H.pylori Rhesus Microbiome Analysis

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Data used in analysis

Library

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  library(readxl)
  library(phyloseq)
  library(microbiome)
  library(DESeq2)
  library(qiime2R)
  library(tidyverse)
  library(tidyMicro)
  library(kableExtra)
  library(magrittr)
  library(ggpubr)
  library(microeco)
  library(tidytree)
  library(RColorBrewer)
  library(questionr)
  library(rmarkdown)
  library(stringr)
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ASV counts the taxa table are linked below:

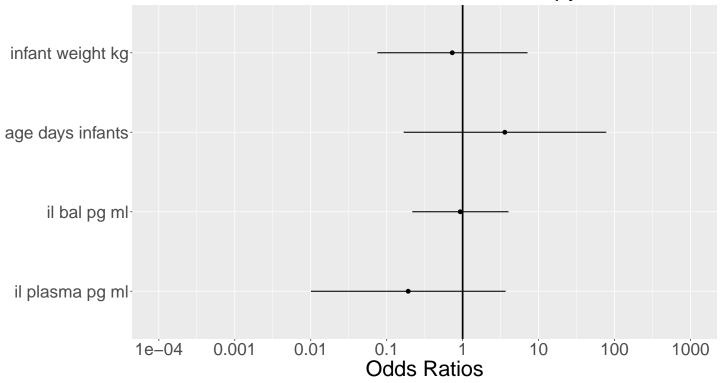
ASV counts

Taxa table

Table 1: H.pylori Metadata

SampleID	Treatment	site	Site_status	sex	log10_cfu.gm	IL8_Lavage	IL8_Plasma
LMiller_00458.BAL	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	NA	463.376
LMiller_00458.Swab	H.pylori_(-)	Swab	H.pylori_(-)_Swab	Female	0.00	NA	463.376
LMiller_00459.BAL	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	NA	258.416
LMiller_00459.Swab	H.pylori_(-)	Swab	H.pylori_(-)_Swab	Female	0.00	NA	258.416
$LMiller_00461.BAL$	$H.pylori_(+)$	BAL	$H.pylori_(+)_BAL$	Female	7.66	NA	704.550
$LMiller_00461.Swab$	$H.pylori_(+)$	Swab	$H.pylori_(+)_Swab$	Female	7.66	NA	704.550
$LMiller_00462.BAL$	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	19.104	1075.626
$LMiller_00462.Swab$	H.pylori_(-)	Swab	H.pylori_(-)_Swab	Female	0.00	19.104	1075.626
$LMiller_00463.BAL$	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	11.590	423.590
$LMiller_00466.BAL$	$H.pylori_(+)$	BAL	$H.pylori_(+)_BAL$	Female	3.81	11.201	642.148
$LMiller_00466.Swab$	H.pylori_(+)	Swab	H.pylori_(+)_Swab	Female	3.81	11.201	642.148
$LMiller_00467.BAL$	$H.pylori_(+)$	BAL	$H.pylori_(+)_BAL$	Female	6.09	15.511	425.782
$LMiller_00467.Swab$	$H.pylori_(+)$	Swab	$H.pylori_(+)_Swab$	Female	6.09	15.511	425.782
$LMiller_00468.BAL$	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	15.511	660.911
$LMiller_00468.Swab$	$H.pylori_{-}(-)$	Swab	H.pylori_(-)_Swab	Female	0.00	15.511	660.911
$LMiller_00469.BAL$	$H.pylori_(+)$	BAL	$H.pylori_(+)_BAL$	Female	6.38	NA	1279.789
$LMiller_00469.Swab$	$H.pylori_(+)$	Swab	$H.pylori_(+)_Swab$	Female	6.38	NA	1279.789
$LMiller_00473.BAL$	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	20.100	608.508
$LMiller_00473.Swab$	H.pylori_(-)	Swab	H.pylori_(-)_Swab	Female	0.00	20.100	608.508
$LMiller_00474.BAL$	$H.pylori_(-)$	BAL	H.pylori_(-)_BAL	Female	0.00	44.699	443.989
$LMiller_00476.BAL$	H.pylori_(+)	BAL	H.pylori_(+)_BAL	Female	5.48	NA	476.431
LMiller 00476.Swab	$H.pylori_(+)$	Swab	H.pylori_(+)_Swab	Female	5.48	NA	476.431
$LMiller_00477.BAL$	$H.pylori_(+)$	BAL	H.pylori_(+)_BAL	Female	5.81	NA	715.056
LMiller_00477.Swab	$H.pylori_(+)$	Swab	H.pylori_(+)_Swab	Female	5.81	NA	715.056
$LMiller_00481.BAL$	H.pylori_(-)	BAL	H.pylori_(-)_BAL	Female	0.00	17.622	NA
$LMiller_00481.Swab$	H.pylori_(-)	Swab	${\rm H.pylori}_(\text{-})_{\rm Swab}$	Female	0.00	17.622	NA

Odds ratios of variables based on H. pylori status



	OR	2.5~%	97.5~%	p
(Intercept)	0.018	0.000	110.146	0.410
$infant_weight_kg$	0.243	0.000	7254.525	0.786
$age_days_infants$	1.042	0.955	1.177	0.413
$il_bal_pg.ml$	0.993	0.852	1.158	0.921
$il_plasma_pg.ml$	0.996	0.985	1.001	0.271

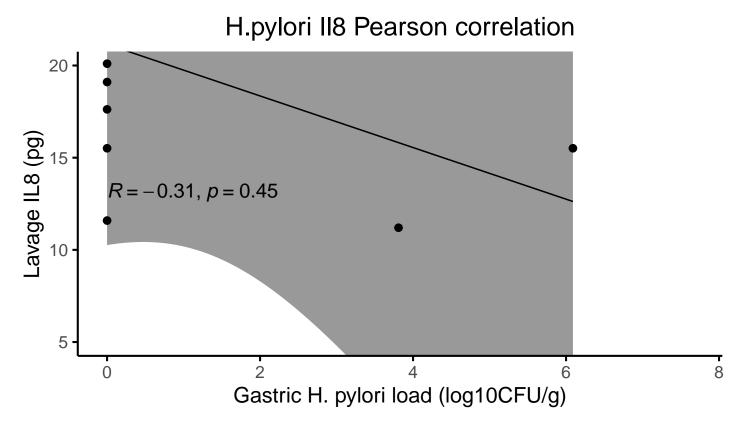


Figure 1: This plot only includes animals that had material sequenced and not all 25 animals from the study

