```
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Pseudomonadales;f_Moraxellaceae;g_Acinetobacter;s_
    Bacteria; p Proteobacteria; c Gammaproteobacteria; o Pseudomonadales; f Pseudomonadaceae; g Pseudomonas; s
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Pseudomonadales;f Moraxellaceae;g Psychrobacter;s
d_Bacteria;p_Campylobacterota;c_Campylobacteria;o_Campylobacterales;f_Campylobacteraceae;g_Campylobacter;s_
    Bacteria; p Proteobacteria; c Gammaproteobacteria; c Enterobacterales; ; ;
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Pseudomonadales;f Pseudomonadaceae; ;
d_Bacteria;p_Firmicutes;c_Bacilli;o_Lactobacillales;f_Listeriaceae;g_Brochothrix;s_
    Bacteria; p Proteobacteria; c Gammaproteobacteria; ; ;
d Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Carnobacteriaceae;g Carnobacterium;s
d_Bacteria;p_Firmicutes;c_Bacilli;o_Bacillales;f_Planococcaceae;_
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Enterobacteriaceae;
    Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Vagococcaceae;g Vagococcus;s
\label{lem:d_Bacteria} $$ d\_Bacteria; p\_Firmicutes; c\_Bacilli; o\_Staphylococcales; f\_Staphylococcaceae; g\_Macrococcus; s\_Staphylococcaceae; g\_Macrococcus; s\_Staphylococcaceae; g\_Macrococcus; s\_Staphylococcaceae; g\_Macrococcus; s\_Staphylococcaceae; g\_Staphylococcaceae; g\_Staphyloc
    Bacteria;p Bacteroidota;c Bacteroidia;o Flavobacteriales;f Weeksellaceae;g Chryseobacterium;s
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Shewanellaceae;g Shewanella;s
d Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Morganellaceae;g Morganella;s
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Enterobacterales;f_Morganellaceae;g_Providencia;s_
d_Bacteria;p_Bacteroidota;c_Bacteroidia;o_Flavobacteriales;f_Flavobacteriaceae;g_Flavobacterium;s_
    Bacteria; p Proteobacteria; c Gammaproteobacteria; o Burkholderiales; f Oxalobacteraceae;
    _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Enterobacterales;f__Morganellaceae;g__Proteus;s__
    _Bacteria;p__Actinobacteriota;c__Actinobacteria;o__Micrococcales;__;_
d Bacteria;p Actinobacteriota;c Actinobacteria;o Micrococcales;f Micrococcaceae;
d__Bacteria;p__Firmicutes;c__Bacilli;o__Lactobacillales;__;__;_
    Bacteria; Actinobacteriota; Actinobacteria; Propionibacteriales; Propionibacteriaceae; Cutibacterium;
d Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Streptococcaceae;g Lactococcus;s
d_Bacteria;p_Firmicutes;c_Bacilli;o_Bacillales;f_Bacillaceae;__;_
    Bacteria;p_Firmicutes;c_Bacilli;o_Lactobacillales;f_Enterococcaceae;g_Enterococcus;s_
    Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Streptococcaceae; ;
    _Bacteria;p__Actinobacteriota;c__Actinobacteria;o__Corynebacteriales;f__Corynebacteriaceae;_
    _Bacteria;p__Firmicutes;c__Bacilli;o__Lactobacillales;f__Streptococcaceae;g__Streptococcus;s__
    Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Listeriaceae;g Listeria;s
    _Bacteria;p__Firmicutes;c__Bacilli;o__Bacillales;f__Bacillaceae;g__Bacillus;s__
