

# Proposals for the revision of Viruses, Bacteria and Protista

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## Comment from the UDC Editorial Team (UDC Consortium)

A report on the revision of these classes with more details about issues is available in the Comments and Communication section of this volume. Due to the impact the revision of Viruses and Bacteria have on class 6 (especially Medicine), the UDC Editorial Team invites further comments and suggestions for the improvements of the proposed schedules. Classification of Protista has been widely disputed in the literature and equally more input on the proposal would be welcome.

## Proposal

- ! 578.8            **Classification of viruses**  
**SN:** *For systematics of viruses, see 578.9*  
*[Revision comment: The scope of this class is narrowed: the previous description was "Classification and systematics of viruses"]*
- ! 578.81           **Viruses primarily of bacterial and Archaean hosts**  
**Including:** Caudovirales and Ligamenvirales
- x 578.811           *(Myoviridae) → 578.911.1*  
x 578.812           *(Styloviridae) → 578.911.4*  
x 578.813           *(Corticoviridae) → 578.914.8*  
x 578.814           *(Microviridae) → 578.921.2*  
x 578.815           *(Iroviridae) → 578.914.5*  
x 578.816           *(Leviviridae. Masculoviruses) → 578.945.2*  
x 578.819           *(Other viruses of this type) → 578.911.2; 578.931.2*  
x 578.82/83        *(Viruses primarily of vertebrate hosts) → 578.82; 578.83*
- + 578.82           Viruses primarily of vertebrate hosts  
**Including:** Nidovirales
- x 578.821           *(Poxviridae) → 578.914.4*  
x 578.822           *(Parvoviridae) → 578.921.1*  
x 578.822.9        *(Adeno-associated virus group (AAV)) → 578.921.1*  
x 578.823           *(Reoviridae) → 578.931.1*  
x 578.824           *(Rhabdoviridae) → 578.951.4*  
x 578.825           *(Herpetoviridae) → 578.912.2*  
x 578.826           *(Adenoviridae) → 578.914.1*  
x 578.827           *(Pavovaviridae) → 578.914.2; 578.914.3*  
x 578.828           *(Retroviridae. Retroviruses) → 578.961.1*
- + 578.83           Viruses primarily of plant, invertebrates and vertebrate hosts  
**Including:** Picornavirales
- x 578.831           *(Paramyxoviridae) → 578.951.3*

- x 578.832      (*Orthomyxoviridae*) → 578.952.3
- x 578.833      (*Togaviridae*) → 578.944.4
- x 578.833.1    (*Alfavirus*) → 578.944.4
- x 578.833.2    (*Flavivirus*) → 578.944.2
- x 578.833.3    (*Pestivirus*) → 578.944.2
- x 578.833.4    (*Rubivirus*) → 578.944.4
- x 578.834      (*Coronaviridae. Coronaviruses*) → 578.941.1
- x 578.835      (*Picornaviridae. Picornaviruses*) → 578.942.1
- x 578.835.1    (*Enterovirus*) → 578.942.1
- x 578.835.2    (*Rhinovirus*) → 578.942.1
- x 578.835.3    (*Calicivirus*) → 578.944.1
- 578.84      Viruses primarily of invertebrate hosts
- x 578.841      (*Baculoviridae*) → 578.914.6
- x 578.842      (*Iridoviridae*) → 578.914.5
- x 578.85/86    (*Viruses primarily of plant hosts*) → 578.85; 578.86
- + 578.85      Viruses primarily of plants hosts  
Including: Tymovirales
- x 578.851      (*Bromovirus*) → 578.944.8
- x 578.852      (*Carlavirus*) → 578.943.3
- x 578.853      (*Caulimovirus*) → 578.971.1
- x 578.854      (*Closterovirus*) → 578.945.1
- x 578.855      (*Comovirus*) → 578.942.2
- x 578.856      (*Cucomovirus*) → 578.944.8
- x 578.857      (*Hordeivirus*) → 578.944.6
- x 578.858      (*Ilarvirus*) → 578.944.8
- + 578.86      Viruses primarily of plant and vertebrate hosts  
Including: Mononegavirales
- x 578.861      (*Luteovirus*) → 578.944.3
- x 578.862      (*Nepovirus*) → 578.942.2
- x 578.863      (*Potexvirus*) → 578.943.2
- x 578.864      (*Potyvirus*) → 578.944.7
- x 578.865      (*Tobamovirus*) → 578.944.6
- x 578.866      (*Tobravirus*) → 578.944.6
- x 578.867      (*Tombusvirus*) → 578.944.5
- x 578.868      (*Tymovirus*) → 578.943.1
- x 578.869      (*Other plant viruses*) → 578.85/86
- x 578.89      (*Unclassified viruses and virus-like particles*) → 578.99
- + 578.9      Systematics of viruses
- + 578.91      Group I (dsDNA viruses)
- + 578.911      Caudovirales
- + 578.911.1    Myoviridae