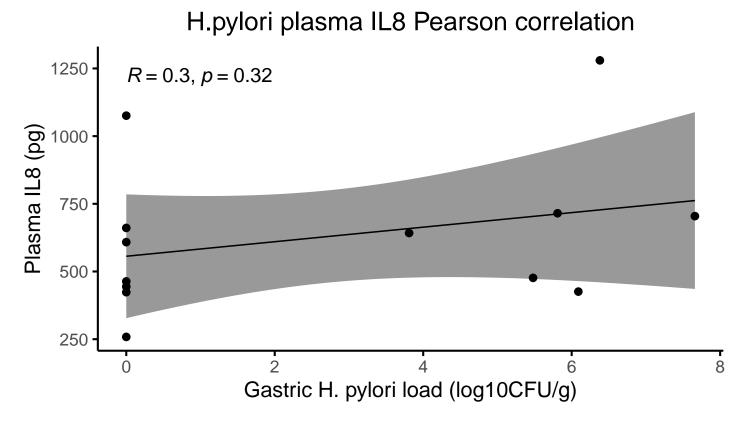
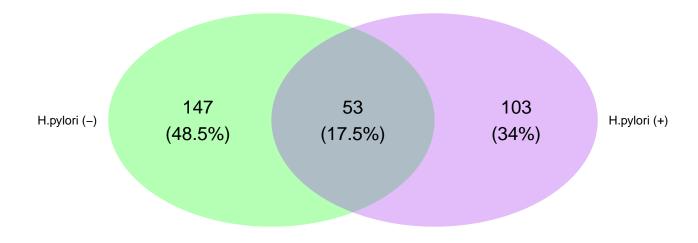
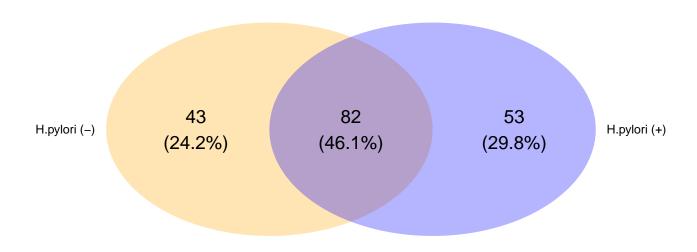


Figure 2: This plot only includes animals that had material sequenced and not all 25 animals from the study

Overlapping taxa between H. pylori (+) and (-) in lavage

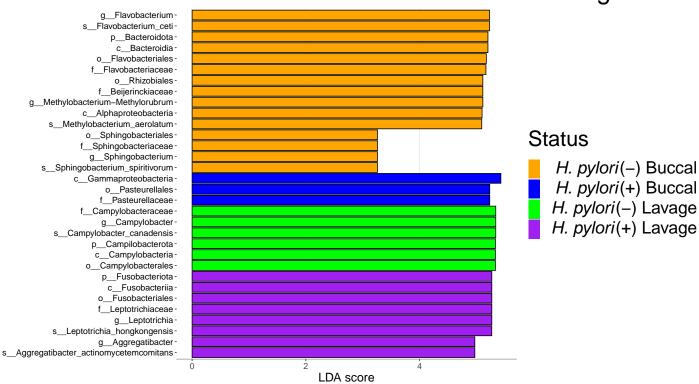


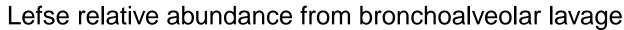
Overlapping taxa between H. pylori (+) and (-) in buccal cavity

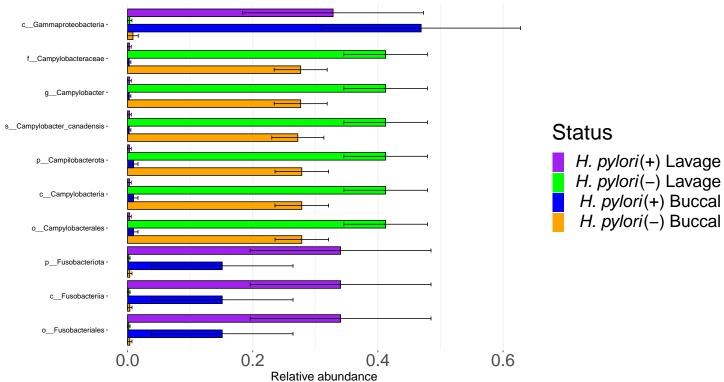


Lefse analysis and differential abundance for both sites

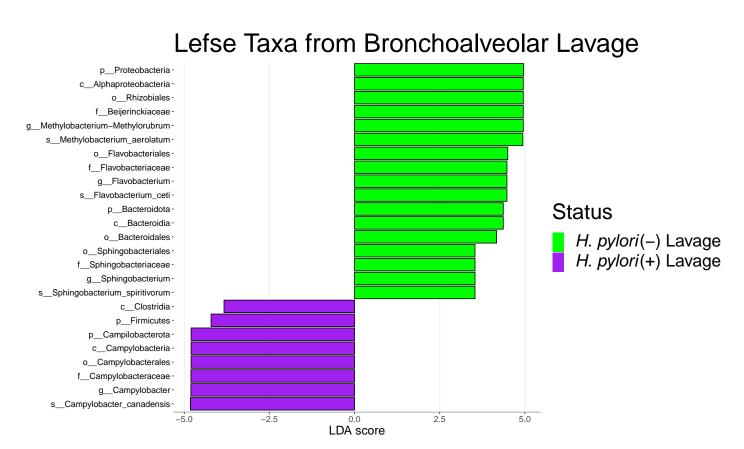
Lefse taxa from bronchoalveolar lavage and or



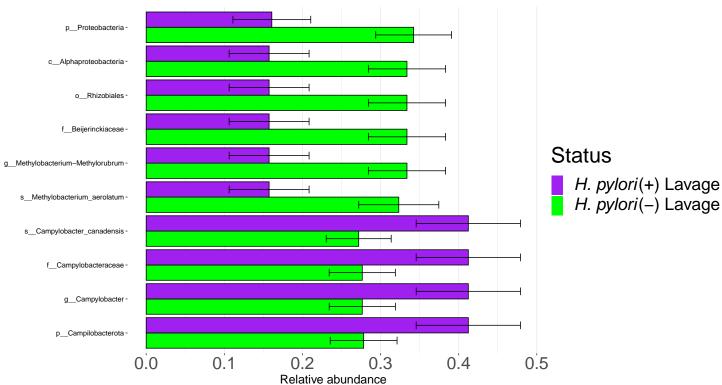




Lefse and differential abundance for bronchoalveolar lavage







Lefse and differential abundance for oral swabs

o__Fusobacteriales -f__Leptotrichiaceae -g__Leptotrichia -

-5.0

-2.5

p__Proteobacteriac__Gammaproteobacteriap__Patescibacteriao__Pasteurellales f__Pasteurellaceae o__Lachnospirales f__Lachnospiraceae -**Status** c__Clostridia p__Firmicutes -H. pylori(-) Buccal H. pylori(+) Buccal g__Aggregatibacters__Aggregatibacter_actinomycetemcomitans s__Leptotrichia_hongkongensisp__Fusobacteriotac__Fusobacteriia-