Unassigned: : : : :
    _Bacteria;p__Actinobacteriota;c__Actinobacteria;o__Corynebacteriales;f__Corynebacteriaceae;g__Turicella;s__
    _Bacteria;p__Firmicutes;c__Bacilli;o__Staphylococcales;f__Staphylococcaceae;g__Staphylococcus;s__
d Bacteria;p Deinococcota;c Deinococci;o Deinococcales;f Trueperaceae;g Truepera;s
    Bacteria;p Bacteroidota;c Bacteroidia;o Flavobacteriales;f Weeksellaceae;
    _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Enterobacterales;f__Vibrionaceae;g__Salinivibrio;s__
d_Bacteria;p__Firmicutes;c_Bacilli;o_Lactobacillales;f_Lactobacillaceae;g_Lactobacillus;s_
    Bacteria;p Firmicutes;c Bacilli;o Erysipelotrichales;f Erysipelotrichaceae;
d__Bacteria;p__Bacteroidota;c__Bacteroidia;o__Flavobacteriales;f__Flavobacteriaceae;__;_
d_Bacteria;p_Firmicutes;c_Clostridia;o_Peptostreptococcales-Tissierellales;f_Family_XI;g_Ezakiella;s_
    Bacteria;p_Bdellovibrionota;c_Oligoflexia;o_0319-6G20;f_0319-6G20;g_0319-6G20;s_
    _Bacteria;p__Deinococcota;c__Deinococci;o__Thermales;f__Thermaceae;g__Thermus;s__
d__Bacteria;__;__;__;__
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Pasteurellaceae;g Haemophilus;s
d_Bacteria;p_Proteobacteria;c_Alphaproteobacteria;o_Sphingomonadales;f_Sphingomonadaceae;_;_
d__Bacteria;p__Actinobacteriota;c__Actinobacteria;__;__;__;
    Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Vibrionaceae;
\label{lem:d_Bacteria}  \mbox{$d$\_Bacteria$;$p$\_Proteobacteria$;$c$\_Gammaproteobacteria$;$o$\_Burkholderiales$;$f$\_Comamonadaceae$; ; }
    _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Pseudomonadales;f__Moraxellaceae;__;_
    Bacteria; p Proteobacteria; c Alphaproteobacteria; o Rhodobacterales; f Rhodobacteraceae;
    Bacteria: proteobacteria: Gammaproteobacteria: Burkholderiales: Neisseriaceae: Uruburuella:
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Bacteria;p Firmicutes;c Bacilli;o Bacillales;
       Bacteria;p_ Actinobacteriota;c_ Thermoleophilia;o_ Gaiellales;
      _Bacteria;p__Firmicutes;c__Clostridia;o__Clostridia_vadinBB60_group;f__Clostridia_vadinBB60_group;g__Clostridia_vadinBB60_group;s__
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Pseudomonadales;__;__;_
      _Bacteria;p__Firmicutes;c__Bacilli;o__Exiguobacterales;f__Exiguobacteraceae;g__Exiguobacterium;s__
d_Bacteria;p_Actinobacteriota;c_Thermoleophilia;o_Solirubrobacterales;f_67-14;g_67-14;s_
d_Bacteria;p_Actinobacteriota;c_Actinobacteria;o_Propionibacteriales;f_Propionibacteriaceae;_;
       _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Pseudomonadales;f__Halomonadaceae;g__Halomonas;s__
      _Bacteria;p__Actinobacteriota;c__Actinobacteria;o__Micrococcales;f__Microbacteriaceae;_
d_Bacteria;p_Firmicutes;c_Clostridia;o_Peptostreptococcales-Tissierellales;f_Peptostreptococcaeae;g_Peptostreptococcus;s_
      _Bacteria;p__Fusobacteriota;c__Fusobacteriia;o__Fusobacteriales;f__Fusobacteriaceae;g__Fusobacterium;s__
d_Bacteria;p_Actinobacteriota;c_Actinobacteria;o_Corynebacteriales;
d_Bacteria;p_Bacteroidota;c_Bacteroidia;o_Flavobacteriales;f_Flavobacteriaceae;g_Imtechella;s_
