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Project - Human Metagenomics

Import Libraries

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

Dataframe vs Series

In [2]:
```
data = pd.read_csv("abundance.csv")
```

```
/var/folders/b4/_dfkx7ls7yx63xxh8hx0s11r0000gn/T/ipykernel_9294/2423369456.
py:1: DtypeWarning: Columns (2,5,9,20,26,42,47,51,52,59,61,68,76,77,78,79)
have mixed types. Specify dtype option on import or set low_memory=False.
  data = pd.read_csv("abundance.csv")
```

In [3]:
```
data
```

Out[3]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 3513 columns

In [4]:
```
type(data)
```

Out[4]:
```
pandas.core.frame.DataFrame
```

In [5]:
```
data["dataset_name"]
```

Out[5]:
```
0                       Candela_Africa
1                       Candela_Africa
2                       Candela_Africa
3                       Candela_Africa
4                       Candela_Africa
                      ...
3605    Zeller_fecal_colorectal_cancer
3606    Zeller_fecal_colorectal_cancer
3607    Zeller_fecal_colorectal_cancer
3608    Zeller_fecal_colorectal_cancer
3609    Zeller_fecal_colorectal_cancer
Name: dataset_name, Length: 3610, dtype: object
```

In [6]:
```
type(data["dataset_name"])
```

Out[6]:
```
pandas.core.series.Series
```

Inspecting Data in Pandas

In [7]:
```
data.head()
```

Out[7]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	sequencin
0	Candela_Africa	H10	h10	stool	n	40	female	tanzania	
1	Candela_Africa	H11	h11	stool	n	29	female	tanzania	
2	Candela_Africa	H12	h12	stool	n	8	female	tanzania	
3	Candela_Africa	H13	h13	stool	n	34	male	tanzania	
4	Candela_Africa	H14	h14	stool	n	30	male	tanzania	

5 rows × 3513 columns

In [9]:
```
data.tail()
```

Out[9]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

5 rows × 3513 columns

In [10]:
```
data.size
```

Out[10]:
```
12681930
```

In [11]:
```
data.columns
```

Out[11]:
```
Index(['dataset_name', 'sampleID', 'subjectID', 'bodysite', 'disease', 'ag
e',
       'gender', 'country', 'sequencing_technology', 'pubmedid',
       ...
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroco
ccaceae|g__Enterococcus|s__Enterococcus_gilvus|t__Enterococcus_gilvus_uncla
ssified',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis|t__GCF_000415925',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminoc
occaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_0002098
55',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965'],
      dtype='object', length=3513)
```

In [12]:
```
data.dtypes
```

Out[12]:
```
dataset_name
object
sampleID
object
subjectID
object
bodysite
object
disease
object

...
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae|
g__Desulfotomaculum|s__Desulfotomaculum_ruminis                          fl
oat64
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae|
g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085         fl
oat64
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae
|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000209855    fl
oat64
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonell
aceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1                          fl
oat64
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonell
aceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965         fl
oat64
Length: 3513, dtype: object
```

In [13]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3610 entries, 0 to 3609
Columns: 3513 entries, dataset_name to k__Bacteria|p__Firmicutes|c__Negativ
icutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasphaera_
sp_BV3C16_1|t__GCF_000478965
dtypes: float64(3302), object(211)
memory usage: 96.8+ MB
```

In [14]:
```
data.shape
```

Out[14]:
```
(3610, 3513)
```

In [15]:
```
data.describe()
```

Out[15]:

	k__Archaea	k__Archaea|p__Euryarchaeota	k__Archaea|p__Euryarchaeota|c__Methanc
count	3610.000000	3610.000000	361
mean	0.390213	0.390213	(
std	2.177087	2.177087	
min	0.000000	0.000000	(
25%	0.000000	0.000000	(
50%	0.000000	0.000000	(
75%	0.000000	0.000000	(
max	49.058170	49.058170	4

8 rows × 3302 columns

In [16]:
```
data.describe(include="0")
```

Out[16]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	seqı
count	3610	3610	3610	3610	3610	3610	3610	3610	
unique	18	3367	1897	25	20	255	6	19	
top	hmp	MH0046	hv07	stool	n	nd	male	usa	
freq	762	3	30	1989	2054	2078	1398	1533	

4 rows × 211 columns

In [18]:
```
data.head()
```

Out[18]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	sequencin
0	Candela_Africa	H10	h10	stool	n	40	female	tanzania	
1	Candela_Africa	H11	h11	stool	n	29	female	tanzania	
2	Candela_Africa	H12	h12	stool	n	8	female	tanzania	
3	Candela_Africa	H13	h13	stool	n	34	male	tanzania	
4	Candela_Africa	H14	h14	stool	n	30	male	tanzania	

5 rows × 3513 columns

In [19]:
```
data.shape
```

Out[19]:
```
(3610, 3513)
```

In [20]:
```
data.duplicated()
```

Out[20]:
```
0       False
1       False
2       False
3       False
4       False
        ...
3605    False
3606    False
3607    False
3608    False
3609    False
Length: 3610, dtype: bool
```

Selecting Columns in Pandas

In [21]:
```
data.columns
```

Out[21]:
```
Index(['dataset_name', 'sampleID', 'subjectID', 'bodysite', 'disease', 'ag
e',
       'gender', 'country', 'sequencing_technology', 'pubmedid',
       ...
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroco
ccaceae|g__Enterococcus|s__Enterococcus_gilvus|t__Enterococcus_gilvus_uncla
ssified',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis|t__GCF_000415925',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminoc
occaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_0002098
55',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965'],
      dtype='object', length=3513)
```

In [22]:
```
# Sophisticated way of selecting a column,bracket notation
data["gender"]
```

Out[22]:
```
0       female
1       female
2       female
3         male
4         male
         ...
3605    female
3606      male
3607    female
3608      male
3609    female
Name: gender, Length: 3610, dtype: object
```

In [23]:
```
# lazy way of selecting,the dot notation
data.gender
```

Out[23]:
```
0       female
1       female
2       female
3         male
4         male
         ...
3605    female
3606      male
3607    female
3608      male
3609    female
Name: gender, Length: 3610, dtype: object
```

In [24]:
```
data["country"]
```

Out[24]:
```
0       tanzania
1       tanzania
2       tanzania
3       tanzania
4       tanzania
          ...
3605      france
3606      france
3607      france
3608      france
3609      france
Name: country, Length: 3610, dtype: object
```

In [25]:
```
data[["country" ,"sequencing_technology", "gender"]]
```

Out[25]:

	country	sequencing_technology	gender
0	tanzania	Illumina	female
1	tanzania	Illumina	female
2	tanzania	Illumina	female
3	tanzania	Illumina	male
4	tanzania	Illumina	male
...	...	...	...
3605	france	Illumina	female
3606	france	Illumina	male
3607	france	Illumina	female
3608	france	Illumina	male
3609	france	Illumina	female

3610 rows × 3 columns

In [26]:
```
data._get_numeric_data()
```

Out[26]:

	k__Archaea	k__Archaea|p__Euryarchaeota	k__Archaea|p__Euryarchaeota|c__Methanol
0	0.24169	0.24169	
1	0.50621	0.50621	
2	0.30522	0.30522	
3	0.40133	0.40133	
4	0.17479	0.17479	
...	...	...	
3605	6.59835	6.59835	
3606	0.00000	0.00000	
3607	0.00000	0.00000	
3608	0.17495	0.17495	
3609	0.08997	0.08997	

3610 rows × 3302 columns

In [27]:
```
data.select_dtypes("object")
```

Out[27]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 211 columns

In [28]:
```
data.select_dtypes("float")
```

Out[28]:

	k__Archaea	k__Archaea|p__Euryarchaeota	k__Archaea|p__Euryarchaeota|c__Methanol
0	0.24169	0.24169	
1	0.50621	0.50621	
2	0.30522	0.30522	
3	0.40133	0.40133	
4	0.17479	0.17479	
...	...	...	
3605	6.59835	6.59835	
3606	0.00000	0.00000	
3607	0.00000	0.00000	
3608	0.17495	0.17495	
3609	0.08997	0.08997	

3610 rows × 3302 columns

In [29]:
```
data.select_dtypes("int")
```

Out[29]:

0
1
2
3
4
...
3605
3606
3607
3608
3609

3610 rows × 0 columns

In [30]:
```
data.select_dtypes("number")
```

Out[30]:

	k__Archaea	k__Archaea|p__Euryarchaeota	k__Archaea|p__Euryarchaeota|c__Methanol
0	0.24169	0.24169	
1	0.50621	0.50621	
2	0.30522	0.30522	
3	0.40133	0.40133	
4	0.17479	0.17479	
...	...	...	
3605	6.59835	6.59835	
3606	0.00000	0.00000	
3607	0.00000	0.00000	
3608	0.17495	0.17495	
3609	0.08997	0.08997	

3610 rows × 3302 columns

In [31]:
```
data.select_dtypes(["object", "int"])
```

Out[31]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 211 columns

In [32]:
```
data[[col for col in data.columns if data[col].nunique() <50]]
```

Out[32]:

	dataset_name	bodysite	disease	gender	country	sequencing_t
0	Candela_Africa	stool	n	female	tanzania	
1	Candela_Africa	stool	n	female	tanzania	
2	Candela_Africa	stool	n	female	tanzania	
3	Candela_Africa	stool	n	male	tanzania	
4	Candela_Africa	stool	n	male	tanzania	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	stool	n	female	france	
3606	Zeller_fecal_colorectal_cancer	stool	small_adenoma	male	france	
3607	Zeller_fecal_colorectal_cancer	stool	n	female	france	
3608	Zeller_fecal_colorectal_cancer	stool	cancer	male	france	
3609	Zeller_fecal_colorectal_cancer	stool	cancer	female	france	

3610 rows × 2024 columns

Methods vs. Attributes

In [33]:
```
data
```

Out[33]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 3513 columns

In [34]:
```
data.drop(columns="dataset_name")
```

Out[34]:

	sampleID	subjectID	bodysite	disease	age	gender	country	sequen
0	H10	h10	stool	n	40	female	tanzania	
1	H11	h11	stool	n	29	female	tanzania	
2	H12	h12	stool	n	8	female	tanzania	
3	H13	h13	stool	n	34	male	tanzania	
4	H14	h14	stool	n	30	male	tanzania	
...	...	...	...	...	...	...	...	
3605	CCIS95409808ST-4-0	fr-152	stool	n	63	female	france	
3606	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	66	male	france	
3607	CCIS98482370ST-3-0	fr-052	stool	n	53	female	france	
3608	CCIS98512455ST-4-0	fr-459	stool	cancer	63	male	france	
3609	CCIS98832363ST-4-0	fr-552	stool	cancer	55	female	france	

3610 rows × 3512 columns

In [35]:
```
data.drop(columns="dataset_name").shape
```

Out[35]:
```
(3610, 3512)
```

In [36]:
```
data.describe()
```

Out[36]:

	k__Archaea	k__Archaea|p__Euryarchaeota	k__Archaea|p__Euryarchaeota|c__Methanc
count	3610.000000	3610.000000	361
mean	0.390213	0.390213	(
std	2.177087	2.177087	
min	0.000000	0.000000	(
25%	0.000000	0.000000	(
50%	0.000000	0.000000	(
75%	0.000000	0.000000	(
max	49.058170	49.058170	4

8 rows × 3302 columns

In [37]:
```
data["age"]
```

Out[37]:
```
0       40
1       29
2        8
3       34
4       30
        ..
3605    63
3606    66
3607    53
3608    63
3609    55
Name: age, Length: 3610, dtype: object
```

In [38]:
```
data["age"].value_counts()
```

Out[38]:
```
age
nd       2078
49         62
59         61
54         52
41         40
         ...
70.06       1
70.7        1
68.98       1
70.34       1
65          1
Name: count, Length: 255, dtype: int64
```

In [39]:
```
data["age"].value_counts(normalize=True)
```

Out[39]:
```
age
nd       0.575623
49       0.017175
59       0.016898
54       0.014404
41       0.011080
           ...
70.06    0.000277
70.7     0.000277
68.98    0.000277
70.34    0.000277
65       0.000277
Name: proportion, Length: 255, dtype: float64
```

Intuition or Common sense in Pandas

In [40]:
```
age = data["age"]
```

In [41]:
```
type(age)
```

Out[41]:
```
pandas.core.series.Series
```

In [42]:
```
type(data)
```

Out[42]:
```
pandas.core.frame.DataFrame
```

In [43]:
```
data.shape
```

Out[43]:
```
(3610, 3513)
```

In [44]:
```
age.shape
```

Out[44]:
```
(3610,)
```

In [45]:
```
data.columns
```

Out[45]:
```
Index(['dataset_name', 'sampleID', 'subjectID', 'bodysite', 'disease', 'ag
e',
       'gender', 'country', 'sequencing_technology', 'pubmedid',
       ...
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroco
ccaceae|g__Enterococcus|s__Enterococcus_gilvus|t__Enterococcus_gilvus_uncla
ssified',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis|t__GCF_000415925',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminoc
occaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_0002098
55',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965'],
      dtype='object', length=3513)
```

In [46]:
```
data["sequencing_technology"]
```

Out[46]:
```
0       Illumina
1       Illumina
2       Illumina
3       Illumina
4       Illumina
          ...
3605    Illumina
3606    Illumina
3607    Illumina
3608    Illumina
3609    Illumina
Name: sequencing_technology, Length: 3610, dtype: object
```

In [47]:
```
data["sequencing_technology"].value_counts()
```

Out[47]:
```
sequencing_technology
Illumina    3610
Name: count, dtype: int64
```

In [48]:
```
data.value_counts()
```

Out[48]:

```
dataset_name      sampleID   subjectID  bodysite                 disease  a
ge  gender  country   sequencing_technology  pubmedid  camp     paired_end_
insert_size  read_length  total_reads  matched_reads  uniquely_matching_rea
ds  uniquely_matched_reads  gene_number  gene_number_for_11m_uniquely_match
ed_reads  hitchip_probe_number  bmi    gene_count_class  hitchip_probe_clas
s  #SampleID            rna_sampleid  infant_gender  infant_gestation_weeks
cohort  less_than_29weeks  sample_collection_days  collectionweek  sampleco
llectionwindow  gut_sample_id_ncbipublic  gut_sample_id_corrected  projecti
d  flowcell  comment  mlst_project  mlst_ec  st_ec  mlst_kp  st_kp  extract
ionprotocolid  site_id_cincinnati  delivery_mode  infant_ethnicity  infant_
race  birth_year  necrotizing_enterocolitis  dol_firstnecors  sepsis  infan
t_birthweight_kg  infant_birth_length_cm  maternal_abx_given  postnatal_ant
imicrobial_use  postnatal_abx_2window  perinatal_antimicrobial_use  death
nursing_status  maternal_age_at_delivery_years  mat_age_bin  parity  infant
_fut2  mat_fut2  lowh  lowlea  highslea  married  gravida  preeclampsia  mu
lt_birth  hypertension  hypertension_prepreg  chorioamnionitis  primipar  d
aysonform3daysprior  days_on_abx_14  visit_number  snprnt    wmsphase  fir
st  repeat  stooltexture  daysafteronset  hus  stec_count  shigatoxin2elisa
readsmillions  nonhuman  stec_coverage  stxab_detected  stx_ratio  typingda
ta  c_difficile_frequency  ibd  sampling_day  known_consumers_of_a_defined_
fermented_milk_product_(dfmp)  mgs_richness  mgs_profile_matched_sample_pai
rs  ethnicity  sample_name  index_2_primer  index_1_primer  sample_name_rep
eat1  extraction_conc  sampleid_with_barcode  initial_nreads  quality_contr
ol  screensensloc_hg19  screensensloc_phix174  screenhiv  percent_initial_r
eads  percent_qc_reads  tipo_prelievo  prima_dopo_cura  codice_provetta  da
ta  prelievo_efemalefemaleettuato_presso  patient_number  pasi  bsa  age_of
emale_onset  arthritis  type  antibiotic_usage  stage   cirrhotic  hbv_rel
ated  alcohol_related  other_causes_related  inr  crea  alb  tb  pt  ascite
s  he  ctp  meld  antivirus  ?-blocker  designation              age_range
site_symmetry  affected/unaffected  method  site_characteristic  total_inti
tal_reads  estimated_median_insert_size  reported_as_failed_qc  uniquely_al
ign_to_human  non_uniquely_align_to_human_with_0_2_mismatches  reads_remove
d_because_of_read_pair_trimming_discrepancy  too_short_after_quality_trimmi
ng(<50bp)  final_#_paired_reads  final_#_singletons  total_final_reads  %_r
eads_kept_by_mean_slope_of_last_5_points_(coverage)  population  bmi_class
16s_rrna  shotgun_metagenome  read_depth_16s  paired  single  height  weigh
t  diabetic  fbg   sbp  dbp  fins  fcp  hbalc  tg    tcho  hdl   ldl   kit
sample_group  illumina_run  classification  gad-antibodies  whr  wc  choles
terol  triglycerides  creatinine  y-gt  fasting_glucose  fasting_insulin  h
ba1c  adiponectin  leptin  glp-1  fgf-19  hscrp  c-peptide  tnfa  il-1  cd1
63  statins  insulin  oral_anti-diabetic_medication  years_in_sweden  tnm_s
tage  ajcc_stage  localization  fobt  wif-1_gene_methylation_test  group  k
__Archaea  k__Archaea|p__Euryarchaeota  k__Archaea|p__Euryarchaeota|c__Meth
anobacteria  k__Archaea|p__Euryarchaeota|c__Methanobacteria|o__Methanobacte
riales  k__Archaea|p__Euryarchaeota|c__Methanobacteria|o__Methanobacteriale
s|f__Methanobacteriaceae  k__Archaea|p__Euryarchaeota|c__Methanobacteria|o_
_Methanobacteriales|f__Methanobacteriaceae|g__Methanobrevibacter  k__Archae
a|p__Euryarchaeota|c__Methanobacteria|o__Methanobacteriales|f__Methanobacte
riaceae|g__Methanobrevibacter|s__Methanobrevibacter_smithii  k__Archaea|p__
Euryarchaeota|c__Methanobacteria|o__Methanobacteriales|f__Methanobacteriace
ae|g__Methanobrevibacter|s__Methanobrevibacter_smithii|t__Methanobrevibacte
r_smithii_unclassified  k__Archaea|p__Euryarchaeota|c__Methanobacteria|o__M
ethanobacteriales|f__Methanobacteriaceae|g__Methanobrevibacter|s__Methanobr
evibacter_unclassified  k__Archaea|p__Euryarchaeota|c__Methanobacteria|o__M
ethanobacteriales|f__Methanobacteriaceae|g__Methanosphaera  k__Archaea|p__E
uryarchaeota|c__Methanobacteria|o__Methanobacteriales|f__Methanobacteriacea
e|g__Methanosphaera|s__Methanosphaera_stadtmanae  k__Archaea|p__Euryarchaeo
ta|c__Methanobacteria|o__Methanobacteriales|f__Methanobacteriaceae|g__Metha
nosphaera|s__Methanosphaera_stadtmanae|t__GCF_000012545  k__Bacteria  k__Ba
cteria|p__Acidobacteria  k__Bacteria|p__Acidobacteria|c__Acidobacteriia  k_
_Bacteria|p__Acidobacteria|c__Acidobacteriia|o__Acidobacteriales  k__Bacter
ia|p__Acidobacteria|c__Acidobacteriia|o__Acidobacteriales|f__Acidobacteriac
eae  k__Bacteria|p__Acidobacteria|c__Acidobacteriia|o__Acidobacteriales|f__
Acidobacteriaceae|g__Acidobacteriaceae_unclassified  k__Bacteria|p__Actinob
```

acteria k__Bacteria|p__Actinobacteria|c__Actinobacteria k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_graevenitzii k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_graevenitzii|t__Actinomyces_graevenitzii_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_odontolyticus k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_odontolyticus|t__Actinomyces_odontolyticus_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_turicensis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_turicensis|t__GCF_000296505 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Varibaculum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Varibaculum|s__Varibaculum_cambriense k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Varibaculum|s__Varibaculum_cambriense|t__GCF_000420065 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_mucilaginosa k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_mucilaginosa|t__Rothia_mucilaginosa_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_adolescentis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_adolescentis|t__Bifidobacterium_adolescentis_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_angulatum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_angulatum|t__GCF_000156635 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_bifidum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_bifidum|t__Bifidobacterium_bifidum_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_catenulatum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_catenulatum|t__GCF_000173455 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_longum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_longum|t__Bifidobacterium_longum_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_pseudocatenulatum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_pseudocatenulatum|t__GCF_000173435 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Gardnerella k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Gardnerella|s__Gardnerella_vaginalis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Gardnerella|s__Gardnerella_vaginalis|t__Gardnerella_vaginalis_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales k__Bacteria|p__Actinobacteria

|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|
g__Adlercreutzia k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriob
acteriales|f__Coriobacteriaceae|g__Adlercreutzia|s__Adlercreutzia_equolifac
iens k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f
__Coriobacteriaceae|g__Adlercreutzia|s__Adlercreutzia_equolifaciens|t__GCF_
000478885 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteria
les|f__Coriobacteriaceae|g__Atopobium k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopob
ium_parvulum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacte
riales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_parvulum|t__GCF_00002
4225 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f
__Coriobacteriaceae|g__Atopobium|s__Atopobium_rimae k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopo
bium|s__Atopobium_rimae|t__GCF_000174015 k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Collinsella k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Corioba
cteriaceae|g__Collinsella|s__Collinsella_aerofaciens k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Coll
insella|s__Collinsella_aerofaciens|t__GCF_000169035 k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Colli
nsella|s__Collinsella_unclassified k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Coriobacteriaceae_nona
me k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__
Coriobacteriaceae|g__Coriobacteriaceae_noname|s__Coriobacteriaceae_bacteriu
m_phI k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|
f__Coriobacteriaceae|g__Coriobacteriaceae_noname|s__Coriobacteriaceae_bacte
rium_phI|t__GCF_000311845 k__Bacteria|p__Actinobacteria|c__Actinobacteria|
o__Coriobacteriales|f__Coriobacteriaceae|g__Eggerthella k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__E
ggerthella|s__Eggerthella_lenta k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Coriobacteriales|f__Coriobacteriaceae|g__Eggerthella|s__Eggerthell
a_lenta|t__GCF_000024265 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o
__Coriobacteriales|f__Coriobacteriaceae|g__Eggerthella|s__Eggerthella_uncla
ssified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriale
s|f__Coriobacteriaceae|g__Gordonibacter k__Bacteria|p__Actinobacteria|c__A
ctinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Gordonibacter|s__
Gordonibacter_pamelaeae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o_
_Coriobacteriales|f__Coriobacteriaceae|g__Gordonibacter|s__Gordonibacter_pa
melaeae|t__GCF_000210055 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o
__Coriobacteriales|f__Coriobacteriaceae|g__Olsenella k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Olse
nella|s__Olsenella_unclassified k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Coriobacteriales|f__Coriobacteriaceae|g__Slackia k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g_
_Slackia|s__Slackia_piriformis k__Bacteria|p__Actinobacteria|c__Actinobact
eria|o__Coriobacteriales|f__Coriobacteriaceae|g__Slackia|s__Slackia_pirifor
mis|t__GCF_000296445 k__Bacteria|p__Bacteroidetes k__Bacteria|p__Bacteroi
detes|c__Bacteroidia k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Ba
cteroidaceae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|
f__Bacteroidaceae|g__Bacteroides k__Bacteria|p__Bacteroidetes|c__Bacteroid
ia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_barnesi
ae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bactero
idaceae|g__Bacteroides|s__Bacteroides_barnesiae|t__GCF_000374585 k__Bacter
ia|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Ba
cteroides|s__Bacteroides_caccae k__Bacteria|p__Bacteroidetes|c__Bacteroidi
a|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_caccae|t
__Bacteroides_caccae_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroi
dia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_cellul
osilyticus k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f_
_Bacteroidaceae|g__Bacteroides|s__Bacteroides_cellulosilyticus|t__Bacteroid
es_cellulosilyticus_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroid
ia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_clarus

```
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidac
eae|g__Bacteroides|s__Bacteroides_clarus|t__GCF_000195615  k__Bacteria|p__B
acteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroid
es|s__Bacteroides_coprocola  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o_
_Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_coprocola|t_
_GCF_000154845  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidale
s|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_coprophilus  k__Bacteria|
p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacte
roides|s__Bacteroides_coprophilus|t__GCF_000157915  k__Bacteria|p__Bacteroi
detes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__B
acteroides_dorei  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroida
les|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_dorei|t__Bacteroides_do
rei_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroida
les|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_eggerthii  k__Bacteria|
p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacte
roides|s__Bacteroides_eggerthii|t__Bacteroides_eggerthii_unclassified  k__B
acteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|
g__Bacteroides|s__Bacteroides_faecis  k__Bacteria|p__Bacteroidetes|c__Bacte
roidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_fae
cis|t__GCF_000226135  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_finegoldii  k__Bact
eria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__
Bacteroides|s__Bacteroides_finegoldii|t__Bacteroides_finegoldii_unclassifie
d  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroi
daceae|g__Bacteroides|s__Bacteroides_fragilis  k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacter
oides_fragilis|t__Bacteroides_fragilis_unclassified  k__Bacteria|p__Bactero
idetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__
Bacteroides_intestinalis  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Ba
cteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_intestinalis|t_
_GCF_000172175  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidale
s|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_massiliensis  k__Bacteria
|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bact
eroides|s__Bacteroides_massiliensis|t__Bacteroides_massiliensis_unclassifie
d  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroi
daceae|g__Bacteroides|s__Bacteroides_nordii  k__Bacteria|p__Bacteroidetes|c
__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroi
des_nordii|t__GCF_000273175  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o_
_Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_ovatus  k__B
acteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|
g__Bacteroides|s__Bacteroides_ovatus|t__Bacteroides_ovatus_unclassified  k_
_Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidacea
e|g__Bacteroides|s__Bacteroides_plebeius  k__Bacteria|p__Bacteroidetes|c__B
acteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides
_plebeius|t__GCF_000187895  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__
Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_salyersiae  k
__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidace
ae|g__Bacteroides|s__Bacteroides_salyersiae|t__Bacteroides_salyersiae_uncla
ssified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Ba
cteroidaceae|g__Bacteroides|s__Bacteroides_sp_4_3_47FAA  k__Bacteria|p__Bac
teroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides
|s__Bacteroides_sp_4_3_47FAA|t__GCF_000158515  k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacter
oides_stercoris  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidal
es|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_stercoris|t__Bacteroides
_stercoris_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bac
teroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_thetaiotaomicron
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidac
eae|g__Bacteroides|s__Bacteroides_thetaiotaomicron|t__Bacteroides_thetaiota
omicron_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_uniformis  k__Bacte
ria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__B
acteroides|s__Bacteroides_uniformis|t__Bacteroides_uniformis_unclassified
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidac
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eae|g__Bacteroides|s__Bacteroides_uniformis|t__GCF_000154205 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_vulgatus k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_vulgatus|t__Bacteroides_vulgatus_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_xylanisolvens k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_xylanisolvens|t__Bacteroides_xylanisolvens_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidales_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidales_noname|g__Bacteroidales_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidales_noname|g__Bacteroidales_noname|s__Bacteroidales_bacterium_ph8 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidales_noname|g__Bacteroidales_noname|s__Bacteroidales_bacterium_ph8|t__GCF_000311925 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Barnesiella k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Barnesiella|s__Barnesiella_intestinihominis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Barnesiella|s__Barnesiella_intestinihominis|t__GCF_000296465 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Coprobacter k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Coprobacter|s__Coprobacter_fastidiosus k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Coprobacter|s__Coprobacter_fastidiosus|t__GCF_000473955 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Odoribacter k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Odoribacter|s__Odoribacter_splanchnicus k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Odoribacter|s__Odoribacter_splanchnicus|t__GCF_000190535 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Odoribacter|s__Odoribacter_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_distasonis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_distasonis|t__Parabacteroides_distasonis_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_goldsteinii k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_goldsteinii|t__Parabacteroides_goldsteinii_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_merdae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_merdae|t__Parabacteroides_merdae_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_asaccharolytica k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_asaccharolytica|t__Porphyromonas_asaccharolytica_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_bennonis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_bennonis|t__GCF_000375645 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_somerae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_somerae|t__GCF_000372405 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_uenonis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_ue

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nonis|t__GCF_000174775  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bact
eroidales|f__Prevotellaceae  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o_
_Bacteroidales|f__Prevotellaceae|g__Alloprevotella  k__Bacteria|p__Bacteroi
detes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s
__Alloprevotella_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|
o__Bacteroidales|f__Prevotellaceae|g__Paraprevotella  k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Paraprevotella
|s__Paraprevotella_clara  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Ba
cteroidales|f__Prevotellaceae|g__Paraprevotella|s__Paraprevotella_clara|t__
GCF_000233955  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales
|f__Prevotellaceae|g__Paraprevotella|s__Paraprevotella_unclassified  k__Bac
teria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g_
_Paraprevotella|s__Paraprevotella_xylaniphila  k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Paraprevotella|s__Par
aprevotella_xylaniphila|t__GCF_000205165  k__Bacteria|p__Bacteroidetes|c__B
acteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella  k__Bacteria|p_
_Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevote
lla|s__Prevotella_bivia  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bac
teroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_bivia|t__Prevotell
a_bivia_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_copri  k__Bacteria|p_
_Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevote
lla|s__Prevotella_copri|t__GCF_000157935  k__Bacteria|p__Bacteroidetes|c__B
acteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_d
isiens  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Pre
votellaceae|g__Prevotella|s__Prevotella_disiens|t__Prevotella_disiens_uncla
ssified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Pr
evotellaceae|g__Prevotella|s__Prevotella_stercorea  k__Bacteria|p__Bacteroi
detes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Pr
evotella_stercorea|t__GCF_000235885  k__Bacteria|p__Bacteroidetes|c__Bacter
oidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_timone
nsis  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevo
tellaceae|g__Prevotella|s__Prevotella_timonensis|t__GCF_000177055  k__Bacte
ria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae  k__B
acteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g
__Alistipes  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f
__Rikenellaceae|g__Alistipes|s__Alistipes_finegoldii  k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Al
istipes_finegoldii|t__GCF_000265365  k__Bacteria|p__Bacteroidetes|c__Bacter
oidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_indistinc
tus  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikene
llaceae|g__Alistipes|s__Alistipes_indistinctus|t__GCF_000231275  k__Bacteri
a|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Alis
tipes|s__Alistipes_onderdonkii  k__Bacteria|p__Bacteroidetes|c__Bacteroidia
|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_onderdonkii|t_
_GCF_000374505  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidale
s|f__Rikenellaceae|g__Alistipes|s__Alistipes_putredinis  k__Bacteria|p__Bac
teroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s_
_Alistipes_putredinis|t__GCF_000154465  k__Bacteria|p__Bacteroidetes|c__Bac
teroidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_senega
lensis  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rik
enellaceae|g__Alistipes|s__Alistipes_senegalensis|t__GCF_000312145  k__Bact
eria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__A
listipes|s__Alistipes_shahii  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o
__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_shahii|t__GCF_00
0210575  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Ri
kenellaceae|g__Alistipes|s__Alistipes_sp_AP11  k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes
_sp_AP11|t__GCF_000321205  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__B
acteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_unclassified  k__Ba
cteria|p__Cyanobacteria  k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_nona
me  k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales
k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__
Oscillatoriales_noname  k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_nonam
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e|o__Oscillatoriales|f__Oscillatoriales_noname|g__Microcoleus  k__Bacteria|
p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Oscillatoria
les_noname|g__Microcoleus|s__Microcoleus_unclassified  k__Bacteria|p__Firmi
cutes  k__Bacteria|p__Firmicutes|c__Bacilli  k__Bacteria|p__Firmicutes|c__B
acilli|o__Lactobacillales  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Carnobacteriaceae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Carnobacteriaceae|g__Granulicatella  k__Bacteria|p__Firmicute
s|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Granulicatella|s__G
ranulicatella_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Enterococcaceae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Enterococcaceae|g__Enterococcus  k__Bacteria|p__Firmicutes|c__
Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococc
us_faecium  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Ente
rococcaceae|g__Enterococcus|s__Enterococcus_faecium|t__Enterococcus_faecium
_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__L
actobacillaceae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f_
_Lactobacillaceae|g__Lactobacillus  k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_anim
alis  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacil
laceae|g__Lactobacillus|s__Lactobacillus_animalis|t__GCF_000183825  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lac
tobacillus|s__Lactobacillus_delbrueckii  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus
_delbrueckii|t__Lactobacillus_delbrueckii_unclassified  k__Bacteria|p__Firm
icutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s
__Lactobacillus_fermentum  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_fermentum|t__
Lactobacillus_fermentum_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|
o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_mu
cosae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobaci
llaceae|g__Lactobacillus|s__Lactobacillus_mucosae|t__GCF_000248095  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lac
tobacillus|s__Lactobacillus_ruminis  k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_rum
inis|t__Lactobacillus_ruminis_unclassified  k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacil
lus_sakei  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lacto
bacillaceae|g__Lactobacillus|s__Lactobacillus_sakei|t__Lactobacillus_sakei_
unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Le
uconostocaceae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__
Leuconostocaceae|g__Leuconostoc  k__Bacteria|p__Firmicutes|c__Bacilli|o__La
ctobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_lactis  k__
Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g_
_Leuconostoc|s__Leuconostoc_lactis|t__Leuconostoc_lactis_unclassified  k__B
acteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__
Leuconostoc|s__Leuconostoc_pseudomesenteroides  k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconos
toc_pseudomesenteroides|t__Leuconostoc_pseudomesenteroides_unclassified  k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g
__Weissella  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leu
conostocaceae|g__Weissella|s__Weissella_unclassified  k__Bacteria|p__Firmic
utes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae  k__Bacteria|p__Firm
icutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Lactococcus  k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g
__Lactococcus|s__Lactococcus_lactis  k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Streptococcaceae|g__Lactococcus|s__Lactococcus_lactis|
t__Lactococcus_lactis_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Streptococcaceae|g__Streptococcus  k__Bacteria|p__Firmi
cutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s_
_Streptococcus_anginosus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobaci
llales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_anginosus|t__S
treptococcus_anginosus_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_aus
tralis  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptoc
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occaceae|g__Streptococcus|s__Streptococcus_australis|t__Streptococcus_austr
alis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|
f__Streptococcaceae|g__Streptococcus|s__Streptococcus_gordonii k__Bacteria
|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strepto
coccus|s__Streptococcus_gordonii|t__GCF_000017005 k__Bacteria|p__Firmicute
s|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Str
eptococcus_infantarius k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacill
ales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_infantarius|t__S
treptococcus_infantarius_unclassified k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_i
nfantis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Strepto
coccaceae|g__Streptococcus|s__Streptococcus_infantis|t__Streptococcus_infan
tis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f
__Streptococcaceae|g__Streptococcus|s__Streptococcus_lutetiensis k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strep
tococcus|s__Streptococcus_lutetiensis|t__GCF_000441535 k__Bacteria|p__Firm
icutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s
__Streptococcus_mitis_oralis_pneumoniae k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus
_mitis_oralis_pneumoniae|t__Streptococcus_mitis_oralis_pneumoniae_unclassif
ied k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococc
aceae|g__Streptococcus|s__Streptococcus_parasanguinis k__Bacteria|p__Firmi
cutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s_
_Streptococcus_parasanguinis|t__Streptococcus_parasanguinis_unclassified k
__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|
g__Streptococcus|s__Streptococcus_salivarius k__Bacteria|p__Firmicutes|c__
Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptoc
occus_salivarius|t__Streptococcus_salivarius_unclassified k__Bacteria|p__F
irmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcu
s|s__Streptococcus_thermophilus k__Bacteria|p__Firmicutes|c__Bacilli|o__La
ctobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_thermop
hilus|t__Streptococcus_thermophilus_unclassified k__Bacteria|p__Firmicutes
|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Stre
ptococcus_vestibularis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacill
ales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_vestibularis|t__
Streptococcus_vestibularis_unclassified k__Bacteria|p__Firmicutes|c__Clost
ridia k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales k__Bacteri
a|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostr
idium k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostrid
iaceae|g__Clostridium|s__Clostridium_asparagiforme k__Bacteria|p__Firmicut
es|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clost
ridium_asparagiforme|t__GCF_000158075 k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_boltea
e k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiace
ae|g__Clostridium|s__Clostridium_bolteae|t__Clostridium_bolteae_unclassifie
d k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiace
ae|g__Clostridium|s__Clostridium_citroniae k__Bacteria|p__Firmicutes|c__Cl
ostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_c
itroniae|t__GCF_000233455 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clost
ridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_clostridioforme k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g
__Clostridium|s__Clostridium_clostridioforme|t__Clostridium_clostridioforme
_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Clostridiaceae|g__Clostridium|s__Clostridium_hathewayi k__Bacteria|p__Firm
icutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__C
lostridium_hathewayi|t__Clostridium_hathewayi_unclassified k__Bacteria|p__
Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|
s__Clostridium_leptum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridi
ales|f__Clostridiaceae|g__Clostridium|s__Clostridium_leptum|t__GCF_00015434
5 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiace
ae|g__Clostridium|s__Clostridium_methylpentosum k__Bacteria|p__Firmicutes|
c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostrid
ium_methylpentosum|t__GCF_000158655 k__Bacteria|p__Firmicutes|c__Clostridi

```
a|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_nexile
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|
g__Clostridium|s__Clostridium_nexile|t__GCF_000156035  k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Cl
ostridium_perfringens  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridi
ales|f__Clostridiaceae|g__Clostridium|s__Clostridium_perfringens|t__Clostri
dium_perfringens_unclassified  k__Bacteria|p__Firmicutes|c__Clostridia|o__C
lostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_L2_50  k__B
acteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__C
lostridium|s__Clostridium_sp_L2_50|t__GCF_000154245  k__Bacteria|p__Firmicu
tes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clos
tridium_symbiosum  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales
|f__Clostridiaceae|g__Clostridium|s__Clostridium_symbiosum|t__Clostridium_s
ymbiosum_unclassified  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridi
ales|f__Clostridiales_Family_XI_Incertae_Sedis  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__
Anaerococcus  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__C
lostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_vagin
alis  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridi
ales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_vaginalis|t__
GCF_000163295  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Clostridiales_Family_XI_Incertae_Sedis|g__Parvimonas  k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sed
is|g__Parvimonas|s__Parvimonas_unclassified  k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Pep
toniphilus  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clo
stridiales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_duerd
enii  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridi
ales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_duerdenii|t
__GCF_000146345  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f
__Clostridiales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_
lacrimalis  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clo
stridiales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_lacri
malis|t__Peptoniphilus_lacrimalis_unclassified  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Clostridiales_noname  k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|g__Clostridial
es_noname  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clos
tridiales_noname|g__Clostridiales_noname|s__Bacteroides_pectinophilus  k__B
acteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_nonam
e|g__Clostridiales_noname|s__Bacteroides_pectinophilus|t__GCF_000155855  k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_non
ame|g__Clostridiales_noname|s__Clostridiales_bacterium_1_7_47FAA  k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|g__
Clostridiales_noname|s__Clostridiales_bacterium_1_7_47FAA|t__GCF_000155435
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_n
oname|g__Clostridiales_noname|s__Clostridiales_genomosp_BVAB3  k__Bacteria|
p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|g__Clo
stridiales_noname|s__Clostridiales_genomosp_BVAB3|t__GCF_000025225  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|g
__Flavonifractor  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Clostridiales_noname|g__Flavonifractor|s__Flavonifractor_plautii  k__Bac
teria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|
g__Flavonifractor|s__Flavonifractor_plautii|t__GCF_000239295  k__Bacteria|p
__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_noname|g__Pseu
doflavonifractor  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Clostridiales_noname|g__Pseudoflavonifractor|s__Pseudoflavonifractor_cap
illosus  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostr
idiales_noname|g__Pseudoflavonifractor|s__Pseudoflavonifractor_capillosus|t
__GCF_000169255  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f
__Eubacteriaceae  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Eubacteriaceae|g__Eubacterium  k__Bacteria|p__Firmicutes|c__Clostridia|o
__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_brachy  k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__
Eubacterium|s__Eubacterium_brachy|t__GCF_000488855  k__Bacteria|p__Firmicut
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es|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubac
terium_eligens k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f_
_Eubacteriaceae|g__Eubacterium|s__Eubacterium_eligens|t__GCF_000146185 k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__
Eubacterium|s__Eubacterium_hallii k__Bacteria|p__Firmicutes|c__Clostridia|
o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_hallii|t__
GCF_000173975 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Eubacteriaceae|g__Eubacterium|s__Eubacterium_ramulus k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eub
acterium_ramulus|t__GCF_000469345 k__Bacteria|p__Firmicutes|c__Clostridia|
o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_rectale k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g
__Eubacterium|s__Eubacterium_rectale|t__Eubacterium_rectale_unclassified k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g
__Eubacterium|s__Eubacterium_siraeum k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_siraeum
|t__Eubacterium_siraeum_unclassified k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_ventrio
sum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteria
ceae|g__Eubacterium|s__Eubacterium_ventriosum|t__GCF_000153885 k__Bacteria
|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Anaer
ostipes k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachno
spiraceae|g__Anaerostipes|s__Anaerostipes_hadrus k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Anaerostipes|s__Anaer
ostipes_hadrus|t__GCF_000332875 k__Bacteria|p__Firmicutes|c__Clostridia|o_
_Clostridiales|f__Lachnospiraceae|g__Blautia k__Bacteria|p__Firmicutes|c__
Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blautia|s__Blautia_hydrog
enotrophica k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__La
chnospiraceae|g__Blautia|s__Blautia_hydrogenotrophica|t__GCF_000157975 k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g_
_Blautia|s__Ruminococcus_gnavus k__Bacteria|p__Firmicutes|c__Clostridia|o_
_Clostridiales|f__Lachnospiraceae|g__Blautia|s__Ruminococcus_gnavus|t__Rumi
nococcus_gnavus_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Cl
ostridiales|f__Lachnospiraceae|g__Blautia|s__Ruminococcus_obeum k__Bacteri
a|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blauti
a|s__Ruminococcus_obeum|t__Ruminococcus_obeum_unclassified k__Bacteria|p__
Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blautia|s__
Ruminococcus_torques k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridia
les|f__Lachnospiraceae|g__Blautia|s__Ruminococcus_torques|t__Ruminococcus_t
orques_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Lachnospiraceae|g__Butyrivibrio k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Lachnospiraceae|g__Butyrivibrio|s__Butyrivibrio_cro
ssotus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnos
piraceae|g__Butyrivibrio|s__Butyrivibrio_crossotus|t__GCF_000156015 k__Bac
teria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Bu
tyrivibrio|s__Butyrivibrio_unclassified k__Bacteria|p__Firmicutes|c__Clost
ridia|o__Clostridiales|f__Lachnospiraceae|g__Coprococcus k__Bacteria|p__Fi
rmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Coprococcus|s
__Coprococcus_catus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Lachnospiraceae|g__Coprococcus|s__Coprococcus_catus|t__GCF_000210555
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae
|g__Coprococcus|s__Coprococcus_comes k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Lachnospiraceae|g__Coprococcus|s__Coprococcus_comes|
t__GCF_000155875 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Lachnospiraceae|g__Coprococcus|s__Coprococcus_eutactus k__Bacteria|p__F
irmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Coprococcus|
s__Coprococcus_eutactus|t__GCF_000154425 k__Bacteria|p__Firmicutes|c__Clos
tridia|o__Clostridiales|f__Lachnospiraceae|g__Coprococcus|s__Coprococcus_sp
_ART55_1 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachn
ospiraceae|g__Coprococcus|s__Coprococcus_sp_ART55_1|t__GCF_000210595 k__Ba
cteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__D
orea k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospi
raceae|g__Dorea|s__Dorea_formicigenerans k__Bacteria|p__Firmicutes|c__Clos

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tridia|o__Clostridiales|f__Lachnospiraceae|g__Dorea|s__Dorea_formicigeneran
s|t__Dorea_formicigenerans_unclassified  k__Bacteria|p__Firmicutes|c__Clost
ridia|o__Clostridiales|f__Lachnospiraceae|g__Dorea|s__Dorea_longicatena  k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g
__Dorea|s__Dorea_longicatena|t__GCF_000154065  k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Dorea|s__Dorea_unclassif
ied  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospir
aceae|g__Lachnospiraceae_noname  k__Bacteria|p__Firmicutes|c__Clostridia|o_
_Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospirac
eae_bacterium_1_1_57FAA  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_bact
erium_1_1_57FAA|t__GCF_000218445  k__Bacteria|p__Firmicutes|c__Clostridia|o
__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospira
ceae_bacterium_1_4_56FAA  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostr
idiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_bac
terium_1_4_56FAA|t__GCF_000218385  k__Bacteria|p__Firmicutes|c__Clostridia|
o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospir
aceae_bacterium_2_1_58FAA  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clost
ridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_ba
cterium_2_1_58FAA|t__GCF_000218465  k__Bacteria|p__Firmicutes|c__Clostridia
|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospi
raceae_bacterium_3_1_46FAA  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clos
tridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_b
acterium_3_1_46FAA|t__GCF_000209405  k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnosp
iraceae_bacterium_3_1_57FAA_CT1  k__Bacteria|p__Firmicutes|c__Clostridia|o_
_Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospirac
eae_bacterium_3_1_57FAA_CT1|t__GCF_000218405  k__Bacteria|p__Firmicutes|c__
Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s_
_Lachnospiraceae_bacterium_4_1_37FAA  k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnos
piraceae_bacterium_4_1_37FAA|t__GCF_000191805  k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s
__Lachnospiraceae_bacterium_5_1_63FAA  k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachno
spiraceae_bacterium_5_1_63FAA|t__GCF_000185525  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|
s__Lachnospiraceae_bacterium_7_1_58FAA  k__Bacteria|p__Firmicutes|c__Clostr
idia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachn
ospiraceae_bacterium_7_1_58FAA|t__GCF_000242155  k__Bacteria|p__Firmicutes|
c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname
|s__Lachnospiraceae_bacterium_8_1_57FAA  k__Bacteria|p__Firmicutes|c__Clost
ridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lach
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|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_nonam
e|s__Lachnospiraceae_bacterium_9_1_43BFAA  k__Bacteria|p__Firmicutes|c__Clo
stridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__La
chnospiraceae_bacterium_9_1_43BFAA|t__GCF_000209445  k__Bacteria|p__Firmicu
tes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Roseburia  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Ros
eburia|s__Roseburia_hominis  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clo
stridiales|f__Lachnospiraceae|g__Roseburia|s__Roseburia_hominis|t__GCF_0002
25345  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnosp
iraceae|g__Roseburia|s__Roseburia_intestinalis  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Roseburia|s__Roseburia_
intestinalis|t__Roseburia_intestinalis_unclassified  k__Bacteria|p__Firmicu
tes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Roseburia|s__Roseb
uria_inulinivorans  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Lachnospiraceae|g__Roseburia|s__Roseburia_inulinivorans|t__GCF_0001741
95  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospira
ceae|g__Roseburia|s__Roseburia_unclassified  k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Oscillospiraceae  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Oscillospiraceae|g__Oscillibacter  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Oscillospiraceae|g__Os
```

