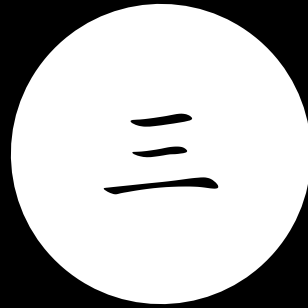


# BACTERIA



## TAXONOMY

Phyla, Classes, Orders, Families, and Genera



Bacteria I. Taxonomy: Genera and Species

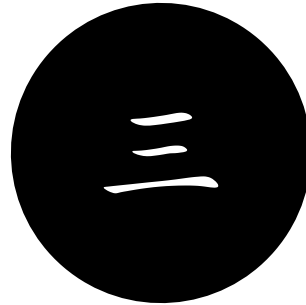
Bacteria II. Taxonomy: Reclassified Species

**Bacteria III. Taxonomy: Phyla, Classes, Orders, Families, and Genera**

**[bacteria.martinklvana.com](http://bacteria.martinklvana.com)**

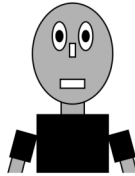


# **BACTERIA**



## **TAXONOMY**

**Phyla, Classes, Orders, Families, and Genera**



### **Bacteria III. Taxonomy: Phyla, Classes, Orders, Families, and Genera**

35 Phyla & 79 Classes & 183 Orders & 430 Families & 3,144 Genera

Martin Klvana

2nd Edition | 2020-04-18



[bacteria.martinklvana.com](http://bacteria.martinklvana.com)

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***Rg Veda 7.59.12***





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# 1 Introduction

Bacteria (sing. bacterium: mod. L., ad. Gr. βακτήριον, dim. of βάκτρον stick, staff) are living things belonging to the domain **Bacteria**.<sup>1</sup> Taxonomy (irreg. f. Gr. τάξις arrangement, order; -νομία distribution) is an orderly arrangement of (living) things into vertical and transverse series of named units, the so-called taxa (sing. taxon; phyla, classes, orders, families, genera, and species), each defined by a set of attributes shared by its members. The names of phyla, classes, orders, families, and genera consist of one word (with the first letter capitalized).

The formal cause of **Bacteria III. Taxonomy: Phyla, Classes, Orders, Families, and Genera**

(this book) is an idea of "a list of all genera belonging to each family, a list of all families belonging to each order, a list of all orders belonging to each class, and a list of all classes belonging to each phylum with references to primary/secondary publications containing the description of the families, orders, classes, and phyla"; for the generic references, see **Bacteria I. Taxonomy: Genera and Species**. The material cause of this book includes a computer (Windows, Cygwin, Mintty, VIM, Python, MikTeX, Zotero, Xara Designer Pro, EverNote, Trello), table, chair, eyeglasses, coffee, peanuts, electricity, and the Internet. The efficient cause of this book

is a skillful use of the means. The final cause is a harmony between this book and its formal cause.

The names of phyla (and their classes, orders, families, and genera) are listed in alphabetical order; the type classes, orders, families, and genera are not indicated; each reference contains three links (active, ■; inactive, □): URL, DOI, and PMID.

This version (2020-04-18) of **Bacteria III. Taxonomy: Phyla, Classes, Orders, Families, and Genera** includes the names of 35 phyla, 79 classes, 183 orders, and 430 families (published from 1917 to 2019), and 3,144 genera. The latest version of this book is available at [bacteria.martinklvana.com](http://bacteria.martinklvana.com), [researchgate.net/publication/324528662](https://researchgate.net/publication/324528662), and [patreon.com/martinklvana](https://patreon.com/martinklvana). New versions will

be announced in the **BACTERIA** project on ResearchGate.

## References

- [1] Woese, C. R.; Fox, G. E. *Proc Natl Acad Sci U S A* **1977**, *74*, 5088–5090.



## 2 Phyla

Abditibacteriota 7  
Acidobacteria 7  
Actinobacteria 8  
Aquificae 26  
Armatimonadetes 27  
Bacteroidetes 37  
Balneolaeota 50  
Caldiserica 57  
Calditrichaeota 57  
Chlamydiae 57  
Chlorobi 57  
Chloroflexi 58  
Chrysiogenetes 60  
Coprothermobacterota 60

Cyanobacteria 60  
Deferribacteres 66  
Deinococcus–Thermus 66  
Dictyoglomi 67  
Elusimicrobia 70  
Fibrobacteres 71  
Firmicutes 71  
Fusobacteria 90  
Gemmatimonadetes 99  
Kiritimatiellaeota 100  
Lentisphaerae 101  
Nitrospirae 103  
Planctomycetes 104  
Proteobacteria 105

Rhodothermaeota **177**

Spirochaetes **179**

Synergistetes **180**

Tenericutes **182**

Thermodesulfobacteria **183**

Thermotogae **183**

Verrucomicrobia **187**

### 3 A

**Phylum: Abditibacteriota**<sup>1</sup>

**Class: Abditibacteria**<sup>1</sup>

**Order: Abditibacteriales**<sup>1</sup>

**Family: Abditibacteriaceae**<sup>1</sup>

Abditibacterium

**Phylum: Acidobacteria**<sup>2</sup>

**Class: Acidobacteriia**<sup>3</sup>

**Order: Acidobacteriales**<sup>3</sup>

**Family: Acidobacteriaceae**<sup>2</sup>

Acidicapsa

Acidipila

Acidobacterium

Bryocella

Chloracidobacterium

Edaphobacter

Granulicella

Occallatibacter

Silvibacterium

Telmatobacter

Terracidiphilus

Terriglobus

**Order: Bryobacterales**<sup>4</sup>

**Family: Bryobacteraceae**<sup>5</sup>

Bryobacter

Paludibaculum

**Class: Blastocatellia**<sup>6</sup>

**Order: Blastocatellales**<sup>6</sup>

**Family: Arenimicrobiaceae**<sup>4</sup>

Arenimicrobium

Brevitalea

**Family: Blastocatellaceae**<sup>6</sup>

Aridibacter

Blastocatella

Stenotrophobacter

Tellurimicrobium

**Family: Pyrinomonadaceae**<sup>7</sup>

Pyrinomonas

**Class: Holophagae**<sup>8</sup>

**Order: Acanthopleuribacteriales**<sup>8</sup>

**Family: Acanthopleuribacteraceae**<sup>8</sup>

Acanthopleuribacter

**Order: Holophagales**<sup>8</sup>

**Family: Holophagaceae**<sup>8</sup>

Geothrix

Holophaga

**Order: Thermotomaculales**<sup>4</sup>

**Family: Thermotomaculaceae**<sup>4</sup>

Thermotomaculum

**Class: Thermoanaerobaculia**<sup>4</sup>

**Order: Thermoanaerobaculales**<sup>4</sup>

**Family: Thermoanaerobaculaceae**<sup>4</sup>

Thermoanaerobaculum

**Class: Vicinamibacteria**<sup>4</sup>

**Order: Vicinamibacteriales**<sup>4</sup>

**Family: Vicinamibacteraceae**<sup>4</sup>

Luteitalea

Vicinamibacter

**Phylum: Actinobacteria**<sup>3</sup>

**Class: Acidimicrobiia**<sup>9</sup>

**Order: Acidimicrobiales**<sup>10</sup>

**Family: Acidimicrobiaceae**<sup>10</sup>

Acidimicrobium



Ferrimicrobium

Ferrithrix

**Family: Iamiaceae**<sup>11</sup>

Aquihabitans

Iamia

**Family: Ilumatobacteraceae**<sup>12</sup>

Desertimonas

Ilumatobacter

**Family: None**

Aciditerrimonas

**Class: Actinobacteria**<sup>10</sup>

**Order: Acidothermales**<sup>13</sup>

**Family: Acidothermaceae**<sup>10</sup>

Acidothermus

**Order: Actinomycetales**<sup>14,15</sup>

**Family: Actinomycetaceae**<sup>15,16</sup>

Actinobaculum

Actinomyces

Actinotignum

Arcanobacterium

Boudabousia

Bowdeniella

Buchananella

Falcivibrio

Flaviflexus

Fudania

Gleimia

Mobiluncus

Pauljensenia

Schaalia

Trueperella

Varibaculum

Winkia

**Order: Actinopolysporales**<sup>17</sup>

**Family: Actinopolysporaceae**<sup>18</sup>

Actinopolyspora

Haloactinomyces

Halopolyspora

Mzabimyces

**Order: Bifidobacteriales**<sup>10</sup>

**Family: Bifidobacteriaceae**<sup>10</sup>

Aeriscardovia

Alloscardovia

Bifidobacterium

Bombiscardovia

Galliscardovia

Gardnerella

Metascardovia

Neoscardovia

Parascardovia

Pseudoscardovia

Scardovia

**Order: Catenulisporales**<sup>19</sup>

**Family: Actinospicaceae**<sup>20</sup>

Actinocrinis

Actinospica

**Family: Catenulisporaceae**<sup>21</sup>

Catenulispora

**Order: Corynebacteriales**<sup>22</sup>

**Family: Corynebacteriaceae**<sup>15</sup>

Bacterionema

Caseobacter

Corynebacterium

Turicella

**Family: Dietziaceae**<sup>10</sup>

Dietzia

**Family: Gordoniaceae**<sup>10</sup>

Gordonia

Jongsikchunia

Williamsia

**Family: Lawsonellaceae**<sup>23</sup>

Lawsonella

**Family: Mycobacteriaceae**<sup>15</sup>

Bactoderma

Mycobacterium

Mycobacteroides

Mycolicibacillus

Mycolicibacter

Mycolicibacterium

Stibiobacter

**Family: Nocardiaceae**<sup>15,24</sup>

Aldersonia

Amycolicococcus

Hoyosella

Micropolyspora

Millisia

Nocardia

Rhodococcus

Skermania

Smaragdicoccus

Tomitella

**Family: Segniliparaceae**<sup>25</sup>

Segniliparus

**Family: Tsukamurellaceae**<sup>10</sup>

Tsukamurella

**Order: Cryptosporangiales**<sup>23</sup>

**Family: Cryptosporangiaceae**<sup>18</sup>

Cryptosporangium

**Family: None**

Fodinicola

**Order: Frankiales**<sup>13</sup>

**Family: Frankiaceae**<sup>15,26</sup>

Frankia

**Family: Motilibacteraceae**<sup>27</sup>

Motilibacter

**Order: Geodermatophilales**<sup>13</sup>

**Family: Antriccaceae**<sup>23</sup>

Antriccoccus

**Family: Geodermatophilaceae**<sup>28</sup>

Blastococcus

Cumulibacter

Geodermatophilus

Klenkia

Modestobacter

**Order: Glycomycetales**<sup>29</sup>

**Family: Glycomycetaceae**<sup>10</sup>

Glycomyces

Haloglycomyces

Paraglycomyces

Salilacibacter

Salininema

Stackebrandtia

**Order: Jiangellales**<sup>30</sup>

**Family: Jiangellaceae**<sup>31</sup>

Haloactinopolyspora

Jiangella

Phytoactinopolyspora

**Order: Kineosporiales**<sup>32</sup>

**Family: Kineosporiaceae**<sup>18</sup>

Angustibacter

Kineococcus

Kineosporia

Pseudokineococcus

Quadrisphaera

Thalassiella

**Order: Micrococcales**<sup>15</sup>

**Family: Beutenbergiaceae**<sup>18</sup>

Beutenbergia

Litorihabitans

Miniimonas

Salana

Serinibacter

**Family: Bogoriellaceae**<sup>33</sup>

Bogoriella

Georgenia

Oceanitalea

**Family: Brevibacteriaceae**<sup>15</sup>

Brevibacterium

Sediminivirga

Spelaeicoccus

**Family: Cellulomonadaceae**<sup>34</sup>

Actinotalea

Cellulomonas

Pseudactinotalea

Sediminihabitans

Tropicihabitans

**Family: Demequinaceae**<sup>35</sup>

Demequina

Lysinimicrobium

**Family: Dermabacteraceae**<sup>10</sup>

Brachybacterium

Dermabacter

Devriesea

Helcobacillus

**Family: Dermacoccaceae**<sup>33</sup>

Allobranchiibius

Barrientosiimonas

Branchiibius

Calidifontibacter

Demetria

Dermacoccus

Flexivirga

Luteipulveratus

Rudaeicoccus

Tamlicoccus

Yimella

**Family: Dermatophilaceae**<sup>15</sup>

Arsenicicoccus

Austwickia

Dermatophilus

Kineosphaera

Mobilicoccus

Piscicoccus

Tonsilliphilus

**Family: Intrasporangiaceae**<sup>10</sup>

Aquipuribacter

Fodinibacter

Humibacillus

Humihabitans

Intrasporangium

Janibacter

Knoellia

Kribbia

Lapillicoccus

Marihabitans

Monashia

Ornithinibacter

Ornithinicoccus

Oryzihumus

Oryzobacter

Pedococcus

Phycococcus

Terrabacter

Terracoccus

Tetrasphaera

**Family: Jonesiaceae**<sup>10</sup>

Flavimobilis

Jonesia

Populibacterium

Sanguibacter

Timonella

**Family: Kytococcaceae**<sup>23</sup>

Kytococcus

**Family: Microbacteriaceae**<sup>36</sup>

Agreia

Agrococcus

Agromyces

Allohumibacter

Alpinimonas

Amnibacterium

Arenivirga

Aurantimicrobium

Aureobacterium

Canibacter

Chryseoglobus

Clavibacter

Cnuibacter

Compostimonas

Conyzicola

Cryobacterium

Curtobacterium

Diaminobutyricibacter

Diaminobutyricimonas

Frigoribacterium

Frondicola

Frondihabitanas

Galbitalea

Glaciibacter

Glaciihabitans  
Gryllotalpicola  
Gulosibacter  
Herbiconiux  
Homoserinibacter  
Homoserinimonas  
Huakuichenia  
Humibacter  
Klugiella  
Labedella  
Leifsonia  
Leucobacter  
Lysinibacter  
Lysinimonas  
Marisediminicola  
Microbacterium  
Microcella

Microterricola  
Mycetocola  
Naasia  
Okibacterium  
Parafrigoribacterium  
Phycicola  
Planctomonas  
Plantibacter  
Pontimonas  
Protaetiibacter  
Pseudoclavibacter  
Pseudolysinimonas  
Puzihella  
Rathayibacter  
Rhodoglobus  
Rhodoluna  
Rudaibacter