Lefse taxa from oral swabs

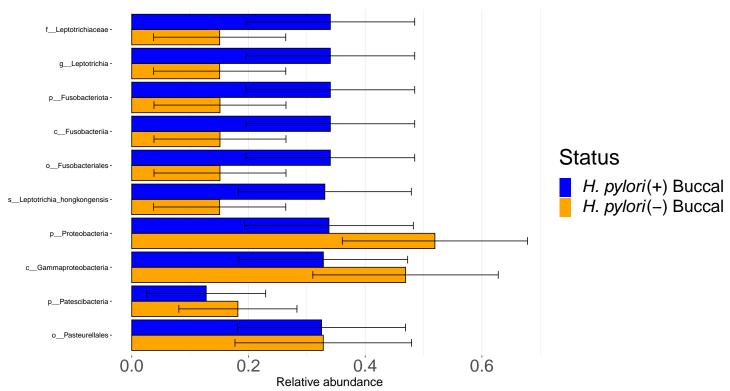
0.0

LDA score

2.5

5.0

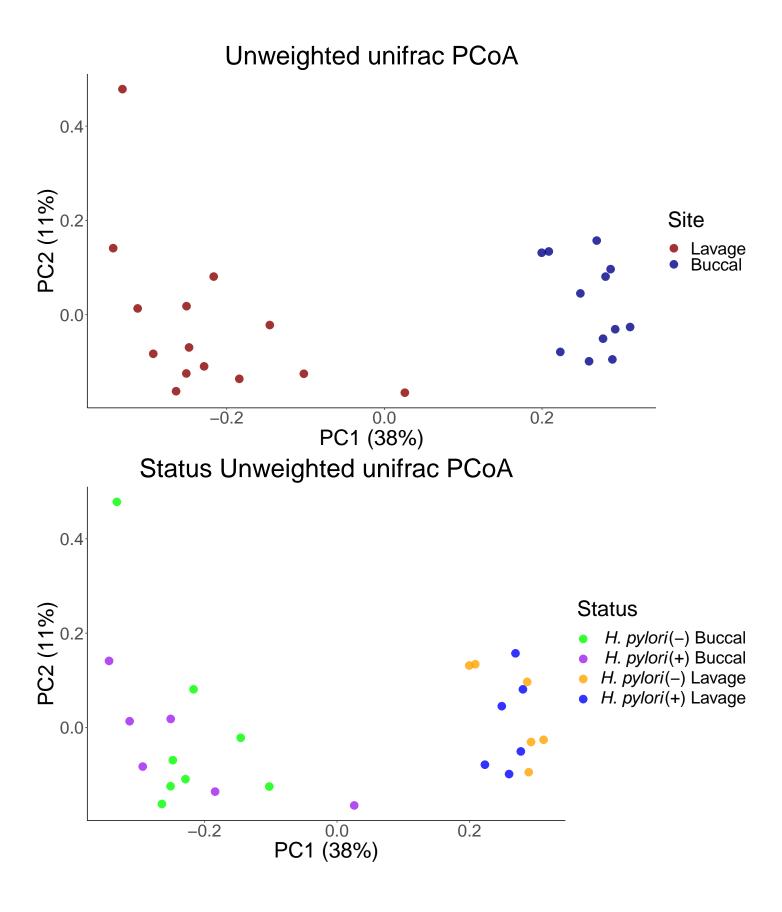
Lefse relative abundance from oral swabs

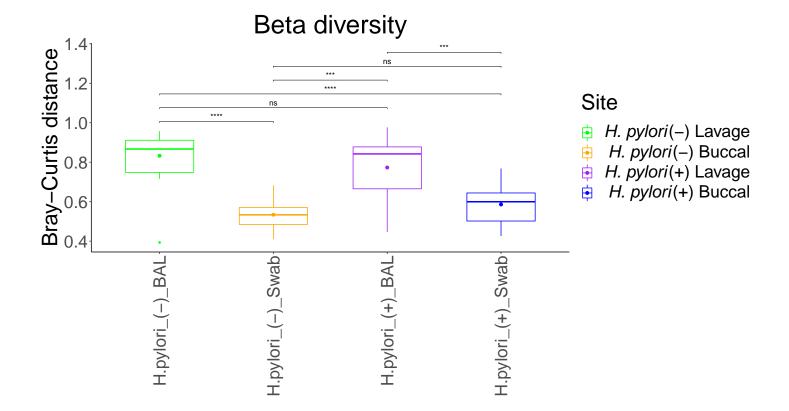


Beta diversity

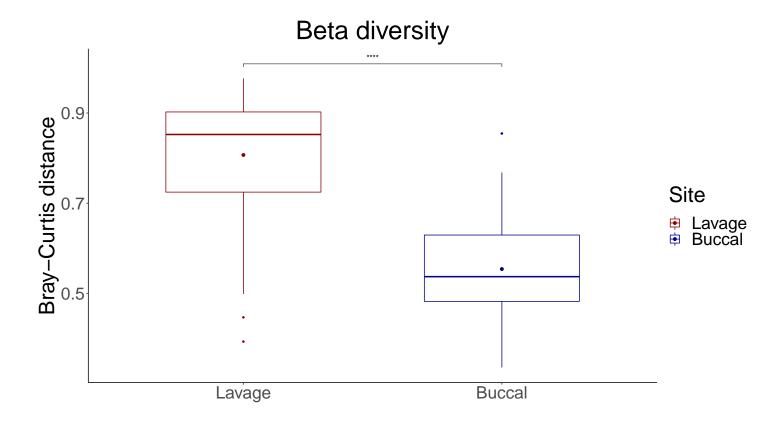
Unweighted unifrac PCoA plots

```
PC1
                   PC2
                              PC3
                                         PC4
                                                     PC5
                                                                PC6
                                                                           PC7
## 1 0.38311 0.1122317 0.08255574 0.05624649 0.04518453 0.04178459 0.03697168
            PC8
                      PC9
                               PC10
                                          PC11
                                                     PC12
                                                                PC13
## 1 0.03441675 0.0305229 0.0292508 0.02395872 0.0227312 0.01881898 0.01538496
         PC15
                     PC16
                                PC17
                                            PC18
                                                         PC19
                                                                     PC20
##
## 1 0.0140825 0.01226748 0.01155323 0.008776171 0.007488221 0.004824027
                        PC22
                                    PC23 PC24 PC25 PC26
##
            PC21
## 1 0.003528799 0.002630896 0.001679594
                                            0
```