cillibacter|s__Oscillibacter_unclassified k__Bacteria|p__Firmicutes|c__Clo
stridia|o__Clostridiales|f__Peptostreptococcaceae k__Bacteria|p__Firmicute
s|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostreptoco
ccaceae_noname k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f_
_Peptostreptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_bartl
ettii k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostr
eptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_bartlettii|t__
GCF_000154445 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Peptostreptococcaceae|g__Peptostreptococcaceae_noname|s__Peptostreptococcac
eae_noname_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Peptostreptococcaceae|g__Peptostreptococcus k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostrep
tococcus|s__Peptostreptococcus_unclassified k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Ruminococcaceae k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Anaerotruncus k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Anaer
otruncus|s__Anaerotruncus_colihominis k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Ruminococcaceae|g__Anaerotruncus|s__Anaerotruncus_c
olihominis|t__GCF_000154565 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clo
stridiales|f__Ruminococcaceae|g__Anaerotruncus|s__Anaerotruncus_unclassifie
d k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcac
eae|g__Faecalibacterium k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Ruminococcaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitz
ii k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococca
ceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__Faecalibacteriu
m_prausnitzii_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clos
tridiales|f__Ruminococcaceae|g__Faecalibacterium|s__Faecalibacterium_prausn
itzii|t__GCF_000162015 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostrid
iales|f__Ruminococcaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzi
i|t__GCF_000166035 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Ruminococcaceae|g__Ruminococcaceae_noname k__Bacteria|p__Firmicutes|c
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ceae_bacterium_D16|t__GCF_000177015 k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Ruminococcaceae|g__Ruminococcus k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Ruminococcus|s__
Ruminococcus_albus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Ruminococcaceae|g__Ruminococcus|s__Ruminococcus_albus|t__Ruminococcus_
albus_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Ruminococcaceae|g__Ruminococcus|s__Ruminococcus_bromii k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Ruminococc
us|s__Ruminococcus_bromii|t__GCF_000209875 k__Bacteria|p__Firmicutes|c__Cl
ostridia|o__Clostridiales|f__Ruminococcaceae|g__Ruminococcus|s__Ruminococcu
s_callidus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Rum
inococcaceae|g__Ruminococcus|s__Ruminococcus_callidus|t__GCF_000468015 k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g_
_Ruminococcus|s__Ruminococcus_champanellensis k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Ruminococcus|s__Ruminoco
ccus_champanellensis|t__GCF_000210095 k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Ruminococcaceae|g__Ruminococcus|s__Ruminococcus_fla
vefaciens k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Rumi
nococcaceae|g__Ruminococcus|s__Ruminococcus_flavefaciens|t__Ruminococcus_fl
avefaciens_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Ruminococcaceae|g__Ruminococcus|s__Ruminococcus_lactaris k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Rum
inococcus|s__Ruminococcus_lactaris|t__Ruminococcus_lactaris_unclassified k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|
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ccus_sp_5_1_39BFAA|t__GCF_000159975 k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Ruminococcaceae|g__Subdoligranulum k__Bacteria|p__Fi
rmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Subdoligranul
um|s__Subdoligranulum_unclassified k__Bacteria|p__Firmicutes|c__Clostridia

|o__Clostridiales|f__Ruminococcaceae|g__Subdoligranulum|s__Subdoligranulum_
variabile k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Rumi
nococcaceae|g__Subdoligranulum|s__Subdoligranulum_variabile|t__GCF_00015795
5 k__Bacteria|p__Firmicutes|c__Erysipelotrichia k__Bacteria|p__Firmicutes
|c__Erysipelotrichia|o__Erysipelotrichales k__Bacteria|p__Firmicutes|c__Er
ysipelotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae k__Bacteria|p_
_Firmicutes|c__Erysipelotrichia|o__Erysipelotrichales|f__Erysipelotrichacea
e|g__Catenibacterium k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erys
ipelotrichales|f__Erysipelotrichaceae|g__Catenibacterium|s__Catenibacterium
_mitsuokai k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotrich
ales|f__Erysipelotrichaceae|g__Catenibacterium|s__Catenibacterium_mitsuokai
|t__GCF_000173795 k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipe
lotrichales|f__Erysipelotrichaceae|g__Coprobacillus k__Bacteria|p__Firmicu
tes|c__Erysipelotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Cop
robacillus|s__Coprobacillus_sp_29_1 k__Bacteria|p__Firmicutes|c__Erysipelo
trichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Coprobacillus|s__Co
probacillus_sp_29_1|t__GCF_000186525 k__Bacteria|p__Firmicutes|c__Erysipel
otrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Coprobacillus|s__C
oprobacillus_sp_D6 k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysip
elotrichales|f__Erysipelotrichaceae|g__Coprobacillus|s__Coprobacillus_sp_D6
|t__GCF_000269565 k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipe
lotrichales|f__Erysipelotrichaceae|g__Erysipelotrichaceae_noname k__Bacter
ia|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotrichales|f__Erysipelotric
haceae|g__Erysipelotrichaceae_noname|s__Clostridium_innocuum k__Bacteria|p
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ium_2_2_44A k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotric
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haceae_bacterium_2_2_44A|t__GCF_000225685 k__Bacteria|p__Firmicutes|c__Ery
sipelotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Erysipelotric
haceae_noname|s__Erysipelotrichaceae_bacterium_6_1_45 k__Bacteria|p__Firmi
cutes|c__Erysipelotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__E
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0242175 k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotrichale
s|f__Erysipelotrichaceae|g__Erysipelotrichaceae_noname|s__Eubacterium_bifor
me k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotrichales|f__
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richales|f__Erysipelotrichaceae|g__Erysipelotrichaceae_noname|s__Eubacteriu
m_cylindroides k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelot
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__Solobacterium|s__Solobacterium_moorei|t__GCF_000186945 k__Bacteria|p__Fi
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__Selenomonadales k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomona
dales|f__Acidaminococcaceae k__Bacteria|p__Firmicutes|c__Negativicutes|o__

Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcaceae_unclassified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_fermentans k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_fermentans|t__GCF_000025305 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_intestini k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_intestini|t__GCF_000230275 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_sp_D21 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_sp_D21|t__GCF_000174215 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_unclassified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Phascolarctobacterium k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Phascolarctobacterium|s__Phascolarctobacterium_succinatutens k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Acidaminococcaceae|g__Phascolarctobacterium|s__Phascolarctobacterium_succinatutens|t__GCF_000188175 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_invisus k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_invisus|t__GCF_000160055 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_micraerophilus k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_micraerophilus|t__Dialister_micraerophilus_unclassified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_succinatiphilus k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_succinatiphilus|t__GCF_000242435 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasphaera_unclassified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Mitsuokella k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Mitsuokella|s__Mitsuokella_multacida k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Mitsuokella|s__Mitsu
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_Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacter
iaceae|g__Fusobacterium|s__Fusobacterium_gonidiaformans|t__Fusobacterium_go
nidiaformans_unclassified k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__
Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_nucle
atum k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fu
sobacteriaceae|g__Fusobacterium|s__Fusobacterium_nucleatum|t__Fusobacterium
_nucleatum_unclassified k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fu
sobacteriales|f__Leptotrichiaceae k__Bacteria|p__Fusobacteria|c__Fusobacte
riia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichiaceae_unclassifie
d k__Bacteria|p__Proteobacteria k__Bacteria|p__Proteobacteria|c__Betaprot
eobacteria k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkhold
eriales k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderi
ales|f__Burkholderiales_noname k__Bacteria|p__Proteobacteria|c__Betaproteo
bacteria|o__Burkholderiales|f__Burkholderiales_noname|g__Burkholderiales_no
name k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiale
s|f__Burkholderiales_noname|g__Burkholderiales_noname|s__Burkholderiales_ba
cterium_1_1_47 k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burk
holderiales|f__Burkholderiales_noname|g__Burkholderiales_noname|s__Burkhold
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|g__Oxalobacter k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Bur
kholderiales|f__Oxalobacteraceae|g__Oxalobacter|s__Oxalobacter_formigenes
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migenes_unclassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o
__Burkholderiales|f__Sutterellaceae k__Bacteria|p__Proteobacteria|c__Betap
roteobacteria|o__Burkholderiales|f__Sutterellaceae|g__Parasutterella k__Ba
cteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutter
ellaceae|g__Parasutterella|s__Parasutterella_excrementihominis k__Bacteria
|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutterellace
ae|g__Parasutterella|s__Parasutterella_excrementihominis|t__GCF_000205025
k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__S
utterellaceae|g__Sutterella k__Bacteria|p__Proteobacteria|c__Betaproteobac
teria|o__Burkholderiales|f__Sutterellaceae|g__Sutterellaceae_unclassified
k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__S
utterellaceae|g__Sutterella|s__Sutterella_wadsworthensis k__Bacteria|p__Pr
oteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutterellaceae|g__
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oteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutterellaceae|g__
Sutterella|s__Sutterella_wadsworthensis|t__Sutterella_wadsworthensis_unclas
sified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales
k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neis
seriaceae k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseria
les|f__Neisseriaceae|g__Neisseria k__Bacteria|p__Proteobacteria|c__Betapro
teobacteria|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_flav
escens k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales
|f__Neisseriaceae|g__Neisseria|s__Neisseria_flavescens|t__Neisseria_flavesc
ens_unclassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Ne
isseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_unclassified k__Bact
eria|p__Proteobacteria|c__Deltaproteobacteria k__Bacteria|p__Proteobacteri
a|c__Deltaproteobacteria|o__Desulfovibrionales k__Bacteria|p__Proteobacter
ia|c__Deltaproteobacteria|o__Desulfovibrionales|f__Desulfovibrionaceae k__
Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovibrionales|f__
Desulfovibrionaceae|g__Bilophila k__Bacteria|p__Proteobacteria|c__Deltapro
teobacteria|o__Desulfovibrionales|f__Desulfovibrionaceae|g__Bilophila|s__Bi
lophila_unclassified k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|
o__Desulfovibrionales|f__Desulfovibrionaceae|g__Bilophila|s__Bilophila_wads
worthia k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovib
rionales|f__Desulfovibrionaceae|g__Bilophila|s__Bilophila_wadsworthia|t__GC
F_000185705 k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulf
ovibrionales|f__Desulfovibrionaceae|g__Desulfovibrio k__Bacteria|p__Proteo

bacteria|c__Deltaproteobacteria|o__Desulfovibrionales|f__Desulfovibrionacea
e|g__Desulfovibrio|s__Desulfovibrio_desulfuricans k__Bacteria|p__Proteobac
teria|c__Deltaproteobacteria|o__Desulfovibrionales|f__Desulfovibrionaceae|g
__Desulfovibrio|s__Desulfovibrio_desulfuricans|t__Desulfovibrio_desulfurica
ns_unclassified k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__De
sulfovibrionales|f__Desulfovibrionaceae|g__Desulfovibrio|s__Desulfovibrio_p
iger k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovibrio
nales|f__Desulfovibrionaceae|g__Desulfovibrio|s__Desulfovibrio_piger|t__GCF
_000156375 k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria k__Bact
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cteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__C
ampylobacteraceae k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o
__Campylobacterales|f__Campylobacteraceae|g__Campylobacter k__Bacteria|p__
Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobact
eraceae|g__Campylobacter|s__Campylobacter_jejuni k__Bacteria|p__Proteobact
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_Campylobacter|s__Campylobacter_jejuni|t__Campylobacter_jejuni_unclassified
k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales
|f__Helicobacteraceae k__Bacteria|p__Proteobacteria|c__Epsilonproteobacter
ia|o__Campylobacterales|f__Helicobacteraceae|g__Helicobacter k__Bacteria|p
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teraceae|g__Helicobacter|s__Helicobacter_pylori k__Bacteria|p__Proteobacte
ria|c__Epsilonproteobacteria|o__Campylobacterales|f__Helicobacteraceae|g__H
elicobacter|s__Helicobacter_pylori|t__Helicobacter_pylori_unclassified k__
Bacteria|p__Proteobacteria|c__Gammaproteobacteria k__Bacteria|p__Proteobac
teria|c__Gammaproteobacteria|o__Aeromonadales k__Bacteria|p__Proteobacteri
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_Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Aeromonadaceae|g
__Aeromonas k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromo
nadales|f__Aeromonadaceae|g__Aeromonas|s__Aeromonas_unclassified k__Bacter
ia|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Succinivibr
ionaceae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonad
ales|f__Succinivibrionaceae|g__Succinivibrionaceae_unclassified k__Bacteri
a|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales k__Bacteri
a|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enteroba
cteriaceae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterob
acteriales|f__Enterobacteriaceae|g__Citrobacter k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Ci
trobacter|s__Citrobacter_freundii k__Bacteria|p__Proteobacteria|c__Gammapr
oteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Citrobacter|s__C
itrobacter_freundii|t__Citrobacter_freundii_unclassified k__Bacteria|p__Pr
oteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriac
eae|g__Citrobacter|s__Citrobacter_unclassified k__Bacteria|p__Proteobacter
ia|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Ent
erobacter k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enteroba
cteriales|f__Enterobacteriaceae|g__Enterobacter|s__Enterobacter_aerogenes
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f
__Enterobacteriaceae|g__Enterobacter|s__Enterobacter_aerogenes|t__Enterobac
ter_aerogenes_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobac
teria|o__Enterobacteriales|f__Enterobacteriaceae|g__Enterobacter|s__Enterob
acter_cloacae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Ente
robacteriales|f__Enterobacteriaceae|g__Enterobacter|s__Enterobacter_cloacae
|t__Enterobacter_cloacae_unclassified k__Bacteria|p__Proteobacteria|c__Gam
maproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Escherichia
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f
__Enterobacteriaceae|g__Escherichia|s__Escherichia_coli k__Bacteria|p__Pro
teobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriace
ae|g__Escherichia|s__Escherichia_coli|t__Escherichia_coli_unclassified k__
Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__E
nterobacteriaceae|g__Escherichia|s__Escherichia_unclassified k__Bacteria|p
__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacte
riaceae|g__Klebsiella k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria
|o__Enterobacteriales|f__Enterobacteriaceae|g__Klebsiella|s__Klebsiella_pne
umoniae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobact

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eriales|f__Enterobacteriaceae|g__Klebsiella|s__Klebsiella_pneumoniae|t__Kle
bsiella_pneumoniae_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaprot
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oteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriac
eae|g__Providencia|s__Providencia_alcalifaciens  k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Pr
ovidencia|s__Providencia_alcalifaciens|t__Providencia_alcalifaciens_unclass
ified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellal
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s  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f
__Pasteurellaceae|g__Haemophilus|s__Haemophilus_parainfluenzae  k__Bacteria
|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellac
eae|g__Haemophilus|s__Haemophilus_parainfluenzae|t__Haemophilus_parainfluen
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les|f__Verrucomicrobiaceae|g__Akkermansia|s__Akkermansia_muciniphila  k__Ba
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ame|o__Eukaryota_noname|f__Eukaryota_noname  k__Eukaryota|p__Eukaryota_nona
me|c__Eukaryota_noname|o__Eukaryota_noname|f__Eukaryota_noname|g__Entamoeba
k__Eukaryota|p__Eukaryota_noname|c__Eukaryota_noname|o__Eukaryota_noname|f_
_Eukaryota_noname|g__Entamoeba|s__Entamoeba_dispar  k__Eukaryota|p__Eukaryo
ta_noname|c__Eukaryota_noname|o__Eukaryota_noname|f__Eukaryota_noname|g__En
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tamoeba|s__Entamoeba_dispar|t__GCA_000209125 k__Eukaryota|p__Microsporidia
k__Eukaryota|p__Microsporidia|c__Microsporidia_noname k__Eukaryota|p__Micr
osporidia|c__Microsporidia_noname|o__Microsporidia_noname k__Eukaryota|p__
Microsporidia|c__Microsporidia_noname|o__Microsporidia_noname|f__Enterocyto
zoonidae k__Eukaryota|p__Microsporidia|c__Microsporidia_noname|o__Microspo
ridia_noname|f__Enterocytozoonidae|g__Enterocytozoon k__Eukaryota|p__Micro
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dae|g__Enterocytozoon|s__Enterocytozoon_bieneusi k__Eukaryota|p__Microspor
idia|c__Microsporidia_noname|o__Microsporidia_noname|f__Enterocytozoonidae|
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i|o__Archaeoglobales k__Archaea|p__Euryarchaeota|c__Archaeoglobi|o__Archae
oglobales|f__Archaeoglobaceae k__Archaea|p__Euryarchaeota|c__Archaeoglobi|
o__Archaeoglobales|f__Archaeoglobaceae|g__Archaeoglobaceae_unclassified k_
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|o__Methanococcales|f__Methanocaldococcaceae k__Archaea|p__Euryarchaeota|c
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occaceae_unclassified k__Bacteria|p__Acidobacteria|c__Acidobacteriia|o__Ac
idobacteriales|f__Acidobacteriaceae|g__Granulicella k__Bacteria|p__Acidoba
cteria|c__Acidobacteriia|o__Acidobacteriales|f__Acidobacteriaceae|g__Granul
icella|s__Granulicella_unclassified k__Bacteria|p__Actinobacteria|c__Actin
obacteria|o__Actinomycetales|f__Actinomycetales_noname k__Bacteria|p__Acti
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__Tropheryma k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyce
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cteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomyce
tales_noname|g__Tropheryma|s__Tropheryma_whipplei|t__Tropheryma_whipplei_un
classified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyceta
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ia|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermatophilace
ae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__D
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thia_dentocariosa k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actin
omycetales|f__Micrococcaceae|g__Rothia|s__Rothia_dentocariosa|t__Rothia_den
tocariosa_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Actinomycetales|f__Propionibacteriaceae k__Bacteria|p__Actinobacteria|c__A
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aceae_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Acti
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eria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Alloscardovia|s__Allosca
rdovia_omnicolens k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifid
obacteriales|f__Bifidobacteriaceae|g__Alloscardovia|s__Alloscardovia_omnico
lens|t__Alloscardovia_omnicolens_unclassified k__Bacteria|p__Actinobacteri

a|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobac
terium|s__Bifidobacterium_animalis k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__B
ifidobacterium_animalis|t__Bifidobacterium_animalis_unclassified k__Bacter
ia|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacter
iaceae|g__Bifidobacterium|s__Bifidobacterium_breve k__Bacteria|p__Actinoba
cteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifi
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eae|g__Bifidobacterium|s__Bifidobacterium_dentium|t__Bifidobacterium_dentiu
m_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidoba
cteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidobacterium_longu
m|t__GCF_000497735 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifi
dobacteriales|f__Bifidobacteriaceae|g__Parascardovia k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Pa
rascardovia|s__Parascardovia_denticolens k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Parascardovia|
s__Parascardovia_denticolens|t__Parascardovia_denticolens_unclassified k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriales|f__Bifido
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sified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Bifidobacteriale
s|f__Bifidobacteriaceae|g__Scardovia|s__Scardovia_wiggsiae k__Bacteria|p__
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eria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacter
iaceae|g__Collinsella|s__Collinsella_tanakaei|t__GCF_000225705 k__Bacteria
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Coriobacteriaceae|g__Enterorhabdus|s__Enterorhabdus_caecimuris k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriace
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e|o__Aquificales|f__Desulfurobacteriaceae|g__Desulfurobacteriaceae_unclassi
fied k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacte
roidaceae|g__Bacteroides|s__Bacteroides_cellulosilyticus|t__GCF_000158035
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidac
eae|g__Bacteroides|s__Bacteroides_eggerthii|t__GCF_000155815 k__Bacteria|p
__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacter
oides|s__Bacteroides_finegoldii|t__GCF_000156195 k__Bacteria|p__Bacteroide
tes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bac
teroides_fluxus k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidal
es|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_fluxus|t__GCF_000195635

k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidac
eae|g__Bacteroides|s__Bacteroides_fragilis|t__GCF_000025985 k__Bacteria|p_
_Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bactero
ides|s__Bacteroides_fragilis|t__GCF_000297735 k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacter
oides_gallinarum k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroida
les|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_gallinarum|t__GCF_00037
4365 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacte
roidaceae|g__Bacteroides|s__Bacteroides_oleiciplenus k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s_
_Bacteroides_oleiciplenus|t__GCF_000315485 k__Bacteria|p__Bacteroidetes|c_
_Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroid
es_ovatus|t__GCF_000218325 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__
Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_ovatus|t__GCF
_000273215 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f_
_Bacteroidaceae|g__Bacteroides|s__Bacteroides_salanitronis k__Bacteria|p__
Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroi
des|s__Bacteroides_salanitronis|t__GCF_000190575 k__Bacteria|p__Bacteroide
tes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bac
teroides_salyersiae|t__GCF_000273235 k__Bacteria|p__Bacteroidetes|c__Bacte
roidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_
1_1_14 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bac
teroidaceae|g__Bacteroides|s__Bacteroides_sp_1_1_14|t__GCF_000162515 k__Ba
cteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g
__Bacteroides|s__Bacteroides_sp_1_1_30 k__Bacteria|p__Bacteroidetes|c__Bac
teroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_s
p_1_1_30|t__GCF_000218365 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__B
acteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_1_1_6 k__B
acteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|
g__Bacteroides|s__Bacteroides_sp_1_1_6|t__GCF_000159875 k__Bacteria|p__Bac
teroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides
|s__Bacteroides_sp_2_1_22 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__B
acteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_2_1_22|t__G
CF_000162155 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|
f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_2_1_56FAA k__Bacteria|p
__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacter
oides|s__Bacteroides_sp_2_1_56FAA|t__GCF_000218345 k__Bacteria|p__Bacteroi
detes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__B
acteroides_sp_3_1_19 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_3_1_19|t__GCF_00
0163655 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Ba
cteroidaceae|g__Bacteroides|s__Bacteroides_sp_3_1_23 k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s_
_Bacteroides_sp_3_1_23|t__GCF_000162555 k__Bacteria|p__Bacteroidetes|c__Ba
cteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_
sp_3_2_5 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__B
acteroidaceae|g__Bacteroides|s__Bacteroides_sp_3_2_5|t__GCF_000159855 k__B
acteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|
g__Bacteroides|s__Bacteroides_sp_9_1_42FAA k__Bacteria|p__Bacteroidetes|c_
_Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroid
es_sp_9_1_42FAA|t__GCF_000157075 k__Bacteria|p__Bacteroidetes|c__Bacteroid
ia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_thetaio
taomicron|t__GCF_000011065 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__
Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_xylanisolvens
|t__GCF_000210075 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroid
ales|f__Marinilabiliaceae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__B
acteroidales|f__Marinilabiliaceae|g__Marinilabiliaceae_unclassified k__Bac
teria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadacea
e|g__Butyricimonas k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroi
dales|f__Porphyromonadaceae|g__Butyricimonas|s__Butyricimonas_synergistica
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromon
adaceae|g__Butyricimonas|s__Butyricimonas_synergistica|t__GCF_000379665 k_
_Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonad
aceae|g__Dysgonomonas k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacte

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roidales|f__Porphyromonadaceae|g__Dysgonomonas|s__Dysgonomonas_unclassified
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromon
adaceae|g__Odoribacter|s__Odoribacter_laneus  k__Bacteria|p__Bacteroidetes|
c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Odoribacter|s__Odo
ribacter_laneus|t__GCF_000243215  k__Bacteria|p__Bacteroidetes|c__Bacteroid
ia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabactero
ides_johnsonii  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidale
s|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_johnsonii|t__
Parabacteroides_johnsonii_unclassified  k__Bacteria|p__Bacteroidetes|c__Bac
teroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parab
acteroides_merdae|t__GCF_000307345  k__Bacteria|p__Bacteroidetes|c__Bactero
idia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacte
roides_sp_D13  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales
|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_sp_D13|t__GCF_
000162275  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__
Prevotellaceae|g__Prevotella|s__Prevotella_buccae  k__Bacteria|p__Bacteroid
etes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Pre
votella_buccae|t__Prevotella_buccae_unclassified  k__Bacteria|p__Bacteroide
tes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prev
otella_buccalis  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidal
es|f__Prevotellaceae|g__Prevotella|s__Prevotella_buccalis|t__GCF_000177075
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellac
eae|g__Prevotella|s__Prevotella_intermedia  k__Bacteria|p__Bacteroidetes|c_
_Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella
_intermedia|t__GCF_000261025  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o
__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_melaninogenic
a  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotel
laceae|g__Prevotella|s__Prevotella_melaninogenica|t__Prevotella_melaninogen
ica_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroida
les|f__Prevotellaceae|g__Prevotella|s__Prevotella_multisaccharivorax  k__Ba
cteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g
__Prevotella|s__Prevotella_multisaccharivorax|t__GCF_000218235  k__Bacteria
|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prev
otella|s__Prevotella_oralis  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o_
_Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_oralis|t__Prev
otella_oralis_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__
Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_sp_HGB5  k__Bacter
ia|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Ali
stipes|s__Alistipes_sp_HGB5|t__GCF_000183485  k__Bacteria|p__Bacteroidetes|
c__Flavobacteriia  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavob
acteriales  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteria
les|f__Flavobacteriaceae  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o_
_Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga  k__Bacteria|p__Ba
cteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__C
apnocytophaga|s__Capnocytophaga_unclassified  k__Bacteria|p__Bacteroidetes|
c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Cellulophaga
k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavo
bacteriaceae|g__Cellulophaga|s__Cellulophaga_unclassified  k__Bacteria|p__B
acteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__
Riemerella  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteria
les|f__Flavobacteriaceae|g__Riemerella|s__Riemerella_unclassified  k__Bacte
ria|p__Bacteroidetes|c__Sphingobacteriia  k__Bacteria|p__Bacteroidetes|c__S
phingobacteriia|o__Sphingobacteriales  k__Bacteria|p__Bacteroidetes|c__Sphi
ngobacteriia|o__Sphingobacteriales|f__Sphingobacteriaceae  k__Bacteria|p__B
acteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|f__Sphingobacteriace
ae|g__Pedobacter  k__Bacteria|p__Bacteroidetes|c__Sphingobacteriia|o__Sphin
gobacteriales|f__Sphingobacteriaceae|g__Pedobacter|s__Pedobacter_unclassifi
ed  k__Bacteria|p__Bacteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|
f__Sphingobacteriaceae|g__Sphingobacterium  k__Bacteria|p__Bacteroidetes|c_
_Sphingobacteriia|o__Sphingobacteriales|f__Sphingobacteriaceae|g__Sphingoba
cterium|s__Sphingobacterium_unclassified  k__Bacteria|p__Candidatus_Sacchar
ibacteria  k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Sacchar
ibacteria_noname  k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_
Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname  k__Bacteria|
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p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname_unclassified k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname|s__candidate_division_TM7_single_cell_isolate_TM7b k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname|s__candidate_division_TM7_single_cell_isolate_TM7b|t__GCF_000170655 k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname|s__candidate_division_TM7_single_cell_isolate_TM7c k__Bacteria|p__Candidatus_Saccharibacteria|c__Candidatus_Saccharibacteria_noname|o__Candidatus_Saccharibacteria_noname|f__Candidatus_Saccharibacteria_noname|g__Candidatus_Saccharibacteria_noname|s__candidate_division_TM7_single_cell_isolate_TM7c|t__GCF_000170675 k__Bacteria|p__Chlamydiae k__Bacteria|p__Chlamydiae|c__Chlamydiia k__Bacteria|p__Chlamydiae|c__Chlamydiia|o__Chlamydiales k__Bacteria|p__Chlamydiae|c__Chlamydiia|o__Chlamydiales|f__Chlamydiaceae k__Bacteria|p__Chlamydiae|c__Chlamydiia|o__Chlamydiales|f__Chlamydiaceae|g__Chlamydophila k__Bacteria|p__Chlamydiae|c__Chlamydiia|o__Chlamydiales|f__Chlamydiaceae|g__Chlamydophila|s__Chlamydophila_unclassified k__Bacteria|p__Chlorobi k__Bacteria|p__Chlorobi|c__Chlorobia k__Bacteria|p__Chlorobi|c__Chlorobia|o__Chlorobiales k__Bacteria|p__Chlorobi|c__Chlorobia|o__Chlorobiales|f__Chlorobiaceae k__Bacteria|p__Chlorobi|c__Chlorobia|o__Chlorobiales|f__Chlorobiaceae|g__Chlorobium k__Bacteria|p__Chlorobi|c__Chlorobia|o__Chlorobiales|f__Chlorobiaceae|g__Chlorobium|s__Chlorobium_phaeobacteroides k__Bacteria|p__Chlorobi|c__Chlorobia|o__Chlorobiales|f__Chlorobiaceae|g__Chlorobium|s__Chlorobium_phaeobacteroides|t__Chlorobium_phaeobacteroides_unclassified k__Bacteria|p__Deferribacteres k__Bacteria|p__Deferribacteres|c__Deferribacteres k__Bacteria|p__Deferribacteres|c__Deferribacteres|o__Deferribacterales k__Bacteria|p__Deferribacteres|c__Deferribacteres|o__Deferribacterales|f__Deferribacteraceae k__Bacteria|p__Deferribacteres|c__Deferribacteres|o__Deferribacterales|f__Deferribacteraceae|g__Mucispirillum k__Bacteria|p__Deferribacteres|c__Deferribacteres|o__Deferribacterales|f__Deferribacteraceae|g__Mucispirillum|s__Mucispirillum_schaedleri k__Bacteria|p__Deferribacteres|c__Deferribacteres|o__Deferribacterales|f__Deferribacteraceae|g__Mucispirillum|s__Mucispirillum_schaedleri|t__GCF_000487995 k__Bacteria|p__Deinococcus_Thermus k__Bacteria|p__Deinococcus_Thermus|c__Deinococci k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus|s__Deinococcus_unclassified k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Thermales k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Thermales|f__Thermaceae k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Thermales|f__Thermaceae|g__Thermus k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Thermales|f__Thermaceae|g__Thermus|s__Thermus_scotoductus k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Thermales|f__Thermaceae|g__Thermus|s__Thermus_scotoductus|t__Thermus_scotoductus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Alicyclobacillaceae k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Alicyclobacillaceae|g__Alicyclobacillus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Alicyclobacillaceae|g__Alicyclobacillus|s__Alicyclobacillus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Gemella k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Gemella|s__Gemella_haemolysans k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacilla

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les|f__Bacillales_noname|g__Gemella|s__Gemella_haemolysans|t__Gemella_haemo
lysans_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__
Bacillales_noname|g__Gemella|s__Gemella_morbillorum  k__Bacteria|p__Firmicu
tes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Gemella|s__Gemella_mor
billorum|t__GCF_000185645  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillal
es|f__Bacillales_noname|g__Gemella|s__Gemella_sanguinis  k__Bacteria|p__Fir
micutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Gemella|s__Gemella
_sanguinis|t__GCF_000204335  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacill
ales|f__Bacillales_noname|g__Gemella|s__Gemella_unclassified  k__Bacteria|p
__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae  k__Bacteria|p__
Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus
k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__
Staphylococcus|s__Staphylococcus_aureus  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_a
ureus|t__Staphylococcus_aureus_unclassified  k__Bacteria|p__Firmicutes|c__B
acilli|o__Lactobacillales|f__Aerococcaceae  k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Lactobacillales|f__Aerococcaceae|g__Abiotrophia  k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Abiotrophia|s__A
biotrophia_defectiva  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillal
es|f__Aerococcaceae|g__Abiotrophia|s__Abiotrophia_defectiva|t__GCF_00016007
5  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacteria
ceae|g__Granulicatella|s__Granulicatella_adiacens  k__Bacteria|p__Firmicute
s|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Granulicatella|s__G
ranulicatella_adiacens|t__GCF_000160675  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_ca
sseliflavus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Ent
erococcaceae|g__Enterococcus|s__Enterococcus_casseliflavus|t__Enterococcus_
casseliflavus_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_durans  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Ente
rococcus|s__Enterococcus_durans|t__Enterococcus_durans_unclassified  k__Bac
teria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Ent
erococcus|s__Enterococcus_faecalis  k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_faecali
s|t__Enterococcus_faecalis_unclassified  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_hi
rae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococca
ceae|g__Enterococcus|s__Enterococcus_hirae|t__Enterococcus_hirae_unclassifi
ed  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacilla
ceae|g__Lactobacillus|s__Lactobacillus_acidophilus  k__Bacteria|p__Firmicut
es|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__La
ctobacillus_acidophilus|t__Lactobacillus_acidophilus_unclassified  k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lact
obacillus|s__Lactobacillus_casei_paracasei  k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacil
lus_casei_paracasei|t__Lactobacillus_casei_paracasei_unclassified  k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lact
obacillus|s__Lactobacillus_crispatus  k__Bacteria|p__Firmicutes|c__Bacilli|
o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_cr
ispatus|t__Lactobacillus_crispatus_unclassified  k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lacto
bacillus_curvatus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|
f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_curvatus|t__GCF_00023
5705  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacil
laceae|g__Lactobacillus|s__Lactobacillus_fructivorans  k__Bacteria|p__Firmi
cutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s_
_Lactobacillus_fructivorans|t__GCF_000185465  k__Bacteria|p__Firmicutes|c__
Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobac
illus_gasseri  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__L
actobacillaceae|g__Lactobacillus|s__Lactobacillus_gasseri|t__Lactobacillus_
gasseri_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillal
es|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_gastricus  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lac
tobacillus|s__Lactobacillus_gastricus|t__GCF_000247775  k__Bacteria|p__Firm
```

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icutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s
__Lactobacillus_plantarum  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_plantarum|t__
Lactobacillus_plantarum_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|
o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_re
uteri  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobaci
llaceae|g__Lactobacillus|s__Lactobacillus_reuteri|t__Lactobacillus_reuteri_
unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__La
ctobacillaceae|g__Lactobacillus|s__Lactobacillus_rhamnosus  k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacill
us|s__Lactobacillus_rhamnosus|t__Lactobacillus_rhamnosus_unclassified  k__B
acteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__
Lactobacillus|s__Lactobacillus_salivarius  k__Bacteria|p__Firmicutes|c__Bac
illi|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacill
us_salivarius|t__Lactobacillus_salivarius_unclassified  k__Bacteria|p__Firm
icutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s
__Lactobacillus_sanfranciscensis  k__Bacteria|p__Firmicutes|c__Bacilli|o__L
actobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_sanfra
nciscensis|t__GCF_000225325  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_versmoldens
is  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacilla
ceae|g__Lactobacillus|s__Lactobacillus_versmoldensis|t__GCF_000260455  k__B
acteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__
Pediococcus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lac
tobacillaceae|g__Pediococcus|s__Pediococcus_pentosaceus  k__Bacteria|p__Fir
micutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Pediococcus|s_
_Pediococcus_pentosaceus|t__Pediococcus_pentosaceus_unclassified  k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Pedio
coccus|s__Pediococcus_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_citreum
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae
|g__Leuconostoc|s__Leuconostoc_citreum|t__Leuconostoc_citreum_unclassified
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae
|g__Leuconostoc|s__Leuconostoc_kimchii  k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_kimc
hii|t__GCF_000092505  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillal
es|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_mesenteroides  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Leu
conostoc|s__Leuconostoc_mesenteroides|t__Leuconostoc_mesenteroides_unclassi
fied  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconosto
caceae|g__Leuconostoc|s__Leuconostoc_unclassified  k__Bacteria|p__Firmicute
s|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Weissella|s__Weissel
la_cibaria  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuc
onostocaceae|g__Weissella|s__Weissella_cibaria|t__GCF_000193635  k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Weisse
lla|s__Weissella_confusa  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobaci
llales|f__Leuconostocaceae|g__Weissella|s__Weissella_confusa|t__GCF_0002399
55  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococca
ceae|g__Lactococcus|s__Lactococcus_garvieae  k__Bacteria|p__Firmicutes|c__B
acilli|o__Lactobacillales|f__Streptococcaceae|g__Lactococcus|s__Lactococcus
_garvieae|t__Lactococcus_garvieae_unclassified  k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Lactococcus|s__Lactococ
cus_raffinolactis  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|
f__Streptococcaceae|g__Lactococcus|s__Lactococcus_raffinolactis|t__GCF_0003
27305  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptoco
ccaceae|g__Streptococcus|s__Streptococcus_agalactiae  k__Bacteria|p__Firmic
utes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__
Streptococcus_agalactiae|t__Streptococcus_agalactiae_unclassified  k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Stre
ptococcus|s__Streptococcus_constellatus  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus
_constellatus|t__Streptococcus_constellatus_unclassified  k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus
|s__Streptococcus_cristatus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
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acillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_cristatus|t
__Streptococcus_cristatus_unclassified  k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_
gallolyticus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__St
reptococcaceae|g__Streptococcus|s__Streptococcus_gallolyticus|t__Streptococ
cus_gallolyticus_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lact
obacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_mutans  k
__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|
g__Streptococcus|s__Streptococcus_mutans|t__Streptococcus_mutans_unclassifi
ed  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococca
ceae|g__Streptococcus|s__Streptococcus_oligofermentans  k__Bacteria|p__Firm
icutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s
__Streptococcus_oligofermentans|t__GCF_000385925  k__Bacteria|p__Firmicutes
|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Stre
ptococcus_sanguinis  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillale
s|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sanguinis|t__Strept
ococcus_sanguinis_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lac
tobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sobrinus
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae
|g__Streptococcus|s__Streptococcus_sobrinus|t__Streptococcus_sobrinus_uncla
ssified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Strepto
coccaceae|g__Streptococcus|s__Streptococcus_tigurinus  k__Bacteria|p__Firmi
cutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s_
_Streptococcus_tigurinus|t__Streptococcus_tigurinus_unclassified  k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Butyri
cicoccus  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clost
ridiaceae|g__Butyricicoccus|s__Butyricicoccus_pullicaecorum  k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Butyricicoc
cus|s__Butyricicoccus_pullicaecorum|t__GCF_000398925  k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridiaceae_non
ame  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridia
ceae|g__Clostridiaceae_noname|s__Clostridiaceae_bacterium_JC118  k__Bacteri
a|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostri
diaceae_noname|s__Clostridiaceae_bacterium_JC118|t__GCF_000313565  k__Bacte
ria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clost
ridium|s__Clostridium_bolteae|t__GCF_000154365  k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridi
um_bolteae|t__GCF_000371665  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clo
stridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_butyricum  k__Ba
cteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Cl
ostridium|s__Clostridium_butyricum|t__Clostridium_butyricum_unclassified  k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g
__Clostridium|s__Clostridium_celatum  k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_celatum
|t__GCF_000320405  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales
|f__Clostridiaceae|g__Clostridium|s__Clostridium_clostridioforme|t__GCF_000
371525  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostri
diaceae|g__Clostridium|s__Clostridium_hathewayi|t__GCF_000160095  k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostr
idium|s__Clostridium_hathewayi|t__GCF_000371445  k__Bacteria|p__Firmicutes|
c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostrid
ium_saccharolyticum  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Clostridiaceae|g__Clostridium|s__Clostridium_saccharolyticum|t__GCF_0
00210535  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clost
ridiaceae|g__Clostridium|s__Clostridium_scindens  k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostri
dium_scindens|t__GCF_000154505  k__Bacteria|p__Firmicutes|c__Clostridia|o__
Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_ATCC_BAA_4
42  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiac
eae|g__Clostridium|s__Clostridium_sp_ATCC_BAA_442|t__GCF_000466445  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clos
tridium|s__Clostridium_sp_D5  k__Bacteria|p__Firmicutes|c__Clostridia|o__Cl
ostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_D5|t__GCF_00
0190355  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostr
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idiaceae|g__Clostridium|s__Clostridium_sp_KLE_1755 k__Bacteria|p__Firmicut
es|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clost
ridium_sp_KLE_1755|t__GCF_000466465 k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_M62_1
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|
g__Clostridium|s__Clostridium_sp_M62_1|t__GCF_000159055 k__Bacteria|p__Fir
micutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XIII_Incerta
e_Sedis k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostr
idiales_Family_XIII_Incertae_Sedis|g__Clostridiales_Family_XIII_Incertae_Se
dis_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_l
actolyticus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Cl
ostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_lactol
yticus|t__GCF_000156575 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaeroc
occus_prevotii k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f_
_Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_pre
votii|t__Anaerococcus_prevotii_unclassified k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Clo
stridiales_Family_XI_Incertae_Sedis_noname k__Bacteria|p__Firmicutes|c__Cl
ostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Clos
tridiales_Family_XI_Incertae_Sedis_noname|s__Clostridiales_bacterium_BV3C26
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_F
amily_XI_Incertae_Sedis|g__Clostridiales_Family_XI_Incertae_Sedis_noname|s_
_Clostridiales_bacterium_BV3C26|t__GCF_000478985 k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g
__Finegoldia k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__C
lostridiales_Family_XI_Incertae_Sedis|g__Finegoldia|s__Finegoldia_magna k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Fam
ily_XI_Incertae_Sedis|g__Finegoldia|s__Finegoldia_magna|t__Finegoldia_magna
_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Clostridiales_Family_XI_Incertae_Sedis|g__Parvimonas|s__Parvimonas_micra k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Fa
mily_XI_Incertae_Sedis|g__Parvimonas|s__Parvimonas_micra|t__GCF_000154405
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_F
amily_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_harei k__Bacteri
a|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_I
ncertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_harei|t__GCF_000183565 k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__
Anaerofustis k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__E
ubacteriaceae|g__Anaerofustis|s__Anaerofustis_stercorihominis k__Bacteria|
p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Anaerofus
tis|s__Anaerofustis_stercorihominis|t__GCF_000154825 k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eub
acterium_limosum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_limosum|t__GCF_000152245 k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g
__Eubacterium|s__Eubacterium_rectale|t__GCF_000020605 k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__Eu
bacterium_saphenum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_saphenum|t__GCF_000161975
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|
g__Eubacterium|s__Eubacterium_siraeum|t__GCF_000209915 k__Bacteria|p__Firm
icutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacterium|s__E
ubacterium_sp_3_1_31 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridia
les|f__Eubacteriaceae|g__Eubacterium|s__Eubacterium_sp_3_1_31|t__Eubacteriu
m_sp_3_1_31_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostr
idiales|f__Lachnospiraceae|g__Anaerostipes|s__Anaerostipes_caccae k__Bacte
ria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Anae
rostipes|s__Anaerostipes_caccae|t__GCF_000154305 k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Anaerostipes|s__Anaer
ostipes_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridia
les|f__Lachnospiraceae|g__Blautia|s__Blautia_hansenii k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blautia|s__Blaut

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ia_hansenii|t__GCF_000156675  k__Bacteria|p__Firmicutes|c__Clostridia|o__Cl
ostridiales|f__Lachnospiraceae|g__Blautia|s__Blautia_producta  k__Bacteria|
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s__Blautia_producta|t__GCF_000373885  k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Lachnospiraceae|g__Blautia|s__Ruminococcus_obeum|t__
GCF_000153905  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__
Lachnospiraceae|g__Blautia|s__Ruminococcus_obeum|t__GCF_000210015  k__Bacte
ria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blau
tia|s__Ruminococcus_torques|t__GCF_000210035  k__Bacteria|p__Firmicutes|c__
Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Dorea|s__Dorea_formicigen
erans|t__GCF_000225745  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostrid
iales|f__Lachnospiraceae|g__Lachnoanaerobaculum  k__Bacteria|p__Firmicutes|
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_Lachnoanaerobaculum_saburreum  k__Bacteria|p__Firmicutes|c__Clostridia|o__
Clostridiales|f__Lachnospiraceae|g__Lachnoanaerobaculum|s__Lachnoanaerobacu
lum_saburreum|t__Lachnoanaerobaculum_saburreum_unclassified  k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospir
aceae_noname|s__Lachnospiraceae_bacterium_5_1_57FAA  k__Bacteria|p__Firmicu
tes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_no
name|s__Lachnospiraceae_bacterium_5_1_57FAA|t__GCF_000218425  k__Bacteria|p
__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospi
raceae_noname|s__Lachnospiraceae_bacterium_6_1_63FAA  k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_n
oname|s__Lachnospiraceae_bacterium_6_1_63FAA|t__GCF_000209425  k__Bacteria|
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iraceae_noname|s__Lachnospiraceae_bacterium_ICM7  k__Bacteria|p__Firmicutes
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e|s__Lachnospiraceae_bacterium_ICM7|t__GCF_000287675  k__Bacteria|p__Firmic
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me|s__Lachnospiraceae_bacterium_oral_taxon_082|t__GCF_000242315  k__Bacteri
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bryantia  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachn
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antia|s__Marvinbryantia_formatexigens|t__GCF_000173815  k__Bacteria|p__Firm
icutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium  k
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dia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sin
us|t__GCF_000160635  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
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95  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospira
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iales|f__Lachnospiraceae|g__Stomatobaculum|s__Stomatobaculum_longum  k__Bac
teria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__St
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28|t__GCF_000469425  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Oscillospiraceae|g__Oscillibacter|s__Oscillibacter_sp_KLE_1745  k__Ba
cteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Oscillospiraceae|g__
Oscillibacter|s__Oscillibacter_sp_KLE_1745|t__GCF_000469445  k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Oscillospiraceae|g__Oscilliba
cter|s__Oscillibacter_valericigenes  k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Oscillospiraceae|g__Oscillibacter|s__Oscillibacter_va
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ostridiales|f__Peptostreptococcaceae|g__Peptostreptococcaceae_noname|s__Clo
stridium_glycolicum  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
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glycolicum|t__GCF_000373865  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clo
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|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Ruminoc
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4A2FAA  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminoc
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ia|o__Halanaerobiales|f__Halobacteroidaceae  k__Bacteria|p__Firmicutes|c__C
lostridia|o__Halanaerobiales|f__Halobacteroidaceae|g__Halobacteroidaceae_un
classified  k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotrich
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eae|g__Bulleidia|s__Bulleidia_extructa  k__Bacteria|p__Firmicutes|c__Erysip
elotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Bulleidia|s__Bul
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chia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Coprobacillus|s__Copro
bacillus_unclassified  k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Ery
sipelotrichales|f__Erysipelotrichaceae|g__Eggerthia  k__Bacteria|p__Firmicu
tes|c__Erysipelotrichia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Egg
erthia|s__Eggerthia_catenaformis  k__Bacteria|p__Firmicutes|c__Erysipelotri
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_catenaformis|t__GCF_000340375  k__Bacteria|p__Firmicutes|c__Erysipelotrich
ia|o__Erysipelotrichales|f__Erysipelotrichaceae|g__Erysipelotrichaceae_nona
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ae_noname|s__Clostridium_spiroforme  k__Bacteria|p__Firmicutes|c__Erysipelo
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ania_sp_AP2  k__Bacteria|p__Firmicutes|c__Erysipelotrichia|o__Erysipelotric
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0245775  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__V
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utes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Megamonas|s_
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ivicutes|o__Selenomonadales|f__Veillonellaceae|g__Megamonas|s__Megamonas_ru
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gativicutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasph
aera_elsdenii  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadale
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a|s__Megasphaera_micronuciformis|t__GCF_000165735  k__Bacteria|p__Firmicute
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eae|g__Selenomonas|s__Selenomonas_bovis  k__Bacteria|p__Firmicutes|c__Negat
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ella k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f
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ssified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderi
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eae|g__Lautropia k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Bu
rkholderiales|f__Burkholderiaceae|g__Lautropia|s__Lautropia_mirabilis k__B
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olderiaceae|g__Lautropia|s__Lautropia_mirabilis|t__GCF_000186425 k__Bacter
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nclassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkhol
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ellaceae|g__Sutterella|s__Sutterella_wadsworthensis|t__GCF_000186505 k__Ba
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ia|p__Proteobacteria|c__Betaproteobacteria|o__Gallionellales|f__Gallionella
ceae k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Gallionellales
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terium k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales
|f__Neisseriaceae|g__Chromobacterium|s__Chromobacterium_unclassified k__Ba
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sulfovibrionaceae|g__Desulfovibrio|s__Desulfovibrio_desulfuricans|t__GCF_00
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rionales|f__Desulfovibrionaceae|g__Desulfovibrio|s__Desulfovibrio_termitidi
s k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovibrional
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pylobacterales|f__Campylobacteraceae|g__Arcobacter k__Bacteria|p__Proteoba
cteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|
g__Arcobacter|s__Arcobacter_butzleri k__Bacteria|p__Proteobacteria|c__Epsi
lonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Arcobacter|
s__Arcobacter_butzleri|t__Arcobacter_butzleri_unclassified k__Bacteria|p__
Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobact
eraceae|g__Arcobacter|s__Arcobacter_unclassified k__Bacteria|p__Proteobact
eria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g_
_Campylobacter|s__Campylobacter_concisus k__Bacteria|p__Proteobacteria|c__
Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylo
bacter|s__Campylobacter_concisus|t__GCF_000017725 k__Bacteria|p__Proteobac

```
teria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g
__Campylobacter|s__Campylobacter_hominis  k__Bacteria|p__Proteobacteria|c__
Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylo
bacter|s__Campylobacter_hominis|t__GCF_000017585  k__Bacteria|p__Proteobact
eria|c__Gammaproteobacteria|o__Aeromonadales|f__Succinivibrionaceae|g__Succ
inatimonas  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromon
adales|f__Succinivibrionaceae|g__Succinatimonas|s__Succinatimonas_hippei  k
__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Suc
cinivibrionaceae|g__Succinatimonas|s__Succinatimonas_hippei|t__GCF_00018819
5  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonadales
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonadales|f__
Pseudoalteromonadaceae  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteri
a|o__Alteromonadales|f__Pseudoalteromonadaceae|g__Pseudoalteromonadaceae_un
classified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Chromat
iales  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Chromatiales
|f__Ectothiorhodospiraceae  k__Bacteria|p__Proteobacteria|c__Gammaproteobac
teria|o__Chromatiales|f__Ectothiorhodospiraceae|g__Spiribacter  k__Bacteria
|p__Proteobacteria|c__Gammaproteobacteria|o__Chromatiales|f__Ectothiorhodos
piraceae|g__Spiribacter|s__Spiribacter_unclassified  k__Bacteria|p__Proteob
acteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g
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cteriaceae_bacterium_9_2_54FAA  k__Bacteria|p__Proteobacteria|c__Gammaprote
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noname|s__Enterobacteriaceae_bacterium_9_2_54FAA|t__GCF_000185685  k__Bacte
ria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Entero
bacteriaceae|g__Enterobacter|s__Enterobacter_cancerogenus  k__Bacteria|p__P
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eae|g__Enterobacter|s__Enterobacter_hormaechei|t__Enterobacter_hormaechei_u
nclassified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Entero
bacteriales|f__Enterobacteriaceae|g__Enterobacter|s__Enterobacter_mori  k__
Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__E
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eria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enter
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teria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__
Klebsiella|s__Klebsiella_oxytoca|t__Klebsiella_oxytoca_unclassified  k__Bac
teria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Ente
robacteriaceae|g__Pantoea  k__Bacteria|p__Proteobacteria|c__Gammaproteobact
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eriales|f__Enterobacteriaceae|g__Proteus  k__Bacteria|p__Proteobacteria|c__
Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Proteus|s
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s_penneri  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enteroba
cteriales|f__Enterobacteriaceae|g__Proteus|s__Proteus_penneri|t__GCF_000155
835  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteria
les|f__Enterobacteriaceae|g__Proteus|s__Proteus_unclassified  k__Bacteria|p
```

__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacte
riaceae|g__Providencia|s__Providencia_unclassified k__Bacteria|p__Proteoba
cteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g_
_Raoultella k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Entero
bacteriales|f__Enterobacteriaceae|g__Raoultella|s__Raoultella_ornithinolyti
ca k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacterial
es|f__Enterobacteriaceae|g__Raoultella|s__Raoultella_ornithinolytica|t__GCF
_000367425 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterob
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|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Shige
lla|s__Shigella_flexneri k__Bacteria|p__Proteobacteria|c__Gammaproteobacte
ria|o__Enterobacteriales|f__Enterobacteriaceae|g__Shigella|s__Shigella_flex
neri|t__Shigella_flexneri_unclassified k__Bacteria|p__Proteobacteria|c__Ga
mmaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Shigella|s_
_Shigella_sonnei k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__E
nterobacteriales|f__Enterobacteriaceae|g__Shigella|s__Shigella_sonnei|t__Sh
igella_sonnei_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobac
teria|o__Enterobacteriales|f__Enterobacteriaceae|g__Yersinia k__Bacteria|p
__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacte
riaceae|g__Yersinia|s__Yersinia_pestis k__Bacteria|p__Proteobacteria|c__Ga
mmaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Yersinia|s_
_Yersinia_pestis|t__Yersinia_pestis_unclassified k__Bacteria|p__Proteobact
eria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Y
ersinia|s__Yersinia_unclassified k__Bacteria|p__Proteobacteria|c__Gammapro
teobacteria|o__Oceanospirillales k__Bacteria|p__Proteobacteria|c__Gammapro
teobacteria|o__Oceanospirillales|f__Hahellaceae k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Oceanospirillales|f__Hahellaceae|g__Hahellace
ae_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Oc
eanospirillales|f__Halomonadaceae k__Bacteria|p__Proteobacteria|c__Gammapr
oteobacteria|o__Oceanospirillales|f__Halomonadaceae|g__Halomonas k__Bacter
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illus k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellal
es|f__Pasteurellaceae|g__Actinobacillus|s__Actinobacillus_unclassified k__
Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Past
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p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellace
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|o__Pasteurellales|f__Pasteurellaceae|g__Aggregatibacter|s__Aggregatibacter
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Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Past
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mophilus|s__Haemophilus_influenzae|t__Haemophilus_influenzae_unclassified
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ae|g__Haemophilus|s__Haemophilus_parahaemolyticus|t__GCF_000262265 k__Bact
eria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteure
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ellaceae|g__Haemophilus|s__Haemophilus_sputorum k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellaceae|g__Haemophi
lus|s__Haemophilus_sputorum|t__Haemophilus_sputorum_unclassified k__Bacter
ia|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurell

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aceae|g__Pasteurella  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|
o__Pasteurellales|f__Pasteurellaceae|g__Pasteurella|s__Pasteurella_unclassi
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es  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales
|f__Moraxellaceae  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__
Pseudomonadales|f__Moraxellaceae|g__Acinetobacter  k__Bacteria|p__Proteobac
teria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acineto
bacter|s__Acinetobacter_baumannii  k__Bacteria|p__Proteobacteria|c__Gammapr
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obacter_baumannii|t__Acinetobacter_baumannii_unclassified  k__Bacteria|p__P
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_Acinetobacter|s__Acinetobacter_lwoffii  k__Bacteria|p__Proteobacteria|c__G
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Acinetobacter_lwoffii|t__Acinetobacter_lwoffii_unclassified  k__Bacteria|p_
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acteria|o__Xanthomonadales  k__Bacteria|p__Proteobacteria|c__Gammaproteobac
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matales|f__Acholeplasmataceae|g__Candidatus_Phytoplasma|s__Candidatus_Phyto
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matales  k__Bacteria|p__Tenericutes|c__Mollicutes|o__Entomoplasmatales|f__S
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s  k__Eukaryota|p__Ascomycota|c__Eurotiomycetes|o__Eurotiales|f__Aspergilla
ceae  k__Eukaryota|p__Ascomycota|c__Eurotiomycetes|o__Eurotiales|f__Aspergi
llaceae|g__Aspergillaceae_unclassified  k__Eukaryota|p__Ascomycota|c__Eurot
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mycota|c__Saccharomycetes|o__Saccharomycetales|f__Saccharomycetaceae  k__Eu
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karyota|p__Ascomycota|c__Saccharomycetes|o__Saccharomycetales|f__Saccharomy
cetaceae|g__Naumovozyma k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o__S
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cota|c__Schizosaccharomycetes|o__Schizosaccharomycetales k__Eukaryota|p__A
scomycota|c__Schizosaccharomycetes|o__Schizosaccharomycetales|f__Schizosacc
haromycetaceae k__Eukaryota|p__Ascomycota|c__Schizosaccharomycetes|o__Schi
zosaccharomycetales|f__Schizosaccharomycetaceae|g__Schizosaccharomyces k__
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pombe k__Eukaryota|p__Ascomycota|c__Schizosaccharomycetes|o__Schizosacchar
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saccharomyces|s__Schizosaccharomyces_unclassified k__Eukaryota|p__Eukaryot
a_noname|c__Eukaryota_noname|o__Eukaryota_noname|f__Hexamitidae k__Eukaryo
ta|p__Eukaryota_noname|c__Eukaryota_noname|o__Eukaryota_noname|f__Hexamitid
ae|g__Giardia k__Eukaryota|p__Eukaryota_noname|c__Eukaryota_noname|o__Euka
ryota_noname|f__Hexamitidae|g__Giardia|s__Giardia_intestinalis k__Eukaryot
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e|g__Giardia|s__Giardia_intestinalis|t__GCA_000002435 k__Bacteria|p__Actin
obacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actin
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europaeus|t__GCF_000411155 k__Bacteria|p__Actinobacteria|c__Actinobacteria
|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_neuii
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actin
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ia|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetace
ae|g__Actinomyces|s__Actinomyces_sp_ICM39 k__Bacteria|p__Actinobacteria|c_
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iliense k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
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rium_amycolatum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinom
ycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_amycol
atum|t__GCF_000173655 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__A
ctinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_
aurimucosum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycet
ales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_aurimucosu
m|t__Corynebacterium_aurimucosum_unclassified k__Bacteria|p__Actinobacteri
a|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacte
rium|s__Corynebacterium_jeikeium k__Bacteria|p__Actinobacteria|c__Actinoba

cteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Coryn
ebacterium_jeikeium|t__Corynebacterium_jeikeium_unclassified k__Bacteria|p
__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae
|g__Corynebacterium|s__Corynebacterium_kroppenstedtii k__Bacteria|p__Actin
obacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Cor
ynebacterium|s__Corynebacterium_kroppenstedtii|t__GCF_000023145 k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriac
eae|g__Corynebacterium|s__Corynebacterium_propinquum k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Cory
nebacterium|s__Corynebacterium_propinquum|t__GCF_000375525 k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g
__Corynebacterium|s__Corynebacterium_pseudodiphtheriticum k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g_
_Corynebacterium|s__Corynebacterium_pseudodiphtheriticum|t__GCF_000466825
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryn
ebacteriaceae|g__Corynebacterium|s__Corynebacterium_pseudogenitalium k__Ba
cteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebact
eriaceae|g__Corynebacterium|s__Corynebacterium_pseudogenitalium|t__GCF_0001
56615 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_pyruviciproducen
s k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Co
rynebacteriaceae|g__Corynebacterium|s__Corynebacterium_pyruviciproducens|t_
_GCF_000411375 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomy
cetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_striatu
m k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Co
rynebacteriaceae|g__Corynebacterium|s__Corynebacterium_striatum|t__GCF_0001
59135 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_tuberculostearic
um k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__C
orynebacteriaceae|g__Corynebacterium|s__Corynebacterium_tuberculostearicum|
t__GCF_000175635 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Dermabacteraceae k__Bacteria|p__Actinobacteria|c__Actinobacte
ria|o__Actinomycetales|f__Dermabacteraceae|g__Dermabacter k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__D
ermabacter|s__Dermabacter_sp_HFH0086 k__Bacteria|p__Actinobacteria|c__Acti
nobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Dermabacter|s__Dermaba
cter_sp_HFH0086|t__GCF_000413375 k__Bacteria|p__Actinobacteria|c__Actinoba
cteria|o__Actinomycetales|f__Micrococcaceae|g__Micrococcus k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Mi
crococcus|s__Micrococcus_luteus k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Actinomycetales|f__Micrococcaceae|g__Micrococcus|s__Micrococcus_lu
teus|t__Micrococcus_luteus_unclassified k__Bacteria|p__Actinobacteria|c__A
ctinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacteri
um|s__Propionibacterium_acnes k__Bacteria|p__Actinobacteria|c__Actinobacte
ria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Prop
ionibacterium_acnes|t__Propionibacterium_acnes_unclassified k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriacea
e|g__Propionibacterium|s__Propionibacterium_avidum k__Bacteria|p__Actinoba
cteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Prop
ionibacterium|s__Propionibacterium_avidum|t__Propionibacterium_avidum_uncla
ssified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_granulos
um k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__P
ropionibacteriaceae|g__Propionibacterium|s__Propionibacterium_granulosum|t_
_Propionibacterium_granulosum_unclassified k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacter
ium|s__Bifidobacterium_minimum k__Bacteria|p__Actinobacteria|c__Actinobact
eria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifid
obacterium_minimum|t__GCF_000421685 k__Bacteria|p__Actinobacteria|c__Actin
obacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__
Bifidobacterium_pseudolongum k__Bacteria|p__Actinobacteria|c__Actinobacter
ia|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Bifidobacterium|s__Bifidob
acterium_pseudolongum|t__GCF_000421365 k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopo

bium_minutum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacte
riales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_minutum|t__GCF_000364
325 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f_
_Coriobacteriaceae|g__Cryptobacterium k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Cryptobacterium|s__
Cryptobacterium_curtum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Coriobacteriales|f__Coriobacteriaceae|g__Cryptobacterium|s__Cryptobacterium
_curtum|t__GCF_000023845 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o
__Coriobacteriales|f__Coriobacteriaceae|g__Eggerthella|s__Eggerthella_sp_HG
A1 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__
Coriobacteriaceae|g__Eggerthella|s__Eggerthella_sp_HGA1|t__GCF_000191845 k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Corio
bacteriaceae|g__Olsenella|s__Olsenella_uli k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Olsenella|s__O
lsenella_uli|t__GCF_000143845 k__Bacteria|p__Actinobacteria|c__Actinobacte
ria|o__Coriobacteriales|f__Coriobacteriaceae|g__Slackia|s__Slackia_exigua
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Cori
obacteriaceae|g__Slackia|s__Slackia_exigua|t__GCF_000162875 k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|
g__Slackia|s__Slackia_unclassified k__Bacteria|p__Bacteroidetes|c__Bactero
idia|o__Bacteroidales|f__Porphyromonadaceae|g__Dysgonomonas|s__Dysgonomonas
_gadei k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Por
phyromonadaceae|g__Dysgonomonas|s__Dysgonomonas_gadei|t__GCF_000213555 k__
Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonada
ceae|g__Dysgonomonas|s__Dysgonomonas_mossii k__Bacteria|p__Bacteroidetes|c
__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Dysgonomonas|s__Dys
gonomonas_mossii|t__Dysgonomonas_mossii_unclassified k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella
|s__Alloprevotella_tannerae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o_
_Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s__Alloprevotella_tanner
ae|t__GCF_000159995 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bactero
idales|f__Prevotellaceae|g__Prevotella|s__Prevotella_bergensis k__Bacteria
|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prev
otella|s__Prevotella_bergensis|t__GCF_000160535 k__Bacteria|p__Bacteroidet
es|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevo
tella_histicola k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidal
es|f__Prevotellaceae|g__Prevotella|s__Prevotella_histicola|t__GCF_000234055
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellac
eae|g__Prevotella|s__Prevotella_paludivivens k__Bacteria|p__Bacteroidetes|
c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotel
la_paludivivens|t__GCF_000373185 k__Bacteria|p__Bacteroidetes|c__Bacteroid
ia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_salivae
k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellac
eae|g__Prevotella|s__Prevotella_salivae|t__GCF_000185845 k__Bacteria|p__Ba
cteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella
|s__Prevotella_veroralis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Ba
cteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_veroralis|t__Prev
otella_veroralis_unclassified k__Bacteria|p__Bacteroidetes|c__Flavobacteri
ia|o__Flavobacteriales|f__Flavobacteriaceae|g__Chryseobacterium k__Bacteri
a|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriace
ae|g__Chryseobacterium|s__Chryseobacterium_gleum k__Bacteria|p__Bacteroide
tes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Chryseoba
cterium|s__Chryseobacterium_gleum|t__GCF_000143785 k__Bacteria|p__Bacteroi
detes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Chryseo
bacterium|s__Chryseobacterium_unclassified k__Bacteria|p__Bacteroidetes|c_
_Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Elizabethkingia
k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavo
bacteriaceae|g__Elizabethkingia|s__Elizabethkingia_meningoseptica k__Bacte
ria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteria
ceae|g__Elizabethkingia|s__Elizabethkingia_meningoseptica|t__Elizabethkingi
a_meningoseptica_unclassified k__Bacteria|p__Bacteroidetes|c__Flavobacteri
ia|o__Flavobacteriales|f__Flavobacteriaceae|g__Empedobacter k__Bacteria|p_
_Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g
__Empedobacter|s__Empedobacter_brevis k__Bacteria|p__Bacteroidetes|c__Flav

obacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Empedobacter|s__Empe
dobacter_brevis|t__GCF_000382425 k__Bacteria|p__Deinococcus_Thermus|c__Dei
nococci|o__Thermales|f__Thermaceae|g__Thermus|s__Thermus_unclassified k__B
acteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae k__Bacteria|
p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Ba
cillus_cereus_thuringiensis k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacill
ales|f__Bacillaceae|g__Bacillus|s__Bacillus_cereus_thuringiensis|t__Bacillu
s_cereus_thuringiensis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o
__Bacillales|f__Paenibacillaceae k__Bacteria|p__Firmicutes|c__Bacilli|o__B
acillales|f__Paenibacillaceae|g__Paenibacillus k__Bacteria|p__Firmicutes|c
__Bacilli|o__Bacillales|f__Paenibacillaceae|g__Paenibacillus|s__Paenibacill
us_barengoltzii k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Paen
ibacillaceae|g__Paenibacillus|s__Paenibacillus_barengoltzii|t__GCF_00040337
5 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Paenibacillaceae|g
__Paenibacillus|s__Paenibacillus_lactis k__Bacteria|p__Firmicutes|c__Bacil
li|o__Bacillales|f__Paenibacillaceae|g__Paenibacillus|s__Paenibacillus_lact
is|t__GCF_000230915 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__
Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_caprae_capitis k__Ba
cteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staph
ylococcus|s__Staphylococcus_caprae_capitis|t__GCF_000160215 k__Bacteria|p_
_Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus
|s__Staphylococcus_caprae_capitis|t__Staphylococcus_caprae_capitis_unclassi
fied k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcace
ae|g__Staphylococcus|s__Staphylococcus_epidermidis k__Bacteria|p__Firmicut
es|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staph
ylococcus_epidermidis|t__Staphylococcus_epidermidis_unclassified k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphyloc
occus|s__Staphylococcus_haemolyticus k__Bacteria|p__Firmicutes|c__Bacilli|
o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_haem
olyticus|t__Staphylococcus_haemolyticus_unclassified k__Bacteria|p__Firmic
utes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Sta
phylococcus_hominis k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__
Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_hominis|t__Staphyloco
ccus_hominis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillal
es|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_lugdunensis k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__St
aphylococcus|s__Staphylococcus_lugdunensis|t__Staphylococcus_lugdunensis_un
classified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphyloc
occaceae|g__Staphylococcus|s__Staphylococcus_pseudintermedius k__Bacteria|
p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococc
us|s__Staphylococcus_pseudintermedius|t__Staphylococcus_pseudintermedius_un
classified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphyloc
occaceae|g__Staphylococcus|s__Staphylococcus_warneri k__Bacteria|p__Firmic
utes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Sta
phylococcus_warneri|t__Staphylococcus_warneri_unclassified k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Facklamia k__
Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Fa
cklamia|s__Facklamia_hominis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Aerococcaceae|g__Facklamia|s__Facklamia_hominis|t__Facklamia_
hominis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillal
es|f__Aerococcaceae|g__Facklamia|s__Facklamia_unclassified k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Dolosigran
ulum k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacte
riaceae|g__Dolosigranulum|s__Dolosigranulum_pigrum k__Bacteria|p__Firmicut
es|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Dolosigranulum|s__
Dolosigranulum_pigrum|t__GCF_000245815 k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Carnobacteriaceae|g__Granulicatella|s__Granulicatel
la_elegans k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carn
obacteriaceae|g__Granulicatella|s__Granulicatella_elegans|t__GCF_000162475
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|
g__Enterococcus|s__Enterococcus_asini k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_asin
i|t__Enterococcus_asini_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|

```
o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_avium
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|
g__Enterococcus|s__Enterococcus_avium|t__Enterococcus_avium_unclassified  k
__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g
__Enterococcus|s__Enterococcus_gallinarum  k__Bacteria|p__Firmicutes|c__Bac
illi|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_
gallinarum|t__GCF_000157255  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_italicus  k__B
acteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__E
nterococcus|s__Enterococcus_italicus|t__GCF_000185365  k__Bacteria|p__Firmi
cutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__E
nterococcus_saccharolyticus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_saccharolyticu
s|t__Enterococcus_saccharolyticus_unclassified  k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enteroco
ccus_sp_7L76  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__En
terococcaceae|g__Enterococcus|s__Enterococcus_sp_7L76|t__GCF_000210115  k__
Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g_
_Lactobacillus|s__Lactobacillus_iners  k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_i
ners|t__Lactobacillus_iners_unclassified  k__Bacteria|p__Firmicutes|c__Baci
lli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillu
s_oris  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_oris|t__GCF_000180015  k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lacto
bacillus|s__Lactobacillus_oris|t__Lactobacillus_oris_unclassified  k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lact
obacillus|s__Lactobacillus_sp_7_1_47FAA  k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus
_sp_7_1_47FAA|t__GCF_000227195  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lac
tobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_vaginali
s  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillac
eae|g__Lactobacillus|s__Lactobacillus_vaginalis|t__GCF_000159435  k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Leuco
nostoc|s__Leuconostoc_fallax  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_fallax|t__GCF_
000165675  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Strep
tococcaceae|g__Streptococcus|s__Streptococcus_canis  k__Bacteria|p__Firmicu
tes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__S
treptococcus_canis|t__GCF_000268305  k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_mac
edonicus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Strept
ococcaceae|g__Streptococcus|s__Streptococcus_macedonicus|t__GCF_000283635
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae
|g__Streptococcus|s__Streptococcus_massiliensis  k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Strep
tococcus_massiliensis|t__Streptococcus_massiliensis_unclassified  k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strep
tococcus|s__Streptococcus_pasteurianus  k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_
pasteurianus|t__GCF_000270165  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lact
obacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_peroris
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae
|g__Streptococcus|s__Streptococcus_peroris|t__GCF_000187585  k__Bacteria|p_
_Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococ
cus|s__Streptococcus_pseudopneumoniae  k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_p
seudopneumoniae|t__Streptococcus_pseudopneumoniae_unclassified  k__Bacteria
|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strepto
coccus|s__Streptococcus_pyogenes  k__Bacteria|p__Firmicutes|c__Bacilli|o__L
actobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_pyogen
es|t__Streptococcus_pyogenes_unclassified  k__Bacteria|p__Firmicutes|c__Bac
illi|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococc
us_sp_C150  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Stre
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ptococcaceae|g__Streptococcus|s__Streptococcus_sp_C150|t__GCF_000187445  k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g_
_Clostridium|s__Clostridium_hylemonae  k__Bacteria|p__Firmicutes|c__Clostri
dia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_hylemo
nae|t__GCF_000156515  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridia
les|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_7_2_43FAA  k__Bacter
ia|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostr
idium|s__Clostridium_sp_7_2_43FAA|t__GCF_000158375  k__Bacteria|p__Firmicut
es|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clost
ridium_sporogenes  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales
|f__Clostridiaceae|g__Clostridium|s__Clostridium_sporogenes|t__Clostridium_
sporogenes_unclassified  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaeroc
occus_hydrogenalis  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus
_hydrogenalis|t__Anaerococcus_hydrogenalis_unclassified  k__Bacteria|p__Fir
micutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_
Sedis|g__Anaerococcus|s__Anaerococcus_obesiensis  k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g
__Anaerococcus|s__Anaerococcus_obesiensis|t__GCF_000311745  k__Bacteria|p__
Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incert
ae_Sedis|g__Anaerococcus|s__Anaerococcus_prevotii|t__GCF_000024105  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_X
I_Incertae_Sedis|g__Anaerococcus|s__Anaerococcus_tetradius  k__Bacteria|p__
Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incert
ae_Sedis|g__Anaerococcus|s__Anaerococcus_tetradius|t__GCF_000159095  k__Bac
teria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_
XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_rhinitidis  k__Bacteria
|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_In
certae_Sedis|g__Peptoniphilus|s__Peptoniphilus_rhinitidis|t__GCF_000246925
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_F
amily_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_timonensis  k__Ba
cteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family
_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_timonensis|t__GCF_0003
12025  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacter
iaceae|g__Eubacterium|s__Eubacterium_siraeum|t__GCF_000210635  k__Bacteria|
p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Anaerost
ipes|s__Anaerostipes_sp_3_2_56FAA  k__Bacteria|p__Firmicutes|c__Clostridia|
o__Clostridiales|f__Lachnospiraceae|g__Anaerostipes|s__Anaerostipes_sp_3_2_
56FAA|t__GCF_000185825  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostrid
iales|f__Lachnospiraceae|g__Cellulosilyticum  k__Bacteria|p__Firmicutes|c__
Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Cellulosilyticum|s__Cellu
losilyticum_lentocellum  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostri
diales|f__Lachnospiraceae|g__Cellulosilyticum|s__Cellulosilyticum_lentocell
um|t__GCF_000178835  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Lachnospiraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_oral_tax
on_107  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnos
piraceae|g__Lachnospiraceae_noname|s__Lachnospiraceae_oral_taxon_107|t__GCF
_000209465  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lac
hnospiraceae|g__Shuttleworthia  k__Bacteria|p__Firmicutes|c__Clostridia|o__
Clostridiales|f__Lachnospiraceae|g__Shuttleworthia|s__Shuttleworthia_satell
es  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospira
ceae|g__Shuttleworthia|s__Shuttleworthia_satelles|t__GCF_000160115  k__Bact
eria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|
g__Peptostreptococcaceae_noname|s__Clostridium_difficile  k__Bacteria|p__Fi
rmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptost
reptococcaceae_noname|s__Clostridium_difficile|t__Clostridium_difficile_unc
lassified  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Pept
ostreptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_difficile|
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f__Peptostreptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_sor
dellii  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptost
reptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_sordellii|t__
Clostridium_sordellii_unclassified  k__Bacteria|p__Firmicutes|c__Clostridia
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|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostreptococcus|s__Peptostreptococcus_anaerobius k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostreptococcus|s__Peptostreptococcus_anaerobius|t__Peptostreptococcus_anaerobius_unclassified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_atypica|t__GCF_000318355 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_ratti k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_ratti|t__GCF_000315505 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_sp_oral_taxon_780 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_sp_oral_taxon_780|t__GCF_000221605 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_ulcerans k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_ulcerans|t__Fusobacterium_ulcerans_unclassified k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_buccalis k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_buccalis|t__GCF_000023905 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_unclassified k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_wadei k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_wadei|t__Leptotrichia_wadei_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Brevundimonas k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Brevundimonas|s__Brevundimonas_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Caulobacter|s__Caulobacter_vibrioides k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Caulobacter|s__Caulobacter_vibrioides|t__Caulobacter_vibrioides_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Afipia k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Afipia|s__Afipia_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Rhodopseudomonas k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Rhodopseudomonas|s__Rhodopseudomonas_palustris k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Rhodopseudomonas|s__Rhodopseudomonas_palustris|t__Rhodopseudomonas_palustris_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Rhodopseudomonas|s__Rhodopseudomonas_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g__Brucella k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g__Brucellaceae_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g__Brucella|s__Brucella_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Hyphomicrobiaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Hyphomicrobiaceae|g__Hyphomicrobiaceae_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Methylobacteriaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Methylobacteriaceae|g__Methylobacterium k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Methylobacteriaceae|g__Methylobacterium|s__Methylobacterium_radiotolerans k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Methylobacteriaceae|g__Methylobacterium|s__Methylobacterium_radiotolerans|t__GCF_000019725 k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae|g__Agrobacteriu

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m  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__R
hizobiaceae|g__Agrobacterium|s__Agrobacterium_tumefaciens  k__Bacteria|p__P
roteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae|g__Agro
bacterium|s__Agrobacterium_tumefaciens|t__Agrobacterium_tumefaciens_unclass
ified  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|
f__Rhizobiaceae|g__Agrobacterium|s__Agrobacterium_unclassified  k__Bacteria
|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae|g_
_Rhizobium  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobi
ales|f__Rhizobiaceae|g__Rhizobium|s__Rhizobium_lupini  k__Bacteria|p__Prote
obacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae|g__Rhizobiu
m|s__Rhizobium_lupini|t__GCF_000304595  k__Bacteria|p__Proteobacteria|c__Al
phaproteobacteria|o__Rhizobiales|f__Rhodobiaceae  k__Bacteria|p__Proteobact
eria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhodobiaceae|g__Rhodobiaceae_
unclassified  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodo
spirillales  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodos
pirillales|f__Acetobacteraceae  k__Bacteria|p__Proteobacteria|c__Alphaprote
obacteria|o__Rhodospirillales|f__Acetobacteraceae|g__Roseomonas  k__Bacteri
a|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Acetobact
eraceae|g__Roseomonas|s__Roseomonas_unclassified  k__Bacteria|p__Proteobact
eria|c__Alphaproteobacteria|o__Sphingomonadales  k__Bacteria|p__Proteobacte
ria|c__Alphaproteobacteria|o__Sphingomonadales|f__Sphingomonadaceae  k__Bac
teria|p__Proteobacteria|c__Alphaproteobacteria|o__Sphingomonadales|f__Sphin
gomonadaceae|g__Sphingomonas  k__Bacteria|p__Proteobacteria|c__Alphaproteob
acteria|o__Sphingomonadales|f__Sphingomonadaceae|g__Sphingomonas|s__Sphingo
monas_echinoides  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__S
phingomonadales|f__Sphingomonadaceae|g__Sphingomonas|s__Sphingomonas_echino
ides|t__GCF_000241465  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria
|o__Sphingomonadales|f__Sphingomonadaceae|g__Sphingomonas|s__Sphingomonas_m
elonis  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Sphingomona
dales|f__Sphingomonadaceae|g__Sphingomonas|s__Sphingomonas_melonis|t__Sphin
gomonas_melonis_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteoba
cteria|o__Burkholderiales|f__Burkholderiaceae|g__Burkholderia|s__Burkholder
ia_cenocepacia  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burk
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teria|o__Burkholderiales|f__Burkholderiaceae|g__Cupriavidus|s__Cupriavidus_
metallidurans|t__GCF_000196015  k__Bacteria|p__Proteobacteria|c__Betaproteo
bacteria|o__Burkholderiales|f__Burkholderiaceae|g__Ralstonia  k__Bacteria|p
__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Burkholderiace
ae|g__Ralstonia|s__Ralstonia_pickettii  k__Bacteria|p__Proteobacteria|c__Be
taproteobacteria|o__Burkholderiales|f__Burkholderiaceae|g__Ralstonia|s__Ral
stonia_pickettii|t__Ralstonia_pickettii_unclassified  k__Bacteria|p__Proteo
bacteria|c__Betaproteobacteria|o__Burkholderiales|f__Burkholderiaceae|g__Ra
lstonia|s__Ralstonia_unclassified  k__Bacteria|p__Proteobacteria|c__Betapro
teobacteria|o__Burkholderiales|f__Burkholderiales_noname|g__Thiomonas  k__B
acteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Burkh
olderiales_noname|g__Thiomonas|s__Thiomonas_unclassified  k__Bacteria|p__Pr
oteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__
Acidovorax  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkhold
eriales|f__Comamonadaceae|g__Acidovorax|s__Acidovorax_ebreus  k__Bacteria|p
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bacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Alic
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k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__C
omamonadaceae|g__Comamonas|s__Comamonas_testosteroni  k__Bacteria|p__Proteo
bacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Coma
monas|s__Comamonas_testosteroni|t__Comamonas_testosteroni_unclassified  k__
Bacteria|p__Proteobacteria|c__Betaproteobacter
ia|o__Burkholderiales|f__Comamonadaceae|g__Curvibacter  k__Bacteria|p__Prot
eobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Cu
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rvibacter|s__Curvibacter_lanceolatus  k__Bacteria|p__Proteobacteria|c__Beta
proteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Curvibacter|s__Curvi
bacter_lanceolatus|t__GCF_000381265  k__Bacteria|p__Proteobacteria|c__Betap
roteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Delftia  k__Bacteria|
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e|g__Delftia|s__Delftia_acidovorans  k__Bacteria|p__Proteobacteria|c__Betap
roteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Delftia|s__Delftia_ac
idovorans|t__Delftia_acidovorans_unclassified  k__Bacteria|p__Proteobacteri
a|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Delftia|s__
Delftia_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o
__Burkholderiales|f__Comamonadaceae|g__Limnohabitans  k__Bacteria|p__Proteo
bacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Limn
ohabitans|s__Limnohabitans_unclassified  k__Bacteria|p__Proteobacteria|c__B
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bacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadaceae|g__Vari
ovorax  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderia
les|f__Comamonadaceae|g__Variovorax|s__Variovorax_unclassified  k__Bacteria
|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Comamonadace
ae|g__Verminephrobacter  k__Bacteria|p__Proteobacteria|c__Betaproteobacteri
a|o__Burkholderiales|f__Comamonadaceae|g__Verminephrobacter|s__Verminephrob
acter_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__
Burkholderiales|f__Oxalobacteraceae|g__Massilia  k__Bacteria|p__Proteobacte
ria|c__Betaproteobacteria|o__Burkholderiales|f__Oxalobacteraceae|g__Massili
a|s__Massilia_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteobact
eria|o__Neisseriales|f__Neisseriaceae|g__Eikenella  k__Bacteria|p__Proteoba
cteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Eikenella|
s__Eikenella_corrodens  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria
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kenella_corrodens_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteo
bacteria|o__Neisseriales|f__Neisseriaceae|g__Kingella  k__Bacteria|p__Prote
obacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Kingell
a|s__Kingella_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteobact
eria|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_cinerea  k_
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riaceae|g__Neisseria|s__Neisseria_cinerea|t__GCF_000173895  k__Bacteria|p__
Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Ne
isseria|s__Neisseria_elongata  k__Bacteria|p__Proteobacteria|c__Betaproteob
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|t__GCF_000176755  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__N
eisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_gonorrhoeae  k__Bact
eria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriace
ae|g__Neisseria|s__Neisseria_gonorrhoeae|t__Neisseria_gonorrhoeae_unclassif
ied  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f_
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ningitidis  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseri
ales|f__Neisseriaceae|g__Neisseria|s__Neisseria_meningitidis|t__Neisseria_m
eningitidis_unclassified  k__Bacteria|p__Proteobacteria|c__Betaproteobacter
ia|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_sicca  k__Bac
teria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriac
eae|g__Neisseria|s__Neisseria_sicca|t__Neisseria_sicca_unclassified  k__Bac
teria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriac
eae|g__Neisseria|s__Neisseria_subflava  k__Bacteria|p__Proteobacteria|c__Be
taproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria
_subflava|t__GCF_000173955  k__Bacteria|p__Proteobacteria|c__Deltaproteobac
teria|o__Desulfovibrionales|f__Desulfovibrionaceae|g__Desulfovibrio|s__Desu
lfovibrio_desulfuricans|t__GCF_000022125  k__Bacteria|p__Proteobacteria|c__
Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylo
bacter|s__Campylobacter_ureolyticus  k__Bacteria|p__Proteobacteria|c__Epsil
onproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylobacte
```