      _Bacteria;p__Firmicutes;c__Bacilli;o__Staphylococcales;f__Staphylococcaceae;g__Jeotgalicoccus;s__
d Bacteria;p Bacteroidota;c Bacteroidia; ;
d_Bacteria;p_Cyanobacteria;c_Cyanobacteriia;o_Pseudanabaenales;f_Pseudanabaenaceae;g_Pseudanabaena_PCC-7429;s_
      _Bacteria;p__Campylobacterota;c__Campylobacteria;o__Campylobacterales;f__Arcobacteraceae;__;
d Bacteria;p Actinobacteriota;c Actinobacteria;o Micrococcales;f Micrococcaceae;g Rothia;s
d_Bacteria;p_Firmicutes;c_Bacilli;__;__;__;
      Bacteria;p Chloroflexi;c Chloroflexia;o Thermomicrobiales;f JG30-KF-CM45;g JG30-KF-CM45;s
d Bacteria;p Proteobacteria;c Gammaproteobacteria;o Pseudomonadales;f Moraxellaceae;g Alkanindiges;s
d_Bacteria;p_Actinobacteriota;c_Actinobacteria;o_Micrococcales;f_Brevibacteriaceae;g_Brevibacterium;s_
       Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Carnobacteriaceae;
       Bacteria;p Actinobacteriota;c Acidimicrobiia;o Actinomarinales;
\label{eq:d_bacteria} $$ d\_Bacteria; p\_Actinobacteriota; c\_Actinobacteria; o\_Nitriliruptorales; f\_Nitriliruptoraceae; g\_Nitriliruptoraceae; s\_Nitriliruptoraceae; s\_Nitrilirup
      Bacteria;p Chloroflexi;c Gitt-GS-136;o Gitt-GS-136;f Gitt-GS-136;g Gitt-GS-136;s
      Bacteria; p Verrucomicrobiota; c Verrucomicrobiae; o Chthoniobacterales; f Chthoniobacteraceae; g Candidatus Udaeobacter; s
d Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Carnobacteriaceae;g Alloiococcus;s
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Enterobacterales;f_Enterobacteriaceae;g_Escherichia-Shigella;s_
d_Bacteria;p_Firmicutes;c_Bacilli;o_Bacillales;f_Bacillaceae;g_Geobacillus;s_
{\tt d\_Bacteria;p\_Firmicutes;c\_Clostridia;o\_Peptostreptococcales-Tissierellales;f\_Family\_XI;g\_Anaerococcus;s\_Institute and the context of the
      _Bacteria;p__Proteobacteria;c__Alphaproteobacteria;o__Acetobacterales;f__Acetobacteraceae;
d_Bacteria;p_Actinobacteriota;c_Thermoleophilia;o_Solirubrobacterales;f_Solirubrobacteraceae;
      Bacteria;p Proteobacteria;c Alphaproteobacteria;o Rickettsiales;f Mitochondria;g Mitochondria;s
d_Bacteria;p_Acidobacteriota;c_Blastocatellia;o_Pyrinomonadales;f_Pyrinomonadaceae;g_RB41;s_
{\tt d\_Bacteria;p\_Proteobacteria;c\_Gammaproteobacteria;o\_Enterobacterales;f\_Aeromonadaceae;g\_Oceanisphaera;s\_Enterobacterales;f\_Aeromonadaceae;g\_Oceanisphaera;s\_Enterobacterales;f\_Aeromonadaceae;g\_Oceanisphaera;s\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobacterales;f\_Enterobac
      Bacteria;p Actinobacteriota;c Acidimicrobiia; ; ;
      _Bacteria;p__Firmicutes;c__Bacilli;o__Staphylococcales;f__Staphylococcaceae;_
      Bacteria;p Actinobacteriota;c Actinobacteria;o Streptomycetales;f Streptomycetaceae;g E1B-B3-114;s
       _Bacteria;p__Firmicutes;c__Clostridia;o__Lachnospirales;f__Lachnospiraceae;__;_
      _Bacteria;p__Bacteroidota;c__Bacteroidia;o__Sphingobacteriales;f__Sphingobacteriaceae;g__Pedobacter;s__
d_Bacteria;p__Actinobacteriota;c__Thermoleophilia;o__Gaiellales;f__uncultured;g__uncultured;s__