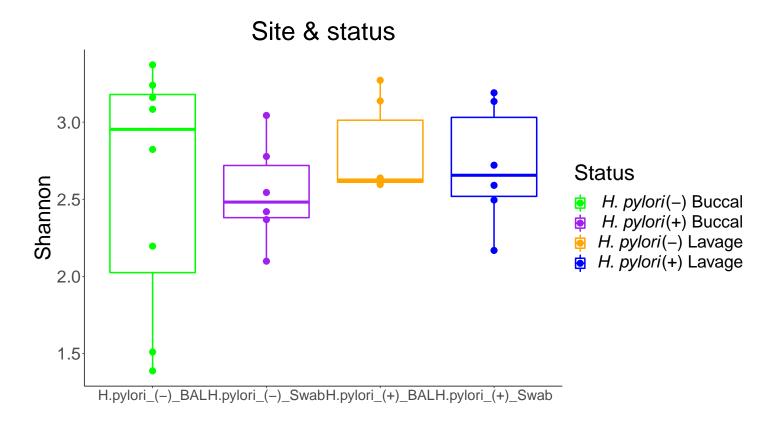


Bray-Curtis



Alpha Diversity

Shannon index by site and H. pylori status



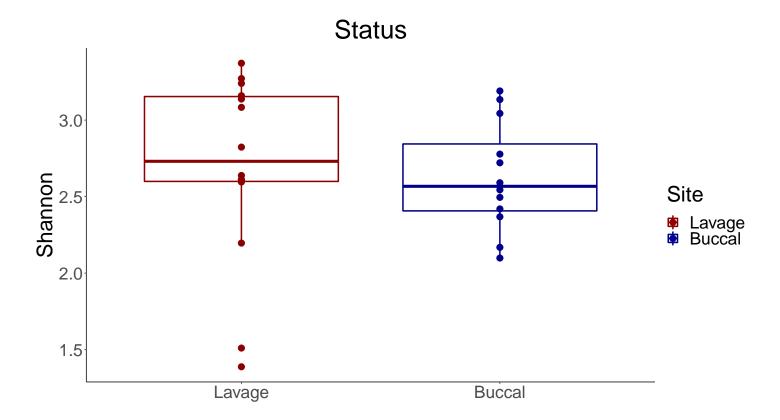
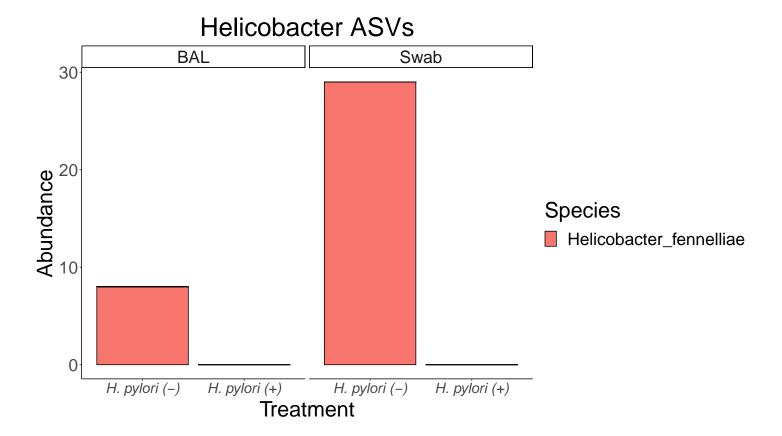