```
r|s__Campylobacter_ureolyticus|t__Campylobacter_ureolyticus_unclassified  k
__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Aer
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|c__Gammaproteobacteria|o__Aeromonadales|f__Aeromonadaceae|g__Aeromonas|s__
Aeromonas_caviae|t__GCF_000208825  k__Bacteria|p__Proteobacteria|c__Gammapr
oteobacteria|o__Aeromonadales|f__Aeromonadaceae|g__Aeromonas|s__Aeromonas_h
ydrophila  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromona
dales|f__Aeromonadaceae|g__Aeromonas|s__Aeromonas_hydrophila|t__Aeromonas_h
ydrophila_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteri
a|o__Enterobacteriales|f__Enterobacteriaceae|g__Buchnera  k__Bacteria|p__Pr
oteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriac
eae|g__Buchnera|s__Buchnera_aphidicola  k__Bacteria|p__Proteobacteria|c__Ga
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Cronobacter_malonaticus_unclassified  k__Bacteria|p__Proteobacteria|c__Gamm
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_sakazakii|t__Cronobacter_sakazakii_unclassified  k__Bacteria|p__Proteobact
eria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__C
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|s__Cronobacter_universalis  k__Bacteria|p__Proteobacteria|c__Gammaproteoba
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er|s__Enterobacter_asburiae  k__Bacteria|p__Proteobacteria|c__Gammaproteoba
cteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Enterobacter|s__Entero
bacter_asburiae|t__GCF_000224675  k__Bacteria|p__Proteobacteria|c__Gammapro
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Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Enterobac
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ria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__En
terobacter|s__Enterobacter_sp_MGH_8  k__Bacteria|p__Proteobacteria|c__Gamma
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ia|s__Escherichia_hermannii  k__Bacteria|p__Proteobacteria|c__Gammaproteoba
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robacteriales|f__Enterobacteriaceae|g__Morganella  k__Bacteria|p__Proteobac
teria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__
Morganella|s__Morganella_morganii  k__Bacteria|p__Proteobacteria|c__Gammapr
oteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Morganella|s__Mo
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oea_agglomerans  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__En
terobacteriales|f__Enterobacteriaceae|g__Pantoea|s__Pantoea_agglomerans|t__
Pantoea_agglomerans_unclassified  k__Bacteria|p__Proteobacteria|c__Gammapro
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a_ananatis  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterob
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|o__Enterobacteriales|f__Enterobacteriaceae|g__Pantoea|s__Pantoea_dispersa
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|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Panto
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es|f__Enterobacteriaceae|g__Pectobacterium|s__Pectobacterium_unclassified
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f
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ria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Entero
bacteriaceae|g__Pectobacterium|s__Pectobacterium_wasabiae|t__Pectobacterium
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rettgeri  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobac
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teria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__
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teobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Serratia|s__Serra
tia_marcescens|t__Serratia_marcescens_unclassified  k__Bacteria|p__Proteoba
cteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g_
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ria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellaceae|g__Haemophi
lus|s__Haemophilus_aegyptius  k__Bacteria|p__Proteobacteria|c__Gammaproteob
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_bereziniae  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudo
monadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_bereziniae|t__
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inetobacter_bouvetii  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|
o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_bouve
tii|t__Acinetobacter_bouvetii_unclassified  k__Bacteria|p__Proteobacteria|c
__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|
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brisouii|t__Acinetobacter_brisouii_unclassified  k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetoba
cter|s__Acinetobacter_guillouiae  k__Bacteria|p__Proteobacteria|c__Gammapro
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bacter_guillouiae|t__Acinetobacter_guillouiae_unclassified  k__Bacteria|p__
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eria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxel
```

laceae|g__Acinetobacter|s__Acinetobacter_junii k__Bacteria|p__Proteobacter
ia|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobac
ter|s__Acinetobacter_junii|t__Acinetobacter_junii_unclassified k__Bacteria
|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellace
ae|g__Acinetobacter|s__Acinetobacter_pittii_calcoaceticus_nosocomialis k__
Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Mor
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lis|t__Acinetobacter_pittii_calcoaceticus_nosocomialis_unclassified k__Bac
teria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxe
llaceae|g__Acinetobacter|s__Acinetobacter_radioresistens k__Bacteria|p__Pr
oteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__
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ns_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Ps
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ed k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales
|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_ursingii k__Bacteria|p
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ssified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomona
dales|f__Moraxellaceae|g__Enhydrobacter k__Bacteria|p__Proteobacteria|c__G
ammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Enhydrobacter|s__
Enhydrobacter_aerosaccus k__Bacteria|p__Proteobacteria|c__Gammaproteobacte
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teria|o__Pseudomonadales|f__Moraxellaceae|g__Moraxella k__Bacteria|p__Prot
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teobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Moraxella|s__Moraxella_c
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|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_psychrotolerans k__Bact
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bacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__P
seudomonas|s__Pseudomonas_putida|t__Pseudomonas_putida_unclassified k__Bac
teria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudo
monadaceae|g__Pseudomonas|s__Pseudomonas_stutzeri k__Bacteria|p__Proteobac
teria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseu
domonas|s__Pseudomonas_stutzeri|t__Pseudomonas_stutzeri_unclassified k__Ba
cteria|p__Proteobacteria|c__Gammaproteobacteria|o__Xanthomonadales|f__Xanth
omonadaceae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Xantho
monadales|f__Xanthomonadaceae|g__Stenotrophomonas k__Bacteria|p__Proteobac
teria|c__Gammaproteobacteria|o__Xanthomonadales|f__Xanthomonadaceae|g__Sten
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|c__Gammaproteobacteria|o__Xanthomonadales|f__Xanthomonadaceae|g__Stenotrop
homonas|s__Stenotrophomonas_maltophilia|t__Stenotrophomonas_maltophilia_unc
lassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Xanthomo

```
nadales|f__Xanthomonadaceae|g__Stenotrophomonas|s__Stenotrophomonas_unclass
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|c__Aconoidasida|o__Haemosporida  k__Eukaryota|p__Apicomplexa|c__Aconoidasi
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conoidasida|o__Haemosporida|f__Haemosporida_noname|g__Plasmodium  k__Eukary
ota|p__Apicomplexa|c__Aconoidasida|o__Haemosporida|f__Haemosporida_noname|g
__Plasmodium|s__Plasmodium_berghei  k__Eukaryota|p__Apicomplexa|c__Aconoida
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omycetales_noname  k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o__Sacchar
omycetales|f__Saccharomycetales_noname|g__Candida  k__Eukaryota|p__Ascomyco
ta|c__Saccharomycetes|o__Saccharomycetales|f__Saccharomycetales_noname|g__C
andida|s__Candida_albicans  k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o
__Saccharomycetales|f__Saccharomycetales_noname|g__Candida|s__Candida_albic
ans|t__GCA_000182965  k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o__Sacc
haromycetales|f__Saccharomycetales_noname|g__Candida|s__Candida_dubliniensi
s  k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o__Saccharomycetales|f__Sa
ccharomycetales_noname|g__Candida|s__Candida_dubliniensis|t__GCA_000026945
k__Eukaryota|p__Ascomycota|c__Saccharomycetes|o__Saccharomycetales|f__Sacch
aromycetales_noname|g__Candida|s__Candida_tropicalis  k__Eukaryota|p__Ascom
ycota|c__Saccharomycetes|o__Saccharomycetales|f__Saccharomycetales_noname|g
__Candida|s__Candida_tropicalis|t__GCA_000006335  k__Eukaryota|p__Ascomycot
a|c__Saccharomycetes|o__Saccharomycetales|f__Saccharomycetales_noname|g__Ca
ndida|s__Candida_unclassified  k__Bacteria|p__Acidobacteria|c__Acidobacteri
a_noname  k__Bacteria|p__Acidobacteria|c__Acidobacteria_noname|o__Acidobact
eria_noname  k__Bacteria|p__Acidobacteria|c__Acidobacteria_noname|o__Acidob
acteria_noname|f__Acidobacteria_noname  k__Bacteria|p__Acidobacteria|c__Aci
dobacteria_noname|o__Acidobacteria_noname|f__Acidobacteria_noname|g__Candid
atus_Chloracidobacterium  k__Bacteria|p__Acidobacteria|c__Acidobacteria_non
ame|o__Acidobacteria_noname|f__Acidobacteria_noname|g__Candidatus_Chloracid
obacterium|s__Candidatus_Chloracidobacterium_thermophilum  k__Bacteria|p__A
```

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cidobacteria|c__Acidobacteria_noname|o__Acidobacteria_noname|f__Acidobacter
ia_noname|g__Candidatus_Chloracidobacterium|s__Candidatus_Chloracidobacteri
um_thermophilum|t__GCF_000226295  k__Bacteria|p__Acidobacteria|c__Acidobact
eriia|o__Acidobacteriales|f__Acidobacteriaceae|g__Terriglobus  k__Bacteria|
p__Acidobacteria|c__Acidobacteriia|o__Acidobacteriales|f__Acidobacteriaceae
|g__Terriglobus|s__Terriglobus_unclassified  k__Bacteria|p__Actinobacteria|
c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculum
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actin
omycetaceae|g__Actinobaculum|s__Actinobaculum_sp_oral_taxon_183  k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetacea
e|g__Actinobaculum|s__Actinobaculum_sp_oral_taxon_183|t__GCF_000466165  k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomy
cetaceae|g__Actinobaculum|s__Actinobaculum_unclassified  k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Act
inomyces|s__Actinomyces_cardiffensis  k__Bacteria|p__Actinobacteria|c__Acti
nobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinom
yces_cardiffensis|t__GCF_000364865  k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyc
es_georgiae  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycet
ales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_georgiae|t__GCF_0002
77685  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Actinomycetaceae|g__Actinomyces|s__Actinomyces_graevenitzii|t__GCF_000466
185  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__
Actinomycetaceae|g__Actinomyces|s__Actinomyces_johnsonii  k__Bacteria|p__Ac
tinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Ac
tinomyces|s__Actinomyces_johnsonii|t__Actinomyces_johnsonii_unclassified  k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actino
mycetaceae|g__Actinomyces|s__Actinomyces_johnsonii|t__GCF_000466205  k__Bac
teria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycet
aceae|g__Actinomyces|s__Actinomyces_johnsonii|t__GCF_000466245  k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae
|g__Actinomyces|s__Actinomyces_massiliensis  k__Bacteria|p__Actinobacteria|
c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__
Actinomyces_massiliensis|t__Actinomyces_massiliensis_unclassified  k__Bacte
ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetac
eae|g__Actinomyces|s__Actinomyces_massiliensis|t__GCF_000296275  k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetacea
e|g__Actinomyces|s__Actinomyces_naeslundii  k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__A
ctinomyces_naeslundii|t__GCF_000285995  k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actin
omyces_oris  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycet
ales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_oris|t__GCF_00018015
5  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Ac
tinomycetaceae|g__Actinomyces|s__Actinomyces_sp_HPA0247  k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Act
inomyces|s__Actinomyces_sp_HPA0247|t__GCF_000411415  k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinom
yces|s__Actinomyces_sp_ICM47  k__Bacteria|p__Actinobacteria|c__Actinobacter
ia|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_
ICM47|t__GCF_000278725  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_t
axon_170  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetale
s|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_170|t__GC
F_000195595  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycet
ales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_171  k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actino
mycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_171|t__GCF_000186965
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actin
omycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_172  k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g_
_Actinomyces|s__Actinomyces_sp_oral_taxon_172|t__GCF_000466265  k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae
|g__Actinomyces|s__Actinomyces_sp_oral_taxon_175  k__Bacteria|p__Actinobact
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eria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyce
s|s__Actinomyces_sp_oral_taxon_175|t__GCF_000223355  k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinom
yces|s__Actinomyces_sp_oral_taxon_180  k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actino
myces_sp_oral_taxon_180|t__GCF_000185285  k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Act
inomyces_sp_oral_taxon_181  k__Bacteria|p__Actinobacteria|c__Actinobacteria
|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_or
al_taxon_181|t__GCF_000318335  k__Bacteria|p__Actinobacteria|c__Actinobacte
ria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp
_oral_taxon_448  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinom
ycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_44
8|t__GCF_000220835  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Acti
nomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon
_848  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f_
_Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_848|t__GCF_00
0162895  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_849  k__Ba
cteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomyce
taceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_849|t__GCF_000239715  k_
_Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinom
ycetaceae|g__Actinomyces|s__Actinomyces_sp_ph3  k__Bacteria|p__Actinobacter
ia|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|
s__Actinomyces_sp_ph3|t__GCF_000308055  k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actin
omyces_timonensis  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actin
omycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_timonensis|t__
GCF_000295095  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyc
etales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_viscosus  k__Bacte
ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetac
eae|g__Actinomyces|s__Actinomyces_viscosus|t__GCF_000175315  k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g_
_Mobiluncus|s__Mobiluncus_curtisii  k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Actinomycetales|f__Actinomycetaceae|g__Mobiluncus|s__Mobiluncus
_curtisii|t__Mobiluncus_curtisii_unclassified  k__Bacteria|p__Actinobacteri
a|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Mobiluncus|s_
_Mobiluncus_mulieris  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Ac
tinomycetales|f__Actinomycetaceae|g__Mobiluncus|s__Mobiluncus_mulieris|t__M
obiluncus_mulieris_unclassified  k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Coryne
bacterium_bovis  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinom
ycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_bovis|
t__GCF_000183325  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_durum
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryn
ebacteriaceae|g__Corynebacterium|s__Corynebacterium_durum|t__GCF_000318135
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryn
ebacteriaceae|g__Corynebacterium|s__Corynebacterium_genitalium  k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriace
ae|g__Corynebacterium|s__Corynebacterium_genitalium|t__GCF_000143825  k__Ba
cteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebact
eriaceae|g__Corynebacterium|s__Corynebacterium_matruchotii  k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g
__Corynebacterium|s__Corynebacterium_matruchotii|t__Corynebacterium_matruch
otii_unclassified  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actin
omycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_matr
uchotii|t__GCF_000158635  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o
__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium  k__Bacteria|p__Ac
tinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Br
achybacterium|s__Brachybacterium_unclassified  k__Bacteria|p__Actinobacteri
a|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Dermabacterac
eae_unclassified  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Micrococcaceae|g__Kocuria  k__Bacteria|p__Actinobacteria|c__Ac
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tinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_aeria k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_aeria|t__Rothia_aeria_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_dentocariosa|t__GCF_000143585 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Rothia|s__Rothia_dentocariosa|t__GCF_000164695 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_abscessus k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_abscessus|t__Mycobacterium_abscessus_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Promicromonosporaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Promicromonosporaceae|g__Promicromonosporaceae_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_acnes|t__GCF_000221145 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_propionicum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_propionicum|t__GCF_000277715 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_sp_KPL1844 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_sp_KPL1844|t__GCF_000477715 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_sp_oral_taxon_192 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionibacterium|s__Propionibacterium_sp_oral_taxon_192|t__GCF_000413315 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_sp_ICM58 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_sp_ICM58|t__GCF_000283035 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_sp_oral_taxon_199 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_sp_oral_taxon_199|t__GCF_000411555 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Atopobium|s__Atopobium_vaginae|t__GCF_000179715 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Coriobacteriaceae_noname|s__Coriobacteriaceae_bacterium_BV3Ac1 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Coriobacteriaceae_noname|s__Coriobacteriaceae_bacterium_BV3Ac1|t__GCF_000468855 k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname|g__Bacteroidetes_noname k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname|g__Bacteroidetes_noname|s__Bacteroidetes_bacterium_oral_taxon_272 k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname|g__Bacteroidetes_noname|s__Bacteroidetes_bacterium_oral_taxon_272|t__GCF_000442105 k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname|g__Bacteroidetes_noname|s__Bacteroidetes_oral_taxon_274 k__Bacteria|p__Bacteroidetes|c__Bacteroidetes_noname|o__Bacteroidetes_noname|f__Bacteroidetes_noname|g__Bacteroidetes_noname|s__Bacteroidetes_oral_taxon_274|t__GCF_000163695 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_caccae|t__GCF_000273725 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_fragilis|t__GCF_000297755 k__Bacteria|p__Bacteroidetes|c__Bacte

roidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_ovatus|t__GCF_000178275 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_ovatus|t__GCF_000273195 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroides|s__Parabacteroides_johnsonii|t__GCF_000156495 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_catoniae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_catoniae|t__GCF_000318215 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_endodontalis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_endodontalis|t__GCF_000174815 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_gingivalis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_gingivalis|t__Porphyromonas_gingivalis_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_gulae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_gulae|t__GCF_000378065 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_sp_oral_taxon_278 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_sp_oral_taxon_278|t__GCF_000467855 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_sp_oral_taxon_279 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_sp_oral_taxon_279|t__GCF_000292995 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Tannerella k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Tannerella|s__Tannerella_forsythia k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Tannerella|s__Tannerella_forsythia|t__GCF_000238215 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s__Alloprevotella_rava k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s__Alloprevotella_rava|t__GCF_000234115 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s__Prevotella_sp_oral_taxon_473 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Alloprevotella|s__Prevotella_sp_oral_taxon_473|t__GCF_000318095 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Candidatus_Prevotella_conceptionensis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Candidatus_Prevotella_conceptionensis|t__GCF_000312305 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_amnii k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_amnii|t__GCF_000177355 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_amnii|t__Prevotella_amnii_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_baroniae k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_baroniae|t__GCF_000468635 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_dentalis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_dentalis|t__Prevotella_dentalis_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_denticola k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_denticola|t__Prevotella_denticola_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_loescheii k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_loescheii|t__GCF_000378085 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_ma

culosa k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Pre
votellaceae|g__Prevotella|s__Prevotella_maculosa|t__GCF_000243015 k__Bacte
ria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__P
revotella|s__Prevotella_maculosa|t__GCF_000382385 k__Bacteria|p__Bacteroid
etes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Pre
votella_maculosa|t__Prevotella_maculosa_unclassified k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__
Prevotella_marshii k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroi
dales|f__Prevotellaceae|g__Prevotella|s__Prevotella_marshii|t__GCF_00014667
5 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotel
laceae|g__Prevotella|s__Prevotella_melaninogenica|t__GCF_000144405 k__Bact
eria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__
Prevotella|s__Prevotella_melaninogenica|t__GCF_000163035 k__Bacteria|p__Ba
cteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella
|s__Prevotella_micans k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacte
roidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_micans|t__Prevotella
_micans_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_multiformis k__Bacte
ria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__P
revotella|s__Prevotella_multiformis|t__GCF_000191065 k__Bacteria|p__Bacter
oidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__
Prevotella_nanceiensis k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bact
eroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_nanceiensis|t__GCF_
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Prevotellaceae|g__Prevotella|s__Prevotella_nigrescens k__Bacteria|p__Bacte
roidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s_
_Prevotella_nigrescens|t__Prevotella_nigrescens_unclassified k__Bacteria|p
__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevot
ella|s__Prevotella_oris k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bac
teroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_oris|t__Prevotella
_oris_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroi
dales|f__Prevotellaceae|g__Prevotella|s__Prevotella_oulorum k__Bacteria|p_
_Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevote
lla|s__Prevotella_oulorum|t__GCF_000224615 k__Bacteria|p__Bacteroidetes|c_
_Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella
_pallens k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__P
revotellaceae|g__Prevotella|s__Prevotella_pallens|t__GCF_000220255 k__Bact
eria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__
Prevotella|s__Prevotella_pleuritidis k__Bacteria|p__Bacteroidetes|c__Bacte
roidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_pleur
itidis|t__GCF_000468135 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bac
teroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_saccharolytica k_
_Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellacea
e|g__Prevotella|s__Prevotella_saccharolytica|t__GCF_000318195 k__Bacteria|
p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevo
tella|s__Prevotella_sp_BV3P1 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o
__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_sp_BV3P1|t__G
CF_000479005 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|
f__Prevotellaceae|g__Prevotella|s__Prevotella_sp_C561 k__Bacteria|p__Bacte
roidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s_
_Prevotella_sp_C561|t__GCF_000224595 k__Bacteria|p__Bacteroidetes|c__Bacte
roidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_sp_or
al_taxon_299 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|
f__Prevotellaceae|g__Prevotella|s__Prevotella_sp_oral_taxon_299|t__GCF_0001
63055 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prev
otellaceae|g__Prevotella|s__Prevotella_sp_oral_taxon_306 k__Bacteria|p__Ba
cteroidetes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella
|s__Prevotella_sp_oral_taxon_306|t__GCF_000257925 k__Bacteria|p__Bacteroid
etes|c__Bacteroidia|o__Bacteroidales|f__Prevotellaceae|g__Prevotella|s__Pre
votella_sp_oral_taxon_317 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__B
acteroidales|f__Prevotellaceae|g__Prevotella|s__Prevotella_sp_oral_taxon_31
7|t__GCF_000162415 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroi
dales|f__Prevotellaceae|g__Prevotella|s__Prevotella_veroralis|t__GCF_000377
625 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Rikene

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llaceae|g__Alistipes|s__Alistipes_sp_JC136  k__Bacteria|p__Bacteroidetes|c_
_Bacteroidia|o__Bacteroidales|f__Rikenellaceae|g__Alistipes|s__Alistipes_sp
_JC136|t__GCF_000285455  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__
Flavobacteriales|f__Flavobacteriaceae|g__Bergeyella  k__Bacteria|p__Bactero
idetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Bergey
ella|s__Bergeyella_zoohelcum  k__Bacteria|p__Bacteroidetes|c__Flavobacterii
a|o__Flavobacteriales|f__Flavobacteriaceae|g__Bergeyella|s__Bergeyella_zooh
elcum|t__Bergeyella_zoohelcum_unclassified  k__Bacteria|p__Bacteroidetes|c_
_Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|
s__Capnocytophaga_gingivalis  k__Bacteria|p__Bacteroidetes|c__Flavobacterii
a|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytoph
aga_gingivalis|t__GCF_000174755  k__Bacteria|p__Bacteroidetes|c__Flavobacte
riia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocyt
ophaga_granulosa  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavoba
cteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_granulos
a|t__GCF_000411115  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavo
bacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_ochrac
ea  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__F
lavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_ochracea|t__Capnocytop
haga_ochracea_unclassified  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|
o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophag
a_sp_CM59  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacterial
es|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_CM59|t__GCF_
000293175  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacterial
es|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxon_3
24  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__F
lavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxon_324|t__G
CF_000318315  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacter
iales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxo
n_326  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f
__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxon_326|t
__GCF_000318295  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobac
teriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_t
axon_329  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriale
s|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxon_32
9|t__GCF_000213295  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavo
bacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_ora
l_taxon_332  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteri
ales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_taxon
_332|t__GCF_000318275  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Fl
avobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_
oral_taxon_335  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobact
eriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral_ta
xon_335|t__GCF_000277665  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o_
_Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_
sp_oral_taxon_336  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavob
acteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_oral
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|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytopha
ga_sp_oral_taxon_338  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Fla
vobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_sp_o
ral_taxon_338|t__GCF_000192225  k__Bacteria|p__Bacteroidetes|c__Flavobacter
iia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocyto
phaga_sp_oral_taxon_380  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__
Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_s
p_oral_taxon_380|t__GCF_000318255  k__Bacteria|p__Bacteroidetes|c__Flavobac
teriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnoc
ytophaga_sp_oral_taxon_412  k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|
o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophag
a_sp_oral_taxon_412|t__GCF_000271925  k__Bacteria|p__Bacteroidetes|c__Flavo
bacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Cap
nocytophaga_sp_oral_taxon_863  k__Bacteria|p__Bacteroidetes|c__Flavobacteri
ia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytop
haga_sp_oral_taxon_863|t__GCF_000466425  k__Bacteria|p__Bacteroidetes|c__Fl
```

avobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__
Capnocytophaga_sputigena k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o_
_Flavobacteriales|f__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_
sputigena|t__GCF_000173675 k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|
o__Flavobacteriales|f__Flavobacteriaceae|g__Elizabethkingia|s__Elizabethkin
gia_unclassified k__Bacteria|p__Chloroflexi k__Bacteria|p__Chloroflexi|c_
_Chloroflexi k__Bacteria|p__Chloroflexi|c__Chloroflexi|o__Chloroflexales
k__Bacteria|p__Chloroflexi|c__Chloroflexi|o__Chloroflexales|f__Chloroflexac
eae k__Bacteria|p__Chloroflexi|c__Chloroflexi|o__Chloroflexales|f__Chlorof
lexaceae|g__Roseiflexus k__Bacteria|p__Chloroflexi|c__Chloroflexi|o__Chlor
oflexales|f__Chloroflexaceae|g__Roseiflexus|s__Roseiflexus_unclassified k_
_Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococ
caceae|g__Deinococcus|s__Deinococcus_radiodurans k__Bacteria|p__Deinococcu
s_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus|s
__Deinococcus_radiodurans|t__GCF_000008565 k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Bacillales|f__Bacillales_noname|g__Gemella|s__Gemella_bergeri k__
Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Gem
ella|s__Gemella_bergeri|t__GCF_000469465 k__Bacteria|p__Firmicutes|c__Baci
lli|o__Bacillales|f__Bacillales_noname|g__Gemella|s__Gemella_haemolysans|t_
_GCF_000173915 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacil
lales_noname|g__Gemella|s__Gemella_haemolysans|t__GCF_000204355 k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Bacillales|f__Listeriaceae k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Bacillales|f__Listeriaceae|g__Listeria k__Bacteria|
p__Firmicutes|c__Bacilli|o__Bacillales|f__Listeriaceae|g__Listeria|s__Liste
ria_monocytogenes k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Li
steriaceae|g__Listeria|s__Listeria_monocytogenes|t__Listeria_monocytogenes_
unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphyl
ococcaceae|g__Staphylococcus|s__Staphylococcus_pasteuri k__Bacteria|p__Fir
micutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__
Staphylococcus_pasteuri|t__GCF_000494875 k__Bacteria|p__Firmicutes|c__Baci
lli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_
saprophyticus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphy
lococcaceae|g__Staphylococcus|s__Staphylococcus_saprophyticus|t__Staphyloco
ccus_saprophyticus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__La
ctobacillales|f__Aerococcaceae|g__Aerococcus k__Bacteria|p__Firmicutes|c__
Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Aerococcus|s__Aerococcus_vir
idans k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococca
ceae|g__Aerococcus|s__Aerococcus_viridans|t__Aerococcus_viridans_unclassifi
ed k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacteri
aceae|g__Alloiococcus k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacilla
les|f__Carnobacteriaceae|g__Alloiococcus|s__Alloiococcus_otitis k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Alloi
ococcus|s__Alloiococcus_otitis|t__GCF_000315445 k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Carnobacterium k__Ba
cteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__
Carnobacterium|s__Carnobacterium_maltaromaticum k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Carnobacteriaceae|g__Carnobacterium|s__Car
nobacterium_maltaromaticum|t__Carnobacterium_maltaromaticum_unclassified k
__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g
__Enterococcus|s__Enterococcus_dispar k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_disp
ar|t__Enterococcus_dispar_unclassified k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_
coleohominis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__La
ctobacillaceae|g__Lactobacillus|s__Lactobacillus_coleohominis|t__GCF_000161
935 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacill
aceae|g__Lactobacillus|s__Lactobacillus_helveticus k__Bacteria|p__Firmicut
es|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__La
ctobacillus_helveticus|t__Lactobacillus_helveticus_unclassified k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactob
acillus|s__Lactobacillus_iners|t__GCF_000179935 k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lacto
bacillus_jensenii k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|
f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_jensenii|t__GCF_00016

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2335  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacil
laceae|g__Lactobacillus|s__Lactobacillus_jensenii|t__Lactobacillus_jensenii
_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__L
actobacillaceae|g__Pediococcus|s__Pediococcus_acidilactici  k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Pediococcus
|s__Pediococcus_acidilactici|t__Pediococcus_acidilactici_unclassified  k__B
acteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__
Leuconostoc|s__Leuconostoc_carnosum  k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_carnosu
m|t__Leuconostoc_carnosum_unclassified  k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_
dysgalactiae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__St
reptococcaceae|g__Streptococcus|s__Streptococcus_dysgalactiae|t__Streptococ
cus_dysgalactiae_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lact
obacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_infantis|
t__GCF_000223255  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f
__Streptococcaceae|g__Streptococcus|s__Streptococcus_intermedius  k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strep
tococcus|s__Streptococcus_intermedius|t__Streptococcus_intermedius_unclassi
fied  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococ
caceae|g__Streptococcus|s__Streptococcus_parasanguinis|t__GCF_000260695  k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g
__Streptococcus|s__Streptococcus_parasanguinis|t__GCF_000507765  k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Strept
ococcus|s__Streptococcus_sp_2_1_36FAA  k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_s
p_2_1_36FAA|t__GCF_000161955  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_AS14  k
__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|
g__Streptococcus|s__Streptococcus_sp_AS14|t__GCF_000286495  k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococc
us|s__Streptococcus_sp_BS35b  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_BS35b|t
__GCF_000286475  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f_
_Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_C300  k__Bacteria|p_
_Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococ
cus|s__Streptococcus_sp_C300|t__GCF_000187645  k__Bacteria|p__Firmicutes|c_
_Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Strepto
coccus_sp_F0441  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f_
_Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_F0441|t__GCF_0003147
75  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococca
ceae|g__Streptococcus|s__Streptococcus_sp_F0442  k__Bacteria|p__Firmicutes|
c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Strep
tococcus_sp_F0442|t__GCF_000314795  k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_G
MD5S  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococ
caceae|g__Streptococcus|s__Streptococcus_sp_GMD5S|t__GCF_000298715  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Str
eptococcus|s__Streptococcus_sp_HPH0090  k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_
sp_HPH0090|t__GCF_000411475  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_I_G2  k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g
__Streptococcus|s__Streptococcus_sp_I_G2|t__GCF_000479335  k__Bacteria|p__F
irmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcu
s|s__Streptococcus_sp_M143  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_M143|t__G
CF_000162495  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__St
reptococcaceae|g__Streptococcus|s__Streptococcus_sp_M334  k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus
|s__Streptococcus_sp_M334|t__GCF_000187745  k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococ
cus_sp_SK140  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__St
reptococcaceae|g__Streptococcus|s__Streptococcus_sp_SK140|t__GCF_000259525
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k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae
|g__Streptococcus|s__Streptococcus_sp_oral_taxon_056 k__Bacteria|p__Firmic
utes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__
Streptococcus_sp_oral_taxon_056|t__GCF_000220065 k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XIII_Incertae_Sedis
|g__Clostridiales_Family_XIII_Incertae_Sedis_noname k__Bacteria|p__Firmicu
tes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XIII_Incertae_Se
dis|g__Clostridiales_Family_XIII_Incertae_Sedis_noname|s__Eubacterium_infir
mum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridia
les_Family_XIII_Incertae_Sedis|g__Clostridiales_Family_XIII_Incertae_Sedis_
noname|s__Eubacterium_infirmum|t__GCF_000242675 k__Bacteria|p__Firmicutes|
c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XIII_Incertae_Sedis|
g__Mogibacterium k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|
f__Clostridiales_Family_XIII_Incertae_Sedis|g__Mogibacterium|s__Mogibacteri
um_sp_CM50 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clo
stridiales_Family_XIII_Incertae_Sedis|g__Mogibacterium|s__Mogibacterium_sp_
CM50|t__GCF_000293155 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridi
ales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Parvimonas|s__Parvimonas_
sp_oral_taxon_110 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales
|f__Clostridiales_Family_XI_Incertae_Sedis|g__Parvimonas|s__Parvimonas_sp_o
ral_taxon_110|t__GCF_000214475 k__Bacteria|p__Firmicutes|c__Clostridia|o__
Clostridiales|f__Eubacteriaceae|g__Eubacteriaceae_noname k__Bacteria|p__Fi
rmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacteriaceae
_noname|s__Eubacteriaceae_bacterium_ACC19a k__Bacteria|p__Firmicutes|c__Cl
ostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacteriaceae_noname|s__Eub
acteriaceae_bacterium_ACC19a|t__GCF_000238115 k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Eubacteriaceae|g__Eubacteriaceae_noname|s__
Eubacteriaceae_bacterium_CM2 k__Bacteria|p__Firmicutes|c__Clostridia|o__Cl
ostridiales|f__Eubacteriaceae|g__Eubacteriaceae_noname|s__Eubacteriaceae_ba
cterium_CM2|t__GCF_000238095 k__Bacteria|p__Firmicutes|c__Clostridia|o__Cl
ostridiales|f__Eubacteriaceae|g__Eubacteriaceae_noname|s__Eubacteriaceae_ba
cterium_CM5 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eu
bacteriaceae|g__Eubacteriaceae_noname|s__Eubacteriaceae_bacterium_CM5|t__GC
F_000238135 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eu
bacteriaceae|g__Eubacteriaceae_noname|s__Eubacteriaceae_bacterium_OBRC8 k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g_
_Eubacteriaceae_noname|s__Eubacteriaceae_bacterium_OBRC8|t__GCF_000293035
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|
g__Eubacteriaceae_noname|s__Eubacteriaceae_noname_unclassified k__Bacteria
|p__Firmicutes|c__Clostridia|o__Clostridiales|f
__Eubacteriaceae|g__Eubacterium|s__Eubacterium_rectale|t__GCF_000209935 k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g_
_Pseudoramibacter k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales
|f__Eubacteriaceae|g__Pseudoramibacter|s__Pseudoramibacter_alactolyticus k
__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Eubacteriaceae|g
__Pseudoramibacter|s__Pseudoramibacter_alactolyticus|t__GCF_000185505 k__B
acteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__
Catonella k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lach
nospiraceae|g__Catonella|s__Catonella_morbi k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Lachnospiraceae|g__Catonella|s__Catonella_mor
bi|t__GCF_000160035 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Lachnospiraceae|g__Johnsonella k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Lachnospiraceae|g__Johnsonella|s__Johnsonella_ignava
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae
|g__Johnsonella|s__Johnsonella_ignava|t__GCF_000235445 k__Bacteria|p__Firm
icutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnoanaerobac
ulum|s__Lachnoanaerobaculum_saburreum|t__GCF_000185385 k__Bacteria|p__Firm
icutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae
_noname|s__Lachnospiraceae_bacterium_2_1_46FAA k__Bacteria|p__Firmicutes|c
__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Lachnospiraceae_noname|
s__Lachnospiraceae_bacterium_2_1_46FAA|t__GCF_000209385 k__Bacteria|p__Fir
micutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s
__Oribacterium_sp_ACB1 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostrid
iales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sp_ACB1|t__GCF_000