Salinibacterium

Schumannella

Subtercola

Yonghaparkia

Zimmermannella

**Family: Micrococcaceae**<sup>15,37</sup>

Acaricomes

Arthrobacter

Auritidibacter

Citricoccus

Enteractinococcus

Falsarthrobacter

Galactobacter

Garicola

Glutamicibacter

Haematomicrobium

Kocuria

Micrococcoides

Micrococcus

Neomicrococcus

Nesterenkonia

Paenarthrobacter

Paeniglutamicibacter

Pseudarthrobacter

Pseudoglutamicibacter

Renibacterium

Rothia

Sinomonas

Specibacter

Stomatococcus

Tersicoccus

Zhihengliuella

**Family: Ornithinimicrobiaceae**<sup>23</sup>

Ornithinimicrobium

Serinicoccus

**Family: Promicromonosporaceae**<sup>10</sup>

Antribacter

Cellulosimicrobium

Isoptericola

Koreibacter

Krasilnikoviella

Luteimicrobium

Myceligenerans

Oerskovia

Paraoerskovia

Promicromonospora

Xylanibacterium

Xylanimicrobium

Xylanimonas

**Family: Rarobacteraceae**<sup>33</sup>

Rarobacter

**Family: Ruaniaceae**<sup>38</sup>

Haloactinobacterium

Ruania

**Family: Tropherymataceae**<sup>23</sup>

Tropheryma

**Family: Yaniellaceae**<sup>39</sup>

Yaniella

**Order: Micromonosporales**<sup>40</sup>

**Family: Micromonosporaceae**<sup>15</sup>

Actinaurispora

Actinocatenispora

Actinoplanes

Actinorhabdospora

Allocatelliglobosispora

Allorhizocola

Amorphosporangium

Ampullariella

Asanoa  
Catellatospora  
Catelliglobospora  
Catenuloplanes  
Couchioplanes  
Dactylosporangium  
Hamadaea  
Jishengella  
Krasilnikovia  
Longispora  
Luedemannella  
Mangrovihabitans  
Micromonospora  
Phytohabitans  
Phytomonospora  
Pilimelia  
Planopolyspora

Planosporangium  
Plantactinospora  
Polymorphospora  
Pseudosporangium  
Rhizocola  
Rugosimonospora  
Salinispora  
Spirilliplanes  
Verrucosispora  
Virgisporangium  
Xiangella  
**Order: Nakamurellales**<sup>13</sup>  
**Family: Nakamurellaceae**<sup>41</sup>  
Humicoccus  
Microsphaera  
Nakamurella  
Saxeibacter

**Order: None**

**Family: Jatrophihabitaceae**<sup>23</sup>

Jatrophihabitans

**Family: None**

Psychromicrobium

**Order: Propionibacteriales**<sup>42</sup>

**Family: Actinopolymorphaceae**<sup>23</sup>

Actinopolymorpha

Flindersiella

Tenggerimyces

Thermasporomyces

**Family: Kribbellaceae**<sup>23</sup>

Hongia

Kribbella

**Family: Nocardioidaceae**<sup>43</sup>

Aeromicrobium

Marmoricola

Mumia

Nocardioides

Pimelobacter

**Family: Propionibacteriaceae**<sup>15,44</sup>

Acidipropionibacterium

Aestuariimicrobium

Arachnia

Auraticoccus

Brevilactibacter

Brooklawnia

Cutibacterium

Desertihabitans

Friedmanniella

Granulicoccus

Luteococcus

Mariniluteicoccus

Microlunatus

Micropruina  
Naumannella  
Propionibacterium  
Propionicicella  
Propioniciclava  
Propionicimonas  
Propioniferax  
Propionimicrobium  
Pseudopropionibacterium  
Raneyella  
Tessaracoccus  
**Order: Pseudonocardiales**<sup>45</sup>  
**Family: None**  
Bounagaea  
**Family: Pseudonocardiaceae**<sup>46</sup>  
Actinoalloteichus  
Actinobispora

Actinocrispum  
Actinokineospora  
Actinomycetospora  
Actinophytocola  
Actinorectispora  
Actinosynnema  
Alloactinosynnema  
Allokutzneria  
Amycolata  
Amycolatopsis  
Crossiella  
Faenia  
Gandjariella  
Goodfellowiella  
Haloechinothrix  
Herbihabitans  
Kibdelosporangium

Kutzneria  
Labedaea  
Lechevalieria  
Lentzea  
Longimycelium  
Prauserella  
Pseudoamycolata  
Pseudonocardia  
Saccharomonospora  
Saccharopolyspora  
Saccharothrix  
Salinifilum  
Sciscionella  
Streptoalloteichus  
Tamaricihabitans  
Thermocrispum  
Thermotunica

Umezawaea  
Yuhushiella  
**Order: Sporichthyales**<sup>23</sup>  
**Family: Sporichthyaceae**<sup>10</sup>  
Epidermidibacterium  
Longivirga  
Sporichthya  
**Order: Streptomycetales**<sup>3</sup>  
**Family: Streptomycetaceae**<sup>15,47</sup>  
Actinopycnidium  
Actinosporangium  
Allostreptomyces  
Chainia  
Elytrosporangium  
Embleya  
Kitasatoa  
Kitasatospora

Microellobosporia

Streptacidiphilus

Streptomyces

Streptovercillium

Yinghuangia

**Order: Streptosporangiales**<sup>48</sup>

**Family: Nocardiosaceae**<sup>49</sup>

Actinorugispora

Allosalinactinospora

Haloactinospora

Lipingzhangella

Marinactinospora

Marinitenerispora

Murinocardiosis

Nocardiosis

Salinactinospora

Spinactinospora

Streptomonospora

Thermobifida

**Family: None**

Allonocardiosis

Sinosporangium

**Family: Streptosporangiaceae**<sup>50</sup>

Acrocarpospora

Bailinhaonella

Desertactinospora

Herbidospora

Microbispora

Microtetraspora

Nonomuraea

Planobispora

Planomonospora

Planotetraspora

Sphaerimonospora

Sphaerisporangium

Spongiactinospora

Streptosporangium

Thermoactinospora

Thermobispora

Thermocatellispora

Thermopolyspora

Thermostaphylospora

**Family: Thermomonosporaceae**<sup>10</sup>

Actinoallomurus

Actinocorallia

Actinomadura

Excellospora

Spirillospora

Thermomonospora

**Class: Coriobacteriia**<sup>51</sup>

**Order: Coriobacteriales**<sup>10</sup>

**Family: Atopobiaceae**<sup>52</sup>

Atopobium

Fannyhessea

Lancefieldella

Libanicoccus

Olsenella

Parolsenella

**Family: Coriobacteriaceae**<sup>10</sup>

Collinsella

Coriobacterium

Enorma

Senegalimassilia

**Order: Eggerthellales**<sup>52</sup>

**Family: Eggerthellaceae**<sup>52</sup>

Adlercreutzia

Asaccharobacter

Cryptobacterium



Denitrobacterium  
Eggerthella  
Ellagibacter  
Enterorhabdus  
Enteroscapio  
Gordonibacter  
Paraeggerthella  
Parvibacter  
Rubneribacter  
Slackia  
**Class: Nitriliruptoria**<sup>53</sup>  
**Order: Egibacterales**<sup>54</sup>  
**Family: Egibacteraceae**<sup>54</sup>  
Egibacter  
**Order: Egicoccales**<sup>55</sup>  
**Family: Egicoccaceae**<sup>55</sup>  
Egicoccus

**Order: Euzebyales**<sup>56</sup>  
**Family: Euzebyaceae**<sup>56</sup>  
Euzebya  
**Order: Nitriliruptorales**<sup>57</sup>  
**Family: Nitriliruptoraceae**<sup>57</sup>  
Nitriliruptor  
**Class: Rubrobacteria**<sup>58</sup>  
**Order: Gaiellales**<sup>59</sup>  
**Family: Gaiellaceae**<sup>59</sup>  
Gaiella  
**Order: Rubrobacterales**<sup>10</sup>  
**Family: Rubrobacteraceae**<sup>10</sup>  
Rubrobacter  
**Class: Thermoleophilia**<sup>60</sup>  
**Order: Solirubrobacterales**<sup>61</sup>  
**Family: Baekduiaceae**<sup>62</sup>  
Baekduia

**Family: Conexibacteraceae**<sup>63</sup>

Conexibacter

**Family: Parviterribacteraceae**<sup>64</sup>

Parviterribacter

**Family: Patulibacteraceae**<sup>65</sup>

Patulibacter

**Family: Solirubrobacteraceae**<sup>63</sup>

Solirubrobacter

**Order: Thermoleophilales**<sup>61</sup>

**Family: Thermoleophilaceae**<sup>63</sup>

Thermoleophilum

**Phylum: Aquificae**<sup>66</sup>

**Class: Aquificae**<sup>67</sup>

**Order: Aquificales**<sup>68</sup>

**Family: Aquificaceae**<sup>69</sup>

Aquifex

Calderobacterium

Hydrogenivirga

Hydrogenobacter

Hydrogenobaculum

Thermocrinis

**Family: Hydrogenothermaceae**<sup>70</sup>

Hydrogenothermus

Persephonella

Sulfurihydrogenibium

Venenivibrio

**Family: None**

Thermosulfidibacter

**Order: Desulfurobacteriales**<sup>71</sup>

**Family: Desulfurobacteriaceae**<sup>72</sup>

Balnearium

Desulfurobacterium

Phorcysia

Thermovibrio

**Phylum: Armatimonadetes**<sup>73</sup>

**Class: Armatimonadia**<sup>73</sup>

**Order: Armatimonadales**<sup>73</sup>

**Family: Armatimonadaceae**<sup>73</sup>

Armatimonas

**Order: Capsulimonadales**<sup>74</sup>

**Family: Capsulimonadaceae**<sup>74</sup>

Capsulimonas

**Class: Chthonomonadetes**<sup>75</sup>

**Order: Chthonomonadales**<sup>75</sup>

**Family: Chthonomonadaceae**<sup>75</sup>

Chthonomonas

**Class: Fimbriimonadia**<sup>76</sup>

**Order: Fimbriimonadales**<sup>76</sup>

**Family: Fimbriimonadaceae**<sup>76</sup>

Fimbriimonas

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■ ■ □

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## 4 B

**Phylum: Bacteroidetes**<sup>1</sup>

**Class: Bacteroidia**<sup>1</sup>

**Order: Bacteroidales**<sup>1</sup>

**Family: Barnesiellaceae**<sup>2</sup>

Barnesiella

Coprobacter

**Family: Dysgonomonadaceae**<sup>2</sup>

Dysgonomonas

Proteiniphilum

**Family: Paludibacteraceae**<sup>2</sup>

Paludibacter

**Family: Tannerellaceae**<sup>2</sup>

Parabacteroides

Tannerella

**Family: Bacteroidaceae**<sup>3</sup>

Acetofilamentum

Acetothermus

Bacteroides

**Family: Balneicellaceae**<sup>4</sup>

Balneicella

**Family: Muribaculaceae**<sup>5</sup>

Duncaniella

Muribaculum

Paramuribaculum

**Family: None**

Phocaeicola

**Family: Porphyromonadaceae**<sup>6</sup>

Falsiporphyromonas

Fermentimonas  
Gabonibacter  
Macellibacteroides  
Microbacter  
Oribaculum  
Petrimonas  
Porphyromonas  
**Family: Prevotellaceae**<sup>7</sup>  
Alloprevotella  
Capsularis  
Hallella  
Paraprevotella  
Prevotella  
Xylanibacter  
**Family: Rikenellaceae**<sup>8</sup>  
Acetobacteroides  
Alistipes

Anaerocella  
Mucinivorans  
Rikenella  
**Family: Williamwhitmaniaceae**<sup>9</sup>  
Williamwhitmania  
**Order: Marinilabiliales**<sup>10</sup>  
**Family: Marinifilaceae**<sup>11</sup>  
Ancylomarina  
Butyricimonas  
Labilibaculum  
Marinifilum  
Odoribacter  
**Family: Marinilabiliaceae**<sup>12</sup>  
Alkaliflexus  
Alkalitalea  
Anaerophaga  
Carboxylicivirga

Geofilum  
Labilibacter  
Mangroviflexus  
Marinilabilia  
Natronoflexus  
Saccharicrinis  
Thermophagus  
**Family: Prolixibacteraceae**<sup>13</sup>  
Draconibacterium  
Mangrovibacterium  
Maribellus  
Mariniphaga  
Meniscus  
Prolixibacter  
Roseimarinus  
Sunxiuqinia  
Tangfeifania

**Family: Salinivirgaceae**<sup>14</sup>  
Salinivirga  
**Class: Chitinophagia**<sup>15</sup>  
**Order: Chitinophagales**<sup>16</sup>  
**Family: Chitinophagaceae**<sup>17</sup>  
Arachidicoccus  
Arvibacter  
Asinibacterium  
Aurantisolimonas  
Chitinophaga  
Cnuella  
Compostibacter  
Crenotalea  
Deminuibacter  
Dinghuibacter  
Edaphobaculum  
Ferruginibacter

Filimonas  
Flaviaesturariibacter  
Flaviumibacter  
Flavipsychrobacter  
Flavisolibacter  
Flavitalea  
Gynuricola  
Haoranjiana  
Heliimonas  
Hydrobacter  
Hydrotalea  
Lacibacter  
Nemorincola  
Niabella  
Niastella  
Niveitalea  
Panacibacter

Paracnuella  
Parafilimonas  
Parasediminibacterium  
Parasegetibacter  
Pseudobacter  
Pseudoflavitalea  
Puia  
Rurimicrobium  
Sediminibacterium  
Segetibacter  
Taibaiella  
Terrimonas  
Thermoflavifilum  
Vibrionimonas  
**Class: Cytophagia**<sup>18</sup>  
**Order: Cytophagales**<sup>3,19</sup>  
**Family: Bernardetiaceae**<sup>20</sup>