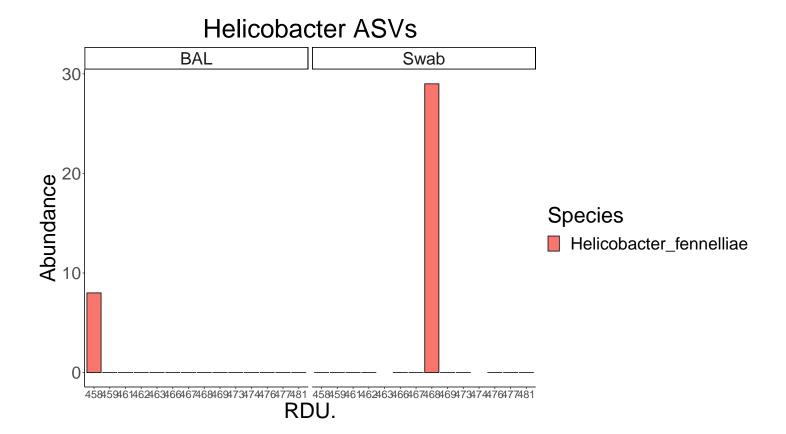
Table 2: All alpha diversity measurees

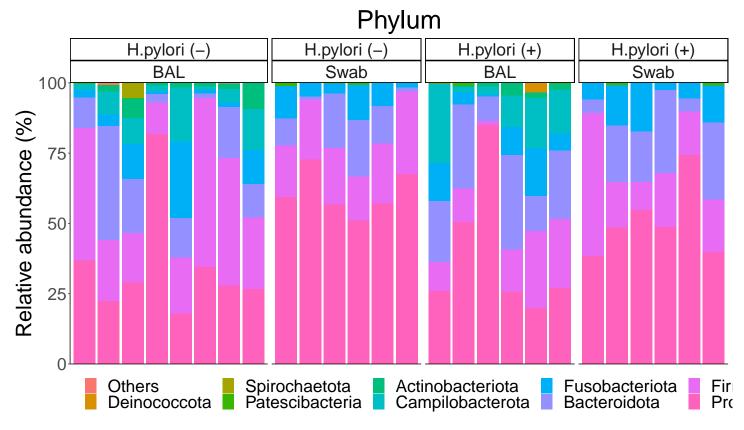
Groups	Measure	Test method	p.value	Significance
H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab	Observed Observed Observed Observed	KW KW KW KW	0.220 0.651 0.081 0.262 0.520	
H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab	Observed Observed Chao1 Chao1 Chao1	KW KW KW KW	0.109 0.202 0.220 0.651 0.081	
H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab	Chao1 Chao1 Chao1 Chao1 ACE	KW KW KW KW	0.262 0.520 0.109 0.202 0.220	
H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab	ACE ACE ACE ACE	KW KW KW KW	0.651 0.081 0.262 0.520 0.109	
H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL	ACE Shannon Shannon Shannon Shannon	KW KW KW KW	0.202 0.439 1.000 0.796 0.109	
H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL	Shannon Shannon Shannon Simpson Simpson	KW KW KW KW	0.337 0.423 0.540 0.519 0.699	
H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab	Simpson Simpson Simpson Simpson	KW KW KW KW	0.699 0.109 0.423 0.262 0.493	
H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab	InvSimpson InvSimpson InvSimpson InvSimpson InvSimpson	KW KW KW KW	0.519 0.699 0.699 0.109 0.423	
H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab	InvSimpson InvSimpson Fisher Fisher Fisher	KW KW KW KW	0.262 0.493 0.606 0.699 0.796	
H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab	Fisher Fisher Fisher Coverage	KW KW KW KW	0.631 0.631 1.000 0.927 NaN	NA
H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab	Coverage Coverage Coverage Coverage	KW KW KW KW	NaN NaN NaN NaN NaN	NA NA NA NA
H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab H.pylori_(-)_BAL vs H.pylori_(+)_BAL H.pylori_(-)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_Swab vs H.pylori_(+)_BAL	Coverage PD PD PD PD	KW KW KW KW	NaN 0.366 0.699 0.439 0.631	NA
H.pylori_(-)_Swab vs H.pylori_(+)_Swab H.pylori_(+)_BAL vs H.pylori_(+)_Swab H.pylori_(-)_BAL vs H.pylori_(-)_Swab vs H.pylori_(+)_BAL vs H.pylori_(+)_Swab	PD PD PD	KW KW KW	0.749 0.631 0.777	

Helicobacter positive respiratory samples

Helicobacter positive samples separated by site







 ${\bf Figure~3:~Microbiota~Composition~at~Phylum~level}.$

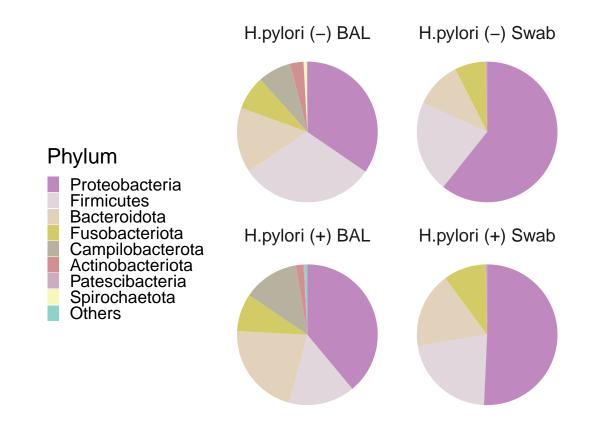


Figure 4: Microbiota Composition at Phylum level.

 Table 3: Phylum Average Relative Abundance

Taxonomy	Sample	Average Percent Abundance
Acidobacteriota Actinobacteriota Actinobacteriota Actinobacteriota Actinobacteriota	H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) Swab H.pylori (-) Swab	0.1% 3.1% 1.8% 0.1% 0%
Bacteroidota Bacteroidota Bacteroidota Bacteroidota Campilobacterota	H.pylori (+) BAL H.pylori (+) Swab H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) BAL	21.7% $17.4%$ $14.9%$ $10.8%$ $12.9%$
Campilobacterota Campilobacterota Deinococcota Desulfobacterota Firmicutes	H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) BAL	7.7% $0%$ $0.6%$ $0.1%$ $31.1%$
Firmicutes Firmicutes Firmicutes Fusobacteriota Fusobacteriota	H.pylori (+) Swab H.pylori (-) Swab H.pylori (+) BAL H.pylori (+) Swab H.pylori (+) BAL	21.7% $21%$ $15.2%$ $9.8%$ $8.6%$
Fusobacteriota Fusobacteriota Latescibacterota Patescibacteria Patescibacteria	H.pylori (-) BAL H.pylori (-) Swab H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) Swab	7.8% $7%$ $0%$ $0.4%$ $0.3%$
Patescibacteria Patescibacteria Proteobacteria Proteobacteria Proteobacteria	H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) BAL	0.3% $0%$ $60.7%$ $50.7%$ $38.9%$
Proteobacteria Spirochaetota	H.pylori (-) BAL H.pylori (-) BAL	$34.5\% \ 0.7\%$

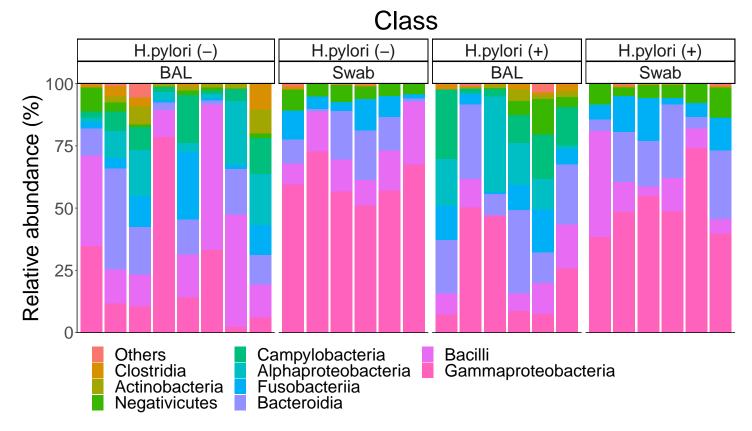


Figure 5: Microbiota Composition at Class level.

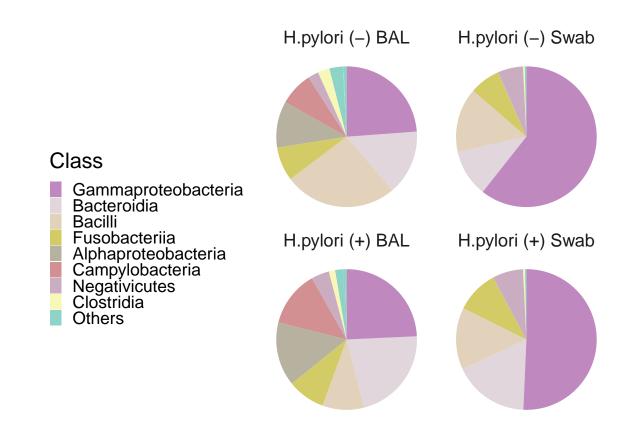


Figure 6: Microbiota Composition at Class level.