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238055  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnos
piraceae|g__Oribacterium|s__Oribacterium_sp_ACB7  k__Bacteria|p__Firmicutes
|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oriba
cterium_sp_ACB7|t__GCF_000238075  k__Bacteria|p__Firmicutes|c__Clostridia|o
__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sp_ACB8
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae
|g__Oribacterium|s__Oribacterium_sp_ACB8|t__GCF_000277505  k__Bacteria|p__F
irmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium
|s__Oribacterium_sp_oral_taxon_078  k__Bacteria|p__Firmicutes|c__Clostridia
|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sp_ora
l_taxon_078|t__Oribacterium_sp_oral_taxon_078_unclassified  k__Bacteria|p__
Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacteriu
m|s__Oribacterium_sp_oral_taxon_108  k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sp_or
al_taxon_108|t__GCF_000214455  k__Bacteria|p__Firmicutes|c__Clostridia|o__C
lostridiales|f__Lachnospiraceae|g__Roseburia|s__Roseburia_intestinalis|t__G
CF_000210655  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__P
eptostreptococcaceae|g__Filifactor  k__Bacteria|p__Firmicutes|c__Clostridia
|o__Clostridiales|f__Peptostreptococcaceae|g__Filifactor|s__Filifactor_aloc
is  k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostrept
ococcaceae|g__Filifactor|s__Filifactor_alocis|t__GCF_000163895  k__Bacteria
|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__P
eptostreptococcaceae_noname|s__Clostridium_hiranonis  k__Bacteria|p__Firmic
utes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostrept
ococcaceae_noname|s__Clostridium_hiranonis|t__GCF_000156055  k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Pept
ostreptococcaceae_noname|s__Eubacterium_yurii  k__Bacteria|p__Firmicutes|c_
_Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostreptococcac
eae_noname|s__Eubacterium_yurii|t__GCF_000146855  k__Bacteria|p__Firmicutes
|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Centipeda  k__Ba
cteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae
|g__Centipeda|s__Centipeda_periodontii  k__Bacteria|p__Firmicutes|c__Negati
vicutes|o__Selenomonadales|f__Veillonellaceae|g__Centipeda|s__Centipeda_per
iodontii|t__GCF_000213975  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Se
lenomonadales|f__Veillonellaceae|g__Dialister|s__Dialister_micraerophilus|t
__GCF_000183445  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonada
les|f__Veillonellaceae|g__Megasphaera|s__Megasphaera_genomosp_type_1  k__Ba
cteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae
|g__Megasphaera|s__Megasphaera_genomosp_type_1|t__GCF_000177555  k__Bacteri
a|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__M
egasphaera|s__Megasphaera_sp_UPII_135_E  k__Bacteria|p__Firmicutes|c__Negat
ivicutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasphaer
a_sp_UPII_135_E|t__GCF_000221545  k__Bacteria|p__Firmicutes|c__Negativicute
s|o__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasphaera_sp_UP
II_199_6  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__
Veillonellaceae|g__Megasphaera|s__Megasphaera_sp_UPII_199_6|t__GCF_00021449
5  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillon
ellaceae|g__Selenomonas|s__Selenomonas_artemidis  k__Bacteria|p__Firmicutes
|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__S
elenomonas_artemidis|t__GCF_000187125  k__Bacteria|p__Firmicutes|c__Negativ
icutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_
flueggei  k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__
Veillonellaceae|g__Selenomonas|s__Selenomonas_flueggei|t__GCF_000160695  k_
_Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellac
eae|g__Selenomonas|s__Selenomonas_infelix  k__Bacteria|p__Firmicutes|c__Neg
ativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomo
nas_infelix|t__GCF_000234095  k__Bacteria|p__Firmicutes|c__Negativicutes|o_
_Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_noxia  k_
_Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellac
eae|g__Selenomonas|s__Selenomonas_noxia|t__GCF_000160555  k__Bacteria|p__Fi
rmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomo
nas|s__Selenomonas_noxia|t__Selenomonas_noxia_unclassified  k__Bacteria|p__
Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Seleno
monas|s__Selenomonas_sp_CM52  k__Bacteria|p__Firmicutes|c__Negativicutes|o_
```

_Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_CM52|t
__GCF_000292955 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonada
les|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_F0473 k__Bacteria|
p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Sel
enomonas|s__Selenomonas_sp_F0473|t__GCF_000315545 k__Bacteria|p__Firmicute
s|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__
Selenomonas_sp_FOBRC6 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Seleno
monadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_FOBRC6|t__GCF
_000286455 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f
__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_FOBRC9 k__Bacteria|p__F
irmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenom
onas|s__Selenomonas_sp_FOBRC9|t__GCF_000287655 k__Bacteria|p__Firmicutes|c
__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Sel
enomonas_sp_oral_taxon_137 k__Bacteria|p__Firmicutes|c__Negativicutes|o__S
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on_137|t__GCF_000183625 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Sele
nomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_oral_taxon_
138 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veill
onellaceae|g__Selenomonas|s__Selenomonas_sp_oral_taxon_138|t__GCF_000318175
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonell
aceae|g__Selenomonas|s__Selenomonas_sp_oral_taxon_149 k__Bacteria|p__Firmi
cutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas
|s__Selenomonas_sp_oral_taxon_149|t__GCF_000146365 k__Bacteria|p__Firmicut
es|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s_
_Selenomonas_sp_oral_taxon_892 k__Bacteria|p__Firmicutes|c__Negativicutes|
o__Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sp_oral
_taxon_892|t__GCF_000468035 k__Bacteria|p__Firmicutes|c__Negativicutes|o__
Selenomonadales|f__Veillonellaceae|g__Selenomonas|s__Selenomonas_sputigena
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assified k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__
Veillonellaceae|g__Veillonella|s__Veillonella_parvula|t__GCF_000177435 k__
Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellace
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ella|s__Veillonella_sp_ACP1 k__Bacteria|p__Firmicutes|c__Negativicutes|o__
Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_sp_ACP1|t_
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|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Ve
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s__Veillonella_sp_oral_taxon_158 k__Bacteria|p__Firmicutes|c__Negativicute
s|o__Selenomonadales|f__Veillonellaceae|g__Veillonella|s__Veillonella_sp_or
al_taxon_158|t__GCF_000183505 k__Bacteria|p__Fusobacteria|c__Fusobacteriia
|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_n
ecrophorum k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales
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riia|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacteri
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p_oral_taxon_370 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacte
riales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_sp_oral_taxon_
370|t__GCF_000235465 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusob
acteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_goodfellowii
k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotri
chiaceae|g__Leptotrichia|s__Leptotrichia_goodfellowii|t__GCF_000176335 k__
Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichi
aceae|g__Leptotrichia|s__Leptotrichia_hofstadii k__Bacteria|p__Fusobacteri

a|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s
__Leptotrichia_hofstadii|t__GCF_000162955 k__Bacteria|p__Fusobacteria|c__F
usobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotrichia|s__Lept
otrichia_shahii k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacter
iales|f__Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_shahii|t__GCF_000
373045 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__
Leptotrichiaceae|g__Leptotrichia|s__Leptotrichia_sp_oral_taxon_215 k__Bact
eria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiacea
e|g__Leptotrichia|s__Leptotrichia_sp_oral_taxon_215|t__GCF_000469505 k__Ba
cteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiac
eae|g__Leptotrichia|s__Leptotrichia_sp_oral_taxon_225 k__Bacteria|p__Fusob
acteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptotri
chia|s__Leptotrichia_sp_oral_taxon_225|t__GCF_000469525 k__Bacteria|p__Fus
obacteria|c__Fusobacteriia|o__Fusobacteriales|f__Leptotrichiaceae|g__Leptot
richia|s__Leptotrichia_wadei|t__GCF_000373345 k__Bacteria|p__Fusobacteria|
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Leptotrichia_wadei|t__GCF_000469405 k__Bacteria|p__Proteobacteria|c__Alpha
proteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Brevundimonas|s__B
revundimonas_diminuta k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria
|o__Caulobacterales|f__Caulobacteraceae|g__Brevundimonas|s__Brevundimonas_d
iminuta|t__Brevundimonas_diminuta_unclassified k__Bacteria|p__Proteobacter
ia|c__Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Afipia|s__
Afipia_birgiae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhi
zobiales|f__Bradyrhizobiaceae|g__Afipia|s__Afipia_birgiae|t__GCF_000308295
k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brad
yrhizobiaceae|g__Afipia|s__Afipia_broomeae k__Bacteria|p__Proteobacteria|c
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ia_broomeae|t__GCF_000314675 k__Bacteria|p__Proteobacteria|c__Alphaproteob
acteria|o__Rhodobacterales k__Bacteria|p__Proteobacteria|c__Alphaproteobac
teria|o__Rhodobacterales|f__Rhodobacteraceae k__Bacteria|p__Proteobacteria
|c__Alphaproteobacteria|o__Rhodobacterales|f__Rhodobacteraceae|g__Paracoccu
s k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodobacterales|
f__Rhodobacteraceae|g__Paracoccus|s__Paracoccus_denitrificans k__Bacteria|
p__Proteobacteria|c__Alphaproteobacteria|o__Rhodobacterales|f__Rhodobactera
ceae|g__Paracoccus|s__Paracoccus_denitrificans|t__Paracoccus_denitrificans_
unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodo
bacterales|f__Rhodobacteraceae|g__Paracoccus|s__Paracoccus_unclassified k_
_Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Sphingomonadales|f__S
phingomonadaceae|g__Sphingobium k__Bacteria|p__Proteobacteria|c__Alphaprot
eobacteria|o__Sphingomonadales|f__Sphingomonadaceae|g__Sphingobium|s__Sphin
gobium_yanoikuyae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__
Sphingomonadales|f__Sphingomonadaceae|g__Sphingobium|s__Sphingobium_yanoiku
yae|t__Sphingobium_yanoikuyae_unclassified k__Bacteria|p__Proteobacteria|c
__Alphaproteobacteria|o__Sphingomonadales|f__Sphingomonadaceae|g__Sphingopy
xis k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Sphingomonadal
es|f__Sphingomonadaceae|g__Sphingopyxis|s__Sphingopyxis_unclassified k__Ba
cteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Alcali
genaceae|g__Pusillimonas k__Bacteria|p__Proteobacteria|c__Betaproteobacter
ia|o__Burkholderiales|f__Alcaligenaceae|g__Pusillimonas|s__Pusillimonas_unc
lassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholde
riales|f__Oxalobacteraceae|g__Herbaspirillum k__Bacteria|p__Proteobacteria
|c__Betaproteobacteria|o__Burkholderiales|f__Oxalobacteraceae|g__Herbaspiri
llum|s__Herbaspirillum_unclassified k__Bacteria|p__Proteobacteria|c__Betap
roteobacteria|o__Burkholderiales|f__Oxalobacteraceae|g__Massilia|s__Massili
a_timonae k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholde
riales|f__Oxalobacteraceae|g__Massilia|s__Massilia_timonae|t__GCF_000315425
k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neis
seriaceae|g__Eikenella|s__Eikenella_corrodens|t__GCF_000158615 k__Bacteria
|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g
__Eikenella|s__Eikenella_corrodens|t__GCF_000504685 k__Bacteria|p__Proteob
acteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Kingella|
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ria|o__Neisseriales|f__Neisseriaceae|g__Kingella|s__Kingella_denitrificans|
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isseriales|f__Neisseriaceae|g__Kingella|s__Kingella_kingae k__Bacteria|p__
Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Ki
ngella|s__Kingella_kingae|t__Kingella_kingae_unclassified k__Bacteria|p__P
roteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Kin
gella|s__Kingella_oralis k__Bacteria|p__Proteobacteria|c__Betaproteobacter
ia|o__Neisseriales|f__Neisseriaceae|g__Kingella|s__Kingella_oralis|t__GCF_0
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es|f__Neisseriaceae|g__Neisseria|s__Neisseria_bacilliformis k__Bacteria|p_
_Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__N
eisseria|s__Neisseria_bacilliformis|t__GCF_000194925 k__Bacteria|p__Proteo
bacteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Neisseri
a|s__Neisseria_lactamica k__Bacteria|p__Proteobacteria|c__Betaproteobacter
ia|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_lactamica|t__
Neisseria_lactamica_unclassified k__Bacteria|p__Proteobacteria|c__Betaprot
eobacteria|o__Neisseriales|f__Neisseriaceae|g__Neisseria|s__Neisseria_polys
accharea k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisserial
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5 k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Neisseriales|f__N
eisseriaceae|g__Neisseria|s__Neisseria_sp_GT4A_CT1 k__Bacteria|p__Proteoba
cteria|c__Betaproteobacteria|o__Neisseriales|f__Neisseriaceae|g__Neisseria|
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obacterales k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulf
obacterales|f__Desulfobulbaceae k__Bacteria|p__Proteobacteria|c__Deltaprot
eobacteria|o__Desulfobacterales|f__Desulfobulbaceae|g__Desulfobulbus k__Ba
cteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfobacterales|f__Des
ulfobulbaceae|g__Desulfobulbus|s__Desulfobulbus_sp_oral_taxon_041 k__Bacte
ria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfobacterales|f__Desulf
obulbaceae|g__Desulfobulbus|s__Desulfobulbus_sp_oral_taxon_041|t__Desulfobu
lbus_sp_oral_taxon_041_unclassified k__Bacteria|p__Proteobacteria|c__Epsil
onproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylobacte
r|s__Campylobacter_curvus k__Bacteria|p__Proteobacteria|c__Epsilonproteoba
cteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylobacter|s__Campy
lobacter_curvus|t__Campylobacter_curvus_unclassified k__Bacteria|p__Proteo
bacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteracea
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|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Cam
pylobacter|s__Campylobacter_gracilis|t__GCF_000175875 k__Bacteria|p__Prote
obacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacterace
ae|g__Campylobacter|s__Campylobacter_rectus k__Bacteria|p__Proteobacteria|
c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Camp
ylobacter|s__Campylobacter_rectus|t__GCF_000174175 k__Bacteria|p__Proteoba
cteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|
g__Campylobacter|s__Campylobacter_showae k__Bacteria|p__Proteobacteria|c__
Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylo
bacter|s__Campylobacter_showae|t__Campylobacter_showae_unclassified k__Bac
teria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Ca
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|f__Campylobacteraceae|g__Campylobacter|s__Campylobacter_showae|t__GCF_0003
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|p__Proteobacteria|c__Gammaproteobacteria|o__Cardiobacteriales|f__Cardiobac
teriaceae|g__Cardiobacterium|s__Cardiobacterium_hominis  k__Bacteria|p__Pro
teobacteria|c__Gammaproteobacteria|o__Cardiobacteriales|f__Cardiobacteriace
ae|g__Cardiobacterium|s__Cardiobacterium_hominis|t__GCF_000160655  k__Bacte
ria|p__Proteobacteria|c__Gammaproteobacteria|o__Cardiobacteriales|f__Cardio
bacteriaceae|g__Cardiobacterium|s__Cardiobacterium_valvarum  k__Bacteria|p_
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__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellacea
e|g__Aggregatibacter|s__Aggregatibacter_actinomycetemcomitans|t__Aggregatib
acter_actinomycetemcomitans_unclassified  k__Bacteria|p__Proteobacteria|c__
Gammaproteobacteria|o__Pasteurellales|f__Pasteurellaceae|g__Aggregatibacter
|s__Aggregatibacter_sp_oral_taxon_458  k__Bacteria|p__Proteobacteria|c__Gam
maproteobacteria|o__Pasteurellales|f__Pasteurellaceae|g__Aggregatibacter|s_
_Aggregatibacter_sp_oral_taxon_458|t__GCF_000466335  k__Bacteria|p__Proteob
acteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Ps
eudomonas|s__Pseudomonas_alcaligenes  k__Bacteria|p__Proteobacteria|c__Gamm
aproteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Ps
eudomonas_alcaligenes|t__Pseudomonas_alcaligenes_unclassified  k__Bacteria|
p__Spirochaetes|c__Spirochaetia|o__Spirochaetales|f__Spirochaetaceae|g__Tre
ponema|s__Treponema_denticola  k__Bacteria|p__Spirochaetes|c__Spirochaetia|
o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_denticola|t_
_Treponema_denticola_unclassified  k__Bacteria|p__Spirochaetes|c__Spirochae
tia|o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_lecithin
olyticum  k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spirochaetales|f__
Spirochaetaceae|g__Treponema|s__Treponema_lecithinolyticum|t__GCF_000468055
k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spirochaetales|f__Spirochaet
aceae|g__Treponema|s__Treponema_maltophilum  k__Bacteria|p__Spirochaetes|c_
_Spirochaetia|o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponem
a_maltophilum|t__GCF_000413055  k__Bacteria|p__Spirochaetes|c__Spirochaetia
|o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_medium  k__
Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spirochaetales|f__Spirochaetace
ae|g__Treponema|s__Treponema_medium|t__GCF_000413035  k__Bacteria|p__Spiroc
haetes|c__Spirochaetia|o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s_
_Treponema_socranskii  k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spiro
chaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_socranskii|t__GCF_00
0413015  k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spirochaetales|f__S
pirochaetaceae|g__Treponema|s__Treponema_socranskii|t__Treponema_socranskii
_unclassified  k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__Spirochaetale
s|f__Spirochaetaceae|g__Treponema|s__Treponema_vincentii  k__Bacteria|p__Sp
irochaetes|c__Spirochaetia|o__Spirochaetales|f__Spirochaetaceae|g__Treponem
a|s__Treponema_vincentii|t__GCF_000175895  k__Bacteria|p__Spirochaetes|c__S
pirochaetia|o__Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_
vincentii|t__GCF_000412995  k__Bacteria|p__Spirochaetes|c__Spirochaetia|o__
Spirochaetales|f__Spirochaetaceae|g__Treponema|s__Treponema_vincentii|t__Tr
eponema_vincentii_unclassified  k__Bacteria|p__Synergistetes|c__Synergistia
|o__Synergistales|f__Synergistaceae|g__Fretibacterium  k__Bacteria|p__Syner
gistetes|c__Synergistia|o__Synergistales|f__Synergistaceae|g__Fretibacteriu
m|s__Fretibacterium_fastidiosum  k__Bacteria|p__Synergistetes|c__Synergisti
a|o__Synergistales|f__Synergistaceae|g__Fretibacterium|s__Fretibacterium_fa
stidiosum|t__GCF_000210715  k__Bacteria|p__Synergistetes|c__Synergistia|o__
Synergistales|f__Synergistaceae|g__Jonquetella  k__Bacteria|p__Synergistete
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s|c__Synergistia|o__Synergistales|f__Synergistaceae|g__Jonquetella|s__Jonqu
etella_anthropi  k__Bacteria|p__Synergistetes|c__Synergistia|o__Synergistal
es|f__Synergistaceae|g__Jonquetella|s__Jonquetella_anthropi|t__Jonquetella_
anthropi_unclassified  k__Bacteria|p__Tenericutes|c__Mollicutes|o__Mycoplas
matales|f__Mycoplasmataceae|g__Mycoplasma|s__Mycoplasma_orale  k__Bacteria|
p__Tenericutes|c__Mollicutes|o__Mycoplasmatales|f__Mycoplasmataceae|g__Myco
plasma|s__Mycoplasma_orale|t__GCF_000420105  k__Eukaryota|p__Ascomycota|c__
Eurotiomycetes|o__Eurotiales|f__Aspergillaceae|g__Aspergillus  k__Eukaryota
|p__Ascomycota|c__Eurotiomycetes|o__Eurotiales|f__Aspergillaceae|g__Aspergi
llus|s__Aspergillus_fumigatus  k__Eukaryota|p__Ascomycota|c__Eurotiomycetes
|o__Eurotiales|f__Aspergillaceae|g__Aspergillus|s__Aspergillus_fumigatus|t_
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a|c__Exobasidiomycetes  k__Eukaryota|p__Basidiomycota|c__Exobasidiomycetes|
o__Malasseziales  k__Eukaryota|p__Basidiomycota|c__Exobasidiomycetes|o__Mal
asseziales|f__Malasseziaceae  k__Eukaryota|p__Basidiomycota|c__Exobasidiomy
cetes|o__Malasseziales|f__Malasseziaceae|g__Malassezia  k__Eukaryota|p__Bas
idiomycota|c__Exobasidiomycetes|o__Malasseziales|f__Malasseziaceae|g__Malas
sezia|s__Malassezia_globosa  k__Eukaryota|p__Basidiomycota|c__Exobasidiomyc
etes|o__Malasseziales|f__Malasseziaceae|g__Malassezia|s__Malassezia_globosa
|t__GCA_000181695  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actin
omycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_
178  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__
Actinomycetaceae|g__Actinomyces|s__Actinomyces_sp_oral_taxon_178|t__GCF_000
186685  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|
f__Brevibacteriaceae|g__Brevibacterium|s__Brevibacterium_casei  k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Brevibacteriacea
e|g__Brevibacterium|s__Brevibacterium_casei|t__GCF_000314575  k__Bacteria|p
__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Brevibacteriaceae|
g__Brevibacterium|s__Brevibacterium_mcbrellneri  k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Actinomycetales|f__Brevibacteriaceae|g__Brevibacte
rium|s__Brevibacterium_mcbrellneri|t__GCF_000178455  k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Coryn
ebacterium|s__Corynebacterium_lipophiloflavum  k__Bacteria|p__Actinobacteri
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rium|s__Corynebacterium_lipophiloflavum|t__GCF_000159635  k__Bacteria|p__Ac
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Corynebacterium|s__Corynebacterium_timonense  k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacter
ium|s__Corynebacterium_timonense|t__GCF_000312345  k__Bacteria|p__Actinobac
teria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Coryneb
acterium|s__Corynebacterium_urealyticum  k__Bacteria|p__Actinobacteria|c__A
ctinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s
__Corynebacterium_urealyticum|t__Corynebacterium_urealyticum_unclassified
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryn
ebacteriaceae|g__Corynebacterium|s__Corynebacterium_variabile  k__Bacteria|
p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriacea
e|g__Corynebacterium|s__Corynebacterium_variabile|t__GCF_000179395  k__Bact
eria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacter
iaceae|g__Turicella  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Act
inomycetales|f__Corynebacteriaceae|g__Turicella|s__Turicella_otitidis  k__B
acteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebac
teriaceae|g__Turicella|s__Turicella_otitidis|t__Turicella_otitidis_unclassi
fied  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f_
_Dietziaceae  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyce
tales|f__Dietziaceae|g__Dietzia  k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Actinomycetales|f__Dietziaceae|g__Dietzia|s__Dietzia_unclassified
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Geode
rmatophilaceae  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomy
cetales|f__Geodermatophilaceae|g__Geodermatophilaceae_unclassified  k__Bact
eria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordo
niaceae|g__Gordonia  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Act
inomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_terrae  k__Bacteria|p_
_Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gor
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donia|s__Gordonia_terrae|t__Gordonia_terrae_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae|g__Janibacter k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae|g__Janibacter|s__Janibacter_hoylei k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae|g__Janibacter|s__Janibacter_hoylei|t__GCF_000297495 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Leifsonia k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Leifsonia|s__Leifsonia_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_rhizophila k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_rhizophila|t__Kocuria_rhizophila_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micromonosporaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micromonosporaceae|g__Actinoplanes k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micromonosporaceae|g__Actinoplanes|s__Actinoplanes_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_phlei k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_phlei|t__GCF_000257725 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_smegmatis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_smegmatis|t__Mycobacterium_smegmatis_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardioidaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardioidaceae|g__Nocardioides k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardioidaceae|g__Nocardioides|s__Nocardioides_unclassified k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_3_1_40A k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_3_1_40A|t__GCF_000186105 k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcales_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Marinococcus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Marinococcus|s__Marinococcus_halotolerans k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Marinococcus|s__Marinococcus_halotolerans|t__GCF_000420725 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Facklamia|s__Facklamia_ignava k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Facklamia|s__Facklamia_ignava|t__GCF_000301055 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Facklamia|s__Facklamia_languida k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Facklamia|s__Facklamia_languida|t__GCF_000245795 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_crispatus|t__GCF_000301135 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_I_P16 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_I_P16|t__GCF_000479315 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_SK643 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_SK643|t__GCF_000259505 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_hathewayi|t__GCF_000235505 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Oribacterium|s__Oribacterium_sp_oral_taxon_078|t__GCF_000160135 k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Rhodospirillaceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Rhodospirillaceae|g__Rhodospirillum k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Rhodospirillaceae|g__Rhodospirillum|s__Rhodospirillum_unclassified k__Bacteria|p__Proteobacteria|c__A

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lphaproteobacteria|o__Sphingomonadales|f__Sphingomonadaceae|g__Sphingobium|
s__Sphingobium_unclassified  k__Bacteria|p__Proteobacteria|c__Deltaproteoba
cteria|o__Myxococcales  k__Bacteria|p__Proteobacteria|c__Deltaproteobacteri
a|o__Myxococcales|f__Myxococcaceae  k__Bacteria|p__Proteobacteria|c__Deltap
roteobacteria|o__Myxococcales|f__Myxococcaceae|g__Myxococcus  k__Bacteria|p
__Proteobacteria|c__Deltaproteobacteria|o__Myxococcales|f__Myxococcaceae|g_
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mmaproteobacteria|o__Alteromonadales|f__Alteromonadaceae  k__Bacteria|p__Pr
oteobacteria|c__Gammaproteobacteria|o__Alteromonadales|f__Alteromonadaceae|
g__Alishewanella  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__A
lteromonadales|f__Alteromonadaceae|g__Alishewanella|s__Alishewanella_unclas
sified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacte
riales|f__Enterobacteriaceae|g__Rahnella  k__Bacteria|p__Proteobacteria|c__
Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Rahnella|
s__Rahnella_aquatilis  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria
|o__Enterobacteriales|f__Enterobacteriaceae|g__Rahnella|s__Rahnella_aquatil
is|t__Rahnella_aquatilis_unclassified  k__Bacteria|p__Proteobacteria|c__Gam
maproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Rahnella|s__
Rahnella_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria
|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_indi
cus  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadale
s|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_indicus|t__Acinetobact
er_indicus_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacter
ia|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_ve
netianus  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomon
adales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_venetianus|t__Aci
netobacter_venetianus_unclassified  k__Bacteria|p__Proteobacteria|c__Gammap
roteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseu
domonas_extremaustralis  k__Bacteria|p__Proteobacteria|c__Gammaproteobacter
ia|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_ext
remaustralis|t__GCF_000242115  k__Bacteria|p__Proteobacteria|c__Gammaproteo
bacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomon
as_mandelii  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudo
monadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_mandelii|t__Pse
udomonas_mandelii_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaprote
obacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomo
nas_mendocina  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseu
domonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_mendocina|t__
Pseudomonas_mendocina_unclassified  k__Bacteria|p__Proteobacteria|c__Gammap
roteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseu
domonas_sp_313  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pse
udomonadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_sp_313|t__GC
F_000316965  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudo
monadales|f__Pseudomonadaceae|g__Pseudomonas|s__Pseudomonas_syringae  k__Ba
cteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseud
omonadaceae|g__Pseudomonas|s__Pseudomonas_syringae|t__GCF_000245455  k__Bac
teria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudo
monadaceae|g__Pseudomonas|s__Pseudomonas_thermotolerans  k__Bacteria|p__Pro
teobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Pseudomonadaceae|g
__Pseudomonas|s__Pseudomonas_thermotolerans|t__GCF_000364625  k__Bacteria|p
__Proteobacteria|c__Gammaproteobacteria|o__Xanthomonadales|f__Xanthomonadac
eae|g__Pseudoxanthomonas  k__Bacteria|p__Proteobacteria|c__Gammaproteobacte
ria|o__Xanthomonadales|f__Xanthomonadaceae|g__Pseudoxanthomonas|s__Pseudoxa
nthomonas_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacill
ales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_mundtii  k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Enteroc
occus|s__Enterococcus_mundtii|t__Enterococcus_mundtii_unclassified  k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Leu
conostoc|s__Leuconostoc_gasicomitatum  k__Bacteria|p__Firmicutes|c__Bacilli
|o__Lactobacillales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_gasic
omitatum|t__GCF_000196855  k__Bacteria|p__Proteobacteria|c__Gammaproteobact
eria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_
schindleri  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudom
onadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobacter_schindleri|t__A
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cinetobacter_schindleri_unclassified k__Archaea|p__Euryarchaeota|c__Methan
ococci|o__Methanococcales|f__Methanocaldococcaceae|g__Methanocaldococcus k
__Archaea|p__Euryarchaeota|c__Methanococci|o__Methanococcales|f__Methanocal
dococcaceae|g__Methanocaldococcus|s__Methanocaldococcus_unclassified k__Ba
cteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadace
ae|g__Parabacteroides|s__Parabacteroides_sp_20_3 k__Bacteria|p__Bacteroide
tes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Parabacteroide
s|s__Parabacteroides_sp_20_3|t__GCF_000162535 k__Bacteria|p__Firmicutes|c_
_Bacilli|o__Bacillales|f__Bacillaceae|g__Gracilibacillus k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Gracilibacillus|s__Grac
ilibacillus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobaci
llales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_amylovorus k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g
__Lactobacillus|s__Lactobacillus_amylovorus|t__Lactobacillus_amylovorus_unc
lassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lacto
bacillaceae|g__Lactobacillus|s__Lactobacillus_johnsonii k__Bacteria|p__Fir
micutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|
s__Lactobacillus_johnsonii|t__Lactobacillus_johnsonii_unclassified k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lac
tobacillus|s__Lactobacillus_saerimneri k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_
saerimneri|t__GCF_000317165 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactob
acillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_ultunensis
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae
|g__Lactobacillus|s__Lactobacillus_ultunensis|t__GCF_000159415 k__Bacteria
|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Pedioco
ccus|s__Pediococcus_lolii k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Lactobacillaceae|g__Pediococcus|s__Pediococcus_lolii|t__GCF_0003
19265 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostrid
iales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_oral_ta
xon_375 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostr
idiales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_oral_
taxon_375|t__GCF_000221565 k__Bacteria|p__Firmicutes|c__Negativicutes|o__S
elenomonadales|f__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_
sp_HPA0509 k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f
__Acidaminococcaceae|g__Acidaminococcus|s__Acidaminococcus_sp_HPA0509|t__GC
F_000411395 k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Camp
ylobacterales|f__Helicobacteraceae|g__Helicobacter|s__Helicobacter_pullorum
k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales
|f__Helicobacteraceae|g__Helicobacter|s__Helicobacter_pullorum|t__GCF_00015
5495 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteri
ales|f__Enterobacteriaceae|g__Candidatus_Moranella k__Bacteria|p__Proteoba
cteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g_
_Candidatus_Moranella|s__Candidatus_Moranella_endobia k__Bacteria|p__Prote
obacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae
|g__Candidatus_Moranella|s__Candidatus_Moranella_endobia|t__Candidatus_Mora
nella_endobia_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria
|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculum|s__Actinobaculum_s
chaalii k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Actinomycetaceae|g__Actinobaculum|s__Actinobaculum_schaalii|t__GCF_0004
11135 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Actinomycetaceae|g__Arcanobacterium k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Arcanobacterium|s__Ar
canobacterium_haemolyticum k__Bacteria|p__Actinobacteria|c__Actinobacteria
|o__Actinomycetales|f__Actinomycetaceae|g__Arcanobacterium|s__Arcanobacteri
um_haemolyticum|t__GCF_000092365 k__Bacteria|p__Actinobacteria|c__Actinoba
cteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Collinsella|s__Collinsel
la_sp_GD3 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteria
les|f__Coriobacteriaceae|g__Collinsella|s__Collinsella_sp_GD3|t__GCF_000333
815 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Coriobacteriales|f_
_Coriobacteriaceae|g__Olsenella|s__Olsenella_profusa k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Coriobacteriales|f__Coriobacteriaceae|g__Olse
nella|s__Olsenella_profusa|t__GCF_000468755 k__Bacteria|p__Bacteroidetes|c
__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroi

des_dorei|t__GCF_000156075 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__
Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_vulgatus|t__G
CF_000273295 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphyl
ococcaceae|g__Macrococcus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillal
es|f__Staphylococcaceae|g__Macrococcus|s__Macrococcus_caseolyticus k__Bact
eria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Macroco
ccus|s__Macrococcus_caseolyticus|t__GCF_000010585 k__Bacteria|p__Firmicute
s|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphy
lococcus_equorum k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Sta
phylococcaceae|g__Staphylococcus|s__Staphylococcus_equorum|t__Staphylococcu
s_equorum_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacill
ales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_cecorum k__Bacteri
a|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Enteroc
occus|s__Enterococcus_cecorum|t__Enterococcus_cecorum_unclassified k__Bact
eria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Ente
rococcus|s__Enterococcus_raffinosus k__Bacteria|p__Firmicutes|c__Bacilli|o
__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_raffin
osus|t__Enterococcus_raffinosus_unclassified k__Bacteria|p__Firmicutes|c__
Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Tetragenococcus k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Tetrag
enococcus|s__Tetragenococcus_halophilus k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Enterococcaceae|g__Tetragenococcus|s__Tetragenococ
cus_halophilus|t__GCF_000283615 k__Bacteria|p__Firmicutes|c__Bacilli|o__La
ctobacillales|f__Enterococcaceae|g__Vagococcus k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Vagococcus|s__Vagococcus
_lutrae k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroc
occaceae|g__Vagococcus|s__Vagococcus_lutrae|t__GCF_000498295 k__Bacteria|p
__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobaci
llus|s__Lactobacillus_buchneri k__Bacteria|p__Firmicutes|c__Bacilli|o__Lac
tobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_buchneri
|t__Lactobacillus_buchneri_unclassified k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus
_coryniformis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__L
actobacillaceae|g__Lactobacillus|s__Lactobacillus_coryniformis|t__Lactobaci
llus_coryniformis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lac
tobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_pentosus
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae
|g__Lactobacillus|s__Lactobacillus_pentosus|t__GCF_000271445 k__Bacteria|p
__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Leuconost
oc|s__Leuconostoc_gelidum k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Leuconostocaceae|g__Leuconostoc|s__Leuconostoc_gelidum|t__Leucon
ostoc_gelidum_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Leuconostocaceae|g__Oenococcus k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Lactobacillales|f__Leuconostocaceae|g__Oenococcus|s__Oenococcus_oe
ni k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostoca
ceae|g__Oenococcus|s__Oenococcus_oeni|t__Oenococcus_oeni_unclassified k__B
acteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__C
lostridium|s__Clostridium_colicanis k__Bacteria|p__Firmicutes|c__Clostridi
a|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_colicani
s|t__GCF_000371465 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiale
s|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_HGF2 k__Bacteria|p__F
irmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s
__Clostridium_sp_HGF2|t__GCF_000183585 k__Bacteria|p__Firmicutes|c__Clostr
idia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Clostridium_sp_SS
2_1 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridia
ceae|g__Clostridium|s__Clostridium_sp_SS2_1|t__GCF_000154545 k__Bacteria|p
__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Ince
rtae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_JC140 k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Se
dis|g__Peptoniphilus|s__Peptoniphilus_sp_JC140|t__GCF_000321025 k__Bacteri
a|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Lachnospiraceae|g__Blauti
a|s__Blautia_sp_KLE_1732 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostr
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65 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostrept

ococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_bifermentans k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptostreptococcaceae|g__Peptostreptococcaceae_noname|s__Clostridium_bifermentans|t__Clostridium_bifermentans_unclassified k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000154385 k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Oxalobacteraceae|g__Janthinobacterium k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Oxalobacteraceae|g__Janthinobacterium|s__Janthinobacterium_unclassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutterellaceae|g__Sutterella|s__Sutterella_parvirubra k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Sutterellaceae|g__Sutterella|s__Sutterella_parvirubra|t__GCF_000250875 k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylobacter|s__Campylobacter_coli k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Campylobacteraceae|g__Campylobacter|s__Campylobacter_coli|t__Campylobacter_coli_unclassified k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Helicobacteraceae|g__Helicobacter|s__Helicobacter_winghamensis k__Bacteria|p__Proteobacteria|c__Epsilonproteobacteria|o__Campylobacterales|f__Helicobacteraceae|g__Helicobacter|s__Helicobacter_winghamensis|t__GCF_000158455 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculum|s__Actinobaculum_urinale k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculum|s__Actinobaculum_urinale|t__GCF_000420445 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Cellulomonadaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Cellulomonadaceae|g__Cellulomonas k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Cellulomonadaceae|g__Cellulomonas|s__Cellulomonas_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_glucuronolyticum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_glucuronolyticum|t__Corynebacterium_glucuronolyticum_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_massiliense k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_massiliense|t__GCF_000420605 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium|s__Brachybacterium_muris k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium|s__Brachybacterium_muris|t__GCF_000338055 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium|s__Brachybacterium_paraconglomeratum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium|s__Brachybacterium_paraconglomeratum|t__GCF_000233655 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermacoccaceae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermacoccaceae|g__Kytococcus k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermacoccaceae|g__Kytococcus|s__Kytococcus_sedentarius k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermacoccaceae|g__Kytococcus|s__Kytococcus_sedentarius|t__GCF_000023925 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dietziaceae|g__Dietzia|s__Dietzia_cinnamea k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dietziaceae|g__Dietzia|s__Dietzia_cinnamea|t__GCF_000186325 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_aichiensis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_aichiensis|t__GCF_000332975 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Leucobacter k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Leucobacter|s__Leucobacter_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Microbacterium k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Microbacterium|s__Microbacterium_

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barkeri  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Microbacteriaceae|g__Microbacterium|s__Microbacterium_barkeri|t__GCF_00
0299315  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Microbacteriaceae|g__Microbacterium|s__Microbacterium_laevaniformans  k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microb
acteriaceae|g__Microbacterium|s__Microbacterium_laevaniformans|t__GCF_00025
5595  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f_
_Microbacteriaceae|g__Microbacterium|s__Microbacterium_maritypicum  k__Bact
eria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteri
aceae|g__Microbacterium|s__Microbacterium_maritypicum|t__GCF_000455825  k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococ
caceae|g__Kocuria|s__Kocuria_atrinae  k__Bacteria|p__Actinobacteria|c__Acti
nobacteria|o__Actinomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_atrin
ae|t__GCF_000286355  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Act
inomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_rhizophila|t__GCF_0002
14115  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Micrococcaceae|g__Micrococcus|s__Micrococcus_luteus|t__GCF_000176875  k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Propioni
bacteriaceae|g__Propionimicrobium  k__Bacteria|p__Actinobacteria|c__Actinob
acteria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionimicrobium|s__
Propionimicrobium_lymphophilum  k__Bacteria|p__Actinobacteria|c__Actinobact
eria|o__Actinomycetales|f__Propionibacteriaceae|g__Propionimicrobium|s__Pro
pionimicrobium_lymphophilum|t__GCF_000411175  k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Bifidobacteriales|f__Bifidobacteriaceae|g__Scardovia|
s__Scardovia_inopinata  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Bifidobacteriales|f__Bifidobacteriaceae|g__Scardovia|s__Scardovia_inopinata
|t__GCF_000163755  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__St
aphylococcaceae|g__Staphylococcus|s__Staphylococcus_lentus  k__Bacteria|p__
Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|
s__Staphylococcus_lentus|t__GCF_000286395  k__Bacteria|p__Firmicutes|c__Bac
illi|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus
_massiliensis  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphy
lococcaceae|g__Staphylococcus|s__Staphylococcus_massiliensis|t__Staphylococ
cus_massiliensis_unclassified  k__Bacteria|p__Firmicutes|c__Bacilli|o__Baci
llales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_pettenkofer
i  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|
g__Staphylococcus|s__Staphylococcus_pettenkoferi|t__GCF_000260275  k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylo
coccus|s__Staphylococcus_simulans  k__Bacteria|p__Firmicutes|c__Bacilli|o__
Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_simulan
s|t__Staphylococcus_simulans_unclassified  k__Bacteria|p__Firmicutes|c__Bac
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_xylosus  k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococ
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teria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Aeroc
occus|s__Aerococcus_urinae  k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Aerococcaceae|g__Aerococcus|s__Aerococcus_urinae|t__GCF_0001932
05  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__
Brucellaceae|g__Ochrobactrum  k__Bacteria|p__Proteobacteria|c__Alphaproteob
acteria|o__Rhizobiales|f__Brucellaceae|g__Ochrobactrum|s__Ochrobactrum_anth
ropi  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f
__Brucellaceae|g__Ochrobactrum|s__Ochrobactrum_anthropi|t__Ochrobactrum_ant
hropi_unclassified  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o_
_Rhizobiales|f__Methylobacteriaceae|g__Methylobacterium|s__Methylobacterium
_populi  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiale
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GCF_000019945  k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhod
ospirillales|f__Acetobacteraceae|g__Acetobacter  k__Bacteria|p__Proteobacte
ria|c__Alphaproteobacteria|o__Rhodospirillales|f__Acetobacteraceae|g__Aceto
bacter|s__Acetobacter_unclassified  k__Bacteria|p__Proteobacteria|c__Betapr
oteobacteria|o__Burkholderiales|f__Alcaligenaceae|g__Achromobacter  k__Bact
eria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Alcalige
naceae|g__Achromobacter|s__Achromobacter_piechaudii  k__Bacteria|p__Proteob
acteria|c__Betaproteobacteria|o__Burkholderiales|f__Alcaligenaceae|g__Achro
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mobacter|s__Achromobacter_piechaudii|t__Achromobacter_piechaudii_unclassifi
ed  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|
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ia|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Alcaligena
ceae|g__Oligella  k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Bu
rkholderiales|f__Alcaligenaceae|g__Oligella|s__Oligella_urethralis  k__Bact
eria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholderiales|f__Alcalige
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Proteobacteria|c__Gammaproteobacteria|o__Alteromonadales|f__Shewanellaceae
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonadales|f__
Shewanellaceae|g__Shewanella  k__Bacteria|p__Proteobacteria|c__Gammaproteob
acteria|o__Alteromonadales|f__Shewanellaceae|g__Shewanella|s__Shewanella_ba
ltica  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonada
les|f__Shewanellaceae|g__Shewanella|s__Shewanella_baltica|t__Shewanella_bal
tica_unclassified  k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__
Alteromonadales|f__Shewanellaceae|g__Shewanella|s__Shewanella_unclassified
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Pasteurellales|f__P
asteurellaceae|g__Pasteurella|s__Pasteurella_bettyae  k__Bacteria|p__Proteo
bacteria|c__Gammaproteobacteria|o__Pasteurellales|f__Pasteurellaceae|g__Pas
teurella|s__Pasteurella_bettyae|t__GCF_000262245  k__Bacteria|p__Proteobact
eria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetob
acter|s__Acinetobacter_haemolyticus  k__Bacteria|p__Proteobacteria|c__Gamma
proteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acin
etobacter_haemolyticus|t__Acinetobacter_haemolyticus_unclassified  k__Bacte
ria|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxell
aceae|g__Acinetobacter|s__Acinetobacter_parvus  k__Bacteria|p__Proteobacter
ia|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobac
ter|s__Acinetobacter_parvus|t__Acinetobacter_parvus_unclassified  k__Bacter
ia|p__Proteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxella
ceae|g__Acinetobacter|s__Acinetobacter_sp_CIP_102637  k__Bacteria|p__Proteo
bacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acin
etobacter|s__Acinetobacter_sp_CIP_102637|t__GCF_000368425  k__Bacteria|p__P
roteobacteria|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g_
_Acinetobacter|s__Acinetobacter_sp_CIP_64_7  k__Bacteria|p__Proteobacteria|
c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter
|s__Acinetobacter_sp_CIP_64_7|t__GCF_000369745  k__Bacteria|p__Proteobacter
ia|c__Gammaproteobacteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobac
ter|s__Acinetobacter_towneri  k__Bacteria|p__Proteobacteria|c__Gammaproteob
acteria|o__Pseudomonadales|f__Moraxellaceae|g__Acinetobacter|s__Acinetobact
er_towneri|t__GCF_000368785  k__Bacteria|p__Synergistetes|c__Synergistia|o_
_Synergistales|f__Synergistaceae|g__Jonquetella|s__Jonquetella_sp_BV3C21  k
__Bacteria|p__Synergistetes|c__Synergistia|o__Synergistales|f__Synergistace
ae|g__Jonquetella|s__Jonquetella_sp_BV3C21|t__GCF_000468895  k__Bacteria|p_
_Synergistetes|c__Synergistia|o__Synergistales|f__Synergistaceae|g__Jonquet
ella|s__Jonquetella_unclassified  k__Bacteria|p__Actinobacteria|c__Actinoba
cteria|o__Actinomycetales|f__Actinopolysporaceae  k__Bacteria|p__Actinobact
eria|c__Actinobacteria|o__Actinomycetales|f__Actinopolysporaceae|g__Actinop
olyspora  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetale
s|f__Actinopolysporaceae|g__Actinopolyspora|s__Actinopolyspora_unclassified
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Pseud
onocardiaceae  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyc
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ia|c__Actinobacteria|o__Actinomycetales|f__Pseudonocardiaceae|g__Pseudonoca
rdia|s__Pseudonocardia_unclassified  k__Bacteria|p__Actinobacteria|c__Actin
obacteria|o__Actinomycetales|f__Pseudonocardiaceae|g__Saccharomonospora  k_
_Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Pseudon
ocardiaceae|g__Saccharomonospora|s__Saccharomonospora_unclassified  k__Bact
eria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Pseudonocard
iaceae|g__Saccharopolyspora  k__Bacteria|p__Actinobacteria|c__Actinobacteri
a|o__Actinomycetales|f__Pseudonocardiaceae|g__Saccharopolyspora|s__Saccharo
polyspora_unclassified  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bact
eroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_cellulosilyticus|
t__GCF_000273015  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroida
les|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_pyogenes  k__Bacteria|p
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__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_pyogenes|t__GCF_000466505 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_D22 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_sp_D22|t__GCF_000163675 k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bacteroidaceae|g__Bacteroides|s__Bacteroides_stercoris|t__GCF_000413395 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Anoxybacillus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Anoxybacillus|s__Anoxybacillus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_amyloliquefaciens k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_amyloliquefaciens|t__Bacillus_amyloliquefaciens_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_megaterium k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_megaterium|t__Bacillus_megaterium_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_pumilus
k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_pumilus|t__Bacillus_pumilus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Aerococcus|s__Aerococcus_viridans|t__GCF_000262085 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_equicursoris k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_equicursoris|t__GCF_000312645
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k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_parauberis|t__Streptococcus_parauberis_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_GMD4S k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_sp_GMD4S|t__GCF_000296955 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Cetobacterium k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Cetobacterium|s__Cetobacterium_somerae k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Cetobacterium|s__Cetobacterium_somerae|t__GCF_000479045 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_varium k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_varium|t__GCF_000159915 k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovibrionales|f__Desulfovibrionaceae|g__Bilophila|s__Bilophila_sp_4_1_30 k__Bacteria|p__Proteobacteria|c__Deltaproteobacteria|o__Desulfovibrionales|f__Desulfovibrionaceae|g__Bilophila|s__Bilophila_sp_4_1_30|t__GCF_000224655 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Aeromonadaceae|g__Aeromonas|s__Aeromonas_veronii k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Aeromonadales|f__Aeromonadaceae|g__Aeromonas|s__Aeromonas_veronii|t__Aeromonas_veronii_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Escherichia|s__Escherichia_albertii k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Escherichia|s__Escherichia_albertii|t__Escherichia_albertii_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Escherichia|s__Escherichia_fergusonii k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Escherichia|s__Escherichia_fergusonii|t__Escherichia_fergusonii_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Klebsiella|s__Klebsiella_variicola k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Klebsiella|s__Klebsiella_variicola|t__GCF_000025465 k__Bacteri

a|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enteroba
cteriaceae|g__Kosakonia k__Bacteria|p__Proteobacteria|c__Gammaproteobacter
ia|o__Enterobacteriales|f__Enterobacteriaceae|g__Kosakonia|s__Kosakonia_rad
icincitans k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterob
acteriales|f__Enterobacteriaceae|g__Kosakonia|s__Kosakonia_radicincitans|t_
_GCF_000280495 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Ent
erobacteriales|f__Enterobacteriaceae|g__Pectobacterium|s__Pectobacterium_ca
rotovorum k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enteroba
cteriales|f__Enterobacteriaceae|g__Pectobacterium|s__Pectobacterium_carotov
orum|t__Pectobacterium_carotovorum_unclassified k__Bacteria|p__Proteobacte
ria|c__Gammaproteobacteria|o__Enterobacteriales|f__Enterobacteriaceae|g__Pl
esiomonas k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enteroba
cteriales|f__Enterobacteriaceae|g__Plesiomonas|s__Plesiomonas_shigelloides
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteriales|f
__Enterobacteriaceae|g__Plesiomonas|s__Plesiomonas_shigelloides|t__GCF_0003
92595 k__Archaea|p__Euryarchaeota|c__Halobacteria k__Archaea|p__Euryarcha
eota|c__Halobacteria|o__Halobacteriales k__Archaea|p__Euryarchaeota|c__Hal
obacteria|o__Halobacteriales|f__Halobacteriaceae k__Archaea|p__Euryarchaeo
ta|c__Halobacteria|o__Halobacteriales|f__Halobacteriaceae|g__Halococcus k_
_Archaea|p__Euryarchaeota|c__Halobacteria|o__Halobacteriales|f__Halobacteri
aceae|g__Halococcus|s__Halococcus_unclassified k__Bacteria|p__Actinobacter
ia|c__Actinobacteria|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculu
m|s__Actinobaculum_massiliense k__Bacteria|p__Actinobacteria|c__Actinobact
eria|o__Actinomycetales|f__Actinomycetaceae|g__Actinobaculum|s__Actinobacul
um_massiliense|t__GCF_000315465 k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Actinomycetales|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_
coleocanis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyceta
les|f__Actinomycetaceae|g__Actinomyces|s__Actinomyces_coleocanis|t__GCF_000
159015 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|
f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_ammoniagenes k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryne
bacteriaceae|g__Corynebacterium|s__Corynebacterium_ammoniagenes|t__GCF_0001
64115 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f
__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_callunae k__Bac
teria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacte
riaceae|g__Corynebacterium|s__Corynebacterium_callunae|t__GCF_000344785 k_
_Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryneb
acteriaceae|g__Corynebacterium|s__Corynebacterium_casei k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__C
orynebacterium|s__Corynebacterium_casei|t__GCF_000234765 k__Bacteria|p__Ac
tinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__
Corynebacterium|s__Corynebacterium_doosanense k__Bacteria|p__Actinobacteri
a|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacte
rium|s__Corynebacterium_doosanense|t__GCF_000372245 k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Coryn
ebacterium|s__Corynebacterium_efficiens k__Bacteria|p__Actinobacteria|c__A
ctinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|s
__Corynebacterium_efficiens|t__Corynebacterium_efficiens_unclassified k__B
acteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebac
teriaceae|g__Corynebacterium|s__Corynebacterium_glutamicum k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g
__Corynebacterium|s__Corynebacterium_glutamicum|t__Corynebacterium_glutamic
um_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinom
ycetales|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_mastit
idis k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f_
_Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_mastitidis|t__GCF
_000375365 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyceta
les|f__Corynebacteriaceae|g__Corynebacterium|s__Corynebacterium_nuruki k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryneba
cteriaceae|g__Corynebacterium|s__Corynebacterium_nuruki|t__GCF_000213935 k
__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Coryne
bacteriaceae|g__Corynebacterium|s__Corynebacterium_resistens k__Bacteria|p
__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae
|g__Corynebacterium|s__Corynebacterium_resistens|t__GCF_000177535 k__Bacte

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ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteri
aceae|g__Corynebacterium|s__Corynebacterium_sp_HFH0082  k__Bacteria|p__Acti
nobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Co
rynebacterium|s__Corynebacterium_sp_HFH0082|t__GCF_000411235  k__Bacteria|p
__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae
|g__Corynebacterium|s__Corynebacterium_sp_KPL1824  k__Bacteria|p__Actinobac
teria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Coryneb
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|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacter
ium|s__Corynebacterium_sp_KPL1859|t__GCF_000478015  k__Bacteria|p__Actinoba
cteria|c__Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Coryne
bacterium|s__Corynebacterium_ulceribovis  k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Actinomycetales|f__Corynebacteriaceae|g__Corynebacterium|
s__Corynebacterium_ulceribovis|t__GCF_000372445  k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacte
rium|s__Brachybacterium_squillarum  k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Actinomycetales|f__Dermabacteraceae|g__Brachybacterium|s__Brach
ybacterium_squillarum|t__GCF_000225825  k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Dermacoccaceae|g__Dermacoccus  k__Bacter
ia|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Dermacoccaceae
|g__Dermacoccus|s__Dermacoccus_sp_Ellin185  k__Bacteria|p__Actinobacteria|c
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macoccus_sp_Ellin185|t__GCF_000152185  k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Actinomycetales|f__Geodermatophilaceae|g__Blastococcus  k__B
acteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Geodermat
ophilaceae|g__Blastococcus|s__Blastococcus_saxobsidens  k__Bacteria|p__Acti
nobacteria|c__Actinobacteria|o__Actinomycetales|f__Geodermatophilaceae|g__B
lastococcus|s__Blastococcus_saxobsidens|t__GCF_000284015  k__Bacteria|p__Ac
tinobacteria|c__Actinobacteria|o__Actinomycetales|f__Geodermatophilaceae|g_
_Geodermatophilus  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actin
omycetales|f__Geodermatophilaceae|g__Geodermatophilus|s__Geodermatophilus_o
bscurus  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
|f__Geodermatophilaceae|g__Geodermatophilus|s__Geodermatophilus_obscurus|t_
_GCF_000025345  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomy
cetales|f__Geodermatophilaceae|g__Modestobacter  k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Actinomycetales|f__Geodermatophilaceae|g__Modestob
acter|s__Modestobacter_multiseptatus  k__Bacteria|p__Actinobacteria|c__Acti
nobacteria|o__Actinomycetales|f__Geodermatophilaceae|g__Modestobacter|s__Mo
destobacter_multiseptatus|t__GCF_000306785  k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia
_bronchialis  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyce
tales|f__Gordoniaceae|g__Gordonia|s__Gordonia_bronchialis|t__GCF_000024785
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordo
niaceae|g__Gordonia|s__Gordonia_otitidis  k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_o
titidis|t__GCF_000248075  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o
__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_paraffinivorans
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordo
niaceae|g__Gordonia|s__Gordonia_paraffinivorans|t__GCF_000344155  k__Bacter
ia|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g
__Gordonia|s__Gordonia_polyisoprenivorans  k__Bacteria|p__Actinobacteria|c_
_Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_
polyisoprenivorans|t__Gordonia_polyisoprenivorans_unclassified  k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__
Gordonia|s__Gordonia_rubripertincta  k__Bacteria|p__Actinobacteria|c__Actin
obacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_rubrip
ertincta|t__GCF_000327325  k__Bacteria|p__Actinobacteria|c__Actinobacteria|
o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordonia_soli  k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g_
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c__Actinobacteria|o__Actinomycetales|f__Gordoniaceae|g__Gordonia|s__Gordoni
a_sputi  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales
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|f__Gordoniaceae|g__Gordonia|s__Gordonia_sputi|t__GCF_000248055 k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiac
eae|g__Ornithinimicrobium k__Bacteria|p__Actinobacteria|c__Actinobacteria|
o__Actinomycetales|f__Intrasporangiaceae|g__Ornithinimicrobium|s__Ornithini
microbium_pekingense k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Ac
tinomycetales|f__Intrasporangiaceae|g__Ornithinimicrobium|s__Ornithinimicro
bium_pekingense|t__GCF_000421185 k__Bacteria|p__Actinobacteria|c__Actinoba
cteria|o__Actinomycetales|f__Intrasporangiaceae|g__Serinicoccus k__Bacteri
a|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiac
eae|g__Serinicoccus|s__Serinicoccus_profundi k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae|g__Serinicoccus
|s__Serinicoccus_profundi|t__GCF_000224715 k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Actinomycetales|f__Intrasporangiaceae|g__Serinicoccus|s
__Serinicoccus_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteri
a|o__Actinomycetales|f__Microbacteriaceae|g__Agrococcus k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Ag
rococcus|s__Agrococcus_pavilionensis k__Bacteria|p__Actinobacteria|c__Acti
nobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Agrococcus|s__Agrococ
cus_pavilionensis|t__GCF_000400485 k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Actinomycetales|f__Microbacteriaceae|g__Agromyces k__Bacteria|
p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae
|g__Agromyces|s__Agromyces_unclassified k__Bacteria|p__Actinobacteria|c__A
ctinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Clavibacter k__Ba
cteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacte
riaceae|g__Clavibacter|s__Clavibacter_michiganensis k__Bacteria|p__Actinob
acteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Clavib
acter|s__Clavibacter_michiganensis|t__Clavibacter_michiganensis_unclassifie
d k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mi
crobacteriaceae|g__Curtobacterium k__Bacteria|p__Actinobacteria|c__Actinob
acteria|o__Actinomycetales|f__Microbacteriaceae|g__Curtobacterium|s__Curtob
acterium_flaccumfaciens k__Bacteria|p__Actinobacteria|c__Actinobacteria|o_
_Actinomycetales|f__Microbacteriaceae|g__Curtobacterium|s__Curtobacterium_f
laccumfaciens|t__GCF_000349565 k__Bacteria|p__Actinobacteria|c__Actinobact
eria|o__Actinomycetales|f__Microbacteriaceae|g__Curtobacterium|s__Curtobact
erium_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Acti
nomycetales|f__Microbacteriaceae|g__Leifsonia|s__Leifsonia_aquatica k__Bac
teria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacter
iaceae|g__Leifsonia|s__Leifsonia_aquatica|t__GCF_000469485 k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g_
_Leucobacter|s__Leucobacter_chromiiresistens k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Actinomycetales|f__Microbacteriaceae|g__Leucobacter|s
__Leucobacter_chromiiresistens|t__GCF_000231305 k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Arthrobacter
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micro
coccaceae|g__Arthrobacter|s__Arthrobacter_arilaitensis k__Bacteria|p__Acti
nobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Arthro
bacter|s__Arthrobacter_arilaitensis|t__GCF_000197735 k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococcaceae|g__Arthroba
cter|s__Arthrobacter_chlorophenolicus k__Bacteria|p__Actinobacteria|c__Act
inobacteria|o__Actinomycetales|f__Micrococcaceae|g__Arthrobacter|s__Arthrob
acter_chlorophenolicus|t__GCF_000022025 k__Bacteria|p__Actinobacteria|c__A
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izophila|t__GCF_000010285 k__Bacteria|p__Actinobacteria|c__Actinobacteria|
o__Actinomycetales|f__Micrococcaceae|g__Kocuria|s__Kocuria_sp_UCD_OTCP k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micrococ
caceae|g__Kocuria|s__Kocuria_sp_UCD_OTCP|t__GCF_000349605 k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Actinomycetales|f__Micromonosporaceae|g_
_Salinispora k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyce
tales|f__Micromonosporaceae|g__Salinispora|s__Salinispora_unclassified k__
Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobact
eriaceae|g__Mycobacterium|s__Mycobacterium_avium k__Bacteria|p__Actinobact
eria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacter
ium|s__Mycobacterium_avium|t__Mycobacterium_avium_unclassified k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae

|g__Mycobacterium|s__Mycobacterium_fortuitum k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|
s__Mycobacterium_fortuitum|t__GCF_000295855 k__Bacteria|p__Actinobacteria|
c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s
__Mycobacterium_gilvum k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_gilvu
m|t__Mycobacterium_gilvum_unclassified k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Myc
obacterium_intracellulare k__Bacteria|p__Actinobacteria|c__Actinobacteria|
o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_in
tracellulare|t__Mycobacterium_intracellulare_unclassified k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__M
ycobacterium|s__Mycobacterium_mageritense k__Bacteria|p__Actinobacteria|c_
_Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__
Mycobacterium_mageritense|t__GCF_000233935 k__Bacteria|p__Actinobacteria|c
__Actinobacteria|o__Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s_
_Mycobacterium_tusciae k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__
Actinomycetales|f__Mycobacteriaceae|g__Mycobacterium|s__Mycobacterium_tusci
ae|t__GCF_000243415 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Act
inomycetales|f__Nakamurellaceae k__Bacteria|p__Actinobacteria|c__Actinobac
teria|o__Actinomycetales|f__Nakamurellaceae|g__Nakamurella k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nakamurellaceae|g__N
akamurella|s__Nakamurella_multipartita k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Nakamurellaceae|g__Nakamurella|s__Nakamu
rella_multipartita|t__GCF_000024365 k__Bacteria|p__Actinobacteria|c__Actin
obacteria|o__Actinomycetales|f__Nocardiaceae k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Actinomycetales|f__Nocardiaceae|g__Nocardia k__Bacte
ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardiaceae|
g__Nocardia|s__Nocardia_farcinica k__Bacteria|p__Actinobacteria|c__Actinob
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nomycetales|f__Nocardiaceae|g__Rhodococcus k__Bacteria|p__Actinobacteria|c
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coccus_equi k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycet
ales|f__Nocardiaceae|g__Rhodococcus|s__Rhodococcus_equi|t__Rhodococcus_equi
_unclassified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomyc
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ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardiaceae|
g__Rhodococcus|s__Rhodococcus_erythropolis|t__Rhodococcus_erythropolis_uncl
assified k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetale
s|f__Nocardiaceae|g__Rhodococcus|s__Rhodococcus_qingshengii k__Bacteria|p_
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dococcus|s__Rhodococcus_qingshengii|t__GCF_000341815 k__Bacteria|p__Actino
bacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardioidaceae|g__Kribbel
la k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__N
ocardioidaceae|g__Kribbella|s__Kribbella_unclassified k__Bacteria|p__Actin
obacteria|c__Actinobacteria|o__Actinomycetales|f__Nocardioidaceae|g__Nocard
ioidaceae_noname k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Nocardioidaceae|g__Nocardioidaceae_noname|s__Nocardioidaceae_b
acterium_Broad_1 k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Nocardioidaceae|g__Nocardioidaceae_noname|s__Nocardioidaceae_b
acterium_Broad_1|t__GCF_000192415 k__Bacteria|p__Actinobacteria|c__Actinob
acteria|o__Actinomycetales|f__Nocardiopsaceae k__Bacteria|p__Actinobacteri
a|c__Actinobacteria|o__Actinomycetales|f__Nocardiopsaceae|g__Nocardiopsis
k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Nocar
diopsaceae|g__Nocardiopsis|s__Nocardiopsis_alba k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Actinomycetales|f__Nocardiopsaceae|g__Nocardiopsis
|s__Nocardiopsis_alba|t__Nocardiopsis_alba_unclassified k__Bacteria|p__Act
inobacteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g_
_Propionibacterium|s__Propionibacterium_sp_HGH0353 k__Bacteria|p__Actinoba
cteria|c__Actinobacteria|o__Actinomycetales|f__Propionibacteriaceae|g__Prop
ionibacterium|s__Propionibacterium_sp_HGH0353|t__GCF_000413335 k__Bacteria
|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Pseudonocardiace
ae|g__Actinomycetospora k__Bacteria|p__Actinobacteria|c__Actinobacteria|o_