       Bacteria;p Actinobacteriota;c Actinobacteria;o Propionibacteriales;f Nocardioidaceae;g Nocardioides;s
      _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Enterobacterales;f__Pasteurellaceae;g__Avibacterium;s_
      _Bacteria;p__Gemmatimonadota;c__AKAU4049;o__AKAU4049;f__AKAU4049;g__AKAU4049;s__
       _Bacteria;p__Verrucomicrobiota;c__Verrucomicrobiae;o__Verrucomicrobiales;f__Rubritaleaceae;_
      _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Enterobacterales;f__Morganellaceae;g__Moellerella;s__
      _Bacteria;p__Cyanobacteria;c__Cyanobacteriia;o__Chloroplast;f__Chloroplast;g__Chloroplast;s__
      Bacteria;p Patescibacteria;c Parcubacteria;o Candidatus Kaiserbacteria;f Candidatus Kaiserbacteria;g Candidatus Kaiserbacteria;s
      _Bacteria;p__Firmicutes;c__Bacilli;o__Lactobacillales;f__Enterococcaceae;_
       _Bacteria;p__Firmicutes;c__Bacilli;o__Staphylococcales;f__Gemellaceae;g__Gemella;s_
       Bacteria;p Synergistota;c Synergistia;o Synergistales;f Synergistaceae;g Jonquetella;s
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_Bacteria;p__Proteobacteria;c__Alphaproteobacteria;o__Rhizobiales;f__Rhizobiaceae;
      _Bacteria;p__Bacteroidota;c__Bacteroidia;o__Sphingobacteriales;f__Sphingobacteriaceae;_
      Bacteria;p Dependentiae;c Babeliae;o Babeliales;f Vermiphilaceae;g Vermiphilaceae;s
     \underline{\hspace{0.1cm}} \textbf{Bacteria;} \underline{\hspace{0.1cm}} \underline{\hspace{0.1cm}} \textbf{Gemmatimonadota;} \underline{\hspace{0.1cm}} \underline{\hspace{0.1cm}} \textbf{Gemmatimonadotes;} \underline{\hspace{0.1cm}} \underline{\hspace{0.1cm}} \underline{\hspace{0.1cm}} \textbf{Gemmatimonadotes;} \underline{\hspace{0.1cm}} \underline{\hspace{0.1
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Pseudomonadales;f_Nitrincolaceae;g_Nitrincola;s_
     Bacteria; p Proteobacteria; c Gammaproteobacteria; e Enterobacterales; f Pseudoalteromonadaceae; g Pseudoalteromonas; s
     _Bacteria;p__Planctomycetota;c__Planctomycetes;o__Pirellulales;f__Pirellulaceae;g__Pirellula;s_
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Burkholderiales;f_Neisseriaceae;_;_
      Bacteria; p Proteobacteria; c Gammaproteobacteria; o Burkholderiales; ;
     Bacteria; p Proteobacteria; c Gammaproteobacteria; o Enterobacterales; f Pasteurellaceae;
d Bacteria;p Actinobacteriota;c Actinobacteria;o Bifidobacteriales;f Bifidobacteriaceae;g Bifidobacterium;s
      Bacteria;p Firmicutes;c Negativicutes;o Veillonellales-Selenomonadales;f Veillonellaceae;g Veillonella;s
     _Bacteria;p__Bacteroidota;c__Bacteroidia;o__Flavobacteriales;f__Flavobacteriaceae;g__Myroides;s__
d Bacteria;p Patescibacteria;c Parcubacteria;o Candidatus Campbellbacteria;f Candidatus Campbellbacteria;g Candidatus Campbellbacteria;s
      Bacteria;p Proteobacteria;c Alphaproteobacteria;o Rhizobiales; ; ;
     _Bacteria;p__Firmicutes;c__Bacilli;o__Mycoplasmatales;f__Mycoplasmataceae;g__Mycoplasma;s__
d__Bacteria;p__Patescibacteria;c__Parcubacteria;__;_