 Table 4: Class Average Relative Abundance

Taxonomy	Sample	Average Percent Abundance
Actinobacteria Actinobacteria Alphaproteobacteria Alphaproteobacteria Bacilli	H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) BAL	3.1% 1.7% 14.7% 10.7% 26%
Bacilli Bacilli Bacilli Bacteroidia Bacteroidia	H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) BAL H.pylori (+) BAL H.pylori (+) Swab	14.9% $14.2%$ $9.6%$ $21.7%$ $17.4%$
Bacteroidia Bacteroidia Campylobacteria Campylobacteria Clostridia	H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) BAL	14.9% $10.8%$ $12.9%$ $7.7%$ $2.7%$
Clostridia Clostridia Clostridia Deinococci Fusobacteriia	H.pylori (+) BAL H.pylori (+) Swab H.pylori (-) Swab H.pylori (+) BAL H.pylori (+) Swab	1.5% $0.4%$ $0.4%$ $0.6%$ $9.8%$
Fusobacteriia Fusobacteriia Fusobacteriia Gammaproteobacteria Gammaproteobacteria	H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) Swab H.pylori (-) Swab H.pylori (+) Swab	8.6% $7.8%$ $7%$ $60.7%$ $50.7%$
Gammaproteobacteria Gammaproteobacteria Negativicutes Negativicutes Negativicutes	H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) Swab H.pylori (-) Swab H.pylori (+) BAL	24.3% $23.8%$ $7.1%$ $5.8%$ $4.1%$
Negativicutes Spirochaetia	H.pylori (-) BAL H.pylori (-) BAL	$2.4\% \\ 0.7\%$

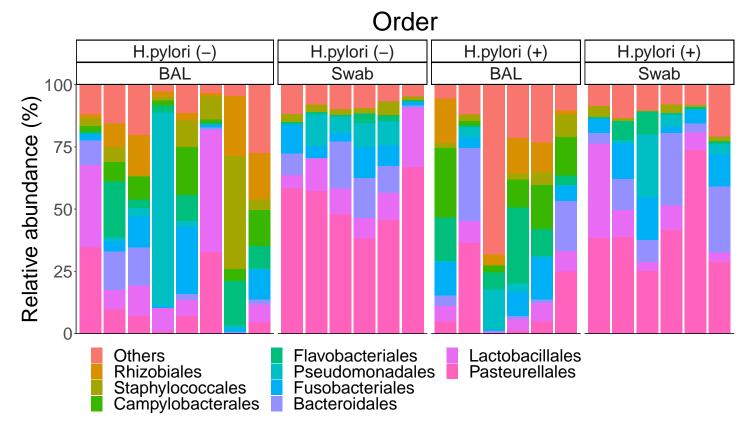


Figure 7: Microbiota Composition at Order level.

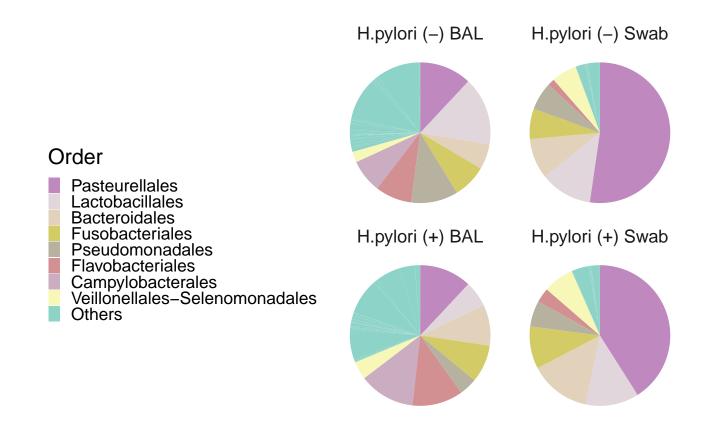


Figure 8: Microbiota Composition at Order level.

 Table 5: Order Average Relative Abundance

Taxonomy	Sample	Average Percent Abundance
Bacteroidales Bacteroidales Bacteroidales Bacteroidales Burkholderiales	H.pylori (+) Swab H.pylori (+) BAL H.pylori (-) Swab H.pylori (-) BAL H.pylori (+) BAL	14.1% 9.4% 9.3% 5.8% 6.8%
Campylobacterales Campylobacterales Flavobacteriales Flavobacteriales Fusobacteriales	H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) Swab	12.9% 7.7% 11.7% 8.4% 9.8%
Fusobacteriales Fusobacteriales Fusobacteriales Lactobacillales Lactobacillales	H.pylori (+) BAL H.pylori (-) BAL H.pylori (-) Swab H.pylori (-) BAL H.pylori (+) Swab	8.6% $7.8%$ $15.7%$ $12.2%$
Lactobacillales Lactobacillales Pasteurellales Pasteurellales Pasteurellales	H.pylori (-) Swab H.pylori (+) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) BAL	12% $6%$ $52.3%$ $41%$ $12%$
Pasteurellales Pseudomonadales Pseudomonadales Pseudomonadales Pseudomonadales	H.pylori (-) BAL H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) BAL	12% $10.8%$ $6.4%$ $5.9%$ $4.1%$
Rhizobiales Rhizobiales Sphingomonadales Staphylococcales Veillonellales-Selenomonadales	H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) Swab	9.6% 8.3% 5.8% 10.1% 7.1%
Veillonellales-Selenomonadales Veillonellales-Selenomonadales	H.pylori (-) Swab H.pylori (+) BAL	5.8% 4.1%

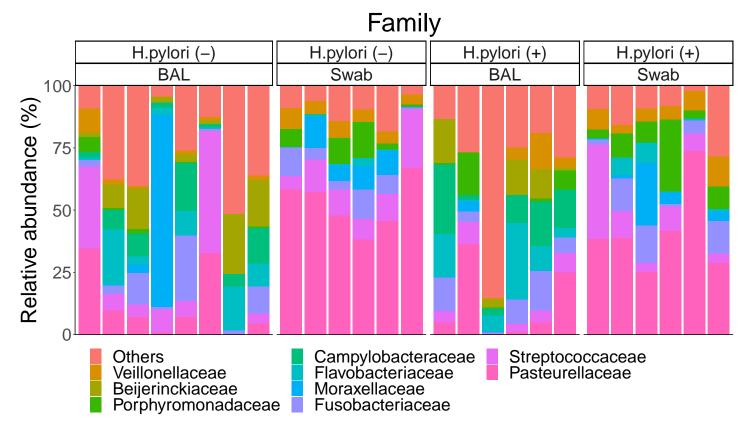


Figure 9: Microbiota Composition at Family level.