Bernardetia

Garritya

Hugenholtzia

**Family: Catalimonadaceae**<sup>21</sup>

Catalinimonas

**Family: Cyclobacteriaceae**<sup>22</sup>

Algoriphagus

Aquiflexum

Belliella

Cecemia

Chimaericella

Cyclobacterium

Echinicola

Fontibacter

Hongiella

Indibacter

Lunatimonas

Mariniradius

Mongoliibacter

Mongoliicoccus

Mongoliitalea

Negadavirga

Nitritalea

Pleomorphovibrio

Rhodonellum

Shivajiella

**Family: Cytophagaceae**<sup>3,23</sup>

Allopseudarcicella

Aquirufa

Arcicella

Arcticibacterium

Arsenicibacter

Arundinibacter

Cytophaga

Dyadobacter  
Edaphorhabdus  
Ekhidna  
Emticicia  
Fibrella  
Fibrisoma  
Flectobacillus  
Flexibacter  
Fluviimonas  
Huanghella  
Jiulongibacter  
Lacihabitans  
Larkinella  
Leadbetterella  
Litoribacter  
Nibrella  
Persicitalea

Pseudarcicella  
Ravibacter  
Rhabdobacter  
Rhodocytophaga  
Rudanella  
Runella  
Siphonobacter  
Spirosoma  
Sporocytophaga  
Taeseokella  
Telluribacter  
**Family: Flammeovirgaceae<sup>24</sup>**  
Cesiribacter  
Fabibacter  
Fabivirga  
Flammeovirga  
Flexithrix

Fulvivirga  
Imperialibacter  
Limibacter  
Marinicola  
Marinoscillum  
Marivirga  
Nafulsella  
Perexilibacter  
Rapidithrix  
Reichenbachiella  
Roseivirga  
Sediminitomix  
Tunicatimonas  
**Family: Hymenobacteraceae**<sup>15</sup>  
Adhaeribacter  
Botryobacter  
Effluviibacter

Hymenobacter  
Nibribacter  
Pontibacter  
Rufibacter  
**Family: Microscillaceae**<sup>20</sup>  
Eisenibacter  
Microscilla  
**Family: Mooreiaceae**<sup>21</sup>  
Mooreia  
**Family: None**  
Chryseolinea  
Luteivirga  
Ohtaekwangia  
Thermoflexibacter  
**Family: Persicobacteraceae**<sup>15</sup>  
Aureibacter  
Fulvitalea

Persicobacter

**Family: Raineyaceae**<sup>25</sup>

Raineya

**Family: Thermonemataceae**<sup>15</sup>

Thermonema

**Class: Flavobacteriia**<sup>26</sup>

**Order: Flavobacteriales**<sup>27</sup>

**Family: Blattabacteriaceae**<sup>28</sup>

Blattabacterium

**Family: Crocinitomicaceae**<sup>15</sup>

Brumimicrobium

Crocinitomix

Fluviicola

Lishizhenia

Salinirepens

Wandonia

**Family: Cryomorphaceae**<sup>29</sup>

Cryomorpha

Luteibaculum

Owenweeksia

Phaecystidibacter

Salibacter

Vicingus

**Family: Flavobacteriaceae**<sup>30</sup>

Actibacter

Aequorivita

Aestuariibaculum

Aestuariicola

Aestuariimonas

Aestuariivivens

Algibacter

Algitea

Algoriella

Antarcticibacterium

Antarcticimonas  
Apibacter  
Aquaticitalea  
Aquibacter  
Aquimarina  
Arcticiflavibacter  
Arenibacter  
Arenitalea  
Ascidiimonas  
Aurantiacicella  
Aurantivirga  
Aureicoccus  
Aureisphaera  
Aureitalea  
Aureivirga  
Bergeyella  
Bizionia

Capnocytophaga  
Cellulophaga  
Changchengzhania  
Chishuiella  
Chryseobacterium  
Citreitalea  
Cloacibacterium  
Coenonia  
Confluentibacter  
Corallibacter  
Costertonia  
Croceibacter  
Croceitalea  
Croceivirga  
Cruoricaptor  
Daejeonia  
Dokdonia

Donghaeana  
Elizabethkingia  
Empedobacter  
Epilithonimonas  
Eudoraea  
Euzebyella  
Flagellimonas  
Flavicella  
Flavimarina  
Flaviramulus  
Flavirhabdus  
Flavivirga  
Flavobacterium  
Formosa  
Frondibacter  
Fulvibacter  
Gaetbulibacter

Gaetbulimicrobium  
Galbibacter  
Gangjinia  
Gelatiniphilus  
Gelidibacter  
Geojedonia  
Gillisia  
Gilvibacter  
Gramella  
Hanstruepera  
Hoppeia  
Hwangdonia  
Hyunsoonleella  
Ichthyenterobacterium  
Imtechella  
Jejudonia  
Jejuia

Joostella  
Kaistella  
Kordia  
Kriegella  
Krokinobacter  
Lacinutrix  
Leeuwenhoekiella  
Leptobacterium  
Litoribaculum  
Lutaonella  
Lutibacter  
Lutimonas  
Mangrovimonas  
Maribacter  
Mariniflexile  
Marinirhabdus  
Marinivirga

Maripseudobacter  
Maritimimonas  
Marixanthomonas  
Meridianimaribacter  
Mesoflavibacter  
Mesonia  
Moheibacter  
Muricauda  
Muriicola  
Myroides  
Namhaeicola  
Neptunitalea  
Nonlabens  
Oceanihabitans  
Olleya  
Ornithobacterium  
Persicivirga

Pibocella  
Planktosalinus  
Planobacterium  
Polaribacter  
Pontirhabdus  
Postechiella  
Pricia  
Pseudobizionia  
Pseudofulvibacter  
Pseudotenacibaculum  
Pseudozobellia  
Psychroflexus  
Psychroserpens  
Pustulibacterium  
Riemerella  
Robertkochia  
Robiginitalea

Sabulitoribacter  
Salegentibacter  
Salinimicrobium  
Sandarakinotalea  
Saonia  
Sediminibacter  
Sediminicola  
Sejongia  
Seonamhaeicola  
Siansivirga  
Sinomicrobium  
Snuella  
Soonwooa  
Spongiibacterium  
Spongiiferula  
Spongiimicrobium  
Spongiimonas



Spongiivirga  
Stanierella  
Stenothermobacter  
Subsaxibacter  
Subsaximicrobium  
Sungkyunkwania  
Taeania  
Tamlana  
Tenacibaculum  
Ulvibacter  
Vitellibacter  
Wautersiella  
Weeksella  
Wenyingzhuangia  
Winogradskyella  
Xanthomarina  
Yeosuana

Zeaxanthinibacter  
Zhouia  
Zobellia  
Zunongwangia  
**Family: Ichthyobacteriaceae**<sup>31</sup>  
Ichthyobacterium  
**Family: Schleiferiaceae**<sup>32</sup>  
Schleiferia  
**Class: None**  
**Order: None**  
**Family: Lentimicrobiaceae**<sup>33</sup>  
Lentimicrobium  
**Family: None**  
Toxothrix  
**Class: Saprospira**<sup>34</sup>  
**Order: Saprospirales**<sup>20</sup>  
**Family: Haliscomenobacteraceae**<sup>20</sup>