```
_Actinomycetales|f__Pseudonocardiaceae|g__Actinomycetospora|s__Actinomyceto
spora_chiangmaiensis  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Ac
tinomycetales|f__Pseudonocardiaceae|g__Actinomycetospora|s__Actinomycetospo
ra_chiangmaiensis|t__GCF_000379625  k__Bacteria|p__Actinobacteria|c__Actino
bacteria|o__Actinomycetales|f__Sanguibacteraceae  k__Bacteria|p__Actinobact
eria|c__Actinobacteria|o__Actinomycetales|f__Sanguibacteraceae|g__Sanguibac
ter  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__
Sanguibacteraceae|g__Sanguibacter|s__Sanguibacter_keddieii  k__Bacteria|p__
Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Sanguibacteraceae|g_
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teria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Segnilipara
ceae|g__Segniliparus  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Ac
tinomycetales|f__Segniliparaceae|g__Segniliparus|s__Segniliparus_unclassifi
ed  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__S
treptomycetaceae  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actino
mycetales|f__Streptomycetaceae|g__Streptomyces  k__Bacteria|p__Actinobacter
ia|c__Actinobacteria|o__Actinomycetales|f__Streptomycetaceae|g__Streptomyce
s|s__Streptomyces_chartreusis  k__Bacteria|p__Actinobacteria|c__Actinobacte
ria|o__Actinomycetales|f__Streptomycetaceae|g__Streptomyces|s__Streptomyces
_chartreusis|t__Streptomyces_chartreusis_unclassified  k__Bacteria|p__Actin
obacteria|c__Actinobacteria|o__Actinomycetales|f__Streptomycetaceae|g__Stre
ptomyces|s__Streptomyces_coelicoflavus  k__Bacteria|p__Actinobacteria|c__Ac
tinobacteria|o__Actinomycetales|f__Streptomycetaceae|g__Streptomyces|s__Str
eptomyces_coelicoflavus|t__GCF_000241835  k__Bacteria|p__Actinobacteria|c__
Actinobacteria|o__Actinomycetales|f__Streptosporangiaceae  k__Bacteria|p__A
ctinobacteria|c__Actinobacteria|o__Actinomycetales|f__Streptosporangiaceae|
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bacteria|c__Actinobacteria|o__Actinomycetales|f__Thermomonosporaceae|g__The
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ria|o__Actinomycetales|f__Tsukamurellaceae  k__Bacteria|p__Actinobacteria|c
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_Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Tsukamu
rellaceae|g__Tsukamurella|s__Tsukamurella_unclassified  k__Bacteria|p__Acti
nobacteria|c__Actinobacteria|o__Actinomycetales|f__Williamsiaceae  k__Bacte
ria|p__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Williamsiacea
e|g__Williamsia  k__Bacteria|p__Actinobacteria|c__Actinobacteria|o__Actinom
ycetales|f__Williamsiaceae|g__Williamsia|s__Williamsia_sp_D3  k__Bacteria|p
__Actinobacteria|c__Actinobacteria|o__Actinomycetales|f__Williamsiaceae|g__
Williamsia|s__Williamsia_sp_D3|t__GCF_000506245  k__Bacteria|p__Actinobacte
ria|c__Actinobacteria|o__Solirubrobacterales  k__Bacteria|p__Actinobacteria
|c__Actinobacteria|o__Solirubrobacterales|f__Solirubrobacterales_unclassifi
ed  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Bactero
idaceae|g__Bacteroides|s__Bacteroides_vulgatus|t__GCF_000012825  k__Bacteri
a|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g_
_Porphyromonas|s__Porphyromonas_crevioricanis  k__Bacteria|p__Bacteroidetes
|c__Bacteroidia|o__Bacteroidales|f__Porphyromonadaceae|g__Porphyromonas|s__
Porphyromonas_crevioricanis|t__GCF_000509245  k__Bacteria|p__Bacteroidetes|
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orphyromonas_macacae  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacter
oidales|f__Porphyromonadaceae|g__Porphyromonas|s__Porphyromonas_macacae|t__
GCF_000379945  k__Bacteria|p__Bacteroidetes|c__Bacteroidia|o__Bacteroidales
|f__Prevotellaceae|g__Prevotella|s__Prevotella_disiens|t__GCF_000467875  k_
_Bacteria|p__Bacteroidetes|c__Cytophagia  k__Bacteria|p__Bacteroidetes|c__C
ytophagia|o__Cytophagales  k__Bacteria|p__Bacteroidetes|c__Cytophagia|o__Cy
tophagales|f__Cytophagaceae  k__Bacteria|p__Bacteroidetes|c__Cytophagia|o__
Cytophagales|f__Cytophagaceae|g__Cytophaga  k__Bacteria|p__Bacteroidetes|c_
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ophagaceae|g__Hymenobacter  k__Bacteria|p__Bacteroidetes|c__Cytophagia|o__C
ytophagales|f__Cytophagaceae|g__Hymenobacter|s__Hymenobacter_aerophilus  k_
_Bacteria|p__Bacteroidetes|c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g
__Hymenobacter|s__Hymenobacter_aerophilus|t__GCF_000382225  k__Bacteria|p__
```

Bacteroidetes|c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g__Hymenobacte
r|s__Hymenobacter_norwichensis k__Bacteria|p__Bacteroidetes|c__Cytophagia|
o__Cytophagales|f__Cytophagaceae|g__Hymenobacter|s__Hymenobacter_norwichens
is|t__GCF_000420705 k__Bacteria|p__Bacteroidetes|c__Cytophagia|o__Cytophag
ales|f__Cytophagaceae|g__Hymenobacter|s__Hymenobacter_unclassified k__Bact
eria|p__Bacteroidetes|c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g__Pon
tibacter k__Bacteria|p__Bacteroidetes|c__Cytophagia|o__Cytophagales|f__Cyt
ophagaceae|g__Pontibacter|s__Pontibacter_unclassified k__Bacteria|p__Bacte
roidetes|c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g__Spirosoma k__Ba
cteria|p__Bacteroidetes|c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g__S
pirosoma|s__Spirosoma_linguale k__Bacteria|p__Bacteroidetes|c__Cytophagia|
o__Cytophagales|f__Cytophagaceae|g__Spirosoma|s__Spirosoma_linguale|t__GCF_
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tophagaceae|g__Spirosoma|s__Spirosoma_luteum k__Bacteria|p__Bacteroidetes|
c__Cytophagia|o__Cytophagales|f__Cytophagaceae|g__Spirosoma|s__Spirosoma_lu
teum|t__GCF_000374065 k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Fl
avobacteriales|f__Blattabacteriaceae k__Bacteria|p__Bacteroidetes|c__Flavo
bacteriia|o__Flavobacteriales|f__Blattabacteriaceae|g__Blattabacterium k__
Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Blattaba
cteriaceae|g__Blattabacterium|s__Blattabacterium_sp_Blattella_germanica k_
_Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Blattab
acteriaceae|g__Blattabacterium|s__Blattabacterium_sp_Blattella_germanica|t_
_GCF_000022605 k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobact
eriales|f__Blattabacteriaceae|g__Blattabacterium|s__Blattabacterium_unclass
ified k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f
__Flavobacteriaceae|g__Capnocytophaga|s__Capnocytophaga_canimorsus k__Bact
eria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteri
aceae|g__Capnocytophaga|s__Capnocytophaga_canimorsus|t__GCF_000220625 k__B
acteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobact
eriaceae|g__Capnocytophaga|s__Capnocytophaga_cynodegmi k__Bacteria|p__Bact
eroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Cap
nocytophaga|s__Capnocytophaga_cynodegmi|t__GCF_000379185 k__Bacteria|p__Ba
cteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__C
hryseobacterium|s__Chryseobacterium_taeanense k__Bacteria|p__Bacteroidetes
|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Chryseobacte
rium|s__Chryseobacterium_taeanense|t__GCF_000304615 k__Bacteria|p__Bactero
idetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Flavob
acteriaceae_noname k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavo
bacteriales|f__Flavobacteriaceae|g__Flavobacteriaceae_noname|s__Flavobacter
iaceae_bacterium_3519_10 k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o_
_Flavobacteriales|f__Flavobacteriaceae|g__Flavobacteriaceae_noname|s__Flavo
bacteriaceae_bacterium_3519_10|t__GCF_000023725 k__Bacteria|p__Bacteroidet
es|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Gillisia
k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavo
bacteriaceae|g__Gillisia|s__Gillisia_unclassified k__Bacteria|p__Bacteroid
etes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Myroides
k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavo
bacteriaceae|g__Myroides|s__Myroides_odoratus k__Bacteria|p__Bacteroidetes
|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Myroides|s__
Myroides_odoratus|t__GCF_000243275 k__Bacteria|p__Bacteroidetes|c__Flavoba
cteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Myroides|s__Myroides_un
classified k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteria
les|f__Flavobacteriaceae|g__Weeksella k__Bacteria|p__Bacteroidetes|c__Flav
obacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Weeksella|s__Weeksel
la_virosa k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacterial
es|f__Flavobacteriaceae|g__Weeksella|s__Weeksella_virosa|t__GCF_000189415
k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavo
bacteriales_noname k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavo
bacteriales|f__Flavobacteriales_noname|g__Flavobacteriales_noname k__Bacte
ria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteria
les_noname|g__Flavobacteriales_noname|s__Candidatus_Uzinura_diaspidicola k
__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavobacteriales|f__Flavob
acteriales_noname|g__Flavobacteriales_noname|s__Candidatus_Uzinura_diaspidi
cola|t__GCF_000331975 k__Bacteria|p__Bacteroidetes|c__Sphingobacteriia|o__

Sphingobacteriales|f__Sphingobacteriaceae|g__Pedobacter|s__Pedobacter_agri
k__Bacteria|p__Bacteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|f__S
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cteria|p__Bacteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|f__Sphing
obacteriaceae|g__Sphingobacterium|s__Sphingobacterium_spiritivorum k__Bact
eria|p__Bacteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|f__Sphingob
acteriaceae|g__Sphingobacterium|s__Sphingobacterium_spiritivorum|t__Sphingo
bacterium_spiritivorum_unclassified k__Bacteria|p__Bacteroidetes|c__Sphing
obacteriia|o__Sphingobacteriales|f__Sphingobacteriales_noname k__Bacteria|
p__Bacteroidetes|c__Sphingobacteriia|o__Sphingobacteriales|f__Sphingobacter
iales_noname|g__Niabella k__Bacteria|p__Bacteroidetes|c__Sphingobacteriia|
o__Sphingobacteriales|f__Sphingobacteriales_noname|g__Niabella|s__Niabella_
unclassified k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscil
latoriales|f__Oscillatoriales_noname|g__Arthrospira k__Bacteria|p__Cyanoba
cteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Oscillatoriales_noname
|g__Arthrospira|s__Arthrospira_unclassified k__Bacteria|p__Cyanobacteria|c
__Cyanobacteria_noname|o__Oscillatoriales|f__Oscillatoriales_noname|g__Crin
alium k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoria
les|f__Oscillatoriales_noname|g__Crinalium|s__Crinalium_epipsammum k__Bact
eria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Oscilla
toriales_noname|g__Crinalium|s__Crinalium_epipsammum|t__GCF_000317495 k__B
acteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Osci
llatoriales_noname|g__Microcoleus|s__Microcoleus_vaginatus k__Bacteria|p__
Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Oscillatoriales
_noname|g__Microcoleus|s__Microcoleus_vaginatus|t__GCF_000214075 k__Bacter
ia|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Oscillato
riales_noname|g__Oscillatoria k__Bacteria|p__Cyanobacteria|c__Cyanobacteri
a_noname|o__Oscillatoriales|f__Oscillatoriales_noname|g__Oscillatoria|s__Os
cillatoria_acuminata k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|
o__Oscillatoriales|f__Oscillatoriales_noname|g__Oscillatoria|s__Oscillatori
a_acuminata|t__GCF_000317105 k__Bacteria|p__Cyanobacteria|c__Cyanobacteria
_noname|o__Oscillatoriales|f__Oscillatoriales_noname|g__Oscillatoria|s__Osc
illatoria_nigro_viridis k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_nona
me|o__Oscillatoriales|f__Oscillatoriales_noname|g__Oscillatoria|s__Oscillat
oria_nigro_viridis|t__GCF_000317475 k__Bacteria|p__Cyanobacteria|c__Cyanob
acteria_noname|o__Oscillatoriales|f__Oscillatoriales_noname|g__Oscillatoria
|s__Oscillatoria_unclassified k__Bacteria|p__Cyanobacteria|c__Cyanobacteri
a_noname|o__Oscillatoriales|f__Oscillatoriales_noname|g__Pseudanabaena k__
Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Oscillatoriales|f__Osc
illatoriales_noname|g__Pseudanabaena|s__Pseudanabaena_unclassified k__Bact
eria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Pleurocapsales k__Bacteri
a|p__Cyanobacteria|c__Cyanobacteria_noname|o__Pleurocapsales|f__Pleurocapsa
les_noname k__Bacteria|p__Cyanobacteria|c__Cyanobacteria_noname|o__Pleuroc
apsales|f__Pleurocapsales_noname|g__Chroococcidiopsis k__Bacteria|p__Cyano
bacteria|c__Cyanobacteria_noname|o__Pleurocapsales|f__Pleurocapsales_noname
|g__Chroococcidiopsis|s__Chroococcidiopsis_thermalis k__Bacteria|p__Cyanob
acteria|c__Cyanobacteria_noname|o__Pleurocapsales|f__Pleurocapsales_noname|
g__Chroococcidiopsis|s__Chroococcidiopsis_thermalis|t__GCF_000317125 k__Ba
cteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcac
eae|g__Deinococcus|s__Deinococcus_aquatilis k__Bacteria|p__Deinococcus_The
rmus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus|s__Dei
nococcus_aquatilis|t__GCF_000378445 k__Bacteria|p__Deinococcus_Thermus|c__
Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus|s__Deinococcus
_geothermalis k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococ
cales|f__Deinococcaceae|g__Deinococcus|s__Deinococcus_geothermalis|t__GCF_0
00196275 k__Bacteria|p__Deinococcus_Thermus|c__Deinococci|o__Deinococcales
|f__Deinococcaceae|g__Deinococcus|s__Deinococcus_gobiensis k__Bacteria|p__
Deinococcus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Dei
nococcus|s__Deinococcus_gobiensis|t__GCF_000252445 k__Bacteria|p__Deinococ
cus_Thermus|c__Deinococci|o__Deinococcales|f__Deinococcaceae|g__Deinococcus
|s__Deinococcus_wulumuqiensis k__Bacteria|p__Deinococcus_Thermus|c__Deinoc
occi|o__Deinococcales|f__Deinococcaceae|g__Deinococcus|s__Deinococcus_wulum
uqiensis|t__GCF_000348665 k__Bacteria|p__Deinococcus_Thermus|c__Deinococci
|o__Thermales|f__Thermaceae|g__Thermus|s__Thermus_thermophilus k__Bacteria

|p__Deinococcus_Thermus|c__Deinococci|o__Thermales|f__Thermaceae|g__Thermus
|s__Thermus_thermophilus|t__Thermus_thermophilus_unclassified k__Bacteria|
p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Anoxybacillus|s__A
noxybacillus_flavithermus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillal
es|f__Bacillaceae|g__Anoxybacillus|s__Anoxybacillus_flavithermus|t__Anoxyba
cillus_flavithermus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__B
acillales|f__Bacillaceae|g__Bacillus|s__Bacillus_licheniformis k__Bacteria
|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacil
lus_licheniformis|t__Bacillus_licheniformis_unclassified k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_sm
ithii k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g_
_Bacillus|s__Bacillus_smithii|t__GCF_000238675 k__Bacteria|p__Firmicutes|c
__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus|s__Bacillus_subtilis k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Bacillus
|s__Bacillus_subtilis|t__Bacillus_subtilis_unclassified k__Bacteria|p__Fir
micutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Geobacillus k__Bacteria
|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|g__Geobacillus|s__Ge
obacillus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|
f__Bacillaceae|g__Lysinibacillus k__Bacteria|p__Firmicutes|c__Bacilli|o__B
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k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__
Exiguobacterium k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Baci
llales_noname|g__Exiguobacterium|s__Exiguobacterium_pavilionensis k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Exiguoba
cterium|s__Exiguobacterium_pavilionensis|t__GCF_000416965 k__Bacteria|p__F
irmicutes|c__Bacilli|o__Bacillales|f__Bacillales_noname|g__Exiguobacterium|
s__Exiguobacterium_sibiricum k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacil
lales|f__Bacillales_noname|g__Exiguobacterium|s__Exiguobacterium_sibiricum|
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illales_noname|g__Exiguobacterium|s__Exiguobacterium_unclassified k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Paenibacillaceae|g__Brevibaci
llus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Paenibacillacea
e|g__Brevibacillus|s__Brevibacillus_brevis k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Bacillales|f__Paenibacillaceae|g__Brevibacillus|s__Brevibacillus_b
revis|t__Brevibacillus_brevis_unclassified k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Bacillales|f__Staphylococcaceae|g__Salinicoccus k__Bacteria|p__Fi
rmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Salinicoccus|s__S
alinicoccus_unclassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillale
s|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_arlettae k__Bac
teria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphy
lococcus|s__Staphylococcus_arlettae|t__GCF_000295715 k__Bacteria|p__Firmic
utes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Sta
phylococcus_carnosus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f_
_Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_carnosus|t__GCF_0000
09405 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcac
eae|g__Staphylococcus|s__Staphylococcus_sp_AL1 k__Bacteria|p__Firmicutes|c
__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphyloc
occus_sp_AL1|t__GCF_000292305 k__Bacteria|p__Firmicutes|c__Bacilli|o__Baci
llales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_sp_E463 k_
_Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__St
aphylococcus|s__Staphylococcus_sp_E463|t__GCF_000316945 k__Bacteria|p__Fir
micutes|c__Bacilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__
Staphylococcus_sp_HGB0015 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillal
es|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcus_sp_HGB0015|t__G
CF_000411275 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Ae
rococcaceae|g__Eremococcus k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactoba
cillales|f__Aerococcaceae|g__Eremococcus|s__Eremococcus_coleocola k__Bacte
ria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Aerococcaceae|g__Eremoco
ccus|s__Eremococcus_coleocola|t__GCF_000183205 k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Catellicoccus k__Bacter
ia|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Catell
icoccus|s__Catellicoccus_marimammalium k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Enterococcaceae|g__Catellicoccus|s__Catellicoccus_m
arimammalium|t__GCF_000313915 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lact

obacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_malodoratus
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|
g__Enterococcus|s__Enterococcus_malodoratus|t__Enterococcus_malodoratus_unc
lassified k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lacto
bacillaceae|g__Lactobacillus|s__Lactobacillus_brevis k__Bacteria|p__Firmic
utes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__
Lactobacillus_brevis|t__Lactobacillus_brevis_unclassified k__Bacteria|p__F
irmicutes|c__Bacilli|o__Lactobacillales|f__Leuconostocaceae|g__Weissella|s_
_Weissella_paramesenteroides k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Leuconostocaceae|g__Weissella|s__Weissella_paramesenteroides|
t__GCF_000160575 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f
__Streptococcaceae|g__Streptococcus|s__Streptococcus_equi k__Bacteria|p__F
irmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococcu
s|s__Streptococcus_equi|t__Streptococcus_equi_unclassified k__Bacteria|p__
Firmicutes|c__Bacilli|o__Lactobacillales|f__Streptococcaceae|g__Streptococc
us|s__Streptococcus_minor k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobac
illales|f__Streptococcaceae|g__Streptococcus|s__Streptococcus_minor|t__GCF_
000377005 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clos
tridiaceae|g__Clostridium|s__Clostridium_beijerinckii k__Bacteria|p__Firmi
cutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|s__Cl
ostridium_beijerinckii|t__GCF_000016965 k__Bacteria|p__Firmicutes|c__Clost
ridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaeroc
occus|s__Anaerococcus_prevotii|t__GCF_000191725 k__Bacteria|p__Firmicutes|
c__Clostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g_
_Anaerococcus|s__Anaerococcus_sp_PH9 k__Bacteria|p__Firmicutes|c__Clostrid
ia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Anaerococc
us|s__Anaerococcus_sp_PH9|t__GCF_000307225 k__Bacteria|p__Firmicutes|c__Cl
ostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Fine
goldia|s__Finegoldia_magna|t__GCF_000159695 k__Bacteria|p__Firmicutes|c__C
lostridia|o__Clostridiales|f__Clostridiales_Family_XI_Incertae_Sedis|g__Hel
cococcus k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clost
ridiales_Family_XI_Incertae_Sedis|g__Helcococcus|s__Helcococcus_kunzii k__
Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Fami
ly_XI_Incertae_Sedis|g__Helcococcus|s__Helcococcus_kunzii|t__GCF_000245755
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_F
amily_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_lacrimalis|t__GCF
_000378725 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clo
stridiales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_BV
3AC2 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridi
ales_Family_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_BV3AC2|t
__GCF_000478945 k__Bacteria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacter
iales|f__Fusobacteriaceae|g__Fusobacterium|s__Fusobacterium_russii k__Bact
eria|p__Fusobacteria|c__Fusobacteriia|o__Fusobacteriales|f__Fusobacteriacea
e|g__Fusobacterium|s__Fusobacterium_russii|t__GCF_000381725 k__Bacteria|p_
_Proteobacteria|c__Alphaproteobacteria|o__Caulobacterales|f__Caulobacterace
ae|g__Caulobacter|s__Caulobacter_segnis k__Bacteria|p__Proteobacteria|c__A
lphaproteobacteria|o__Caulobacterales|f__Caulobacteraceae|g__Caulobacter|s_
_Caulobacter_segnis|t__GCF_000092285 k__Bacteria|p__Proteobacteria|c__Alph
aproteobacteria|o__Rhizobiales|f__Aurantimonadaceae k__Bacteria|p__Proteob
acteria|c__Alphaproteobacteria|o__Rhizobiales|f__Aurantimonadaceae|g__Auran
timonadaceae_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobact
eria|o__Rhizobiales|f__Beijerinckiaceae k__Bacteria|p__Proteobacteria|c__A
lphaproteobacteria|o__Rhizobiales|f__Beijerinckiaceae|g__Beijerinckiaceae_u
nclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizob
iales|f__Bradyrhizobiaceae|g__Nitrobacter k__Bacteria|p__Proteobacteria|c_
_Alphaproteobacteria|o__Rhizobiales|f__Bradyrhizobiaceae|g__Nitrobacter|s__
Nitrobacter_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacte
ria|o__Rhizobiales|f__Brucellaceae|g__Brucella|s__Brucella_ovis k__Bacteri
a|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g
__Brucella|s__Brucella_ovis|t__Brucella_ovis_unclassified k__Bacteria|p__P
roteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g__Bruc
ella|s__Brucella_pinnipedialis k__Bacteria|p__Proteobacteria|c__Alphaprote
obacteria|o__Rhizobiales|f__Brucellaceae|g__Brucella|s__Brucella_pinnipedia
lis|t__Brucella_pinnipedialis_unclassified k__Bacteria|p__Proteobacteria|c

__Alphaproteobacteria|o__Rhizobiales|f__Brucellaceae|g__Ochrobactrum|s__Och
robactrum_intermedium k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria
|o__Rhizobiales|f__Brucellaceae|g__Ochrobactrum|s__Ochrobactrum_intermedium
|t__Ochrobactrum_intermedium_unclassified k__Bacteria|p__Proteobacteria|c_
_Alphaproteobacteria|o__Rhizobiales|f__Hyphomicrobiaceae|g__Hyphomicrobium
k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Hyph
omicrobiaceae|g__Hyphomicrobium|s__Hyphomicrobium_denitrificans k__Bacteri
a|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Hyphomicrobiac
eae|g__Hyphomicrobium|s__Hyphomicrobium_denitrificans|t__Hyphomicrobium_den
itrificans_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacter
ia|o__Rhizobiales|f__Hyphomicrobiaceae|g__Hyphomicrobium|s__Hyphomicrobium_
unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizo
biales|f__Methylobacteriaceae|g__Methylobacterium|s__Methylobacterium_extor
quens k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|
f__Methylobacteriaceae|g__Methylobacterium|s__Methylobacterium_extorquens|t
__Methylobacterium_extorquens_unclassified k__Bacteria|p__Proteobacteria|c
__Alphaproteobacteria|o__Rhizobiales|f__Phyllobacteriaceae k__Bacteria|p__
Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Phyllobacteriaceae|
g__Mesorhizobium k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__R
hizobiales|f__Phyllobacteriaceae|g__Mesorhizobium|s__Mesorhizobium_loti k_
_Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Phyllo
bacteriaceae|g__Mesorhizobium|s__Mesorhizobium_loti|t__Mesorhizobium_loti_u
nclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizob
iales|f__Phyllobacteriaceae|g__Mesorhizobium|s__Mesorhizobium_unclassified
k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhiz
obiaceae|g__Sinorhizobium k__Bacteria|p__Proteobacteria|c__Alphaproteobact
eria|o__Rhizobiales|f__Rhizobiaceae|g__Sinorhizobium|s__Sinorhizobium_uncla
ssified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiale
s|f__Xanthobacteraceae k__Bacteria|p__Proteobacteria|c__Alphaproteobacteri
a|o__Rhizobiales|f__Xanthobacteraceae|g__Azorhizobium k__Bacteria|p__Prote
obacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Xanthobacteraceae|g__Azo
rhizobium|s__Azorhizobium_caulinodans k__Bacteria|p__Proteobacteria|c__Alp
haproteobacteria|o__Rhizobiales|f__Xanthobacteraceae|g__Azorhizobium|s__Azo
rhizobium_caulinodans|t__GCF_000010525 k__Bacteria|p__Proteobacteria|c__Al
phaproteobacteria|o__Rhizobiales|f__Xanthobacteraceae|g__Xanthobacter k__B
acteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Xanthoba
cteraceae|g__Xanthobacteraceae_unclassified k__Bacteria|p__Proteobacteria|
c__Alphaproteobacteria|o__Rhizobiales|f__Xanthobacteraceae|g__Xanthobacter|
s__Xanthobacter_autotrophicus k__Bacteria|p__Proteobacteria|c__Alphaproteo
bacteria|o__Rhizobiales|f__Xanthobacteraceae|g__Xanthobacter|s__Xanthobacte
r_autotrophicus|t__GCF_000017645 k__Bacteria|p__Proteobacteria|c__Alphapro
teobacteria|o__Rhodobacterales|f__Rhodobacteraceae|g__Ketogulonicigenium k
__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodobacterales|f__R
hodobacteraceae|g__Ketogulonicigenium|s__Ketogulonicigenium_vulgare k__Bac
teria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodobacterales|f__Rhodob
acteraceae|g__Ketogulonicigenium|s__Ketogulonicigenium_vulgare|t__Ketogulon
icigenium_vulgare_unclassified k__Bacteria|p__Proteobacteria|c__Alphaprote
obacteria|o__Rhodobacterales|f__Rhodobacteraceae|g__Paracoccus|s__Paracoccu
s_zeaxanthinifaciens k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|
o__Rhodobacterales|f__Rhodobacteraceae|g__Paracoccus|s__Paracoccus_zeaxanth
inifaciens|t__GCF_000420145 k__Bacteria|p__Proteobacteria|c__Alphaproteoba
cteria|o__Rhodobacterales|f__Rhodobacteraceae|g__Rhodobacter k__Bacteria|p
__Proteobacteria|c__Alphaproteobacteria|o__Rhodobacterales|f__Rhodobacterac
eae|g__Rhodobacter|s__Rhodobacter_sphaeroides k__Bacteria|p__Proteobacteri
a|c__Alphaproteobacteria|o__Rhodobacterales|f__Rhodobacteraceae|g__Rhodobac
ter|s__Rhodobacter_sphaeroides|t__Rhodobacter_sphaeroides_unclassified k__
Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Ac
etobacteraceae|g__Acidiphilium k__Bacteria|p__Proteobacteria|c__Alphaprote
obacteria|o__Rhodospirillales|f__Acetobacteraceae|g__Acidiphilium|s__Acidip
hilium_unclassified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o
__Rhodospirillales|f__Acetobacteraceae|g__Acidocella k__Bacteria|p__Proteo
bacteria|c__Alphaproteobacteria|o__Rhodospirillales|f__Acetobacteraceae|g__
Acidocella|s__Acidocella_sp_MX_AZ02 k__Bacteria|p__Proteobacteria|c__Alpha
proteobacteria|o__Rhodospirillales|f__Acetobacteraceae|g__Acidocella|s__Aci

docella_sp_MX_AZ02|t__GCF_000306035 k__Bacteria|p__Proteobacteria|c__Alpha
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irillum k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodospiri
llales|f__Rhodospirillaceae|g__Azospirillum|s__Azospirillum_lipoferum k__B
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classified k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhodosp
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ria|c__Alphaproteobacteria|o__Rhodospirillales|f__Rhodospirillaceae|g__Novi
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lassified k__Bacteria|p__Proteobacteria|c__Betaproteobacteria|o__Burkholde
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es|f__Arthrodermataceae|g__Arthrodermataceae_unclassified  k__Eukaryota|p__
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es|o__Onygenales|f__Onygenales_noname|g__Coccidioides|s__Coccidioides_immit
is  k__Eukaryota|p__Ascomycota|c__Eurotiomycetes|o__Onygenales|f__Onygenale
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Coccidioides|s__Coccidioides_posadasii  k__Eukaryota|p__Ascomycota|c__Eurot
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omycetes|o__Helotiales  k__Eukaryota|p__Ascomycota|c__Leotiomycetes|o__Helo
tiales|f__Sclerotiniaceae  k__Eukaryota|p__Ascomycota|c__Leotiomycetes|o__H
elotiales|f__Sclerotiniaceae|g__Botryotinia  k__Eukaryota|p__Ascomycota|c__
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ae|g__Debaryomyces|s__Debaryomyces_hansenii  k__Eukaryota|p__Ascomycota|c__
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cetes|o__Tremellales k__Eukaryota|p__Basidiomycota|c__Tremellomycetes|o__T
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Ustilaginales k__Eukaryota|p__Basidiomycota|c__Ustilaginomycetes|o__Ustila
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bacillus_pohliae k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Ali
cyclobacillaceae|g__Alicyclobacillus|s__Alicyclobacillus_pohliae|t__GCF_000

376225 k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Paenibacillac
eae|g__Brevibacillus|s__Brevibacillus_borstelensis k__Bacteria|p__Firmicut
es|c__Bacilli|o__Bacillales|f__Paenibacillaceae|g__Brevibacillus|s__Breviba
cillus_borstelensis|t__GCF_000353565 k__Bacteria|p__Firmicutes|c__Bacilli|
o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_an
tri k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacill
aceae|g__Lactobacillus|s__Lactobacillus_antri|t__GCF_000160835 k__Bacteria
|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobacillaceae|g__Lactoba
cillus|s__Lactobacillus_farciminis k__Bacteria|p__Firmicutes|c__Bacilli|o_
_Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_farc
iminis|t__GCF_000184535 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacil
lales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus_fermentum|t__GC
F_000466785 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Cl
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Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiaceae|g__Clostridium|
s__Clostridium_phytofermentans|t__GCF_000018685 k__Bacteria|p__Firmicutes|
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ium_sp_MSTE9 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__C
lostridiaceae|g__Clostridium|s__Clostridium_sp_MSTE9|t__GCF_000277625 k__B
acteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Famil
y_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_oral_taxon_836 k_
_Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Clostridiales_Fam
ily_XI_Incertae_Sedis|g__Peptoniphilus|s__Peptoniphilus_sp_oral_taxon_836|t
__GCF_000179335 k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f
__Eubacteriaceae|g__Eubacterium|s__Eubacterium_rectale|t__GCF_000209955 k_
_Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizob
iaceae|g__Shinella k__Bacteria|p__Proteobacteria|c__Alphaproteobacteria|o_
_Rhizobiales|f__Rhizobiaceae|g__Shinella|s__Shinella_zoogloeoides k__Bacte
ria|p__Proteobacteria|c__Alphaproteobacteria|o__Rhizobiales|f__Rhizobiaceae
|g__Shinella|s__Shinella_zoogloeoides|t__GCF_000496935 k__Bacteria|p__Prot
eobacteria|c__Gammaproteobacteria|o__Alteromonadales|f__Pseudoalteromonadac
eae|g__Pseudoalteromonas k__Bacteria|p__Proteobacteria|c__Gammaproteobacte
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eudoalteromonas_haloplanktis k__Bacteria|p__Proteobacteria|c__Gammaproteob
acteria|o__Alteromonadales|f__Pseudoalteromonadaceae|g__Pseudoalteromonas|s
__Pseudoalteromonas_haloplanktis|t__Pseudoalteromonas_haloplanktis_unclassi
fied k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonadal
es|f__Pseudoalteromonadaceae|g__Pseudoalteromonas|s__Pseudoalteromonas_undi
na k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Alteromonadales
|f__Pseudoalteromonadaceae|g__Pseudoalteromonas|s__Pseudoalteromonas_undina
|t__GCF_000238275 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__
Enterobacteriales|f__Enterobacteriaceae|g__Providencia|s__Providencia_stuar
tii k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Enterobacteria
les|f__Enterobacteriaceae|g__Providencia|s__Providencia_stuartii|t__Provide
ncia_stuartii_unclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobac
teria|o__Oceanospirillales|f__Halomonadaceae|g__Halomonas|s__Halomonas_boli
viensis k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Oceanospir
illales|f__Halomonadaceae|g__Halomonas|s__Halomonas_boliviensis|t__GCF_0002
36035 k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Vibrionales
k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Vibrionales|f__Vibr
ionaceae k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Vibrional
es|f__Vibrionaceae|g__Vibrio k__Bacteria|p__Proteobacteria|c__Gammaproteob
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teria|p__Proteobacteria|c__Gammaproteobacteria|o__Vibrionales|f__Vibrionace
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eria|c__Gammaproteobacteria|o__Xanthomonadales|f__Xanthomonadaceae|g__Xanth
omonas|s__Xanthomonas_axonopodis k__Bacteria|p__Proteobacteria|c__Gammapro
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monas_axonopodis|t__Xanthomonas_axonopodis_unclassified k__Bacteria|p__Pro
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__Xanthomonas|s__Xanthomonas_fuscans k__Bacteria|p__Proteobacteria|c__Gamm
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nthomonas_fuscans|t__Xanthomonas_fuscans_unclassified k__Bacteria|p__Tener
icutes|c__Mollicutes|o__Mycoplasmatales|f__Mycoplasmataceae|g__Mycoplasma|s

__Mycoplasma_bovis k__Bacteria|p__Tenericutes|c__Mollicutes|o__Mycoplasmat
ales|f__Mycoplasmataceae|g__Mycoplasma|s__Mycoplasma_bovis|t__Mycoplasma_bo
vis_unclassified k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|o__Flavoba
cteriales|f__Flavobacteriaceae|g__Zunongwangia k__Bacteria|p__Bacteroidete
s|c__Flavobacteriia|o__Flavobacteriales|f__Flavobacteriaceae|g__Zunongwangi
a|s__Zunongwangia_profunda k__Bacteria|p__Bacteroidetes|c__Flavobacteriia|
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ofunda|t__GCF_000023465 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacil
lales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_faecium|t__GCF_000
294895 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroco
ccaceae|g__Enterococcus|s__Enterococcus_pallens k__Bacteria|p__Firmicutes|
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cetes|c__Planctomycetia|o__Planctomycetales|f__Planctomycetaceae k__Bacter
ia|p__Planctomycetes|c__Planctomycetia|o__Planctomycetales|f__Planctomyceta
ceae|g__Rhodopirellula k__Bacteria|p__Planctomycetes|c__Planctomycetia|o__
Planctomycetales|f__Planctomycetaceae|g__Rhodopirellula|s__Rhodopirellula_u
nclassified k__Bacteria|p__Proteobacteria|c__Gammaproteobacteria|o__Vibrio
nales|f__Vibrionaceae|g__Vibrio|s__Vibrio_furnissii k__Bacteria|p__Proteob
acteria|c__Gammaproteobacteria|o__Vibrionales|f__Vibrionaceae|g__Vibrio|s__
Vibrio_furnissii|t__Vibrio_furnissii_unclassified k__Bacteria|p__Bacteroid
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bacillus|s__Lysinibacillus_fusiformis k__Bacteria|p__Firmicutes|c__Bacilli
|o__Bacillales|f__Bacillaceae|g__Lysinibacillus|s__Lysinibacillus_fusiformi
s|t__Lysinibacillus_fusiformis_unclassified k__Bacteria|p__Firmicutes|c__B
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aericus k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Bacillaceae|
g__Lysinibacillus|s__Lysinibacillus_sphaericus|t__Lysinibacillus_sphaericus
_unclassified k__Archaea|p__Euryarchaeota|c__Methanobacteria|o__Methanobac
teriales|f__Methanobacteriaceae|g__Methanobacterium k__Archaea|p__Euryarch
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thanobacterium|s__Methanobacterium_unclassified k__Bacteria|p__Firmicutes|
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_boronitolerans k__Bacteria|p__Firmicutes|c__Bacilli|o__Bacillales|f__Baci
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Staphylococcus|s__Staphylococcus_vitulinus k__Bacteria|p__Firmicutes|c__Ba
cilli|o__Bacillales|f__Staphylococcaceae|g__Staphylococcus|s__Staphylococcu
s_vitulinus|t__GCF_000286335 k__Bacteria|p__Firmicutes|c__Bacilli|o__Lacto
bacillales|f__Enterococcaceae|g__Bavariicoccus k__Bacteria|p__Firmicutes|c
__Bacilli|o__Lactobacillales|f__Enterococcaceae|g__Bavariicoccus|s__Bavarii
coccus_seileri k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__
Enterococcaceae|g__Bavariicoccus|s__Bavariicoccus_seileri|t__GCF_000421665
k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enterococcaceae|
g__Enterococcus|s__Enterococcus_gilvus k__Bacteria|p__Firmicutes|c__Bacill
i|o__Lactobacillales|f__Enterococcaceae|g__Enterococcus|s__Enterococcus_gil
vus|t__Enterococcus_gilvus_unclassified k__Bacteria|p__Firmicutes|c__Bacil
li|o__Lactobacillales|f__Lactobacillaceae|g__Lactobacillus|s__Lactobacillus
_otakiensis k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lac
tobacillaceae|g__Lactobacillus|s__Lactobacillus_otakiensis|t__GCF_000415925
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae|
g__Desulfotomaculum k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridial
es|f__Peptococcaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis k__Ba
cteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae|g__De
sulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085 k__Bacteria|p_
_Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcaceae|g__Faecalibac

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terium|s__Faecalibacterium_prausnitzii|t__GCF_000209855  k__Bacteria|p__Fir
micutes|c__Negativicutes|o__Selenomonadales|f__Veillonellaceae|g__Megasphae
ra|s__Megasphaera_sp_BV3C16_1  k__Bacteria|p__Firmicutes|c__Negativicutes|o
__Selenomonadales|f__Veillonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C1
6_1|t__GCF_000478965
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61950752                 14334951                                        4
7948                                                        113639
3310462               140888              3451350            0.737773636
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Name: count, Length: 3610, dtype: int64
```