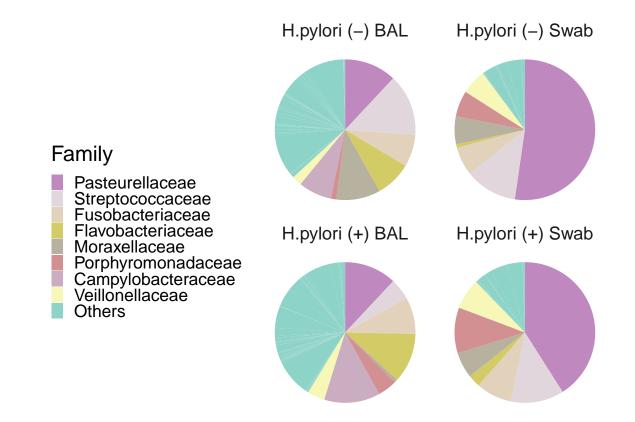


Figure 10: Microbiota Composition at Family level.

Table 6: Family Average Relative Abundance

Taxonomy	Sample	Average Percent Abundance
Beijerinckiaceae Beijerinckiaceae Campylobacteraceae Campylobacteraceae Flavobacteriaceae	H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL	9.5% 8.1% 12.9% 7.7% 11.5%
Flavobacteriaceae Fusobacteriaceae Fusobacteriaceae Fusobacteriaceae Fusobacteriaceae	H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) Swab H.pylori (-) BAL H.pylori (-) Swab	8.3% $8.5%$ $8.2%$ $7.4%$ $6.6%$
Moraxellaceae Moraxellaceae Moraxellaceae Oxalobacteraceae Pasteurellaceae	H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) BAL H.pylori (-) Swab	10.1% $6.4%$ $5.9%$ $5%$ $52.3%$
Pasteurellaceae Pasteurellaceae Pasteurellaceae Porphyromonadaceae Porphyromonadaceae	H.pylori (+) Swab H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) Swab H.pylori (-) Swab	41% $12%$ $12%$ $10.5%$ $5.9%$
Porphyromonadaceae Prevotellaceae Prevotellaceae Sphingomonadaceae Staphylococcaceae	H.pylori (+) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL H.pylori (-) BAL	4.4% $4.3%$ $4.1%$ $5.8%$ $8.4%$
Streptococcaceae Streptococcaceae Streptococcaceae Streptococcaceae Veillonellaceae	H.pylori (-) BAL H.pylori (+) Swab H.pylori (-) Swab H.pylori (+) BAL H.pylori (+) Swab	14.2% $12.2%$ $12%$ $4.9%$ $7%$
Veillonellaceae Veillonellaceae	H.pylori (-) Swab H.pylori (+) BAL	5.8% $4%$

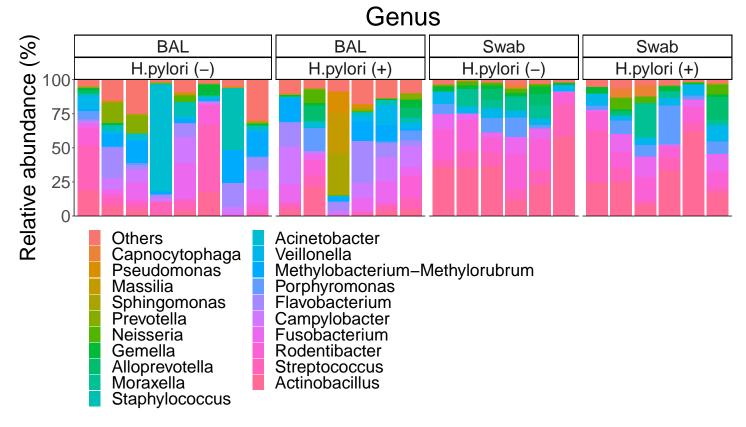


Figure 11: Microbiota Composition at Genus level.

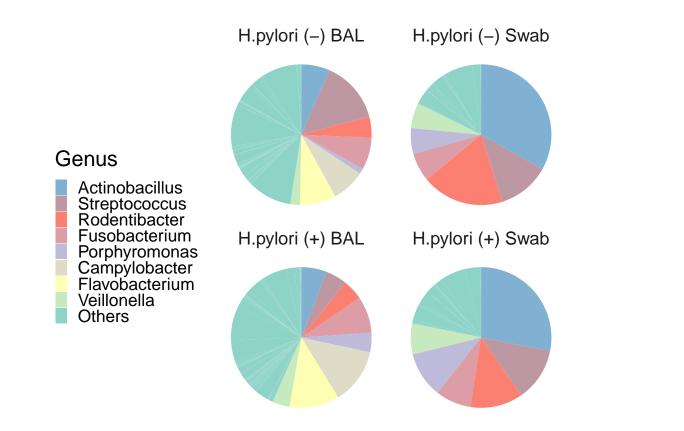


Figure 12: Microbiota Composition at Genus level.

 Table 7: Genus Average Relative Abundance

Taxonomy	Sample	Average Percent Abundance
Acinetobacter Actinobacillus Actinobacillus Actinobacillus Actinobacillus	H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (-) BAL H.pylori (+) BAL	10.1% 33.1% 28.1% 6.6% 5.9%
Campylobacter Campylobacter Flavobacterium Flavobacterium Fusobacterium	H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL H.pylori (-) BAL H.pylori (+) BAL	12.9% 7.7% 11.5% 8.3% 8.5%
Fusobacterium Fusobacterium Fusobacterium Massilia Methylobacterium-Methylorubrum	H.pylori (+) Swab H.pylori (-) BAL H.pylori (-) Swab H.pylori (+) BAL H.pylori (-) BAL	8.2% 7.4% 6.6% 4.9% 9.5%
Methylobacterium-Methylorubrum Moraxella Moraxella Porphyromonas Porphyromonas	H.pylori (+) BAL H.pylori (-) Swab H.pylori (+) Swab H.pylori (+) Swab H.pylori (-) Swab	8.1% 6.4% 5.9% 10.5% 5.9%
Rodentibacter Rodentibacter Rodentibacter Rodentibacter Sphingomonas	H.pylori (-) Swab H.pylori (+) Swab H.pylori (-) BAL H.pylori (+) BAL H.pylori (+) BAL	18.9% 12.1% 4.9% 4.7% 5.4%
Staphylococcus Streptococcus Streptococcus Streptococcus Streptococcus	H.pylori (-) BAL H.pylori (-) BAL H.pylori (+) Swab H.pylori (-) Swab H.pylori (+) BAL	8.4% 14.2% 12.2% 12% 4.9%
Veillonella Veillonella	H.pylori (+) Swab H.pylori (-) Swab	7% 5.8%