Haliscomenobacter

Phaeodactylibacter

Portibacter

**Family: Lewinellaceae**<sup>20</sup>

Lewinella

**Family: Saprospiraceae**<sup>35</sup>

Aureispira

Membranicola

Saprospira

**Class: Sphingobacteriia**<sup>36</sup>

**Order: Sphingobacteriales**<sup>37</sup>

**Family: Crenotrichaceae**<sup>3</sup>

Crenothrix

**Family: Filobacteriaceae**<sup>38</sup>

Filobacterium

**Family: Saprospiraceae**<sup>35</sup>

Membranicola

Saprospira

**Family: Sphingobacteriaceae**<sup>39</sup>

Anseongella

Arcticibacter

Mucilaginibacter

Nubsella

Olivibacter

Parapedobacter

Pedobacter

Pelobium

Pseudopedobacter

Pseudosphingobacterium

Solitalea

Sphingobacterium

**Phylum: Balneolaeota**<sup>20</sup>

**Class: Balneolia**<sup>15</sup>

**Order: Balneolales**<sup>16</sup>

**Family: Balneolaceae**<sup>40</sup>

Aliifodinibius

Balneola

Fodinibius

Gracilimonas

Rhodohalobacter

**Family: Soortiaceae**<sup>41</sup>

Soortia

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## 5 C

**Phylum: Caldiserica**<sup>1</sup>

**Class: Caldisericia**<sup>1</sup>

**Order: Caldisericales**<sup>1</sup>

**Family: Caldiseriaceae**<sup>1</sup>

Caldisericum

**Phylum: Calditrichaeota**<sup>2</sup>

**Class: None**

**Order: None**

**Family: None**

Calorithrix

**Phylum: Chlamydiae**<sup>3</sup>

**Class: Chlamydiia**<sup>4</sup>

**Order: Chlamydiales**<sup>5,6</sup>

**Family: Chlamydiaceae**<sup>5,7</sup>

Chlamydia

Chlamydophila

**Family: Parachlamydiaceae**<sup>8</sup>

Neochlamydia

Parachlamydia

**Family: Simkaniaceae**<sup>8</sup>

Simkania

**Family: Waddliaceae**<sup>9</sup>

Waddlia

**Phylum: Chlorobi**<sup>10</sup>

**Class: Chlorobia**<sup>11</sup>

**Order: Chlorobiales**<sup>5,12</sup>

**Family: Chlorobiaceae**<sup>5</sup>

Ancalochloris

Chlorobaculum

Chlorobium

Chloroherpeton

Pelodictyon

Prosthecochloris

**Class: Ignavibacteria**<sup>10</sup>

**Order: Ignavibacteriales**<sup>10</sup>

**Family: Ignavibacteriaceae**<sup>10</sup>

Ignavibacterium

**Family: Melioribacteraceae**<sup>13</sup>

Melioribacter

**Phylum: Chloroflexi**<sup>14</sup>

**Class: Anaerolineae**<sup>15</sup>

**Order: Aggregatilineales**<sup>16</sup>

**Family: Aggregatilineaceae**<sup>16</sup>

Aggregatilinea

**Order: Anaerolineales**<sup>15</sup>

**Family: Anaerolineaceae**<sup>15</sup>

Anaerolinea

Bellilinea

Leptolinea

Levilinea

Longilinea

Ornatilinea

Pelolinea

**Order: None**

**Family: None**

Flexilinea

**Class: Ardenticatenia**<sup>17</sup>

**Order: Ardenticatenales**<sup>17</sup>

**Family: Ardenticatenaceae**<sup>17</sup>

Ardenticatena

**Class: Caldilineae**<sup>15</sup>

**Order: Caldilineales**<sup>15</sup>

**Family: Caldilineaceae**<sup>15</sup>

Caldilinea

Litorilinea

**Class: Chloroflexia**<sup>18</sup>

**Order: Chloroflexales**<sup>18</sup>

**Family: Chloroflexaceae**<sup>18</sup>

Chloroflexus

**Family: Oscillochloridaceae**<sup>19</sup>

Chloronema

Oscillochloris

**Family: Roseiflexaceae**<sup>18</sup>

Heliothrix

Roseiflexus

**Order: Herpetosiphonales**<sup>18</sup>

**Family: Herpetosiphonaceae**<sup>18</sup>

Herpetosiphon

**Order: Kallotenuales**<sup>20</sup>

**Family: Kallotenuaceae**<sup>20</sup>

Kallotenua

**Class: Dehalococcoidia**<sup>21</sup>

**Order: Dehalococcoidales**<sup>21</sup>

**Family: Dehalococcoidaceae**<sup>21</sup>

Dehalococcoides

Dehalogenimonas

**Class: Ktedonobacteria**<sup>22</sup>

**Order: Ktedonobacterales**<sup>22</sup>

**Family: Dictyobacteraceae**<sup>23</sup>

Dictyobacter

Tengunoibacter

**Family: Ktedonobacteraceae**<sup>22</sup>

Ktedonobacter

**Family: Thermosporotrichaceae**<sup>24</sup>

Thermosporothrix

**Order: Thermogemmatisporales**<sup>25</sup>

**Family: Thermogemmatissporaceae**<sup>25</sup>

Thermogemmatispora

**Class: Thermoflexia**<sup>26</sup>

**Order: Thermoflexales**<sup>26</sup>

**Family: Thermoflexaceae**<sup>26</sup>

Thermoflexus

**Class: Thermomicrobia**<sup>27</sup>

**Order: Sphaerobacterales**<sup>28</sup>

**Family: Sphaerobacteraceae**<sup>28</sup>

Nitrolancea

Sphaerobacter

**Order: Thermomicrobiales**<sup>29</sup>

**Family: Thermomicrobiaceae**<sup>30</sup>

Thermomicrobium

Thermorudis

**Phylum: Chrysiogenetes**<sup>31</sup>

**Class: Chrysiogenetes**<sup>32</sup>

**Order: Chrysiogenales**<sup>33</sup>

**Family: Chrysiogenaceae**<sup>34</sup>

Chrysiogenes

Desulfurispira

Desulfurispirillum

**Phylum: Coprothermobacterota**<sup>35</sup>

**Class: Coprothermobacteria**<sup>35</sup>

**Order: Coprothermobacterales**<sup>35</sup>

**Family: Coprothermobacteraceae**<sup>35</sup>

Coprothermobacter

**Phylum: Cyanobacteria**<sup>11</sup>

**Class: None**

**Order: None**

**Family: None**

Prochlorococcus

Prochloron

Prochlorothrix

Rubidibacter

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## 6 D

**Phylum: Deferribacteres**<sup>1</sup>

**Class: Deferribacteres**<sup>2</sup>

**Order: Deferribacterales**<sup>3</sup>

**Family: Deferribacteraceae**<sup>4</sup>

Calditerrivibrio

Deferribacter

Denitrovibrio

Flexistipes

Geovibrio

Mucispirillum

Petrothermobacter

Seleniivibrio

**Family: None**

Caldithrix

**Phylum: Deinococcus–Thermus**<sup>5</sup>

**Class: Deinococci**<sup>6</sup>

**Order: Deinococcales**<sup>7</sup>

**Family: Deinococcaceae**<sup>8</sup>

Deinobacter

Deinobacterium

Deinococcus

**Family: Trueperaceae**<sup>9</sup>

Truepera

**Order: Thermales**<sup>10</sup>

**Family: Thermaceae**<sup>11</sup>

Calidithermus

Marinithermus

Meiothermus

Oceanithermus  
Rhabdothermus  
Thermus  
Vulcanithermus

**Phylum: Dictyoglomi**<sup>12</sup>

**Class: Dictyoglomia**<sup>13</sup>

**Order: Dictyoglomales**<sup>14</sup>

**Family: Dictyoglomaceae**<sup>15</sup>

Dictyoglomus

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# 7 E

**Phylum: Elusimicrobia**<sup>1</sup>

**Class: Elusimicrobia**<sup>1</sup>

**Order: Elusimicrobiales**<sup>1</sup>

**Family: Elusimicrobiaceae**<sup>1</sup>

Elusimicrobium

**Class: Endomicrobia**<sup>2</sup>

**Order: Endomicrobiales**<sup>2</sup>

**Family: Endomicrobiaceae**<sup>2</sup>

Endomicrobium

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## 8 F

**Phylum: Fibrobacteres**<sup>1</sup>

**Class: Chitinispirillia**<sup>2</sup>

**Order: Chitinispirillales**<sup>2</sup>

**Family: Chitinispirillaceae**<sup>2</sup>

Chitinispirillum

**Class: Chitinivibrionia**<sup>3</sup>

**Order: Chitinivibrionales**<sup>3</sup>

**Family: Chitinivibrionaceae**<sup>3</sup>

Chitinivibrio

**Class: Fibrobacteria**<sup>4</sup>

**Order: Fibrobacterales**<sup>5</sup>

**Family: Fibrobacteraceae**<sup>6</sup>

Fibrobacter

**Phylum: Firmicutes**<sup>7,8</sup>

**Class: Tissierellia**<sup>9</sup>

**Order: Tissierellales**<sup>9</sup>

**Family: Tissierellaceae**<sup>9</sup>

Tissierella

**Family: Gottschalkiaceae**<sup>10</sup>

Andreesenia

Gottschalkia

**Class: Bacilli**<sup>11</sup>

**Order: Bacillales**<sup>7</sup>

**Family: Alicyclobacillaceae**<sup>12</sup>

Alicyclobacillus

Effusibacillus

Kyrpidia

Sulfobacillus

Tumebacillus

**Family: Bacillaceae**<sup>7</sup>

Aeribacillus

Aliibacillus

Alkalibacillus

Alkalilactibacillus

Allobacillus

Alteribacillus

Amphibacillus

Anaerobacillus

Anoxybacillus

Aquibacillus

Aquisalibacillus

Aureibacillus

Bacillus

Caldalkalibacillus

Caldibacillus

Calditerricola

Camelliibacillus

Cerasibacillus

Compostibacillus

Desertibacillus

Domibacillus

Falsibacillus

Fermentibacillus

Fictibacillus

Filobacillus

Geobacillus

Gracilibacillus

Halalkalibacillus

Halobacillus

Halolactibacillus

Hydrogenibacillus

Lentibacillus



Lysinibacillus  
Marinococcus  
Melghiribacillus  
Microaerobacter  
Natribacillus  
Natronobacillus  
Nosocomiicoccus  
Oceanobacillus  
Ornithinibacillus  
Parageobacillus  
Paraliobacillus  
Paralkalibacillus  
Paucisalibacillus  
Pelagibacillus  
Pelagirhabdus  
Piscibacillus  
Polygonibacillus

Pontibacillus  
Pradoshia  
Pseudogracilibacillus  
Psychrobacillus  
Pueribacillus  
Saccharococcus  
Salibacillus  
Salibacterium  
Salimicrobium  
Salinibacillus  
Salipaludibacillus  
Salirhabdus  
Salisediminibacterium  
Saliterribacillus  
Salsuginibacillus  
Sediminibacillus  
Sinibacillus

Streptohalobacillus

Swionibacillus

Tenuibacillus

Tepidibacillus

Terribacillus

Texcoconibacillus

Thalassobacillus

Thalassorhabdus

Thermolongibacillus

Virgibacillus

Viridibacillus

Vulcanibacillus

**Family: Caryophanaceae**<sup>7</sup>

Bhargavaea

Caryophanon

Chryseomicrobium

Filibacter

Indiicoccus

Jeotgalibacillus

Kurthia

Marinibacillus

Paenisporosarcina

Planococcus

Planomicrobium

Savagea

Sporosarcina

Ureibacillus

**Family: Listeriaceae**<sup>13</sup>

Brochothrix

Listeria

**Family: None**

Alkalicoccus

Chungangia

Desulfuribacillus

Exiguobacterium

Gemella

Geomicrobium

Rummeliibacillus

Sinobaca

Solibacillus

Terrilactibacillus

Thermicanus

**Family: Paenibacillaceae**<sup>14</sup>

Ammoniibacillus

Ammoniphilus

Aneurinibacillus

Brevibacillus

Chengkuizengella

Cohnella

Fontibacillus

Gorillibacterium

Longirhabdus

Marinicrinis

Oxalophagus

Paenibacillus

Paludirhabdus

Saccharibacillus

Thermobacillus

Xylanibacillus

**Family: Pasteuriaceae**<sup>7</sup>

Pasteuria

**Family: Sporolactobacillaceae**<sup>15</sup>

Caenibacillus

Pullulanibacillus

Scopulibacillus

Sporolactobacillus

Tuberibacillus

**Family: Staphylococcaceae**<sup>16</sup>

Abyssicoccus  
Aliicoccus  
Auricoccus  
Corticococcus  
Jeotgalicoccus  
Macrooccus  
Salinicoccus  
Staphylococcus  
**Family: Thermoactinomycetaceae**<sup>17</sup>  
Baia  
Croceifilum  
Desmospora  
Geothermomicrobium  
Hazenella  
Kroppenstedtia  
Laceyella  
Lihuaxuella

Marininema  
Marinithermofilum  
Mechercharimyces  
Melghirimyces  
Novibacillus  
Paenactinomycetes  
Paludifilum  
Planifilum  
Polycladomyces  
Risungbinella  
Salinithrix  
Seinonella  
Shimazuella  
Staphylospora  
Thermoactinomycetes  
Thermoflavimicrobium  
**Order: Lactobacillales**<sup>18</sup>

**Family: Aerococcaceae**<sup>19</sup>

Abiotrophia

Aerococcus

Dolosicoccus

Eremococcus

Facklamia

Globicatella

Ignavigranum

Suicoccus

**Family: Carnobacteriaceae**<sup>20</sup>

Alkalibacterium

Allofustis

Alloiococcus

Atopobacter

Atopococcus

Atopostipes

Carnobacterium

Desemzia

Dolosigranulum

Granulicatella

Isobaculum

Jeotgalibaca

Lacticigenium

Lactosphaera

Marinilactibacillus

Pisciglobus

Trichococcus

**Family: Enterococcaceae**<sup>21</sup>

Bavariiococcus

Catelicoccus

Enterococcus

Melissococcus

Pilibacter

Tetragenococcus

Vagococcus

**Family: Lactobacillaceae**<sup>7,22</sup>

Lactobacillus

Paralactobacillus

Pediococcus

Sharpea

**Family: Leuconostocaceae**<sup>23</sup>

Convivina

Fructobacillus

Leuconostoc

Oenococcus

Weissella

**Family: Streptococcaceae**<sup>7,24</sup>

Floricoccus

Lactococcus

Lactovum

Streptococcus

**Class: Clostridia**<sup>25</sup>

**Order: Eubacteriales**<sup>7,26</sup>

**Family: Catabacteraceae**<sup>27</sup>

Catabacter

**Family: Caldicoprobacteraceae**<sup>28</sup>

Caldicoprobacter

**Family: Christensenellaceae**<sup>29</sup>

Christensenella

**Family: Clostridiaceae**<sup>7</sup>

Alkaliphilus

Anaerobacter

Anaeromicrobium

Anaerosalibacter

Anaerosolibacter

Anaerosporobacter

Anaerovirgula

Anoxynatronum

Anoxynatronum  
Asaccharospora  
Brassicibacter  
Caldisalibacter  
Caloramator  
Caloranaerobacter  
Caminicella  
Clostridiisalibacter  
Clostridium  
Crassaminicella  
Fervidicella  
Fonticella  
Garciella  
Geosporobacter  
Haloimpatiens  
Hathewayia  
Hungatella

Hydrogenispora  
Intestinibacter  
Irregularibacter  
Keratinibaculum  
Lactonifactor  
Lutispora  
Natronincola  
Oceanirhabdus  
Oxobacter  
Paeniclostridium  
Paraclostridium  
Proteiniborus  
Proteiniclasticum  
Romboutsia  
Salimesophilobacter  
Sarcina  
Serpentinicella

Sporosalibacterium

Tepidimicrobium

Terrisporobacter

Thermobrachium

Thermohalobacter

Thermotalea

Tindallia

Youngiibacter

**Family: Defluviitaleaceae**<sup>30</sup>

Defluviitalea

**Family: Eubacteriaceae**<sup>31</sup>

Acetobacterium

Alkalibacter

Alkalibaculum

Aminicella

Anaerofustis

Eubacterium

Pseudoramibacter

Rhabdanaerobium

**Family: Gracilibacteraceae**<sup>32</sup>

Gracilibacter

**Family: Heliobacteriaceae**<sup>33</sup>

Heliobacillus

Heliobacterium

Heliophilum

Heliorestis

**Family: Lachnospiraceae**<sup>34</sup>

Abyssivirga

Acetatifactor

Acetitomaculum

Agathobacter

Anaerobium

Anaerobutyricum

Anaerocolumna



Anaerosacchariphilus  
Anaerostipes  
Anaerotaenia  
Anaerotignum  
Blautia  
Bryantella  
Butyrivibrio  
Catenibacillus  
Catonella  
Cellulosilyticum  
Coprococcus  
Cuneatibacter  
Dorea  
Eisenbergiella  
Extibacter  
Faecalicatena  
Faecalimonas

Falcatimonas  
Frisingicoccus  
Fusicatenibacter  
Herbinix  
Hespellia  
Howardella  
Johnsonella  
Kineothrix  
Lachnoanaerobaculum  
Lachnobacterium  
Lachnospira  
Lachnotalea  
Marvinbryantia  
Mediterraneibacter  
Merdimonas  
Mobilisporobacter  
Mobilitalea

Moryella  
Muricomes  
Murimonas  
Natranaerovirga  
Oribacterium  
Parasporobacterium  
Pseudobutyrvibrio  
Robinsoniella  
Roseburia  
Schaedlerella  
Sellimonas  
Shuttleworthia  
Sporobacterium  
Stomatobaculum  
Syntrophococcus  
**Family: None**  
Acidaminobacter

Aminipila  
Anaerobranca  
Anaerovorax  
Carboxydocella  
Dethiosulfatibacter  
Fenollaria  
Fusibacter  
Guggenheimella  
Kallipyga  
Marinisorobacter  
Mogibacterium  
Sedimentibacter  
Soehngenia  
Sporanaerobacter  
Thermaerobacter  
**Family: Oscillospiraceae<sup>7</sup>**  
Acetanaerobacterium

Acetivibrio  
Acutalibacter  
Agathobaculum  
Anaerobacterium  
Anaerofilum  
Anaerotruncus  
Butyricoccus  
Caproiciproducens  
Cellulosibacter  
Dysosmobacter  
Ercella  
Ethanoligenens  
Faecalibacterium  
Fastidiosipila  
Flavonifractor  
Fournierella  
Harryflintia

Herbivorax  
Hungateiclostridium  
Hydrogenoanaerobacterium  
Intestinimonas  
Lawsonibacter  
Mageeibacillus  
Massiliimalia  
Monoglobus  
Oscillibacter  
Oscillospira  
Paludicola  
Papillibacter  
Petroclostridium  
Pseudobacteroides  
Pseudoflavonifractor  
Ruminiclostridium  
Ruminococcus

Ruthenibacterium  
Saccharofermentans  
Sporobacter  
Subdoligranulum  
Tepidibaculum  
Thermoclostridium

**Family: Peptococcaceae**<sup>7,35</sup>

Cryptanaerobacter  
Dehalobacter  
Desulfallas  
Desulfitibacter  
Desulfitispora  
Desulfitobacterium  
Desulfocucumis  
Desulfofarcimen  
Desulfofundulus  
Desulfohalotomaculum

Desulfonispora  
Desulfosporosinus  
Desulfotomaculum  
Desulfurispora  
Pelotomaculum  
Peptococcus  
Sporotomaculum  
Syntrophobotulus  
Thermincola

**Family: Peptoniphilaceae**<sup>36</sup>

Anaerococcus  
Anaerosphaera  
Citroniella  
Ezakiella  
Finegoldia  
Gallicola  
Helcococcus

Murdochiella  
Parvimonas  
Peptoniphilus  
**Family: Peptostreptococcaceae**<sup>37</sup>  
Acetoanaerobium  
Clostridioides  
Filifactor  
Maledivibacter  
Paramaledivibacter  
Peptoanaerobacter  
Peptoclostridium  
Peptostreptococcus  
Proteocatella  
Sporacetigenium  
Tepidibacter  
Wukongibacter  
**Family: Proteinivoraceae**<sup>38</sup>

Proteinivorax  
**Family: Symbiobacteriaceae**<sup>39</sup>  
Symbiobacterium  
**Family: Syntrophomonadaceae**<sup>40</sup>  
Dethiobacter  
Pelospora  
Syntrophomonas  
Syntrophospora  
Syntrophothermus  
Thermohydrogenium  
Thermosyntropha  
**Family: Vallitaleaceae**<sup>41</sup>  
Petrocella  
Vallitalea  
**Order: Halanaerobiales**<sup>42</sup>  
**Family: Halanaerobiaceae**<sup>43</sup>  
Halanaerobium