In [55]:
```
data["sequencing_technology"]
```

Out[55]:
```
0       Illumina
1       Illumina
2       Illumina
3       Illumina
4       Illumina
          ...
3605    Illumina
3606    Illumina
3607    Illumina
3608    Illumina
3609    Illumina
Name: sequencing_technology, Length: 3610, dtype: object
```

In [57]:
```
data.sequencing_technology
```

Out[57]:
```
0       Illumina
1       Illumina
2       Illumina
3       Illumina
4       Illumina
          ...
3605    Illumina
3606    Illumina
3607    Illumina
3608    Illumina
3609    Illumina
Name: sequencing_technology, Length: 3610, dtype: object
```

In [85]:
```
data["pubmedid"]
```

Out[85]:
```
0       25981789
1       25981789
2       25981789
3       25981789
4       25981789
          ...
3605    25432777
3606    25432777
3607    25432777
3608    25432777
3609    25432777
Name: pubmedid, Length: 3610, dtype: object
```

In [86]:
```
data["pubmedid"].value_counts()
```

Out[86]:
```
pubmedid
22699609    731
nd          545
25279917    291
24997787    252
22699609    250
23023125    242
23985870    218
25079328    190
23719380    145
24997787    130
23023125    121
20203603    110
25432777    108
23985870     60
25807110     58
23571589     53
25079328     42
25981789     38
25432777     26
Name: count, dtype: int64
```

In [87]:
```
data.pubmedid
```

Out[87]:
```
0       25981789
1       25981789
2       25981789
3       25981789
4       25981789
          ...
3605    25432777
3606    25432777
3607    25432777
3608    25432777
3609    25432777
Name: pubmedid, Length: 3610, dtype: object
```

In [88]:
```
pubmedid = pd.DataFrame({
    'TechnologyName': ["25981789"],
    'Throughput': [1000],
    'Accuracy': [0.95]
})
```

In [89]:
```
sorted_pubmedid = pubmedid.sort_values(by='Throughput', ascending=False)
```

In [90]:
```
print(sorted_pubmedid)
```

```
  TechnologyName  Throughput  Accuracy
0       25981789        1000      0.95
```

In [92]:
```
data["pubmedid"] = data["pubmedid"].astype(str)
data.sort_values(by="pubmedid", inplace=True)
```

In [93]:
```
data.sort_values(by="pubmedid")
```

Out[93]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender
1866	metahit	MH0074	mh0074	stool	n	49	female
1842	metahit	MH0050	mh0050	stool	n	49	male
1841	metahit	MH0049	mh0049	stool	n	44	female
1818	metahit	MH0024	mh0024	stool	n	59	female
1819	metahit	MH0025	mh0025	stool	n	49	female
...	...	...	...	...	...	...	...
2358	Psoriasis_2014	Steph_b2_64	19	gomito_dx	y	32	male
2357	Psoriasis_2014	Steph_b2_63	19	gomito_sx	y	32	male
2356	Psoriasis_2014	Steph_b2_62	19	solco_retroauricolare_dx	n	32	male
2362	Psoriasis_2014	Steph_b2_68	20	gomito_dx	y	49	male
581	doyle_bt2	G46978	10151	nd	nd	nd	nd

3610 rows × 3513 columns

Method Chaining in Pandas

In [94]:
```
data["pubmedid"]
```

Out[94]:
```
1866    20203603
1895    20203603
1894    20203603
1893    20203603
1892    20203603
          ...
622           nd
621           nd
620           nd
626           nd
581           nd
Name: pubmedid, Length: 3610, dtype: object
```

In [95]:
```
data["pubmedid"].value_counts()
```

Out[95]:
```
pubmedid
22699609    981
nd          545
24997787    382
23023125    363
25279917    291
23985870    278
25079328    232
23719380    145
25432777    134
20203603    110
25807110     58
23571589     53
25981789     38
Name: count, dtype: int64
```

In [96]:
```
data["pubmedid"].value_counts().sort_index()
```

Out[96]:
```
pubmedid
20203603    110
22699609    981
23023125    363
23571589     53
23719380    145
23985870    278
24997787    382
25079328    232
25279917    291
25432777    134
25807110     58
25981789     38
nd          545
Name: count, dtype: int64
```

In [97]:
```
data["pubmedid"].sort_index()
```

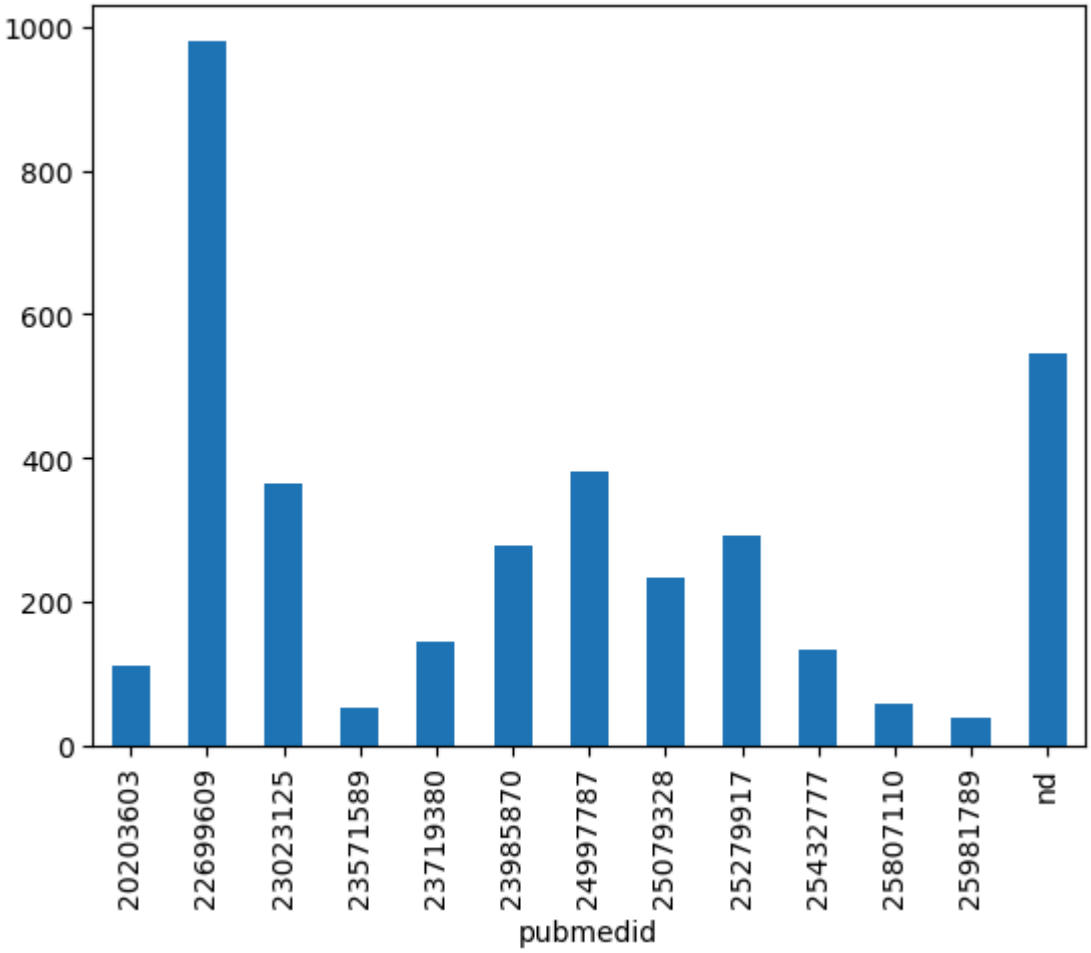
Out[97]:
```
0       25981789
1       25981789
2       25981789
3       25981789
4       25981789
          ...
3605    25432777
3606    25432777
3607    25432777
3608    25432777
3609    25432777
Name: pubmedid, Length: 3610, dtype: object
```

In [98]:
```
data["pubmedid"].sort_index().value_counts()
```

Out[98]:
```
pubmedid
22699609    981
nd          545
24997787    382
23023125    363
25279917    291
23985870    278
25079328    232
23719380    145
25432777    134
20203603    110
25807110     58
23571589     53
25981789     38
Name: count, dtype: int64
```

In [99]:
```
data["pubmedid"].value_counts().sort_index().plot.bar()
```

Out[99]:
```
<Axes: xlabel='pubmedid'>
```



loc[ ] and iloc [ ]

In [100…
```
data
```

Out[100]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	MH0074	mh0074	stool	n	49	female	de
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1894	metahit	V1_CD_11	v1_cd_11	stool	n	62	female	
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57	female	
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55	female	
...	...	...	...	...	...	...	...	
622	doyle_bt2	G51224	12311	nd	nd	nd	nd	
621	doyle_bt2	G51223	12271	nd	nd	nd	nd	
620	doyle_bt2	G51222	12221	nd	nd	nd	nd	
626	doyle_bt2	G51228	12351	nd	nd	nd	nd	
581	doyle_bt2	G46978	10151	nd	nd	nd	nd	

3610 rows × 3513 columns

In [101…
```
data.iloc[4]
```

Out[101]:
```
dataset_name
metahit
sampleID
O2_UC_24
subjectID
o2_uc_24
bodysite
stool
disease
ibd_ulcerative_colitis

...
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis
0.0
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085
0.0
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcacea
e|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000209855
0.0
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1
0.0
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965
0.0
Name: 1892, Length: 3513, dtype: object
```

In [102…
```
data.iloc[:5]
```

Out[102]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	MH0074	mh0074	stool	n	49	female	de
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1894	metahit	V1_CD_11	v1_cd_11	stool	n	62	female	
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57	female	
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55	female	

5 rows × 3513 columns

In [103…
```
#[start:stop:step]
data.iloc[1:10]
```

Out[103]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1894	metahit	V1_CD_11	v1_cd_11	stool	n	62	female	
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57	female	
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55	female	
1891	metahit	O2_UC_23	o2_uc_23	stool	ibd_ulcerative_colitis	44	female	
1890	metahit	O2_UC_22	o2_uc_22	stool	ibd_ulcerative_colitis	44	male	
1889	metahit	O2_UC_21	o2_uc_21	stool	ibd_ulcerative_colitis	49	female	
1888	metahit	O2_UC_20	o2_uc_20	stool	ibd_ulcerative_colitis	51	female	
1887	metahit	O2_UC_1	o2_uc_1	stool	ibd_ulcerative_colitis	37	male	

9 rows × 3513 columns

In [104…

```
data.iloc[1:10:2]
```

Out[104]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57	female	
1891	metahit	O2_UC_23	o2_uc_23	stool	ibd_ulcerative_colitis	44	female	
1889	metahit	O2_UC_21	o2_uc_21	stool	ibd_ulcerative_colitis	49	female	
1887	metahit	O2_UC_1	o2_uc_1	stool	ibd_ulcerative_colitis	37	male	

5 rows × 3513 columns

In [105…

```
data.iloc[1:10:3]
```

Out[105]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55	female	
1889	metahit	O2_UC_21	o2_uc_21	stool	ibd_ulcerative_colitis	49	female	

3 rows × 3513 columns

In [106…

```
data.iloc[1:]
```

Out[106]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41	female	
1894	metahit	V1_CD_11	v1_cd_11	stool	n	62	female	
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57	female	
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55	female	
1891	metahit	O2_UC_23	o2_uc_23	stool	ibd_ulcerative_colitis	44	female	
...	...	...	...	...	...	...	...	
622	doyle_bt2	G51224	12311	nd	nd	nd	nd	
621	doyle_bt2	G51223	12271	nd	nd	nd	nd	
620	doyle_bt2	G51222	12221	nd	nd	nd	nd	
626	doyle_bt2	G51228	12351	nd	nd	nd	nd	
581	doyle_bt2	G46978	10151	nd	nd	nd	nd	

3609 rows × 3513 columns

In [107…

```
data.iloc[-10:]
```

Out[107]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	sequer
550	doyle_bt2	G46934	10581	nd	nd	nd	nd	usa	
627	doyle_bt2	G51229	12351	nd	nd	nd	nd	usa	
625	doyle_bt2	G51227	12321	nd	nd	nd	nd	usa	
624	doyle_bt2	G51226	12511	nd	nd	nd	nd	usa	
623	doyle_bt2	G51225	12431	nd	nd	nd	nd	usa	
622	doyle_bt2	G51224	12311	nd	nd	nd	nd	usa	
621	doyle_bt2	G51223	12271	nd	nd	nd	nd	usa	
620	doyle_bt2	G51222	12221	nd	nd	nd	nd	usa	
626	doyle_bt2	G51228	12351	nd	nd	nd	nd	usa	
581	doyle_bt2	G46978	10151	nd	nd	nd	nd	usa	

10 rows × 3513 columns

In [108…

```
#[start:stop:step]
data.iloc[:,2:6]
```

Out[108]:

	subjectID	bodysite	disease	age
1866	mh0074	stool	n	49
1895	v1_cd_12	stool	ibd_crohn_disease	41
1894	v1_cd_11	stool	n	62
1893	o2_uc_4	stool	ibd_ulcerative_colitis	57
1892	o2_uc_24	stool	ibd_ulcerative_colitis	55
...	...	...	...	...
622	12311	nd	nd	nd
621	12271	nd	nd	nd
620	12221	nd	nd	nd
626	12351	nd	nd	nd
581	10151	nd	nd	nd

3610 rows × 4 columns

In [109…

```
data.iloc[3:10,5:-2]
```

Out[109]:

	age	gender	country	sequencing_technology	pubmedid	camp	paired_end_insert_
1893	57	female	spain	Illumina	20203603	nd	
1892	55	female	spain	Illumina	20203603	nd	
1891	44	female	spain	Illumina	20203603	nd	
1890	44	male	spain	Illumina	20203603	nd	
1889	49	female	spain	Illumina	20203603	nd	
1888	51	female	spain	Illumina	20203603	nd	
1887	37	male	spain	Illumina	20203603	nd	

7 rows × 3506 columns

In [110…

```
data.iloc[:1000]
```

Out[110]:

	dataset_name	sampleID	subjectID	bodysite	disease	age
1866	metahit	MH0074	mh0074	stool	n	49
1895	metahit	V1_CD_12	v1_cd_12	stool	ibd_crohn_disease	41
1894	metahit	V1_CD_11	v1_cd_11	stool	n	62
1893	metahit	O2_UC_4	o2_uc_4	stool	ibd_ulcerative_colitis	57
1892	metahit	O2_UC_24	o2_uc_24	stool	ibd_ulcerative_colitis	55
...	...	...	...	...	...	..
1512	hmp	SRS064774	764062976	tongue_dorsum	n	nc
1511	hmp	SRS064704	809635352	posterior_fornix	n	nc
1510	hmp	SRS064645	686765762	stool	n	nc
1509	hmp	SRS064557	764042746	stool	n	nc
1519	hmp	SRS065310	764042746	supragingival_plaque	n	nc

1000 rows × 3513 columns

In [111…

```
data.loc[:1000, "subjectID"]
```

Out[111]:

```
1866       mh0074
1895     v1_cd_12
1894     v1_cd_11
1893      o2_uc_4
1892     o2_uc_24
          ...
996     159632143
997     159632143
998     159672603
999     159753524
1000    159753524
Name: subjectID, Length: 544, dtype: object
```

In [112…

```
data.loc[:100,["subjectID", "sampleID", "country"]]
```

Out[112]:

	subjectID	sampleID	country
1866	mh0074	MH0074	denmark
1895	v1_cd_12	V1_CD_12	spain
1894	v1_cd_11	V1_CD_11	spain
1893	o2_uc_4	O2_UC_4	spain
1892	o2_uc_24	O2_UC_24	spain
...	...	...	...
104	mh0082	MH0082	denmark
103	mh0081	MH0081	denmark
102	mh0080	MH0080	denmark
101	mh0079	MH0079	denmark
100	mh0078	MH0078	denmark

1808 rows × 3 columns

In [113…
```
data.loc[100,"sampleID"]
```

Out[113]:
```
'MH0078'
```

In [114…
```
# Change/ update a value in a dataframe
data.loc[100,"sampleID"]=3.83
```

In [115…
```
data.loc[100,"sampleID"]
```

Out[115]:
```
3.83
```

Filter with conditional logic using loc [ ]

In [128…
```
for i in data [["subjectID", "sampleID", "country","pubmedid","age","bodysit
    print(i.upper())
    print(data[i].unique())
    print()
```

```
SUBJECTID
['mh0074' 'v1_cd_12' 'v1_cd_11' ... 12021 10581 10151]

SAMPLEID
['MH0074' 'V1_CD_12' 'V1_CD_11' ... 'G51222' 'G51228' 'G46978']

COUNTRY
['denmark' 'spain' 'usa' 'nd' 'china' ' -' 'germany' 'sweden' 'france'
 'yugoslavia' 'norway' 'hungary' 'estonia' 'finland' 'iceland' 'slovakia'
 'peru' 'italy' 'tanzania']

PUBMEDID
['20203603' '22699609' '23023125' '23571589' '23719380' '23985870'
 '24997787' '25079328' '25279917' '25432777' '25807110' '25981789' 'nd']

AGE
['49' '41' '62' '57' '55' '44' '51' '37' '42' '48' '56' '47' '31' '68'
 '43' '34' '59' '64' '54' '25' '69' '0' '32' '22' '19' '38' '53' '45' '36'
 '46' '18' '63' '67' '58' 'nd' '61' '60' '52' '50' '35' '27' '29' '21'
 '39' '28' '40' '26' ' -' '70' '74' '75' '79' '65' '71' '30' '72' '81'
 '13' '80' '33' '23' '14' '24' '73' '66' '83' '86' '71.1' '70.07' '70.02'
 '69.27' '69.48' '70.01' '69.89' '70.15' '70.05' '69.49' '69.79' '69.53'
 '70.24' '70.34' '68.98' '69.42' '70.7' '69.92' '69.7' '71.65' '71.63'
 '69.15' '71.26' '71.84' '71.53' '69.74' '71.44' '71.25' '70.47' '71.4'
 '71.45' '69.67' '70.33' '71.17' '70.06' '70.21' '70.85' '70.25' '71.12'
 '70.16' '70.57' '70.46' '70.91' '70.56' '70.67' '69.32' '70.96' '69.54'
 '70.27' '69.78' '69.91' '69.18' '69.03' '69.43' '69.87' '69.36' '70.43'
 '70.03' '69.98' '70.31' '71.28' '69.41' '71.71' '70.11' '71.01' '70.55'
 '71.11' '68.96' '70.42' '71.02' '70.97' '70.14' '70.39' '69.02' '70.72'
 '70.2' '71.24' '69.06' '71.16' '70.22' '69.47' '70.12' '71.21' '69.97'
 '71.36' '71.38' '70.9' '70.52' '71.31' '70.78' '70.59' '71.47' '70.68'
 '69.88' '71.03' '71.29' '70.86' '70.63' '70.71' '70.23' '70.08' '71.49'
 '71.39' '69.08' '71.57' '71.58' '71.04' '70.45' '70.19' '69.58' '70.35'
 '70.84' 'na' '20' 48 62 64 51 55 38 59 61 36 60 53 44 66 56 54 46 45 41
 47 43 73 70 32 35 49 27 30 34 52 37 58 39 18 74 72 69 42 '78' '76' 29 71
 50 40 33 57 63 25 31 26 23 '77' 65 78 84 79 85 68 '87' '89' '10' '5' '4'
 '3' '9' '2' '7' '6' '12' '1' '8' '16' '17' '15' 67]

BODYSITE
['stool' 'tongue_dorsum' 'posterior_fornix' 'supragingival_plaque'
 'buccal_mucosa' 'mid_vagina' 'vaginal_introitus' 'subgingival_plaque'
 'throat' 'palatine_tonsils' 'saliva' 'anterior_nares'
 'keratinized_gingiva' 'r_retroauricular_crease' 'l_retroauricular_crease'
 'hard_palate' 'skin' 'gomito_sx' 'nd' 'gomito_dx'
 'solco_retroauricolare_sx' 'solco_retroauricolare_dx' 'milk'
 'infant_faeces' 'mother_faeces']

SUBJECTID
['mh0074' 'v1_cd_12' 'v1_cd_11' ... 12021 10581 10151]

SAMPLEID
['MH0074' 'V1_CD_12' 'V1_CD_11' ... 'G51222' 'G51228' 'G46978']
```

In [129…

```
print(data.columns)
```

```
Index(['dataset_name', 'sampleID', 'subjectID', 'bodysite', 'disease', 'ag
e',
       'gender', 'country', 'sequencing_technology', 'pubmedid',
       ...
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Enteroco
ccaceae|g__Enterococcus|s__Enterococcus_gilvus|t__Enterococcus_gilvus_uncla
ssified',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis',
       'k__Bacteria|p__Firmicutes|c__Bacilli|o__Lactobacillales|f__Lactobac
illaceae|g__Lactobacillus|s__Lactobacillus_otakiensis|t__GCF_000415925',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptoco
ccaceae|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085',
       'k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminoc
occaceae|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_0002098
55',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1',
       'k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Ve
illonellaceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965'],
      dtype='object', length=3513)
```

In [132…

```
MH0074 = data["sampleID"] == "MH0074"
```

In [133…

```
MH0074
```

Out[133]:

```
1866     True
1895    False
1894    False
1893    False
1892    False
        ...
622     False
621     False
620     False
626     False
581     False
Name: sampleID, Length: 3610, dtype: bool
```

In [134…

```
MH0074.value_counts()
```

Out[134]:

```
sampleID
False    3607
True        3
Name: count, dtype: int64
```

In [135…

```
data.loc[MH0074]
```

Out[135]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	cou
1866	metahit	MH0074	mh0074	stool	n	49	female	denn
96	Chatelier_gut_obesity	MH0074	mh0074	stool	leaness	nd	-	denn
1976	Neilsen_genome_assembly	MH0074	mh0074	stool	n	49	female	denn

3 rows × 3513 columns

In [137…
```
data.loc[data["sampleID"] == "G51222"]
```

Out[137]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	sequen
620	doyle_bt2	G51222	12221	nd	nd	nd	nd	usa	

1 rows × 3513 columns

In [141…
```
data["sampleID"] = pd.to_numeric(data["sampleID"], errors="coerce").fillna(-
data["subjectID"] = pd.to_numeric(data["subjectID"], errors="coerce").fillna
result = data.loc[data["sampleID"] > data["subjectID"]]
```

In [142…
```
result
```

Out[142]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	s
100	Chatelier_gut_obesity	3.83	-1.0	stool	obesity	nd	-	denmark	

1 rows × 3513 columns

In [145…
```
data.loc[data["sampleID"] >data["subjectID"],"dataset_name"]
```

Out[145]:
```
100    Chatelier_gut_obesity
Name: dataset_name, dtype: object
```

In [149…
```
data.loc[(data["pubmedid"] == "20203603") & (data["age"] == "49")]
```

Out[149]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	cou
1866	metahit	-1.0	-1.0	stool	n	49	female	den
1889	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	49	female	
1873	metahit	-1.0	-1.0	stool	n	49	female	den
1900	metahit	-1.0	-1.0	stool	n	49	male	
1869	metahit	-1.0	-1.0	stool	n	49	female	den
1834	metahit	-1.0	-1.0	stool	n	49	male	den
1827	metahit	-1.0	-1.0	stool	n	49	male	den
1820	metahit	-1.0	-1.0	stool	n	49	female	den
1819	metahit	-1.0	-1.0	stool	n	49	female	den
1842	metahit	-1.0	-1.0	stool	n	49	male	den
1844	metahit	-1.0	-1.0	stool	n	49	female	den
1815	metahit	-1.0	-1.0	stool	n	49	female	den
1862	metahit	-1.0	-1.0	stool	n	49	male	den
1870	metahit	-1.0	-1.0	stool	n	49	female	den
1854	metahit	-1.0	-1.0	stool	n	49	female	den
1846	metahit	-1.0	-1.0	stool	n	49	male	den
1845	metahit	-1.0	-1.0	stool	n	49	female	den
1817	metahit	-1.0	-1.0	stool	n	49	female	den

18 rows × 3513 columns

In [150…

```
# Both statement need to evaluate to true
data.loc[(data["pubmedid"] == "20203603") & (data["age"] == "49")].sort_valu
```

Out[150]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	cou
1842	metahit	-1.0	-1.0	stool	n	49	male	den
1900	metahit	-1.0	-1.0	stool	n	49	male	:
1846	metahit	-1.0	-1.0	stool	n	49	male	den
1834	metahit	-1.0	-1.0	stool	n	49	male	den
1827	metahit	-1.0	-1.0	stool	n	49	male	den
1862	metahit	-1.0	-1.0	stool	n	49	male	den
1815	metahit	-1.0	-1.0	stool	n	49	female	den
1845	metahit	-1.0	-1.0	stool	n	49	female	den
1854	metahit	-1.0	-1.0	stool	n	49	female	den
1870	metahit	-1.0	-1.0	stool	n	49	female	den
1866	metahit	-1.0	-1.0	stool	n	49	female	den
1844	metahit	-1.0	-1.0	stool	n	49	female	den
1889	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	49	female	:
1819	metahit	-1.0	-1.0	stool	n	49	female	den
1820	metahit	-1.0	-1.0	stool	n	49	female	den
1869	metahit	-1.0	-1.0	stool	n	49	female	den
1873	metahit	-1.0	-1.0	stool	n	49	female	den
1817	metahit	-1.0	-1.0	stool	n	49	female	den

18 rows × 3513 columns

In [151…

```
rpg = data["age"] == "49"
```

In [152…

```
data.loc[20203603 & rpg]
```

Out[152]:

	dataset_name	sampleID	subjectID	bodysite	disease	age
1866	metahit	-1.0	-1.0	stool	n	49
1889	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	49
1873	metahit	-1.0	-1.0	stool	n	49
1900	metahit	-1.0	-1.0	stool	n	49
1869	metahit	-1.0	-1.0	stool	n	49
...	...	...	...	...	...	...
2042	Neilsen_genome_assembly	-1.0	-1.0	stool	n	49
2044	Neilsen_genome_assembly	-1.0	-1.0	stool	n	49
2590	Quin_gut_liver_cirrhosis	-1.0	-1.0	stool	cirrhosis	49
3583	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	49
3564	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	49

62 rows × 3513 columns

In [154…
```
mask = data["age"] == "49"
```

In [155…
```
filtered_data = data[mask]
```

In [158…
```
filtered_data = data[data["age"] == "49"]
```

In [159…
```
data["age"] = "49"
```

In [161…
```
condition = data["age"].isin(["49", "57"])
filtered_data = data[condition]
```

In [162…
```
data.loc[condition, "age"] = "NewValue"
```

In [163…
```
# isin()
top_3_country = data.country.isin(["denmark", "france","spain"])
```

In [164…
```
data.loc[top_3_country]
```

Out[164]:

	dataset_name	sampleID	subjectID	bodysite	disease	
1866	metahit	-1.0	-1.0	stool	n	Nev
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	Nev
1894	metahit	-1.0	-1.0	stool	n	Nev
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	Nev
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	Nev
...	...	...	...	...	...	
3536	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3521	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3561	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3609	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3608	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev

907 rows × 3513 columns

In [166…
```
data["pubmedid"] = pd.to_numeric(data["pubmedid"], errors="coerce")
countr_2M = data[(data["country"].isin(["spain", "denmark", "france"])) & (c
```

In [179…
```
country = data.country.isin(["denmark", "spain", "france"])
country_2M = data["pubmedid"] >= 2
```

In [181…
```
data.loc[country & top_3_country & country_2M]
```

Out[181]:

	dataset_name	sampleID	subjectID	bodysite	disease	
1866	metahit	-1.0	-1.0	stool	n	Nev
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	Nev
1894	metahit	-1.0	-1.0	stool	n	Nev
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	Nev
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	Nev
...	...	...	...	...	...	
3536	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3521	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3561	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3609	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev
3608	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Nev

907 rows × 3513 columns

In [190…

```
data.loc[-data["country"].isin(["denmark", "spain", "france"])]
```

Out[190]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	countr
841	hmp	-1.0	763435843.0	tongue_dorsum	n	NaN	NaN	us
916	hmp	-1.0	764143897.0	tongue_dorsum	n	NaN	NaN	us
915	hmp	-1.0	763759525.0	stool	n	NaN	NaN	us
914	hmp	-1.0	763759525.0	tongue_dorsum	n	NaN	NaN	us
913	hmp	-1.0	763759525.0	posterior_fornix	n	NaN	NaN	us
...	...	...	...	...	...	...	...	.
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	us
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	us
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	us
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	us
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	us

2703 rows × 3513 columns

Most Useful Methods for Data Analysis

In [193…

```
# query()

data.query("sampleID < subjectID")
```

Out[193]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	countr
841	hmp	-1.0	763435843.0	tongue_dorsum	n	NaN	NaN	us
916	hmp	-1.0	764143897.0	tongue_dorsum	n	NaN	NaN	us
915	hmp	-1.0	763759525.0	stool	n	NaN	NaN	us
914	hmp	-1.0	763759525.0	tongue_dorsum	n	NaN	NaN	us
913	hmp	-1.0	763759525.0	posterior_fornix	n	NaN	NaN	us
...	...	...	...	...	...	...	...	.
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	us
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	us
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	us
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	us
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	us

1509 rows × 3513 columns

In [194…

```
data.query("country == 'france' and age > 49")
```

Out[194]:

dataset_name	sampleID	subjectID	bodysite	disease	age	gender	country	sequencing

0 rows × 3513 columns

In [195…

```
france = data.query("country == 'france'")
```

In [196…

```
france
```

Out[196]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	ge
3343	WT2D	-1.0	-1.0	stool	n	NaN	
3484	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	
3483	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	
3482	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	
3481	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
...	...	...	...	...	...	...	
3536	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3521	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3561	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3609	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3608	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	