Lavage Genus Abundance

Grouped by H. pylori status

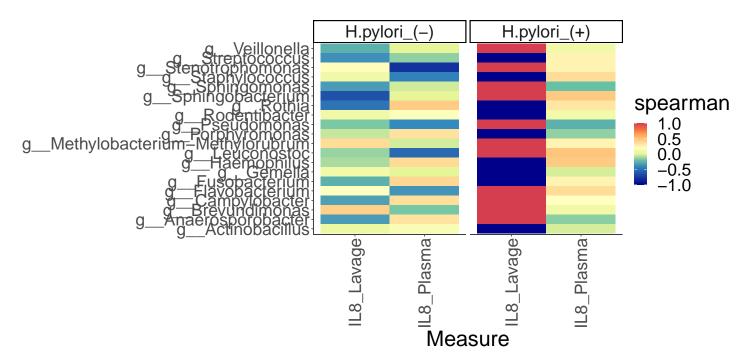


Figure 13: IL8 and lavage genus abundance Spearman correlations separated by H. pylori status

Lavage Genus Abundance

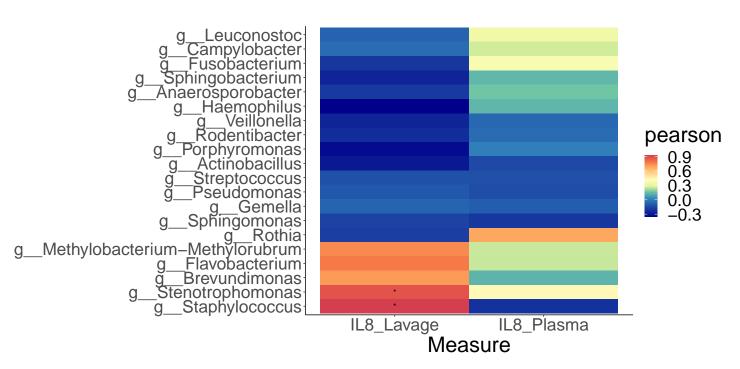


Figure 14: IL8 and lavage genus abundance Spearman correlations independent of H. pylori status

Lavage Alpha Diversity

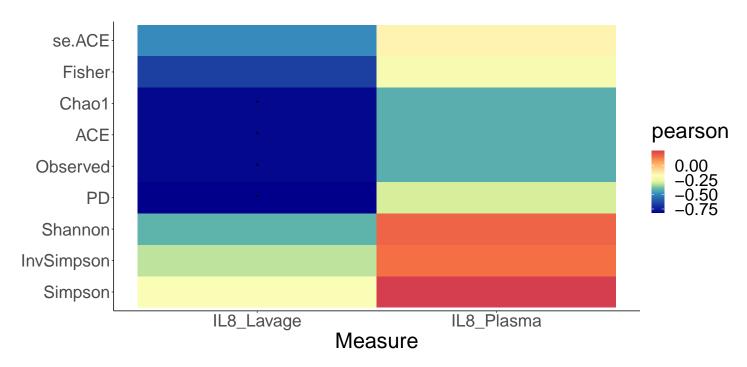


Figure 15: IL8 and lavage alpha diversity Spearman correlations inpendent of H. pylori status.

Buccal Cavity Genus Abundance

Grouped by H. pylori status

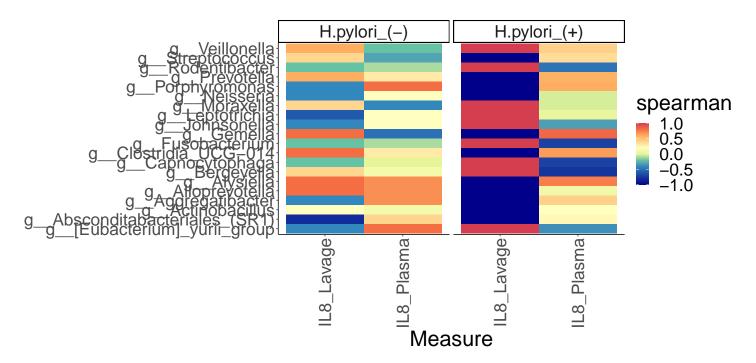


Figure 16: IL8 and Buccal genus abundance Spearman correlations separated by H. pylori status

Buccal Cavity Genus Abundance

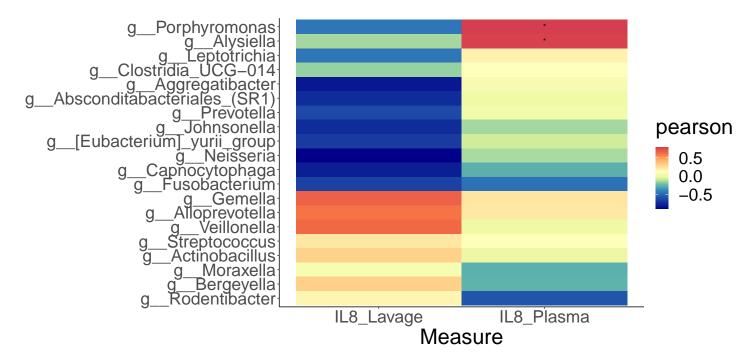


Figure 17: IL8 and Buccal genus abundance Spearman correlations independent of H. pylori status

Buccal Cavity Alpha Diversity

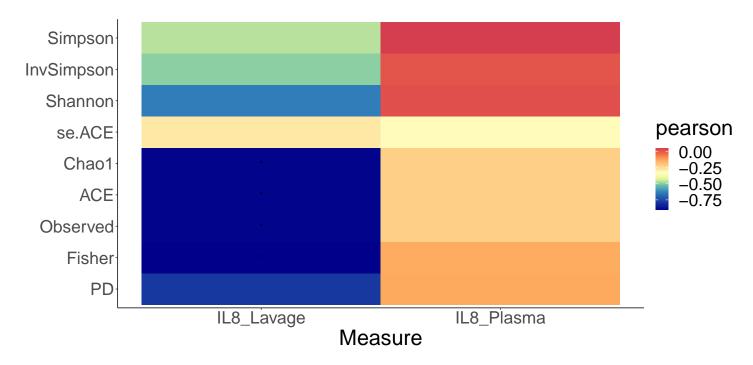


Figure 18: IL8 and Buccal alpha diversity Spearman correlations independent of H. pylori status

Record session information

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## Running under: Ubuntu 18.04.6 LTS
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## [8] base
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