Halarsenatibacter

Halocella

Haloicola

Halothermothrix

**Family: Halobacteroidaceae**<sup>42</sup>

Acetohalobium

Fuchsiella

Halanaerobacter

Halanaerobaculum

Halobacteroides

Halonatronum

Natroniella

Orenia

Selenihalanaerobacter

Sporohalobacter

**Family: None**

Anoxybacter

**Order: Natranaerobiales**<sup>44</sup>

**Family: Natranaerobiaceae**<sup>44</sup>

Natranaerobaculum

Natranaerobius

Natronovirga

**Order: None**

**Family: None**

Syntrophaceticus

**Order: Thermoanaerobacterales**<sup>45</sup>

**Family: None**

Caldicellulosiruptor

Mahella

**Family: Thermoanaerobacteraceae**<sup>46</sup>

Acetogenium

Ammonifex

Brockia

Caldanaerobacter

Caldanaerobius  
Calderihabitans  
Caloribacterium  
Carboxydibrachium  
Carboxydothemus  
Desulfothermobacter  
Desulfoviregula  
Gelria  
Moorella  
Thermacetogenium  
Thermanaeromonas  
Thermoanaerobacter  
Thermoanaerobacterium  
Thermoanaerobium  
Thermobacteroides  
Thermodesulfitimonas  
Thermoterrabacterium

**Family: Thermodesulfobiaceae**<sup>47</sup>  
Thermodesulfobium  
**Order: Thermosediminibacterales**<sup>48</sup>  
**Family: Tepidanaerobacteraceae**<sup>48</sup>  
Biomaibacter  
Tepidanaerobacter  
**Family: Thermosediminibacteraceae**<sup>48</sup>  
Caldanaerovirga  
Fervidicola  
Thermosediminibacter  
Thermovenabulum  
Thermovorax  
**Class: Erysipelotrichia**<sup>49</sup>  
**Order: Erysipelotrichales**<sup>50</sup>  
**Family: Erysipelotrichaceae**<sup>51</sup>  
Allobaculum  
Anaerorhabdus

Breznakia  
Bulleidia  
Catenibacterium  
Catenisphaera  
Coprobacillus  
Dielma  
Dubosiella  
Eggerthia  
Erysipelothrix  
Faecalibacillus  
Faecalibaculum  
Faecalicoccus  
Faecalitalea  
Holdemanella  
Holdemania  
Ileibacterium  
Kandleria

Longibaculum  
Longicatena  
Solobacterium  
Turicibacter  
**Class: Limnochordia**<sup>52</sup>  
**Order: Limnochordales**<sup>52</sup>  
**Family: Limnochordaceae**<sup>52</sup>  
Limnochorda  
**Class: Negativicutes**<sup>53</sup>  
**Order: Acidaminococcales**<sup>54</sup>  
**Family: Acidaminococcaceae**<sup>53</sup>  
Acidaminococcus  
Anaerospora  
Phascolarctobacterium  
Succiniclasticum  
Succinispira  
**Order: Selenomonadales**<sup>53</sup>



**Family: Selenomonadaceae**<sup>54</sup>

Anaerovibrio

Centipeda

Megamonas

Mitsuokella

Pectinatus

Propionispira

Schwartzia

Selenomonas

Zymophilus

**Family: Sporomusaceae**<sup>54</sup>

Acetonema

Anaeroarcus

Anaeromusa

Anaerosinus

Anaerosporomusa

Dendrosporobacter

Lucifera

Methylomusa

Pelosinus

Propionispora

Sporolituus

Sporomusa

Sporotalea

Thermosinus

**Order: Veillonellales**<sup>54</sup>

**Family: Veillonellaceae**<sup>7,55</sup>

Allisonella

Anaeroglobus

Dialister

Megasphaera

Negativicoccus

Quinella

Veillonella

**Class: None**

**Order: None**

**Family: None**

Caecibacterium

**Class: Thermolithobacteria**<sup>56</sup>

**Order: Thermolithobacterales**<sup>56</sup>

**Family: Thermolithobacteraceae**<sup>56</sup>

Thermolithobacter

**Phylum: Fusobacteria**<sup>1</sup>

**Class: Fusobacteriia**<sup>57</sup>

**Order: Fusobacteriales**<sup>58</sup>

**Family: Fusobacteriaceae**<sup>59</sup>

Cetobacterium

Fusobacterium

Hypnocyclicus

Ilyobacter

Propionigenium

Psychrilyobacter

**Family: Leptotrichiaceae**<sup>60</sup>

Caviibacter

Leptotrichia

Oceanivirga

Sebaldella

Sneathia

Streptobacillus

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## 9 G

**Phylum: Gemmatimonadetes**<sup>1</sup>

**Class: Gemmatimonadetes**<sup>1</sup>

**Order: Gemmatimonadales**<sup>1</sup>

**Family: Gemmatimonadaceae**<sup>1</sup>

Gemmatimonas

Roseisolibacter

**Class: Longimicrobia**<sup>2</sup>

**Order: Longimicrobiales**<sup>2</sup>

**Family: Longimicrobiaceae**<sup>2</sup>

Longimicrobium

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# 10 K

**Phylum: Kiritimatiellaeota**<sup>1</sup>

**Class: Kiritimatiellae**<sup>1</sup>

**Order: Kiritimatiellales**<sup>1</sup>

**Family: Kiritimatiellaceae**<sup>1</sup>

Kiritimatiella

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# 11 L

**Phylum: Lentisphaerae**<sup>1</sup>

**Class: Lentisphaeria**<sup>2</sup>

**Order: Lentisphaerales**<sup>1</sup>

**Family: Lentisphaeraceae**<sup>3</sup>

Lentisphaera

**Order: Victivallales**<sup>1</sup>

**Family: Victivallaceae**<sup>4</sup>

Victivallis

**Class: Oligosphaeria**<sup>5</sup>

**Order: Oligosphaerales**<sup>5</sup>

**Family: Oligosphaeraceae**<sup>5</sup>

Oligosphaera

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## 12 N

**Phylum: Nitrospirae**<sup>1</sup>

**Class: Nitrospira**<sup>1</sup>

**Order: Nitrospirales**<sup>1</sup>

**Family: Nitrospiraceae**<sup>1</sup>

Leptospirillum

Nitrospira

Thermodesulfovibrio

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# 13 P

**Phylum: Planctomycetes**<sup>1</sup>

**Class: Planctomycetia**<sup>2</sup>

**Order: Planctomycetales**<sup>3</sup>

**Family: Gemmataceae**<sup>4</sup>

Fimbriiglobus

Gemmata

Telmatocola

Zavarzinella

**Family: Isosphaeraceae**<sup>5</sup>

Aquisphaera

Isosphaera

Paludisphaera

Singulisphaera

Tautonia

Tundrisphaera

**Family: Planctomycetaceae**<sup>3</sup>

Blastopirellula

Gimesia

Mariniblastus

Pirellula

Planctomicrobium

Planctomyces

Planctopirus

Pseudopedobacter

Rhodopirellula

Roseimaritima

Rubinisphaera

Rubripirellula



Schlesneria

Thermogutta

Thermostilla

Tuwongella

**Class: Phycisphaerae**<sup>6</sup>

**Order: Phycisphaerales**<sup>6</sup>

**Family: Phycisphaeraceae**<sup>6</sup>

Algisphaera

Phycisphaera

**Order: Sedimentisphaerales**<sup>7</sup>

**Family: Sedimentisphaeraceae**<sup>7</sup>

Sedimentisphaera

**Order: Tepidisphaerales**<sup>8</sup>

**Family: Tepidisphaeraceae**<sup>8</sup>

Tepidisphaera

**Phylum: Proteobacteria**<sup>9</sup>

**Class: Zetaproteobacteria**<sup>10</sup>

**Order: Mariprofundales**<sup>10</sup>

**Family: Mariprofundaceae**<sup>11</sup>

Mariprofundus

**Class: Acidithiobacillia**<sup>12</sup>

**Order: Acidithiobacillales**<sup>13</sup>

**Family: Acidithiobacillaceae**<sup>14</sup>

Acidithiobacillus

**Family: Thermithiobacillaceae**<sup>15</sup>

Thermithiobacillus

**Class: Alphaproteobacteria**<sup>16</sup>

**Order: Caulobacterales**<sup>17,18</sup>

**Family: Caulobacteraceae**<sup>18</sup>

Aquidulcibacter

Asticcacaulis

Brevundimonas

Caulobacter

Phenylobacterium

**Family: Hyphomonadaceae**<sup>19</sup>

Algimonas

Asprobacter

Fretibacter

Glycocaulis

Hellea

Henriciella

Hirschia

Hyphobacterium

Hyphomonas

Litorimonas

Maribaculum

Maricaulis

Marinicauda

Oceanicaulis

Ponticaulis

Robiginitomaculum

Thalassorhabdomicrobium

Woodsholea

**Order: Emcibacterales**<sup>20</sup>

**Family: Emcibacteraceae**<sup>20</sup>

Emcibacter

**Order: Iodidimonadales**<sup>20</sup>

**Family: Iodidimonadaceae**<sup>20</sup>

Iodidimonas

**Order: Kiloniellales**<sup>21</sup>

**Family: Kiloniellaceae**<sup>21</sup>

Kiloniella

**Order: Kordiimonadales**<sup>22</sup>

**Family: Kordiimonadaceae**<sup>23</sup>

Eilatimonas

Kordiimonas

**Family: Temperatibacteraceae**<sup>24</sup>

Temperatibacter

**Order: Magnetococcales**<sup>25</sup>

**Family: Magnetococcaceae**<sup>25</sup>

Magnetococcus

**Order: Micropepsales**<sup>26</sup>

**Family: Micropepsaceae**<sup>26</sup>

Micropepsis

Rhizomicrobium

**Order: Minwuiiales**<sup>27</sup>

**Family: Minwuiaceae**<sup>27</sup>

Minwuia

**Order: None**

**Family: None**

Amphiplicatus

Aquisalinus

Enterovirga

Hartmannibacter

Hyphococcus

Marinicaulis

Parvularcula

**Order: Rhizobiales**<sup>28</sup>

**Family: Aestuariivirgaceae**<sup>29</sup>

Aestuariivirga

**Family: Alsobacteraceae**<sup>30</sup>

Alsobacter

**Family: Ancalomicrobiaceae**<sup>31</sup>

Ancalomicrobium

Pinisolibacter

Siculibacillus

**Family: Bartonellaceae**<sup>17</sup>

Bartonella

Grahamella

Rochalimaea

**Family: Beijerinckiaceae**<sup>32</sup>

Beijerinckia

Methylocapsa  
Methylocella  
Methyloferula  
Methylorosula  
Methylovirgula  
Pseudochelatococcus  
Qingshengfania  
**Family: Bradyrhizobiaceae**<sup>33</sup>  
Afipia  
Agromonas  
Blastobacter  
Bosea  
Bradyrhizobium  
Nitrobacter  
Oligotropha  
Rhodoblastus  
Rhodopseudomonas

Tardiphaga  
Variibacter  
**Family: Brucellaceae**<sup>17,34</sup>  
Brucella  
Daeguia  
Falsochrobactrum  
Mycoplana  
Ochrobactrum  
Paenochrobactrum  
Pseudochrobactrum  
**Family: Chelatococcaceae**<sup>35</sup>  
Camelimonas  
Chelatococcus  
**Family: Cohaesibacteraceae**<sup>36</sup>  
Breoghania  
Cohaesibacter  
**Family: Hyphomicrobiaceae**<sup>17</sup>

Angulomicrobium  
Aquabacter  
Arsenicitalea  
Blastochloris  
Cucumibacter  
Devosia  
Dichotomicrobium  
Filomicrobium  
Gemmiger  
Hyphomicrobium  
Limoniibacter  
Maritalea  
Methyloligella  
Methylorhabdus  
Methyloterrigena  
Paradevosia  
Pedomicrobium

Pelagibacterium  
Prosthecomicrobium  
Rhodomicrobium  
Rhodoplanes  
Seliberia  
Vasilyevaea  
Youhaiella  
Zhangella  
**Family: Lichenihabitantaceae**<sup>37</sup>  
Lichenihabitans  
**Family: Mabikibacteraceae**<sup>38</sup>  
Mabikibacter  
**Family: Methylobacteriaceae**<sup>39</sup>  
Balneimonas  
Meganema  
Methylobacterium  
Methylorubrum

Microvirga  
Neomegalonema  
Protomonas  
Psychroglaciecola  
**Family: Methylocystaceae**<sup>40</sup>  
Albibacter  
Chenggangzhangella  
Chthonobacter  
Hansschlegelia  
Methylocystis  
Methylopila  
Methylosinus  
Pleomorphomonas  
Terasakiella  
**Family: None**  
Amorphus  
Aurantimonas

Aureimonas  
Bauldia  
Consotaella  
Flaviflagellibacter  
Fulvimarina  
Jiella  
Mangrovicella  
Martelella  
Methylobrevis  
Methyloceanibacter  
Mongoliimonas  
Oharaeibacter  
Phreatobacter  
Pseudorhodoplanes  
Pyruvatibacter  
Tepidicaulis  
**Family: Notoacmeibacteraceae**<sup>41</sup>

Notoacmeibacter

**Family: Phyllobacteriaceae**<sup>42</sup>

Aminobacter

Aquamicrobium

Chelativorans

Chelatobacter

Corticibacterium

Defluviobacter

Hoeflea

Lentilitoribacter

Mesorhizobium

Nitratireductor

Oceaniradius

Oricola

Phyllobacterium

Pseudahrensia

Pseudaminobacter

Pseudohoeflea

Roseitalea

Salaquimonas

Thalassocola

Thermovum

Tianweitalia

Zhengella

**Family: Rhizobiaceae**<sup>17,43</sup>

Agrobacterium

Allorhizobium

Carbophilus

Ciceribacter

Crabtreeella

Ensifer

Gellertiella

Kaistia

Liberibacter

Neorhizobium  
Pararhizobium  
Pseudorhizobium  
Rhizobium  
Shinella  
Sinorhizobium  
**Family: Rhodobiaceae**<sup>44</sup>  
Afifella  
Anderseniella  
Butyratibacter  
Lutibaculum  
Microbaculum  
Parvibaculum  
Rhodobium  
Rhodoligotrophos  
Roseospirillum  
Tepidamorphus

**Family: Roseiarcaceae**<sup>45</sup>  
Roseiarcus  
**Family: Salinarimonadaceae**<sup>46</sup>  
Salinarimonas  
Saliniramus  
**Family: Xanthobacteraceae**<sup>19</sup>  
Ancylobacter  
Azorhizobium  
Labrys  
Microcyclus  
Pseudolabrys  
Pseudoxanthobacter  
Starkeya  
Xanthobacter  
**Order: Rhodobacterales**<sup>47</sup>  
**Family: Rhodobacteraceae**<sup>48</sup>  
Acidimangrovimonas



Actibacterium  
Acuticoccus  
Aestuariibius  
Aestuariicoccus  
Aestuarih habitans  
Aestuariivita  
Aestuarium  
Agaricicola  
Ahrensia  
Albidovulum  
Albimonas  
Albirhodobacter  
Aliiroseovarius  
Aliishimia  
Alkalilacustris  
Alkalimicrobium  
Amaricoccus

Amylibacter  
Antarctobacter  
Aquicoccus  
Aquimixticola  
Arenibacillus  
Ascidiacei habitans  
Boseongicola  
Brevirhabdus  
Carideicomes  
Catellibacterium  
Celeribacter  
Cereibacter  
Chachezhania  
Citricella  
Citreimonas  
Cognatishimia  
Cognatiyoonia

Confluentimicrobium  
Cribrihabitans  
Defluviimonas  
Dinoroseobacter  
Donghicola  
Epibacterium  
Falsirhodobacter  
Flavimaricola  
Fluviibacterium  
Frigidibacter  
Gaetbulicola  
Gemmobacter  
Haematobacter  
Halocynthiibacter  
Halodurantibacterium  
Halovulum  
Hasllibacter

Histidinibacterium  
Huaishuia  
Hwanghaeicola  
Jannaschia  
Jhaorihella  
Kandeliimicrobium  
Ketogulonicigenium  
Labrenzia  
Lacimonas  
Leisingera  
Lentibacter  
Limibaculum  
Limimaricola  
Litoreibacter  
Litorimicrobium  
Litorisediminicola  
Litorisediminivivens

Litorivita  
Loktanella  
Lutimaribacter  
Maliponia  
Mameliella  
Mangrovicoccus  
Maribius  
Marimonas  
Marinibacterium  
Marinovum  
Maritimibacter  
Marivita  
Marivivens  
Meridianimarinicoccus  
Methylarcula  
Monaibacterium  
Nautella

Neptunicoccus  
Nereida  
Nesiotobacter  
Nioella  
Oceanibium  
Oceanibulbus  
Oceanicella  
Oceanicola  
Oceaniglobus  
Octadecabacter  
Pacificibacter  
Paenimaribius  
Paenirhodobacter  
Palleronia  
Pannonibacter  
Paracoccus  
Paradonghicola

Paraphaeobacter  
Pararhodobacter  
Pelagibaca  
Pelagicola  
Pelagimonas  
Pelagivirga  
Phaeobacter  
Phycocomes  
Planktomarina  
Planktotalea  
Pleomorphobacterium  
Pontibaca  
Ponticoccus  
Pontivivens  
Poseidonocella  
Primorskyibacter  
Profundibacter

Profundibacterium  
Pseudaestuariiivita  
Pseudodonghicola  
Pseudogemmobacter  
Pseudohalocynthiibacter  
Pseudomaribius  
Pseudooceanicola  
Pseudooctadecabacter  
Pseudopelagicola  
Pseudophaeobacter  
Pseudopuniceibacterium  
Pseudorhodobacter  
Pseudoroseicyclus  
Pseudoroseovarius  
Pseudoruegeria  
Pseudoseohaicola  
Pseudovibrio

Psychromarinibacter  
Puniceibacterium  
Rhodobaca  
Rhodobacter  
Rhodobaculum  
Rhodophyticola  
Rhodosalinus  
Rhodovulum  
Roseibaca  
Roseibacterium  
Roseibium  
Roseicitreum  
Roseicyclus  
Roseinatronobacter  
Roseisalinus  
Roseivivax  
Roseobacter

Roseovarius  
Rubellimicrobium  
Rubribacterium  
Rubricella  
Rubrimonas  
Ruegeria  
Sagittula  
Salinihabitans  
Salinovum  
Salipiger  
Sedimentitalea  
Sediminimonas  
Seohaecicola  
Shimia  
Silicibacter  
Silicimonas  
Sinirhodobacter

Staleyia  
Stappia  
Sulfitobacter  
Tabrizicola  
Tateyamaia  
Thalassobacter  
Thalassobius  
Thalassococcus  
Thiobacimonas  
Thioclava  
Thiosphaera  
Tranquillimonas  
Tritonibacter  
Tropicibacter  
Tropicimonas  
Vadicella  
Wenxinia

Xinfangfangia  
Xuhuaishuia  
Yangia  
Yoonia  
Youngimonas  
**Order: Rhodospirillales**<sup>17,49</sup>  
**Family: Acetobacteraceae**<sup>50</sup>  
Acetobacter  
Acidibrevibacterium  
Acidicaldus  
Acidiphilium  
Acidisoma  
Acidisphaera  
Acidocella  
Acidomonas  
Ameyamaea  
Asaia

Belnapia  
Bombella  
Caldovatus  
Commensalibacter  
Craurococcus  
Crenalkalicoccus  
Dankookia  
Elioraea  
Endobacter  
Gluconacetobacter  
Gluconobacter  
Granulibacter  
Humitalea  
Komagataeibacter  
Kozakia  
Muricoccus  
Neoasaia

Neokomagataea  
Nguyenibacter  
Paracraurococcus  
Rhodopila  
Rhodovarius  
Rhodovastum  
Roseicella  
Roseococcus  
Roseomonas  
Rubritepida  
Saccharibacter  
Siccirubricoccus  
Stella  
Swaminathania  
Swingsia  
Tanticharoenia  
Teichococcus

Zavarzinia

**Family: Geminicoccaceae**<sup>51</sup>

Arboricoccus

Geminicoccus

**Family: Rhodospirillaceae**<sup>17,49</sup>

Aestuariispira

Algihabitans

Aliidongia

Azospirillum

Caenispirillum

Conglomeromonas

Constrictibacter

Defluviicoccus

Desertibacter

Dongia

Elstera

Ferrovibrio

Ferruginivarius

Fodinicurvata

Haematospirillum

Hwanghaeella

Indioceanicola

Inquilingus

Insolitispirillum

Lacibacterium

Limibacillus

Limimonas

Magnetospira

Magnetospirillum

Magnetovibrio

Marinibaculum

Marispirillum

Marivibrio

Nisaea



Nitrospirillum  
Niveispirillum  
Novispirillum  
Oceanibaculum  
Oleisolibacter  
Pararhodospirillum  
Pelagibius  
Phaeospirillum  
Phaeovibrio  
Reyranella  
Rhodocista  
Rhodospira  
Rhodospirillum  
Rhodovibrio  
Roseospira  
Skermanella  
Tagaea

Taonella  
Telmatospirillum  
Thalassobaculum  
Thalassospira  
Tistlia  
Tistrella  
Varunaivibrio  
**Order: Rhodothalassiales**<sup>52</sup>  
**Family: Rhodothalassiaceae**<sup>52</sup>  
Rhodothalassium  
**Order: Rickettsiales**<sup>17</sup>  
**Family: Anaplasmataceae**<sup>17,53</sup>  
Aegyptianella  
Anaplasma  
Cowdria  
Ehrlichia  
Neorickettsia

Wolbachia

**Family: Holosporaceae**<sup>54</sup>

Caedibacter

Holospora

Lyticum

Pseudocaedibacter

Symbiotes

Tectibacter

**Family: Rickettsiaceae**<sup>17,55</sup>

Occidentia

Orientia

Rickettsia

**Order: Sneathiellales**<sup>56</sup>

**Family: Sneathiellaceae**<sup>56</sup>

Oceanibacterium

Sneathiella

**Order: Sphingomonadales**<sup>57</sup>

**Family: Erythrobacteraceae**<sup>19</sup>

Altererythrobacter

Croceibacterium

Croceicoccus

Erythrobacter

Erythromicrobium

Porphyrobacter

Qipengyuania

**Family: Sphingomonadaceae**<sup>58</sup>

Aquisediminimonas

Blastomonas

Chakrabartia

Erythromonas

Hephaestia

Novosphingobium

Pacificimonas

Parablastomonas

Parasphingopyxis  
Polymorphobacter  
Rhizomonas  
Rhizorhabdus  
Rhizorhapis  
Sandaracinobacter  
Sandarakinorhabdus  
Sphingoaurantiacus  
Sphingobium  
Sphingomicrobium  
Sphingomonas  
Sphingopyxis  
Sphingorhabdus  
Sphingosinicella  
Sphingosinithalassobacter  
Stakelama  
Zymomonas

**Class: Betaproteobacteria**<sup>59</sup>

**Order: Burkholderiales**<sup>60</sup>

**Family: Alcaligenaceae**<sup>61</sup>

Achromobacter  
Advenella  
Alcaligenes  
Algicoccus  
Ampullimonas  
Azohydromonas  
Basilea  
Bordetella  
Brackiella  
Caenimicrobium  
Candidimonas  
Castellaniella  
Corticimicrobacter  
Derxia

Eoetvoesia  
Kerstesia  
Oligella  
Orrella  
Paenalcaligenes  
Paracandidimonas  
Paralcaligenes  
Parapusillimonas  
Parvibium  
Pelistega  
Pigmentiphaga  
Pusillimonas  
Saccharedens  
Taylorella  
Tetrathiobacter  
Verticia  
Verticiella

**Family: Burkholderiaceae**<sup>62</sup>

Burkholderia  
Caballeronia  
Chitinimonas  
Cupriavidus  
Ephemeropterocola  
Formosimonas  
Hydromonas  
Lautropia  
Limnobacter  
Mycetohabitans  
Mycoavidus  
Pandoraea  
Paraburkholderia  
Pararobbisia  
Paucimonas  
Polynucleobacter

Quisquiliibacterium

Ralstonia

Robbsia

Thermothrix

Trinickia

Wautersia

**Family: Comamonadaceae<sup>63</sup>**

Acidovorax

Albidiferax

Alicycliphilus

Aquabacterium

Brachymonas

Caenibacterium

Caenimonas

Caldimonas

Calidifontimicrobium

Comamonas

Corticibacter

Curvibacter

Delftia

Diaphorobacter

Extensimonas

Giesbergeria

Hydrogenophaga

Hylemonella

Ideonella

Kinneretia

Lampropedia

Leptothrix

Limnohabitans

Macromonas

Malikia

Melaminivora

Mitsuaria

Oryzisolibacter  
Ottowia  
Paucibacter  
Pelomonas  
Polaromonas  
Pseudacidovorax  
Pseudorhodoferax  
Pulveribacter  
Ramlibacter  
Rhodoferax  
Roseateles  
Rubrivivax  
Schlegelella  
Simplicispira  
Sphaerotilus  
Tepidicella  
Tepidimonas

Thiomonas  
Tibeticola  
Variovorax  
Verminephrobacter  
Xenophilus  
Xylophilus  
Zhizhongheella  
**Family: None**  
Aquincola  
Inhella  
Methylibium  
Piscinibacter  
Rhizobacter  
Rivibacter  
Thiobacter  
**Family: Oxalobacteraceae**<sup>64</sup>  
Collimonas

Duganella  
Glaciimonas  
Herbaspirillum  
Herminiimonas  
Janthinobacterium  
Massilia  
Naxibacter  
Noviherbaspirillum  
Oxalicibacterium  
Oxalobacter  
Paraherbaspirillum  
Pseudoduganella  
Solimicrobium  
Telluria  
Undibacterium  
**Family: Sutterellaceae**<sup>65</sup>  
Mesosutterella

Parasutterella  
Sutterella  
Turicimonas  
**Order: Neisseriales**<sup>66</sup>  
**Family: Chromobacteriaceae**<sup>67</sup>  
Andreprevotia  
Aquaspirillum  
Aquitalea  
Chitinibacter  
Chitinilyticum  
Chitiniphilus  
Chromobacterium  
Deefgea  
Formivibrio  
Gulbenkiania  
Iodobacter  
Jeongeupia

Laribacter  
Leeia  
Microvirgula  
Paludibacterium  
Pseudogulbenkiana  
Silvimonas  
Vogesella  
**Family: Neisseriaceae**<sup>17</sup>  
Alysiella  
Amantichitinum  
Bergeriella  
Conchiformibius  
Crenobacter  
Eikenella  
Kingella  
Morococcus  
Neisseria

Prolinoborus  
Rivicola  
Simonsiella  
Snodgrassella  
Stenoxybacter  
Uruburuella  
Vitreoscilla  
**Order: Nitrosomonadales**<sup>68</sup>  
**Family: Gallionellaceae**<sup>17,18</sup>  
Ferrigenium  
Ferriphasselus  
Gallionella  
Sulfuricella  
Sulfuriferula  
Sulfurirhabdus  
**Family: Methylophilaceae**<sup>69</sup>  
Methylobacillus



Methylophilus

Methylotenera

Methylovorus

Novimethylophilus

Pseudomethylobacillus

**Family: Nitrosomonadaceae**<sup>70</sup>

Nitrosolobus

Nitrosomonas

Nitrospira

Nitrospira

**Family: Spirillaceae**<sup>17</sup>

Spirillum

**Family: Sterolibacteriaceae**<sup>71</sup>

Denitratisoma

Georgfuchsia

Methyloversatilis

Sterolibacterium

Sulfurisoma

Sulfuritalea

**Family: Thiobacillaceae**<sup>71</sup>

Annwoodia

Thiobacillus

**Order: None**

**Family: None**

Chitinivorax

Sulfuritortus

**Order: Rhodocyclales**<sup>72</sup>

**Family: Azonexaceae**<sup>71</sup>

Azonexus

Dechloromonas

Ferribacterium

Quatrionicoccus

**Family: Rhodocyclaceae**<sup>73</sup>

Azospira

Azovibrio  
Dechlorosoma  
Niveibacterium  
Oryzomicrobium  
Propionibacter  
Propionivibrio  
Rhodocyclus  
Rugosibacter  
**Family: Zoogloeaceae**<sup>71</sup>  
Aromatoleum  
Azoarcus  
Thauera  
Uliginosibacterium  
Zoogloea  
**Class: Deltaproteobacteria**<sup>74</sup>  
**Order: Bradymonadales**<sup>75</sup>  
**Family: Bradymonadaceae**<sup>75</sup>