135 rows × 3513 columns

In [197…

```
# unique() and nunique()

data.country.unique()
```

Out[197]:
```
array(['denmark', 'spain', 'usa', 'nd', 'china', ' -', 'germany',
       'sweden', 'france', 'yugoslavia', 'norway', 'hungary', 'estonia',
       'finland', 'iceland', 'slovakia', 'peru', 'italy', 'tanzania'],
      dtype=object)
```

In [198…
```
data.country.nunique()
```

Out[198]:
```
19
```

In [199…
```
data.nunique()
```

Out[199]:
```
dataset_name
18
sampleID
2
subjectID
322
bodysite
25
disease
20

...
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis
2
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085
2
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcacea
e|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000209855
2
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1
2
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965
2
Length: 3513, dtype: int64
```

In [200…
```
data["pubmedid"].nunique()
```

Out[200]:
```
12
```

In [201…
```
for i in data.select_dtypes("object"):
    print(data[i].unique())
```

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 'Quin_gut_liver_cirrhosis' 'Segre_Human_Skin'
 'Zeller_fecal_colorectal_cancer' 'Tito_subsistence_gut' 'Candela_Africa'
 'Psoriasis_2014' 'doyle_bt2' 'VerticalTransmissionPilot']
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 'throat' 'palatine_tonsils' 'saliva' 'anterior_nares'
 'keratinized_gingiva' 'r_retroauricular_crease' 'l_retroauricular_crease'
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 'solco_retroauricolare_sx' 'solco_retroauricolare_dx' 'milk'
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['nd' 'yes']
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 '25.58' '3.95' '8.24' '6.18' '10.44' '7.14' '5.64' '13.22' '34.6' '12.29'
 '2.89' '23.93' '29' '20.01' '26.5' '11.34' '8.82' '10.05' '10.69' '7.93'
 '14.1' '13.06' '11.39' '15.64' '23.16' '9.87' '28.71' '18.51' '13.18'
 '25.19' '13.56' '13.7' '15.4' '17.66' '19.14' '9.14' '14.48' '8.72'
 '20.19' '25.49' '7.06' '14.5' '22.37' '15.3' '16.8' '12.08' '9.06'
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 '14.52' '15.92' '5.23' '32.02' '6' '5.31' '10.71' '8.63' '7.11' '34.47'
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 '6.6' '8.1' '12']
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 '1.4' '1.64' '2.23' '1.27' '1.22' '1.2' '0.71' '-' ' -' '0.87' '3.05'
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 '1.14' '0.74' '1.13' '0.8' '0.77' '1.21' '0.83' '1.35' '1.71' '0.98'
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 '4.36' '3.17' '3.84' '1.36' '5.2' '4.83' '4.76' '3.75']
['nd' 'mbio_kit_food' 'qiagen_ministool']
['nd' '4' '5' '3' '2' '1']
['nd' '2' '1']
['nd' 'igt' 'ngt' 't2d']
['nd' '0' '1.8' '0.1' '0.7' '0.2' '0.5' '0.8' '0.4' '0.3' '0.6' '0.9'
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 '2.3']
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 '0.75' '0.77' '0.93' '0.96' '0.99' '0.97' '1.05']
['nd' '85' '93' '94' '104' '78' '84' '115' '80' '87' '92' '67' '69' '102'
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 '71' '89' '98' '110' '103' '66' '70' '108' '106' '101' '109' '117' '97'
 '76' '75']
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 '6.14' '6.47' '6.88' '5.56' '5.26' '4.83' '5.29' '5.23' '5.55' '4.91'
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 '6.55']
['nd' '0.95' '0.93' '0.61' '0.55' '0.99' '1.15' '1.89' '1.54' '0.92'
 '1.36' '1.01' '1.17' '0.42' '0.83' '1.5' '0.67' '0.6' '1.22' '0.78'
 '1.31' '3.28' '0.73' '0.91' '1.03' '0.68' '0.84' '0.71' '2.04' '0.88'
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 '1.42' '1.2' '4' '1.95' '3.64' '1.26' '2.88' '0.49' '1.43' '1.27' '1.57'
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 '3.07' '0.8' '1.62' '1.25' '2.36' '1.55' '2.15' '1.67' '1.63' '6.35']
['nd' '63' '58' '74' '68' '114' '71' '85' '94' '72' '62' '97' '75' '52'
 '65' '61' '90' '53' '66' '76' '59' '70' '44' '69' '64' '60' '56' '80'
 '112' '182' '92' '73' '67' '54' '77' '57' '110' '81' '47' '49' '93' '55'
 '89' '50' '132' '95' '78' '48']
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 '9.6' '4.9' '5.4' '4.6' '23' '33' '13' '7.4' '6.8' '6.4' '8.3' '8' '5.7'
 '16' '8.9' '11' '4.8' '6.3' '14' '6.1' '6.2' '7.3' '7.9' '5' '4.7' '36'
 '8.7' '6.6' '8.5' '6.9' '9' '41' '47' '19' '8.8' '3.7' '4.5' '7.2' '15'
 '2.8' '9.4' '6.5' '5.1' '3.1' '6' '18' '22' '4.2' '9.2' '3.9' '66' '17'
 '51' '3' '9.7' '4' '8.1' '5.8' '3.5' '7.8' '57' '25']
['nd' '33' '34' '36' '37' '38' '53' '35' '40' '42' '59' '43' '41' '46'
 '44' '31' '76' '52' '48' '45' '50' '26' '51' '63' '32' '65' '56' '49'
 '77' '58' '47' '27']
['nd' '13' '13.1' '12.3' '12.2' '15.6' '11.7' '7' '6.75' '17.4' '16.4'
 '21.1' '27.6' '16.5' '10.5' '21.4' '20.1' '22.2' '19' '6.43' '7.34' '28'
 '14.8' '11.8' '17.8' '11.9' '14.4' '34.8' '7.49' '24.8' '11.3' '10.1'
 '8.54' '24.6' '13.2' '23.3' '20.6' '20.7' '10.9' '15.1' '20.5' '9.34'
 '14.1' '15.5' '30.2' '16.2' '8.5' '11.4' '17.1' '9.65' '11.6' '11' '15.7'
 '9.28' '15.8' '8.59' '16.8' '15.2' '10' '6.85' '13.5' '12.1' '14.5'
 '14.2' '8.9' '26.3' '15' '6.1' '8.2' '10.3' '9.78' '8.45' '10.2' '21.6'
 '19.6' '12.7' '8.91' '15.3' '9.52' '21.8' '9.61' '6.48' '9.87' '10.7'
 '8.82' '9.11' '9.9' '7.67' '11.1' '15.4' '12' '7.3' '8.29' '18.3' '18.8'
 '16.3' '4.69' '8.67' '-' '8.53' '9.7' '8.17' '8.8' '3.68' '17.7' '4.39'
 '9.55' '19.2' '9.84' '21.3' '7.46' '5.64' '8.13' '9.67' '26.6' '12.9'
 '7.81' '9.36']
['nd' '22.5' '39.4' '23' '72.1' '4.75' '25.4' '29.6' '105' '11.3' '22.9'
 '14.5' '42.6' '6.16' '8.49' '33.4' '8.96' '11.4' '12.2' '7.14' '34.7'
 '36.4' '49.4' '12.5' '15.4' '14.7' '21.3' '13.2' '10.1' '23.4' '15.1'
 '28.5' '28.2' '8.12' '11.5' '7.02' '57.1' '37.6' '38.5' '28' '36' '6.21'
 '7.01' '19.9' '10.9' '20.1' '8.53' '19.1' '44.9' '21.1' '8.79' '45.2'
 '27' '18.8' '23.2' '17.1' '14.8' '30.3' '28.4' '21.7' '57.5' '16.1'
 '35.2' '40.3' '48.2' '14.6' '21.4' '3.58' '7.33' '21.2' '29.8' '29.5'
 '6.98' '2.17' '48.9' '29.7' '40.4' '32.9' '13.1' '37.8' '77.7' '21.6'
 '49.9' '18.5' '13' '10.4' '35.8' '53.6' '14.1' '25.1' '17' '16.5' '7.28'
 '3.59' '15.8' '29.1' '25.7' '43.5' '7.11' '33.8' '18.2' '25.6' '26'
 '5.28' '31.8' '20.6' '3.92' '57.7' '5.49' '10.3' '36.6' '31.4' '5.6' '-'
 '19.6' '44' '12.6' '32.4' '35' '16.2' '5.47' '91.8' '37.5' '49.1' '23.3'
 '28.9' '31.7' '36.3' '42.1' '7.06']
['nd' '1' '0.1' '0.7' '0.8' '-' '1.4' '0.6' '0.3' '0.9' '0.4' '4.8' '16'
 '1.7' '1.5' '1.1' '1.3' '0.5' '0' '1.6' '11.2' '7.5' '3.4' '3.6' '0.2'
 '2' '1.8' '3.1' '4.6' '1.2' '2.5' '4.5' '3.3' '2.2' '1.9' '8.9' '3' '2.1'
 '3.5' '17.8' '5.9' '3.8' '13.1' '4' '2.7']
['nd' '202.14' '149.89' '108.38' '156.83' '100.46' '-' '147.82' '138.55'
 '122.88' '172.94' '91.32' '85.29' '66.99' '131.88' '56.02' '33.33'
 '172.68' '115.77' '131.9' '253.37' '99.15' '158.25' '168.9' '54.27'
 '67.19' '55.88' '220.89' '188.26' '120.59' '72' '100.14' '306.87' '73.53'
 '97.98' '73.58' '82.53' '344.52' '98.57' '77.77' '260.83' '79.48'
 '125.01' '202.04' '172.12' '50.89' '455.48' '114.86' '36.12' '90.97'
 '146.48' '123.56' '158.27' '111.89' '103.25' '87.99' '68.8' '49.67'
 '58.24' '297.92' '69.8' '65.28' '70.38' '91.03' '125.85' '91.9' '76.69'
 '89.17' '75.4' '199.62' '173.53' '273.73' '155.23' '61.66' '119.19'
 '102.69' '48.04' '49.3' '374.99' '100.73' '782.18' '107.27' '63.05'
 '109.15' '86.25' '123.71' '80.72' '71.51' '82.18' '155.25' '172.73'
 '176.5' '228.33' '140.3' '544.12' '295.9' '59.25' '219.58' '149.5'
 '63.13' '76.65' '71.52' '54.88' '97.11' '59.85' '99.42' '311.24' '137.13'
 '126.98' '73.08' '113.79' '315.21' '16.4' '62.57' '56.69' '56.47' '54.12'
 '255.56' '109.28' '521.85' '30.76' '97.35' '160.61' '57.14' '253.72'
 '110.08' '206.06' '142.31' '61.97' '130.04' '52.1' '215.11']
['nd' '0.69' '1.12' '2.16' '1.13' '0.39' '0.68' '26.51' '11.37' '0.82'
 '0.56' '1.27' '7.68' '1.5' '0.6' '6.48' '1.9' '0.51' '1.15' '2.98' '3.54'
 '6.25' '4.55' '0.94' '2.04' '1.09' '1.02' '14.92' '0.71' '2.77' '2.4'
 '3.52' '1.69' '0.83' '1.26' '2.26' '0.21' '1.07' '5.68' '0.49' '3.14'
 '0.13' '0.67' '1.54' '1.24' '7.05' '0.63' '1.44' '1.55' '3.84' '3' '1.52'
 '1.28' '7.03' '13.56' '5.67' '1.49' '1.34' '1.36' '4.11' '4.64' '2.88'
 '1.38' '1.53' '0.34' '1.81' '3.53' '1.21' '0.9' '0.77' '38.95' '2' '2.48'
 '0.85' '2.23' '3.2' '2.53' '3.48' '7.5' '2.37' '11.82' '2.38' '2.52'
```

```
 '3.29' '0.93' '2.62' '0.81' '1.46' '99.22' '0.58' '1.78' '7.64' '1.37'
 '1.31' '2.28' '10.87' '2.84' '1.25' '7.93' '0.64' '0.99' '12.36' '1.62'
 '5.21' '1.1' '27.15' '1.33' '0.38' '1.86' '1.06' '0.41' '13.16' '4.91'
 '1.08' '3.85' '0.65' '1.47' '1.84' '13.2' '3.26' '1.32' '1.18' '4.48'
 '2.35' '0.42' '21' '10.06']
['nd' '0.74' '0.61' '0.51' '0.9' '0.5' '1.14' '1.78' '1.84' '0.72' '0.79'
 '0.64' '0.56' '0.49' '0.7' '2.7' '0.44' '0.55' '0.58' '1.58' '2.6' '0.93'
 '0.73' '0.66' '0.53' '0.75' '1.25' '0.81' '0.83' '0.94' '1.22' '1.35'
 '0.92' '0.77' '0.84' '0.71' '1.18' '0.89' '0.63' '0.68' '0.54' '2' '0.62'
 '0.87' '0.91' '0.98' '0.78' '0.8' '0.97' '0.41' '0.59' '1.07' '0.31'
 '1.06' '1.21' '1.47' '1.12' '0.67' '0.99' '0.95' '1.3' '1.16' '1.38'
 '1.37' '1.36' '0.46' '1.2' '0.88' '0.34' '1.32' '1.72' '1.11' '0.12'
 '0.85' '0.29' '0.65' '1.4' '0.4' '1' '2.8' '1.6' '0.52' '1.03' '1.08'
 '0.69' '1.52']
['nd' '1.77' '2.9' '1.04' '2.83' '0.96' '2.76' '2.27' '2.94' '3.62' '1.8'
 '2.37' '0.81' '1.46' '1.82' '2.52' '1.07' '0.75' '2.92' '1.43' '1.86'
 '2.78' '1.72' '2.06' '1.84' '0.85' '1.6' '1.28' '2.09' '1.31' '1.66'
 '1.57' '3.19' '2.23' '1.33' '2.42' '2.47' '2.22' '0.95' '1.56' '1.01'
 '1.47' '3.21' '2.26' '2.56' '2.36' '1.45' '4.27' '2.31' '3.28' '2.08'
 '6.74' '1.55' '1.16' '1.15' '1.23' '1.22' '3.34' '1.54' '2.38' '1.78'
 '2.14' '2.43' '2.62' '2.69' '1.91' '1.58' '1.79' '2.77' '2.18' '4.87'
 '1.76' '0.94' '2.65' '6.11' '1.92' '2.05' '2.54' '1.63' '2.03' '1.03'
 '2.25' '3.86' '2.21' '2.16' '3.89' '1.88' '1.21' '1.52' '3.52' '1.71'
 '3.81' '2.71' '1.67' '7.1' '4.14' '1.65' '2.12' '3.74' '3.3' '3.48'
 '1.98' '2.44' '2.29' '1.39' '0.86' '1.37' '2.79' '2.2' '2.04' '3.01' '3'
 '1.08' '2.53']
['nd' '0.85' '0' '-' '2.41' '1.74' '6' '0.63' '1.02' '1.65' '0.6' '0.14'
 '2.05' '4.64' '0.26' '5.77' '9.56' '1.42' '16.85' '2.73' '11.91' '12.89'
 '1.44' '3.31' '0.82' '3.82' '2.23' '6.65' '9.54' '0.55' '0.1' '7.29'
 '1.73' '6.4']
['nd' '941.35' '766.32' '522.14' '767.02' '806.45' '-' '1107.28' '1004'
 '637.54' '814.43' '810.44' '918.41' '639.78' '476.37' '1073.95' '710.69'
 '608.62' '932.26' '765.62' '1348.58' '966.14' '1224.79' '655.61' '333.52'
 '913.25' '567.92' '867.17' '585.88' '464.81' '1006.04' '1163.37' '690.95'
 '817.84' '603.82' '807.93' '276.65' '894.44' '894.24' '889.07' '501.25'
 '688.31' '564.43' '617.9' '839.61' '765.46' '702.19' '602.49' '683.31'
 '745.27' '522.79' '635.58' '767.49' '657.49' '1033.03' '690.19' '676.39'
 '715.62' '389.8' '766.81' '989.69' '592.01' '641.53' '699.12' '458.06'
 '856.49' '704.67' '675.62' '552.14' '434.41' '977.02' '791.41' '559.32'
 '660.47' '148.95' '727.64' '523.9' '673.58' '873.32' '1179.49' '1312.23'
 '804.95' '109.75' '771.32' '1192.01' '552.25' '332.07' '711.86' '822.75'
 '254.49' '704.4' '779.93' '688.48' '356.51' '465.58' '717.03' '1079.71'
 '578.9' '862.85' '970.13' '415.85' '902.35' '651.95' '763.23' '865.49'
 '556.64' '861.83' '1203.67' '1319.38' '901.43' '889.54' '2276.46'
 '1798.27' '890.01' '811' '1184.81' '764.42' '1061.43' '1169.62' '510.36'
 '1246.62' '1216.26' '677.67' '568' '1007.16' '1218.49' '1231.77' '655.19'
 '901.82' '703.12' '559.14' '816.53']
['nd' 'n' 'y']
['nd' 'n' 'y']
['nd' '-' 'met' 'sulph']
['nd' 'na' '40' '35' '38' '39' '24' '42' '59' '37' '60' '15' '33' '34']
['nd' 'na' 't3n1m1' 't3nxm1' 't1n0m0' 't2n0m0' 't2n1m1' 't4n1m0' 't4n1m1'
 't3n1m0' 't3n0m0' 't2n1m0' 't4n0m0' 't3n0m1' 't4n0m1']
['nd' 'na' 'iv' 'i' 'iii' 'ii']
['nd' 'lc' 'na' 'lc/rc' 'rc' 'rectum' 'sigma']
['nd' 'negative' 'positive']
['nd' 'negative' 'positive' 'na']
['nd' 'control' 'crc' 'na']
```

In [202…

```
# rename and set index

france
```

Out[202]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	ge
3343	WT2D	-1.0	-1.0	stool	n	NaN	
3484	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	
3483	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	
3482	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	
3481	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
...	...	...	...	...	...	...	
3536	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3521	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3561	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3609	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	
3608	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	

135 rows × 3513 columns

In [203…

```
# rename and set index

france.reset_index()
```

Out[203]:

	index	dataset_name	sampleID	subjectID	bodysite	disease	ag
0	3343	WT2D	-1.0	-1.0	stool	n	Na
1	3484	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	Na
2	3483	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	Na
3	3482	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	Na
4	3481	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na
...	...	...	...	...	...	...	.
130	3536	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na
131	3521	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na
132	3561	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na
133	3609	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na
134	3608	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	Na

135 rows × 3514 columns

In [204…

```
#reset_index and rename and set index

france.reset_index(drop=True, inplace=True)
```

In [205…

```
france
```

Out[205]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	genc
0	WT2D	-1.0	-1.0	stool	n	NaN	N
1	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	N
2	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	N
3	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	N
4	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
...	...	...	...	...	...	...	
130	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
131	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
132	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
133	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
134	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N

135 rows × 3513 columns

In [206…

```
france.set_index("dataset_name")
```

Out[206]:

	sampleID	subjectID	bodysite	disease	age	gender
dataset_name						
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
...	...	...	...	...	...	...
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

135 rows × 3512 columns

In [207…

```
france
```

Out[207]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	genc
0	WT2D	-1.0	-1.0	stool	n	NaN	N
1	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	N
2	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	N
3	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	N
4	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
...	...	...	...	...	...	...	
130	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
131	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
132	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
133	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N
134	Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	N

135 rows × 3513 columns

In [208…

```
france.set_index("dataset_name",inplace=True)
```

In [209…

```
france
```

Out[209]:

	sampleID	subjectID	bodysite	disease	age	gender
dataset_name						
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
...	...	...	...	...	...	...
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

135 rows × 3512 columns

In [210…

```
france.rename({"disease":"subjectID","sampleID": "country"})
```

Out[210]:

dataset_name	sampleID	subjectID	bodysite	disease	age	gender
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
...	...	...	...	...	...	...
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

135 rows × 3512 columns

In [211…

```
france.rename({"disease":"subjectID","sampleID": "country"},axis=1)
```

Out[211]:

dataset_name	country	subjectID	bodysite	subjectID	age	gender
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
...	...	...	...	...	...	...
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

135 rows × 3512 columns

In [212…

```
france
```

Out[212]:

dataset_name	sampleID	subjectID	bodysite	disease	age	gender
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
...	...	...	...	...	...	...
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

135 rows × 3512 columns

In [213…

```
#nlargest and nsmallest
```

In [222…

```
france.nlargest(n=10, columns="age")
```

Out[222]:

dataset_name	sampleID	subjectID	bodysite	disease	age	gender
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN

10 rows × 3512 columns

In [223…

```
france.nlargest(n=10, columns="age").loc[:,"gender"]
```

Out[223]:
```
dataset_name
WT2D                              NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Zeller_fecal_colorectal_cancer    NaN
Name: gender, dtype: float64
```

In [226…
```
france["disease"].value_counts().nlargest(10).plot.bar(ax=ax[1][0])
ax[1][0].set_title("Top 10 Diseases")
```

Out[226]:
```
Text(0.5, 1.0, 'Top 10 Diseases')
```

In [230…
```
france.nsmallest(n=5,columns="pubmedid")
```

Out[230]:

dataset_name	sampleID	subjectID	bodysite	disease	age	gender
WT2D	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	small_adenoma	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	n	NaN	NaN
Zeller_fecal_colorectal_cancer	-1.0	-1.0	stool	cancer	NaN	NaN

5 rows × 3512 columns

In [231…
```
# value_counts()
top_100 = france.nlargest(n=100,columns="pubmedid")
```

In [233…
```
top_100["pubmedid"].value_counts()
```

Out[233]:
```
pubmedid
25432777.0    100
Name: count, dtype: int64
```

In [234…
```
top_100["pubmedid"].value_counts(normalize=True)
```

Out[234]:
```
pubmedid
25432777.0    1.0
Name: proportion, dtype: float64
```

In [235…
```
top_100["pubmedid"].value_counts(normalize=True,ascending=False)
```

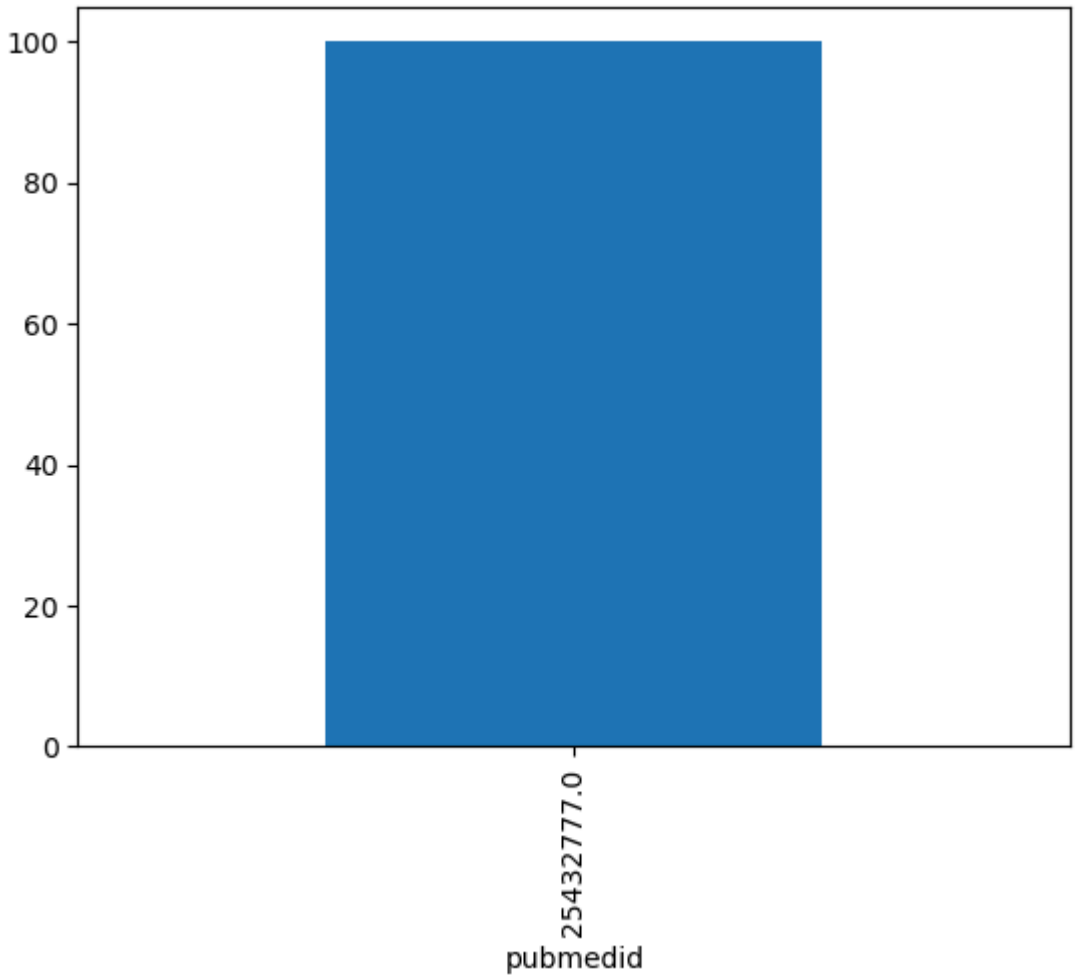
Out[235]:
```
pubmedid
25432777.0    1.0
Name: proportion, dtype: float64
```

In [236…
```
top_100["pubmedid"].value_counts(normalize=True,ascending=True)
```

Out[236]:
```
pubmedid
25432777.0    1.0
Name: proportion, dtype: float64
```

In [237…
```
top_100["pubmedid"].value_counts().plot.bar()
```

Out[237]: <Axes: xlabel='pubmedid'>



In [238…

```
data
```

Out[238]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	-1.0	-1.0	stool	n	NaN	NaN	der
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	NaN	NaN	
1894	metahit	-1.0	-1.0	stool	n	NaN	NaN	
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
...	...	...	...	...	...	...	...	
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	

3610 rows × 3513 columns

In [239…

```
# sort_values

country
```

Out[239]:
```
1866     True
1895     True
1894     True
1893     True
1892     True
        ...
622     False
621     False
620     False
626     False
581     False
Name: country, Length: 3610, dtype: bool
```

In [240…
```
pubmedid
```

Out[240]:

	TechnologyName	Throughput	Accuracy
0	25981789	1000	0.95

In [251…
```
# aggfuncs + agg() & cumsum()

print("Min age:", data.age.min())
print("Max age:", data.age.max())
print("Mean age:", data.age.mean())
print("Median age:", data.age.median())
print("std age:", data.age.std())
print("Count number of rows in age:", data.age.count())
print("Sum of pubmedid age:", data.pubmedid.sum())
print("Mode dataset_name", data.dataset_name.mode()[0])
```

```
Min age: nan
Max age: nan
Mean age: nan
Median age: nan
std age: nan
Count number of rows in age: 0
Sum of pubmedid age: 72820910368.0
Mode dataset_name hmp
```

In [252…
```
data.dataset_name.mode()[0]
```

Out[252]:
```
'hmp'
```

In [253…
```
data["pubmedid"].quantile(0.8)
```

Out[253]:
```
25079328.0
```

In [254…
```
0.61
data["pubmedid"].quantile(0.99)
```

Out[254]:
```
25981789.0
```

In [255…
```
data.pubmedid.agg(["min", "max", "mean", "median", "std", "sum", "count"])
```

Out[255]:
```
min       2.020360e+07
max       2.598179e+07
mean      2.375886e+07
median    2.371938e+07
std       1.299564e+06
sum       7.282091e+10
count     3.065000e+03
Name: pubmedid, dtype: float64
```

In [256…
```
data.pubmedid.cumsum()
```

Out[256]:
```
1866     20203603.0
1895     40407206.0
1894     60610809.0
1893     80814412.0
1892    101018015.0
           ...
622             NaN
621             NaN
620             NaN
626             NaN
581             NaN
Name: pubmedid, Length: 3610, dtype: float64
```

In [259…
```
pubmedid = data.loc[data.country == "pa" ,["gender", "age"]].groupby("age")
```

In [260…
```
pubmedid
```

Out[260]:
```
Series([], Name: gender, dtype: float64)
```

In [261…
```
pubmedid.cumsum()
```

Out[261]:
```
Series([], Name: gender, dtype: float64)
```

In [262…
```
# qut and qcut
# cut
pd.cut(x = data["pubmedid"],bins=5)
```

Out[262]:
```
1866    (20197824.814, 21359240.2]
1895    (20197824.814, 21359240.2]
1894    (20197824.814, 21359240.2]
1893    (20197824.814, 21359240.2]
1892    (20197824.814, 21359240.2]
                   ...
622                            NaN
621                            NaN
620                            NaN
626                            NaN
581                            NaN
Name: pubmedid, Length: 3610, dtype: category
Categories (5, interval[float64, right]): [(20197824.814, 21359240.2] < (2
1359240.2, 22514877.4] < (22514877.4, 23670514.6] < (23670514.6, 24826151.
8] < (24826151.8, 25981789.0]]
```

In [263…
```
pd.cut(x = data["pubmedid"],bins=5).value_counts()
```

Out[263]:
```
pubmedid
(22514877.4, 23670514.6]      1397
(24826151.8, 25981789.0]      1135
(23670514.6, 24826151.8]       423
(20197824.814, 21359240.2]     110
(21359240.2, 22514877.4]         0
Name: count, dtype: int64
```

In [269…
```
pd.cut(x = data["pubmedid"],bins=[21359240.2,22514877.4, 23670514.6, 248261
```

Out[269]:
```
1866    NaN
1895    NaN
1894    NaN
1893    NaN
1892    NaN
       ...
622     NaN
621     NaN
620     NaN
626     NaN
581     NaN
Name: pubmedid, Length: 3610, dtype: category
Categories (4, interval[float64, right]): [(21359240.2, 22514877.4] < (225
14877.4, 23670514.6] < (23670514.6, 24826151.8] < (24826151.8, 25981789.
0]]
```

In [270…
```
pd.cut(x = data["pubmedid"],bins=[21359240.2,22514877.4, 23670514.6, 248261
```

Out[270]:
```
pubmedid
(22514877.4, 23670514.6]    1397
(24826151.8, 25981789.0]    1135
(23670514.6, 24826151.8]     423
(21359240.2, 22514877.4]       0
Name: count, dtype: int64
```

In [271…
```
pd.cut(x = data["pubmedid"],bins=[21359240.2,22514877.4, 23670514.6, 248261
```

Out[271]:
```
1866    NaN
1895    NaN
1894    NaN
1893    NaN
1892    NaN
       ...
622     NaN
621     NaN
620     NaN
626     NaN
581     NaN
Name: pubmedid, Length: 3610, dtype: category
Categories (4, object): ['80s' < '90s' < '00s' < '10s']
```

In [272…
```
pd.cut(x = data["pubmedid"],bins=[21359240.2,22514877.4, 23670514.6, 248261
```

Out[272]:
```
pubmedid
90s    1397
10s    1135
00s     423
80s       0
Name: count, dtype: int64
```

In [273…
```
pd.cut(x = data["pubmedid"],bins=[21359240.2,22514877.4, 23670514.6, 248261
```

Out[273]:
```
1866    NaN
1895    NaN
1894    NaN
1893    NaN
1892    NaN
       ...
622     NaN
621     NaN
620     NaN
626     NaN
581     NaN
Name: pubmedid, Length: 3610, dtype: category
Categories (4, object): ['80s' < '90s' < '00s' < '10s']
```

In [274…
```
data
```

Out[274]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	-1.0	-1.0	stool	n	NaN	NaN	der
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	NaN	NaN	
1894	metahit	-1.0	-1.0	stool	n	NaN	NaN	
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
...	...	...	...	...	...	...	...	
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	

3610 rows × 3513 columns

In [275…
```
# qcut

pd.qcut(x=data["pubmedid"], q=4)
```

Out[275]:
```
1866    (20203602.999, 22699609.0]
1895    (20203602.999, 22699609.0]
1894    (20203602.999, 22699609.0]
1893    (20203602.999, 22699609.0]
1892    (20203602.999, 22699609.0]
                   ...
622                           NaN
621                           NaN
620                           NaN
626                           NaN
581                           NaN
Name: pubmedid, Length: 3610, dtype: category
Categories (4, interval[float64, right]): [(20203602.999, 22699609.0] < (2
2699609.0, 23719380.0] < (23719380.0, 24997787.0] < (24997787.0, 25981789.
0]]
```

In [276…
```
pd.qcut(x=data["pubmedid"], q=4).value_counts()
```

Out[276]:
```
pubmedid
(20203602.999, 22699609.0]    1091
(24997787.0, 25981789.0]       753
(23719380.0, 24997787.0]       660
(22699609.0, 23719380.0]       561
Name: count, dtype: int64
```

In [278…
```
pd.qcut(x=data["pubmedid"], q=4,precision=50).value_counts()
```

Out[278]:
```
pubmedid
(20203603.0, 22699609.0]    1091
(24997787.0, 25981789.0]     753
(23719380.0, 24997787.0]     660
(22699609.0, 23719380.0]     561
Name: count, dtype: int64
```

In [280…
```
pd.qcut(x=data["pubmedid"], q=[0,0.5,0.75,0.95,1],precision=50).value_counts
```

Out[280]:
```
pubmedid
(20203603.0, 23719380.0]    1652
(23719380.0, 24997787.0]     660
(24997787.0, 25432777.0]     657
(25432777.0, 25981789.0]      96
Name: count, dtype: int64
```

In [282…
```
pd.qcut(x=data["pubmedid"], q=[0, 0.5, 0.75, 0.95, 1], labels=["Low tier", '
```

Out[282]:
```
pubmedid
Low tier         1652
Above Avg         660
Popular Games     657
Mega Hits          96
Name: count, dtype: int64
```

In [283…
```
data["Popularity"] = pd.qcut(x=data["pubmedid"], q=[0, 0.5, 0.75, 0.95, 1],
```

In [284…
```
data
```

Out[284]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	-1.0	-1.0	stool	n	NaN	NaN	der
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	NaN	NaN	
1894	metahit	-1.0	-1.0	stool	n	NaN	NaN	
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
...	...	...	...	...	...	...	...	
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	

3610 rows × 3514 columns

In [285…
```
# apply

country = ["spain","usa","denmark","france"]
```

In [286…
```
def categories(x):
    if x in country:
        return "country"
```

In [296…
```
data["pubmedid"]
```

Out[296]:
```
1866    20203603.0
1895    20203603.0
1894    20203603.0
1893    20203603.0
1892    20203603.0
           ...
622            NaN
621            NaN
620            NaN
626            NaN
581            NaN
Name: pubmedid, Length: 3610, dtype: float64
```

In [297…
```
data["pubmedid"].apply(categories)
```

Out[297]:
```
1866    None
1895    None
1894    None
1893    None
1892    None
        ...
622     None
621     None
620     None
626     None
581     None
Name: pubmedid, Length: 3610, dtype: object
```

In [298…
```
data["pubmedid_data"] = data["pubmedid"].apply(categories)
```

In [299…
```
data
```

Out[299]:

	dataset_name	sampleID	subjectID	bodysite	disease	age	gender	co
1866	metahit	-1.0	-1.0	stool	n	NaN	NaN	der
1895	metahit	-1.0	-1.0	stool	ibd_crohn_disease	NaN	NaN	
1894	metahit	-1.0	-1.0	stool	n	NaN	NaN	
1893	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
1892	metahit	-1.0	-1.0	stool	ibd_ulcerative_colitis	NaN	NaN	
...	...	...	...	...	...	...	...	
622	doyle_bt2	-1.0	12311.0	nd	nd	NaN	NaN	
621	doyle_bt2	-1.0	12271.0	nd	nd	NaN	NaN	
620	doyle_bt2	-1.0	12221.0	nd	nd	NaN	NaN	
626	doyle_bt2	-1.0	12351.0	nd	nd	NaN	NaN	
581	doyle_bt2	-1.0	10151.0	nd	nd	NaN	NaN	

3610 rows × 3515 columns

In [300…
```
import scipy.stats as stats
```

In [301…
```
z_score = data.select_dtypes("float").apply(lambda x: stats.zscore(x))
```

In [302…
```
z_score
```

Out[302]:

	sampleID	subjectID	age	gender	pubmedid	k__Archaea	k__Archaea|p__Euryarch
1866	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1895	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1894	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1893	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1892	-0.016646	-0.482639	NaN	NaN	NaN	-0.061271	-0.0
...	...	...	...	...	...	...	
622	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
621	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
620	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
626	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
581	-0.016646	-0.482598	NaN	NaN	NaN	-0.179261	-0.1

3610 rows × 3308 columns

In [303…

```
z_score.mean()
```

Out[303]:

```
sampleID
3.168903e-16
subjectID
-1.259688e-16
age
NaN
gender
NaN
pubmedid
NaN

...
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085        -
6.888918e-18
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcacea
e|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000209855
9.841312e-19
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1                          -
5.904787e-18
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965        -
5.904787e-18
Popularity
NaN
Length: 3308, dtype: float64
```

In [304…

```
z_score.std()
```

Out[304]:
```
sampleID
1.000139
subjectID
1.000139
age
NaN
gender
NaN
pubmedid
NaN

...
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Peptococcaceae
|g__Desulfotomaculum|s__Desulfotomaculum_ruminis|t__GCF_000215085
1.000139
k__Bacteria|p__Firmicutes|c__Clostridia|o__Clostridiales|f__Ruminococcacea
e|g__Faecalibacterium|s__Faecalibacterium_prausnitzii|t__GCF_000209855
1.000139
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1
1.000139
k__Bacteria|p__Firmicutes|c__Negativicutes|o__Selenomonadales|f__Veillonel
laceae|g__Megasphaera|s__Megasphaera_sp_BV3C16_1|t__GCF_000478965
1.000139
Popularity
NaN
Length: 3308, dtype: float64
```

In [305…
```
z_score
```

Out[305]:

	sampleID	subjectID	age	gender	pubmedid	k__Archaea	k__Archaea|p__Euryarch
1866	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1895	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1894	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1893	-0.016646	-0.482639	NaN	NaN	NaN	-0.179261	-0.1
1892	-0.016646	-0.482639	NaN	NaN	NaN	-0.061271	-0.0
...	...	...	...	...	...	...	
622	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
621	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
620	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
626	-0.016646	-0.482590	NaN	NaN	NaN	-0.179261	-0.1
581	-0.016646	-0.482598	NaN	NaN	NaN	-0.179261	-0.1

3610 rows × 3308 columns

In [2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:
```
data = pd.read_csv("abundance.csv")
```

```
/var/folders/b4/_dfkx7ls7yx63xxh8hx0s11r0000gn/T/ipykernel_43800/2423369456.py:1: DtypeWarning: Columns (2,5,9,20,26,42,47,51,52,59,61,68,76,77,78,79) have mixed types. Specify dtype option on import or set low_memory=False.
  data = pd.read_csv("abundance.csv")
```

In [4]:
```
data
```

Out[4]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 3513 columns

In [5]:
```
# corr()

corr_matrix = data.drop("pubmedid", axis=1)
```

In [6]:
```
corr_matrix
```

Out[6]:

	dataset_name	sampleID	subjectID	bodysite	disease	a
0	Candela_Africa	H10	h10	stool	n	
1	Candela_Africa	H11	h11	stool	n	
2	Candela_Africa	H12	h12	stool	n	
3	Candela_Africa	H13	h13	stool	n	
4	Candela_Africa	H14	h14	stool	n	
...	...	...	...	...	...	
3605	Zeller_fecal_colorectal_cancer	CCIS95409808ST-4-0	fr-152	stool	n	
3606	Zeller_fecal_colorectal_cancer	CCIS96387239ST-4-0	fr-626	stool	small_adenoma	
3607	Zeller_fecal_colorectal_cancer	CCIS98482370ST-3-0	fr-052	stool	n	
3608	Zeller_fecal_colorectal_cancer	CCIS98512455ST-4-0	fr-459	stool	cancer	
3609	Zeller_fecal_colorectal_cancer	CCIS98832363ST-4-0	fr-552	stool	cancer	

3610 rows × 3512 columns

In [7]:
```
numeric_data = data.select_dtypes(include=['float64', 'int64'])
```

In [ ]:

In [ ]:

In [309…
```
corr_matrix_numeric = corr_matrix.apply(pd.to_numeric, errors='coerce')
```

In [310…
```
corr_matrix_numeric = corr_matrix_numeric.dropna(axis=0, how='any').dropna(a
```

In [312…
```
corr_matrix_numeric = corr_matrix_numeric.fillna(0)
```

In [313…
```
if not corr_matrix_numeric.empty:
    sns.heatmap(corr_matrix_numeric)
else:
    print("Correlation matrix is empty.")
```

```
Correlation matrix is empty.
```

GroupBy , most important thing

In [314…
```
data.groupby("country")["pubmedid"].mean()
```

Out[314]:
```
country
 -            2.302312e+07
china         2.385132e+07
denmark       2.378328e+07
estonia       2.371938e+07
finland       2.371938e+07
france        2.542009e+07
germany       2.358196e+07
hungary       2.371938e+07
iceland       2.371938e+07
italy         2.598179e+07
nd            2.269961e+07
norway        2.371938e+07
peru          2.580711e+07
slovakia      2.371938e+07
spain         2.427308e+07
sweden        2.371938e+07
tanzania      2.598179e+07
usa           2.346169e+07
yugoslavia    2.371938e+07
Name: pubmedid, dtype: float64
```

In [315…
```
data.country.unique()
```

Out[315]:
```
array(['denmark', 'spain', 'usa', 'nd', 'china', ' -', 'germany',
       'sweden', 'france', 'yugoslavia', 'norway', 'hungary', 'estonia',
       'finland', 'iceland', 'slovakia', 'peru', 'italy', 'tanzania'],
      dtype=object)
```

In [316…
```
print(data["pubmedid"].mean())

data.loc[data["country"] == "denmark", "pubmedid"]
```

Out[316]:
```
23758861.45774878
1866    20203603.0
1878    20203603.0
1877    20203603.0
1876    20203603.0
1875    20203603.0
           ...
2045    24997787.0
2042    24997787.0
2050    24997787.0
2043    24997787.0
2044    24997787.0
Name: pubmedid, Length: 514, dtype: float64
```

In [317…
```
print(data["pubmedid"].mean())

data.loc[data["country"] == "denmark", "pubmedid"].mean()
```

Out[317]:
```
23758861.45774878
23783279.59922179
```

In [ ]: