCGCAAGCTTCTCTATTA	FAM-CGCGCAAACGAGCAGCAGAT
Candida parapsilosis	TATCGCTCAACACCAAACCC	TCGAATCTTTGAACGCACATTG	FAM-AGGGTTTGAGGGAGAAATGACGCT
Candida tropicalis	CGATGGAAGTTTGAGGCAATAAC	CTCTCGGCCAAGGTTTATACT	FAM-TGTGATGCCCTTAGACGTTCTGGG