Bradymonas  
Lujinxingia  
**Order: Desulfarculales**<sup>76</sup>  
**Family: Desulfarculaceae**<sup>77</sup>  
Desulfarculus  
Desulfocarbo  
Dethiosulfatarculus  
**Order: Desulfobacterales**<sup>78</sup>  
**Family: Desulfobacteraceae**<sup>79</sup>  
Desulfatibacillum  
Desulfatiferula  
Desulfatiglans  
Desulfatirhabdium  
Desulfatitalea  
Desulfobacter  
Desulfobacterium  
Desulfobacula

Desulfobotulus  
Desulfocella  
Desulfococcus  
Desulfoconvexum  
Desulfofaba  
Desulfofrigus  
Desulfoluna  
Desulfomusa  
Desulfonatronobacter  
Desulfonema  
Desulforegula  
Desulfosalsimonas  
Desulfosarcina  
Desulfospira  
Desulfotignum  
**Family: Desulfobulbaceae**<sup>80</sup>  
Desulfobulbus

Desulfocapsa  
Desulfofustis  
Desulfopila  
Desulfoprunum  
Desulforhopalus  
Desulfotalea  
Desulfurivibrio  
**Family: Nitrospinaceae**<sup>81</sup>  
Nitrospina  
**Order: Desulfovibrionales**<sup>82</sup>  
**Family: Desulfohalobiaceae**<sup>83</sup>  
Desulfohalobium  
Desulfonatronospira  
Desulfonatronovibrio  
Desulfonauticus  
Desulfothermus  
Desulfovermiculus

**Family: Desulfomicrobiaceae**<sup>84</sup>

Desulfomicrobium

Desulfoplanes

**Family: Desulfonatraceae**<sup>85</sup>

Desulfonatrum

**Family: Desulfovibrionaceae**<sup>86</sup>

Bilophila

Desulfobaculum

Desulfocurvibacter

Desulfocurvus

Desulfohalovibrio

Desulfomonas

Desulfovibrio

Halodesulfovibrio

Lawsonia

Pseudodesulfovibrio

**Order: Desulfurellales**<sup>87</sup>

**Family: Desulfurellaceae**<sup>88</sup>

Desulfurella

Hippea

**Order: Desulfuromonadales**<sup>89</sup>

**Family: Desulfuromonadaceae**<sup>90</sup>

Desulfuromonas

Desulfuromusa

Malonomonas

Pelobacter

**Family: Geobacteraceae**<sup>91</sup>

Geoalkalibacter

Geobacter

Geopsychrobacter

Geothermobacter

Trichlorobacter

**Order: Myxococcales**<sup>17</sup>

**Family: Anaeromyxobacteraceae**<sup>92</sup>

Anaeromyxobacter

**Family: Archangiaceae**<sup>17</sup>

Angiococcus

Archangium

Cystobacter

Hyalangium

Melittangium

Stigmatella

Vitiosangium

**Family: Kofleriaceae**<sup>93</sup>

Haliangium

Koferia

**Family: Labilitrichaceae**<sup>92</sup>

Labilithrix

**Family: Myxococcaceae**<sup>17</sup>

Aggregicoccus

Corallococcus

Myxococcus

Pyxidicoccus

Simulacricoccus

**Family: Nannocystaceae**<sup>94</sup>

Enhygromyxa

Nannocystis

Plesiocystis

Pseudenhygromyxa

**Family: None**

Minicystis

**Family: Phaselicystidaceae**<sup>95</sup>

Phaselicystis

**Family: Polyangiaceae**<sup>17</sup>

Aetherobacter

Byssovorax

Chondromyces

Jahnella

Polyangium

Racemicystis

Sorangium

**Family: Sandaracinaceae**<sup>96</sup>

Sandaracinus

**Family: Vulgatibacteraceae**<sup>92</sup>

Vulgatibacter

**Order: None**

**Family: None**

Deferrisoma

Dissulfuribacter

Dissulfurimicrobium

Dissulfurirhabdus

**Family: Syntrophorhabdaceae**<sup>97</sup>

Syntrophorhabdus

**Order: Syntrophobacterales**<sup>98</sup>

**Family: Syntrophaceae**<sup>99</sup>

Desulfobacca

Desulfomonile

Smithella

Syntrophus

**Family: Syntrophobacteraceae**<sup>100</sup>

Desulfacinum

Desulfoglaeba

Desulforhabdus

Desulfosoma

Desulfovirga

Syntrophobacter

Thermodesulforhabdus

**Class: Epsilonproteobacteria**<sup>101</sup>

**Order: Campylobacterales**<sup>102</sup>

**Family: Campylobacteraceae**<sup>103</sup>

Aliarcobacter

Arcobacter

Campylobacter

Dehalospirillum

Halarcobacter

Malaciobacter

Poseidonibacter

Pseudarcobacter

Sulfurospirillum

**Family: Helicobacteraceae**<sup>104</sup>

Helicobacter

Sulfuricurvum

Sulfurimonas

Sulfurovum

Thiovulum

Wolinella

**Family: None**

Hydrogenimonas

**Order: Nautiliales**<sup>105</sup>

**Family: Nautiliaceae**<sup>105</sup>

Caminibacter

Cetia

Lebetimonas

Nautilia

Nitratifractor

Nitratiruptor

Thioreductor

**Class: Gammaproteobacteria**<sup>106</sup>

**Order: Vibrionales**<sup>1</sup>

**Family: Vibrionaceae**<sup>17</sup>

Aliivibrio

Allomonas

Beneckea

Catenococcus

Echinimonas

Enterovibrio

Grimontia

Listonella

Lucibacterium

Paraphotobacterium

Photobacterium

Salinivibrio

Thaumasiovibrio

Vibrio

**Order: Acidiferrobacterales**<sup>107</sup>

**Family: Acidiferrobacteraceae**<sup>107</sup>

Acidiferrobacter

Sulfuricaulis

Sulfurifustis

**Order: Aeromonadales**<sup>108</sup>

**Family: Aeromonadaceae**<sup>109</sup>

Aeromonas

Dongshaea

Oceanimonas

Oceanisphaera

Pseudaeromonas

Tolumonas

Zobellella

**Family: Succinivibrionaceae**<sup>110</sup>

Anaerobiospirillum

Ruminobacter

Succinatimonas

Succinimonas

Succinivibrio

**Order: Alteromonadales**<sup>111</sup>

**Family: Alteromonadaceae**<sup>112</sup>

Aestuariibacter

Agaribacter

Agarivorans

Alginatibacterium



Aliagarivorans  
Aliiglaciecola  
Alishewanella  
Alkalimarinus  
Alteromonas  
Bowmanella  
Catenovulum  
Glaciecola  
Hydrocarboniclastica  
Lacimicrobium  
Mangrovitalea  
Marinobacter  
Marinobacterium  
Neptunicella  
Paraglaciecola  
Planctobacterium  
Pseudobowmanella

Salinimonas  
Tamilnaduibacter  
**Family: Celerinatantimonadaceae**<sup>113</sup>  
Celerinatantimonas  
**Family: Colwelliaceae**<sup>114</sup>  
Colwellia  
Litorilituus  
Piscinibacterium  
Thalassomonas  
Thalassotalea  
**Family: Ferrimonadaceae**<sup>114</sup>  
Ferrimonas  
Paraferrimonas  
**Family: Idiomarinaceae**<sup>114</sup>  
Aliidiomarina  
Idiomarina  
Pseudidiomarina

**Family: Moritellaceae**<sup>114</sup>

Moritella

Paramoritella

**Family: None**

Aestuariicella

Motilimonas

Neiella

**Family: Pseudoalteromonadaceae**<sup>114</sup>

Algicola

Pseudoalteromonas

Psychrosphaera

Salsuginimonas

**Family: Psychromonadaceae**<sup>114</sup>

Corallincola

Psychromonas

**Family: Shewanellaceae**<sup>114</sup>

Parashewanella

Psychrobium

Shewanella

**Order: Arenicellales**<sup>115</sup>

**Family: Arenicellaceae**<sup>115</sup>

Arenicella

Perspicuibacter

**Order: Cardiobacteriales**<sup>116</sup>

**Family: Cardiobacteriaceae**<sup>117</sup>

Cardiobacterium

Dichelobacter

Suttonella

**Order: Cellvibrionales**<sup>118</sup>

**Family: Cellvibrionaceae**<sup>118</sup>

Agaribacterium

Agarilytica

Cellvibrio

Eionea

Gilvimarinus  
Halioxenophilus  
Maricurvus  
Marinimicrobium  
Pseudomaricurvus  
Pseudoteredinibacter  
Saccharophagus  
Simiduia  
Teredinibacter  
Umboniibacter  
**Family: Halieaceae**<sup>118</sup>  
Chromatocurvus  
Congregibacter  
Haliea  
Halioglobus  
Kineobactrum  
Luminiphilus

Marimicrobium  
Parahaliea  
Pseudohaliea  
**Family: Microbulbiferaceae**<sup>118</sup>  
Microbulbifer  
**Family: Porticoccaceae**<sup>118</sup>  
Porticoccus  
**Family: Spongiibacteraceae**<sup>118</sup>  
Dasania  
Marortus  
Melitea  
Sinobacterium  
Spongiibacter  
Zhongshania  
**Order: Chromatiales**<sup>119</sup>  
**Family: Chromatiaceae**<sup>17</sup>  
Alishewanella

Allochromatium  
Amoebobacter  
Chromatium  
Halochromatium  
Imhoffiella  
Isochromatium  
Lamprobacter  
Lamprocystis  
Marichromatium  
Nitrosococcus  
Pfennigia  
Phaeobacterium  
Phaeochromatium  
Rhabdochromatium  
Rheinheimera  
Thermochromatium  
Thioalkalicoccus

Thiobaca  
Thiocapsa  
Thiococcus  
Thiocystis  
Thiodictyon  
Thioflavicoccus  
Thiohalocapsa  
Thiolamprovum  
Thiopedia  
Thiophaeococcus  
Thiorhodococcus  
Thiorhodovibrio  
Thiospirillum  
**Family: Ectothiorhodospiraceae**<sup>120</sup>  
Acidihalobacter  
Alkalilimnicola  
Alkalispirillum

Aquisalimonas  
Arhodomonas  
Ectothiorhodosinus  
Ectothiorhodospira  
Halofilum  
Halopeptonella  
Halorhodospira  
Inmirania  
Methylohalomonas  
Methylnatrum  
Natronocella  
Natronospira  
Nitrococcus  
Oceanococcus  
Spiribacter  
Thioalbus  
Thioalkalivibrio

Thiogranum  
Thiohalomonas  
Thiohalospira  
Thiorhodospira  
**Family: Granulosicoccaceae**<sup>121</sup>  
Granulosicoccus  
Sulfuriflexus  
**Family: Halothiobacillaceae**<sup>122</sup>  
Halothiobacillus  
Thiofaba  
Thiovirga  
**Family: Thioalkalibacteraceae**<sup>123</sup>  
Guyparkeria  
Thioalkalibacter  
**Family: Thioalkalispiraceae**<sup>124</sup>  
Endothiovibrio  
Thioalkalispira

Thiohalophilus

**Family: Thioprofundaceae**<sup>125</sup>

Sulfurivermis

Thioprofundum

**Family: Wenzhouxiangellaceae**<sup>126</sup>

Wenzhouxiangella

**Family: Woeseiaceae**<sup>127</sup>

Woeseia

**Order: Enterobacterales**<sup>128</sup>

**Family: Budviciaceae**<sup>128</sup>

Budvicia

Leminorella

Pragia

**Family: Enterobacteriaceae**<sup>17</sup>

Biostraticola

Buttiauxella

Calymmatobacterium

Cedecea

Citrobacter

Cronobacter

Enterobacillus

Enterobacter

Escherichia

Franconibacter

Gibbsiella

Izhakiella

Klebsiella

Kluyvera

Kosakonia

Koserella

Leclercia

Lelliottia

Levinea

Limnobaculum

Mangrovibacter  
Metakosakonia  
Phytobacter  
Pluralibacter  
Pseudeschierichia  
Pseudocitrobacter  
Raoultella  
Rosenbergiella  
Saccharobacter  
Salmonella  
Shigella  
Shimwellia  
Siccibacter  
Trabulsiella  
Yokenella  
**Family: Erwiniaceae**<sup>128</sup>  
Buchnera

Erwinia  
Kalamiella  
Mixta  
Pantoea  
Phaseolibacter  
Tatumella  
Wigglesworthia  
**Family: Hafniaceae**<sup>128</sup>  
Edwardsiella  
Hafnia  
Obesumbacterium  
**Family: Morganellaceae**<sup>128</sup>  
Arsenophonus  
Cosenzaea  
Moellerella  
Morganella  
Photorhabdus

Proteus

Providencia

Xenorhabdus

**Family: None**

Plesiomonas

**Family: Pectobacteriaceae**<sup>128</sup>

Brenneria

Dickeya

Lonsdalea

Pectobacterium

Sodalis

**Family: Yersiniaceae**<sup>128</sup>

Chania

Ewingella

Rahnella

Rouxiella

Samsonia

Serratia

Yersinia

**Order: Immundisolibacterales**<sup>129</sup>

**Family: Immundisolibacteraceae**<sup>129</sup>

Immundisolibacter

**Order: Legionellales**<sup>130</sup>

**Family: Coxiellaceae**<sup>131</sup>

Aquicella

Coxiella

Diplorickettsia

Rickettsiella

**Family: Legionellaceae**<sup>17,132</sup>

Fluoribacter

Legionella

Sarcobium

Tatlockia

**Order: Lysobacterales**<sup>17,133</sup>



**Family: Lysobacteraceae**<sup>17,133</sup>

Arenimonas

Aspromonas

Chujaibacter

Coralloluteibacterium

Luteimonas

Lysobacter

Metallibacterium

Mizugakiibacter

Pseudoxanthomonas

Silanimonas

Stenotrophomonas

Thermomonas

Vulcaniibacterium

Xanthomonas

Xylella

**Family: None**

Alkanibacter

Povalibacter

Singularimonas

Steroidobacter

**Family: Rhodanobacteraceae**<sup>134</sup>

Ahniella

Aquimonas

Chiayiivirga

Dokdonella

Dyella

Frateuria

Fulvimonas

Luteibacter

Oleiagrimonas

Pseudofulvimonas

Rehaibacterium

Rhodanobacter

Rudaea

Tahibacter

**Order: Methylococcales**<sup>135</sup>

**Family: Crenotrichaceae**<sup>17</sup>

Crenothrix

**Family: Methylococcaceae**<sup>136</sup>

Methylobacter

Methylaldum

Methylococcus

Methylocucumis

Methylogaea

Methyloglobulus

Methylahalobius

Methylomagnum

Methylomarinum

Methylomicrobium

Methylomonas

Methyloparacoccus

Methyloprofundus

Methylosarcina

Methylosoma

Methylosphaera

Methyloterricola

Methylovulum

**Family: Methylothermaceae**<sup>137</sup>

Methylomarinovum

Methylothermus

**Family: None**

Methylotuvimicrobium

**Order: Nevskiales**<sup>134</sup>

**Family: Algiphilaceae**<sup>138</sup>

Algiphilus

**Family: Nevskiaceae**<sup>17,18</sup>

Alkanibacter

Fontimonas  
Hydrocarboniphaga  
Nevskia  
Panacagrimonas  
Singularimonas  
Sinimarinibacterium  
Sinobacter  
Solimonas  
Stagnimonas  
Stenotrophobium  
**Family: Salinisphaeraceae**<sup>134</sup>  
Abyssibacter  
Salinisphaera  
**Family: Steroidobacteraceae**<sup>139</sup>  
Povalibacter  
Steroidobacter  
**Order: None**