      _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Xanthomonadales;f__Xanthomonadaceae;__;__
     _Bacteria;p__Firmicutes;c__Clostridia;o__Lachnospirales;f__Lachnospiraceae;g__[Eubacterium]_hallii_group;s_
d__Bacteria;p__Patescibacteria;c__Saccharimonadia;o__Saccharimonadales;__
     _Bacteria;p__Proteobacteria;c__Alphaproteobacteria;o__Caulobacterales;f__Caulobacteraceae;__;__
d Bacteria;p Bacteroidota;c Bacteroidia;o Chitinophagales;f Chitinophagaceae;
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Burkholderiales;f_Comamonadaceae;g_Schlegelella;s_
     _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Enterobacterales;f__Idiomarinaceae;g__Aliidiomarina;s_
d Bacteria;p Proteobacteria;c Gammaproteobacteria;o Enterobacterales;f Alteromonadaceae;g Rheinheimera;s
_Bacteria;p__Campylobacterota;c__Campylobacteria;o__Campylobacterales;__;__;__
     Bacteria;p Bacteroidota;c Bacteroidia;o Flavobacteriales;f Flavobacteriaceae;g Gillisia;s
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Burkholderiales;f_Alcaligenaceae;g_Alcaligenes;s_
     _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Burkholderiales;f__Burkholderiaceae;g__Ralstonia;s__
d Bacteria;p Actinobacteriota;c Actinobacteria;o Corynebacteriales;f Corynebacteriaceae;g Corynebacterium;s
d__Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Burkholderiales;f__Alcaligenaceae;_
     Bacteria; Proteobacteria; Gammaproteobacteria; Legionellales; Legionellaceae;
     Bacteria;p Proteobacteria;c Alphaproteobacteria;o Rhizobiales;f Beijerinckiaceae;
     _Bacteria;p__Proteobacteria;c__Alphaproteobacteria;o__Azospirillales;f__uncultured;g__uncultured;s_
     Bacteria; Actinobacteriota; Actinobacteria; Propionibacteriales; Nocardioidaceae; Aeromicrobium;
     Bacteria;p Actinobacteriota;c Actinobacteria;o Micrococcales;f Intrasporangiaceae;g Aquipuribacter;s
d_Bacteria;p_Proteobacteria;c_Gammaproteobacteria;o_Burkholderiales;f_Neisseriaceae;g_uncultured;s_
     Bacteria;p Chloroflexi;c KD4-96;o KD4-96;f KD4-96;g KD4-96;s
     Bacteria;p Firmicutes;c Bacilli;o Lactobacillales;f Aerococcaceae;g Aerococcus;s
     _Bacteria;p__Firmicutes;c__Bacilli;o__Lactobacillales;f__Aerococcaceae;g__Abiotrophia;s__
     _Bacteria;p__Firmicutes;c__Bacilli;o__Lactobacillales;f__Lactobacillaceae;__;_
     _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Burkholderiales;f__Burkholderiaceae;_
      Bacteria;p Proteobacteria;c Gammaproteobacteria;o Burkholderiales;f Neisseriaceae;g Vitreoscilla;s
     _Bacteria;p__Cyanobacteria;c__Cyanobacteriia;o__Leptolyngbyales;f__Leptolyngbyaceae;__;_
     _Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Burkholderiales;f__Hydrogenophilaceae;g__Hydrogenophilus;s__
      Bacteria;p Actinobacteriota;c Acidimicrobiia;o Microtrichales;f uncultured;g uncultured;s
d_Bacteria;p__Proteobacteria;c__Gammaproteobacteria;o__Xanthomonadales;__;__;__
d_Bacteria;p_Proteobacteria;_;_;_;_
      Bacteria;p Firmicutes;c Clostridia;o Peptostreptococcales-Tissierellales;f Family XI;g Finegoldia;s
     _Bacteria;p__Actinobacteriota;c__Acidimicrobila;o__Microtrichales;f__Ilumatobacteraceae;__;__
      Bacteria;p Firmicutes;c Bacilli;o Bacillales;f Planococcaceae;g Lysinibacillus;s
      Bacteria;p Proteobacteria;c Alphaproteobacteria;o Caulobacterales;f Hyphomonadaceae;g SWB02;s
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d_Bacteria;p_Actinobacteriota;c_Coriobacteriia;o_Coriobacteriales;f_Coriobacteriaceae;g_Collinsella;s_
d Bacteria;p Actinobacteriota;c Thermoleophilia;o Solirubrobacterales; ; ;
d_Bacteria;p_Proteobacteria;c_Alphaproteobacteria;o_Acetobacterales;f_Acetobacteraceae;g_Craurococcus-Caldovatus;s_
d_Bacteria;p_Proteobacteria;c_Alphaproteobacteria;o_Reyranellales;f_Reyranellaceae;g_Reyranella;s_
d_Bacteria;p_Proteobacteria;c_Alphaproteobacteria;o_Rhizobiales;f_Hyphomicrobiaceae;__;_
\label{local_decomposition} $$ d\_Bacteria; p\_Fusobacteriota; c\_Fusobacteria; o\_Fusobacteriales; f\_Fusobacteriaceae; \underline{\hspace{0.5cm}}; \underline{\hspace{0.5cm}}
d_Bacteria;p_Firmicutes;c_Clostridia;o_Oscillospirales;f_Hungateiclostridiaceae;__;_
d__Bacteria;p__Firmicutes;c__Clostridia;__;__;__;__
d_Bacteria;p_Firmicutes;c_Clostridia;o_Oscillospirales;f_Ruminococcaceae;g_Faecalibacterium;s_
\label{lostridiaceae} $$ d\_Bacteria; p\_Firmicutes; c\_Clostridia; o\_Clostridiales; f\_Clostridiaceae; g\_Clostridium\_sensu\_stricto\_5; s\_Clostridiaceae; g\_Clostridiaceae; g\_Clo
d_Bacteria;p_Bacteroidota;c_Rhodothermia;o_Rhodothermales;f_Rhodothermaceae;_;_
d_Bacteria;p_Bacteroidota;c_Bacteroidia;o_Bacteroidales;f_Bacteroidaceae;g_Bacteroides;s_
\label{lem:d_Bacteria} $$ d\_Bacteria; p\_Sumerlaeota; c\_Sumerlaeia; o\_Sumerlaeales; f\_Sumerlaeaceae; g\_Sumerlaea; s\_Sumerlaeaceae; g\_Sumerlaeaceae; g\_Sumerlae
 \verb|d_Bacteria;p_Firmicutes;c_Bacilli;o_Lactobacillales;f_Lactobacillaceae;g_Levilactobacillus;s_Lactobacillaceae;g_Levilactobacillus;s_Lactobacillaceae;g_Levilactobacillus;s_Lactobacillaceae;g_Levilactobacillus;s_Lactobacillus;s_Lactobacillaceae;g_Levilactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_Lactobacillus;s_
                 Bacteria;p Firmicutes;c Bacilli;o Erysipelotrichales;f Erysipelatoclostridiaceae;g Erysipelotrichaceae UCG-003;s
d_Bacteria;p_Acidobacteriota;c_vicinamibacteria;o_vicinamibacterales;f_uncultured;g_uncultured;s_
\label{lem:d_Bacteria} $$ d\_Bacteria; p\_Firmicutes; c\_Bacilli; o\_Erysipelotrichales; f\_Erysipelotrichaceae; g\_Erysipelothrix; s\_Erysipelotrichales; f\_Erysipelotrichaceae; g\_Erysipelothrix; s\_Erysipelotrichales; f\_Erysipelotrichaceae; g\_Erysipelothrix; s\_Erysipelotrichales; f\_Erysipelotrichaceae; g\_Erysipelothrix; s\_Erysipelotrichales; f\_Erysipelotrichaceae; g\_Erysipelothrix; s\_Erysipelothrix; s\_Erysipel
d Bacteria;p Bdellovibrionota;c Bdellovibrionia;o Bdellovibrionales;f Bdellovibrionaceae;g Bdellovibrio;s
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 ${\tt d\_Bacteria;p\_Bacteroidota;c\_Bacteroidia;o\_Sphingobacteriales;f\_Sphingobacteriaceae;g\_Sphingobacterium;s\_leadingstream and the state of the stat$