**Family: None**  
Acidibacter  
Alkalimonas  
Arsukibacterium  
Flintibacter  
Gallaecimonas  
Ignatzschineria  
Litorivivens  
Marinagarivorans  
Marinibactrum  
Marinicella  
Plasticicumulans  
Pseudohongiella  
Salicola  
Sedimenticola  
Thiohalobacter  
Thiohalorhabdus

Thiolapillus  
Thiosocius  
Wohlfahrtiimonas  
**Family: Thorselliaceae**<sup>140</sup>  
Coetzee  
Thorsellia  
**Order: Oceanospirillales**<sup>141</sup>  
**Family: Alcanivoraceae**<sup>142</sup>  
Alcanivorax  
Fundibacter  
Ketobacter  
Pelagibaculum  
Pleionea  
**Family: Balneatricaceae**<sup>143</sup>  
Balneatrix  
Pokkaliibacter  
**Family: Endozoicomonadaceae**<sup>144</sup>

Endozoicomonas  
Kistimonas  
Parendozoicomonas  
**Family: Hahellaceae**<sup>145</sup>  
Allohahella  
Hahella  
Halospina  
Sansalvadorimonas  
Zooshikella  
**Family: Halomonadaceae**<sup>146</sup>  
Aidingimonas  
Carnimonas  
Chromohalobacter  
Cobetia  
Deleya  
Halomonas  
Halotalea

Halovibrio  
Kushneria  
Larsenimonas  
Modicisalibacter  
Pistricoccus  
Salinicola  
Terasakiispira  
Volcaniella  
Zymbacter  
**Family: Kangiellaceae**<sup>147</sup>  
Aliikangiella  
Kangiella  
**Family: Litoricolaceae**<sup>148</sup>  
Litoricola  
**Family: None**  
Spongiispira  
**Family: Oceanospirillaceae**<sup>149</sup>

Amphritea  
Bacterioplanes  
Bacterioplanoides  
Bermanella  
Corallomonas  
Litoribacillus  
Litoribrevibacter  
Marinomonas  
Marinospirillum  
Motiliproteus  
Neptuniibacter  
Neptunomonas  
Nitrincola  
Oceaniserpentilla  
Oceanobacter  
Oceanospirillum  
Oleibacter

Oleispira

Pontibacterium

Pseudospirillum

Reinekea

Thalassolituus

**Family: Oleiphilaceae**<sup>150</sup>

Oleiphilus

**Order: Orbales**<sup>151</sup>

**Family: Orbaceae**<sup>151</sup>

Frischella

Gilliamella

Orbus

**Order: Pasteurellales**<sup>152</sup>

**Family: Pasteurellaceae**<sup>153</sup>

Actinobacillus

Aggregatibacter

Avibacterium

Basfia

Bibersteinia

Bisgaardia

Caviibacterium

Chelonobacter

Conservatibacter

Cricetibacter

Frederiksenia

Gallibacterium

Haemophilus

Histophilus

Lonepinella

Mannheimia

Mesocricetibacter

Muribacter

Necropsobacter

Nicoletella

Otariodibacter  
Pasteurella  
Phocoenobacter  
Rodentibacter  
Seminibacterium  
Testudinibacter  
Ursidibacter  
Vespertiliibacter  
Volucribacter  
**Family: Psittacellaceae**<sup>154</sup>  
Psittacella  
**Order: Pseudomonadales**<sup>17,155</sup>  
**Family: Moraxellaceae**<sup>156</sup>  
Acinetobacter  
Agitococcus  
Alkanindiges  
Branhamella

Cavicella  
Enhydrobacter  
Faucicola  
Fluviicoccus  
Moraxella  
Paraperlucidibaca  
Perlucidibaca  
Psychrobacter  
**Family: Pseudomonadaceae**<sup>17,157</sup>  
Azomonas  
Azomonotrichon  
Azorhizophilus  
Azotobacter  
Chryseomonas  
Entomomonas  
Flavimonas  
Mesophilobacter

Oblitimonas  
Permianibacter  
Pseudomonas  
Rugamonas  
Serpens  
Thiopseudomonas  
**Family: Ventosimonadaceae**<sup>158</sup>  
Ventosimonas  
**Order: Thiotrichales**<sup>159</sup>  
**Family: Beggiatoaceae**<sup>17</sup>  
Beggiatoa  
Thioflexithrix  
**Family: Fastidiosibacteraceae**<sup>160</sup>  
Facilibium  
Fastidiosibacter  
**Family: Francisellaceae**<sup>161</sup>  
Allofrancisella

Cysteiniphilum  
Francisella  
Pseudofrancisella  
**Family: None**  
Fangia  
**Family: Piscirickettsiaceae**<sup>162</sup>  
Cycloclasticus  
Galenea  
Hydrogenovibrio  
Methylophaga  
Piscirickettsia  
Sulfurivirga  
Thioalkalimicrobium  
Thiomicrorhabdus  
Thiomicrospira  
**Family: Thiofilaceae**<sup>163</sup>  
Thiofilum



**Family: Thiolineaceae**<sup>163</sup>

Thiolinea

**Family: Thiotrichaceae**<sup>164</sup>

Achromatium

Cocleimonas

Leucothrix

Thiobacterium

Thiomargarita

Thioploca

Thiospira

Thiothrix

**Class: Hydrogenophilalia**<sup>71</sup>

**Order: Hydrogenophilales**<sup>165</sup>

**Family: Hydrogenophilaceae**<sup>166</sup>

Hydrogenophilus

Petrobacter

Tepidiphilus

**Class: Oligoflexia**<sup>167</sup>

**Order: Bacteriovorales**<sup>168</sup>

**Family: Bacteriovoraceae**<sup>169</sup>

Bacteriolyticum

Bacteriovorax

**Family: Halobacteriovoraceae**<sup>170</sup>

Halobacteriovorax

**Family: Peredibacteraceae**<sup>171</sup>

Peredibacter

**Order: Bdellovibrionales**<sup>172</sup>

**Family: Bdellovibrionaceae**<sup>173</sup>

Bdellovibrio

Micavibrio

Vampirovibrio

**Order: Oligoflexales**<sup>167</sup>

**Family: Oligoflexaceae**<sup>167</sup>

Oligoflexus

**Family: Pseudobacteriovoraceae**<sup>174</sup>

Pseudobacteriovorax

**Order: Silvanigrellales**<sup>168</sup>

**Family: Silvanigrellaceae**<sup>168</sup>

Silvanigrella

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# 14 R

**Phylum: Rhodothermaeota**<sup>1</sup>

**Class: Rhodothermia**<sup>1</sup>

**Order: Rhodothermales**<sup>2</sup>

**Family: Rhodothermaceae**<sup>3</sup>

Longibacter

Longimonas

Natronotalea

Rhodothermus

Rubricoccus

Rubrivirga

**Family: Rubricoccaceae**<sup>1</sup>

**Family: Salinibacteraceae**<sup>1</sup>

Salinibacter

Salinivenus

**Family: Salisaetaceae**<sup>4</sup>

Roseithermus

Salisaeta

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# 15 S

**Phylum: Spirochaetes**<sup>1</sup>

**Class: Spirochaetes**<sup>2</sup>

**Order: Brachyspirales**<sup>3,4</sup>

**Family: Brachyspiraceae**<sup>5</sup>

Brachyspira

Serpulina

**Order: Brevinematales**<sup>3,4</sup>

**Family: Brevinemataceae**<sup>6</sup>

Brevinema

**Order: Leptospirales**<sup>3,4</sup>

**Family: Leptospiraceae**<sup>7,8</sup>

Leptonema

Leptospira

Turneriella

**Order: Spirochaetales**<sup>7,9</sup>

**Family: Borreliaceae**<sup>3,4</sup>

Borrelia

Borreliella

Cristispira

**Family: None**

Exilispira

**Family: Spirochaetaceae**<sup>7</sup>

Alkalispirochaeta

Clevelandina

Diplocalyx

Hollandina

Marispirochaeta

Oceanispirochaeta

Pillotina  
Pleomorphochaeta  
Rectinema  
Salinispira  
Sediminispirochaeta  
Sphaerochaeta  
Spirochaeta  
Treponema

**Phylum: Synergistetes**<sup>10</sup>

**Class: None**

**Order: None**

**Family: None**

Rarimicrobium

**Class: Synergistia**<sup>10</sup>

**Order: Synergistales**<sup>10</sup>

**Family: Synergistaceae**<sup>10</sup>

Acetomicrobium

Aminiphilus  
Aminivibrio  
Aminobacterium  
Aminomonas  
Anaerobaculum  
Cloacibacillus  
Dethiosulfovibrio  
Fretibacterium  
Jonquetella  
Lactivibrio  
Pyramidobacter  
Synergistes  
Thermanaerovibrio  
Thermovirga

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## 16 T

**Phylum: Tenericutes**<sup>1</sup>

**Class: Mollicutes**<sup>2,3</sup>

**Order: Acholeplasmatales**<sup>4</sup>

**Family: Acholeplasmataceae**<sup>2,5</sup>

Acholeplasma

**Order: Anaeroplasmatales**<sup>6</sup>

**Family: Anaeroplasmataceae**<sup>6</sup>

Anaeroplasma

Asteroleplasma

**Order: Entomoplasmatales**<sup>7</sup>

**Family: Entomoplasmataceae**<sup>7</sup>

Entomoplasma

Mesoplasma

**Family: Spiroplasmataceae**<sup>8</sup>

Spiroplasma

**Order: Haloplasmales**<sup>9</sup>

**Family: Haloplasmataceae**<sup>9</sup>

Haloplasma

**Order: Mycoplasmatales**<sup>2,10</sup>

**Family: Mycoplasmataceae**<sup>2,10</sup>

Eperythrozoon

Haemobartonella

Mycoplasma

Ureaplasma

Williamsoniiplasma

**Order: Mycoplasmodales**<sup>11</sup>

**Family: Metamycoplasmataceae**<sup>11</sup>

Mesomycoplasma

Metamycoplasma

Mycoplasma

**Family: Mycoplasma**<sup>11</sup>

Malacoplasma

Mycoplasma

**Phylum: Thermodesulfobacteria**<sup>12</sup>

**Class: None**

**Order: None**

**Family: None**

Thermosulfophilus

**Class: Thermodesulfobacteria**<sup>13</sup>

**Order: Thermodesulfobacteriales**<sup>14</sup>

**Family: Thermodesulfobacteriaceae**<sup>15</sup>

Caldimicrobium

Thermodesulfatator

Thermodesulfobacterium

Thermosulfurimonas

**Phylum: Thermotogae**<sup>16</sup>

**Class: Thermotogae**<sup>17</sup>

**Order: Kosmotogales**<sup>18</sup>

**Family: Kosmotogaceae**<sup>18</sup>

Kosmotoga

Mesotoga

Thermococcoides

**Order: Mesoaciditogales**<sup>19</sup>

**Family: Mesoaciditogaceae**<sup>19</sup>

Athalassotoga

Mesoaciditoga

**Order: Petrotogales**<sup>18</sup>

**Family: Petrotogaceae**<sup>18</sup>

Defluviitoga

Geotoga

Marinitoga

Oceanotoga

Petrotoga

**Order: Thermotogales**<sup>20</sup>

**Family: Fervidobacteriaceae**<sup>18</sup>

Fervidobacterium

Thermosipho

**Family: Thermotogaceae**<sup>21</sup>

Pseudothermotoga

Thermotoga

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□ □ □

# 17 V

**Phylum: Verrucomicrobia**<sup>1</sup>

**Class: Spartobacteria**<sup>2</sup>

**Order: None**

**Family: None**

Terrimicrobium

**Class: None**

**Order: None**

**Family: None**

Limisphaera

**Class: Opitutae**<sup>3</sup>

**Order: Opitiales**<sup>3</sup>

**Family: Opitutaceae**<sup>3</sup>

Alterococcus

Cephaloticoccus

Ereboglobus

Geminisphaera

Nibricoccus

Oleiharenicola

Opitutus

**Order: Puniceococcales**<sup>3</sup>

**Family: Puniceococcaceae**<sup>3</sup>

Cerasicoccus

Coraliomargarita

Pelagicoccus

Puniceicoccus

Ruficoccus

**Class: Verrucomicrobiae**<sup>4</sup>

**Order: Verrucomicrobiales**<sup>5</sup>

**Family: Akkermansiaceae**<sup>6</sup>

Akkermansia

**Family: Rubritaleaceae**<sup>7</sup>

Rubritalea

**Family: Verrucomicrobiaceae**<sup>5</sup>

Brevifollis

Haloferula

Luteolibacter

Pescicirhabdus

Phragmitibacter

Prostheco bacter

Roseibacillus

Roseimicrobium

Verrucomicrobium

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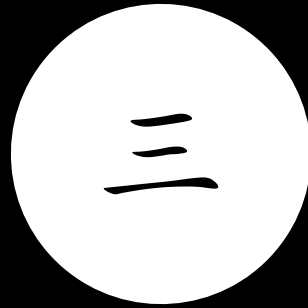
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# **BACTERIA**



## **TAXONOMY**

**Phyla, Classes, Orders, Families, and Genera**