- Including: Bacteriophages: Enterobacteria phages, Escherichia phages and Pseudomonas phages
- + 578.911.2 Podoviridae  
Including: Podovirus (Cellulophaga phages and Clostridium phages)
- + 578.911.3 Siphoviridae  
Including: Escherichia phages and Enterobacteria phages
- + 578.911.4 Styloviridae
- + 578.912 Herpesvirales
- + 578.912.1 Alloherpesviridae  
Including: Batrachovirus and Salmonivirus (Salmonid herpesvirus 1)  
IN: *Viruses infecting fish and amphibians*
- + 578.912.2 Herpesviridae  
Including: Cytomegalovirus (Human herpesvirus 5); Roseolovirus (Human herpesvirus 6A); Lymphocryptovirus (Epstein-Barr virus)  
IN: *Viruses infecting vertebrates*
- + 578.912.21 Varicellovirus (genus)  
Including: Varicella zoster virus and Pseudorabies virus
- + 578.912.22 Simplexvirus (geus)  
Including: Human herpesvirus 1 and 2
- + 578.912.3 Malacoherpesviridae  
Including: Ostreavirus and Haliotivirus  
IN: *Viruses infecting molluscs*
- + 578.913 Ligamenvirales  
IN: *Viruses infecting Archaea*
- + 578.913.1 Lipothrixviridae  
Including: Alfa-, Beta-, Gamma- and Deltalipothrixvirus
- + 578.913.2 Rudiviridae  
Including: Rudivirus (Sulfolobus islandicus virus 1 and 2)
- + 578.914 Unassigned families  
Including: Ampullaviridae, Ascoviridae, Bicaudaviridae, Clavaviridae, Fuselloviridae, Globuloviridae, Guttaviridae, Hytrosaviridae, Marseilleviridae, Mimiviridae, Nudiviridae, Nimaviridae, Pandoraviridae, Phycodnaviridae, Plasmaviridae, Polydnviridae, Sphaerolipoviridae, Tectiviridae and Turriviridae
- + 578.914.1 Adenoviridae  
Including: Aviadenovirus (Avian adenoviruses) and Mastadenovirus (Human mastadenovirus C)  
IN: *Viruses infecting vertebrates*
- + 578.914.2 Papillomaviridae  
Including: Alpha- and Betapapillomavirus (Papillomaviruses)  
SN: *Class here members of the deprecated family Papovaviridae*

- IN: *Viruses infecting vertebrates*
- + 578.914.3 Polyomaviridae  
Including: Polyomavirus (BK virus, JC virus and Merkel cell virus)  
SN: *Class here members of the deprecated family Papovaviridae*  
IN: *Viruses infecting mammals and birds*
- + 578.914.4 Poxviridae  
Including: Parapoxvirus (Orf virus, Pseudocowpox virus and Bovine papular stomatitis virus); Yatapoxvirus (Tanapox virus and Yaba monkey tumor virus); Molluscipoxvirus (Molluscum contagiosum virus)  
IN: *Viruses infecting vertebrates and invertebrates*
- + 578.914.41 Orthopoxvirus (genus)  
Including: Smallpox/variola virus, Vaccinia virus, Cowpox virus and Monkeypox virus
- + 578.914.5 Iridoviridae  
Including: Iridovirus and Ranavirus  
IN: *Viruses infecting amphibians, reptiles, fishes and invertebrates*
- + 578.914.6 Baculoviridae  
Including: Alpha-, Beta-, Gamma- and Deltabaculovirus  
IN: *Viruses infecting invertebrates*
- + 578.914.7 Asfarviridae  
Including: Asfarvirus (African swine fever virus)  
IN: *Viruses infecting insects and mammals*
- + 578.914.8 Corticoviridae  
Including: Corticovirus  
IN: *Viruses infecting Bacteria*
- + 578.92 Group II (ssDNA viruses )
- + 578.921 Unassigned families  
Including: Anelloviridae, Bacillariodnaviridae, Bidnaviridae, Circoviridae, Inoviridae, Nanoviridae and Spiraviridae
- + 578.921.1 Parvoviridae  
Including; Parvoviruses: Erythrovirus (Parvovirus B19); Dependoparvovirus (Adeno-associated virus, AAV); Protoparvovirus (Rodent protoparvovirus 1)  
IN: *Viruses infecting invertebrates and vertebrates*
- + 578.921.2 Microviridae  
Including: Microvirus and Spiromicrovirus  
IN: *Viruses infecting Bacteria*
- + 578.921.3 Geminiviridae  
Including: Begomovirus (Bean golden yellow mosaic virus); Curtovirus (Beet curly top virus); Mastrevirus (Maize streak virus)  
IN: *Viruses infecting plants*
- + 578.93 Group III (dsRNA viruses)

- + 578.931 Unassigned families  
Including: Amalgaviridae, Birnaviridae, Chrysoviridae, Endornaviridae, Hypoviridae, Megabirnaviridae, Partitiviridae, Picobirnaviridae, Quadriviridae and Totiviridae
- + 578.931.1 Reoviridae  
Including: Orbivirus (Bluetongue virus, African horse sickness virus and Epizootic hemorrhagic disease virus); Phytoreovirus (Wound tumor virus); Seadornavirus (Banna virus); Coltivirus (Colorado tick fever virus)  
IN: *Viruses infecting fungi, plants, invertebrates and vertebrates*
- + 578.931.11 Rotavirus (genus)  
Including: Rotaviruses
- + 578.931.2 Cystoviridae  
Including: Cystovirus (Pseudomonas phage)  
IN: *Viruses infecting Bacteria*
- + 578.94 Group IV ((+)ssRNA viruses)
- + 578.941 Nidovirales  
Including: Arteriviridae, Mesoniviridae and Roniviridae
- + 578.941.1 Coronaviridae  
Including: Coronaviruses: Betacoronavirus (SARS-CoV and MERS-CoV)  
IN: *Viruses infecting mammals and birds*
- + 578.942 Picornavirales  
Including: Dicistroviridae, Iflaviridae and Marnaviridae
- + 578.942.1 Picornaviridae  
Including: Senecavirus (Senecaviruses)  
IN: *Viruses infecting vertebrates*
- + 578.942.11 Aphthovirus (genus)  
Including: Foot-and-mouth disease virus
- + 578.942.12 Enterovirus (genus)  
Including: Enteroviruses, Poliovirus and Rhinovirus
- + 578.942.13 Hepatovirus (genus)  
Including: Hepatovirus A
- + 578.942.2 Secoviridae  
Including: Cheravirus (Cherry rasp leaf virus); Fabavirus (Broad bean wilt virus 1); Nepovirus (Tobacco ringspot virus); Comovirus (Cowpea mosaic virus)  
IN: *Viruses infecting plants*
- + 578.943 Tymovirales  
Including: Gammaflexiviridae
- + 578.943.1 Tymoviridae  
Including: Tymovirus (Turnip yellow mosaic virus) and Maculavirus (Grapevine fleck virus)
- + 578.943.2 Alphaflexiviridae

- Including: Potexvirus (Potato virus X)  
IN: *Viruses infecting plants and fungi*
- + 578.943.3      Betaflexiviridae  
Including: Carlavirus (Carnation latent virus) and Vitivirus (Grapevine virus)  
IN: *Viruses infecting plants and fungi*
- + 578.944      Unassigned families (I)  
Including: Alphetetraviridae, Alvernaviridae, Barnaviridae, Benyviridae, Carmotetraviridae, Fusariviridae, Narnaviridae and Permutotetraviridae
- + 578.944.1      Caliciviridae  
Including: Lagovirus (Rabbit hemorrhagic disease virus) and Norovirus (Winter vomiting virus)  
IN: *Viruses infecting vertebrates*
- + 578.944.2      Flaviviridae  
Including: Hepacivirus (Hepatitis C virus); Pegivirus (Pegiviruses); Pestivirus (Bovine viral diarrhea virus 1)  
IN: *Viruses infecting mammals*
- + 578.944.21      Flavivirus (genus)  
Including: Yellow fever virus, West Nile virus, Zika virus, Dengue virus and Tick-borne encephalitis virus
- + 578.944.3      Luteoviridae  
Including: Polerovirus (Potato leafroll virus) and Luteovirus (Barley yellow dwarf virus-PAV)  
IN: *Viruses infecting plants*
- + 578.944.4      Togaviridae  
IN: *Viruses infecting insects and vertebrates*
- + 578.944.41      Alphavirus (genus)  
Including: Chikungunya virus, Ross River virus and Sindbis virus
- + 578.944.42      Rubivirus (genus)  
Including: Rubella virus
- + 578.944.5      Tombusviridae  
Including: Alphanecrovirus (Tobacco necrosis virus A); Betanecrovirus (Tobacco necrosis virus B); Machlomovirus (Maize chlorotic mottle virus); Panicovirus (Panicum mosaic virus); Umbravirus (Tobacco mottle virus); Tombusvirus (Tomato bushy shunt virus); Zeavirus (Maize necrotic streak virus)  
IN: *Viruses infecting plants*
- + 578.944.6      Virgaviridae  
Including: Furovirus (Soil-borne wheat mosaic virus); Hordeivirus (Barley stripe mosaic virus); Pomovirus (Potato mop-top virus); Tobravirus (Tobacco rattle virus)  
IN: *Viruses infecting plants*
- + 578.944.61      Tobamovirus (genus)  
Including: Tobacco mosaic virus
- + 578.944.7      Potyviridae  
Including: Bymovirus (Barley yellow mosaic virus); Poacevirus (Triticum mosaic virus);

- Potyvirus (Potato virus Y); Tritimovirus (Wheat streak mosaic virus)  
IN: *Viruses infecting plants*
- + 578.944.8 Bromoviridae  
Including: Alfamovirus (Alfalfa mosaic virus); Bromovirus (Brome mosaic virus); Ilarvirus (Tobacco streak virus); Oleavirus (Olive latent virus 2); Cucumovirus (Cucumber mosaic virus)  
IN: *Viruses infecting plants*
- + 578.945 Unassigned families (II)
- + 578.945.1 Closteroviridae  
Including: Closteovirus (Beet yellows virus) and Crinivirus (Lettuce infectious yellow virus)  
IN: *Viruses infecting plants*
- + 578.945.2 Leviviridae  
IN: *Viruses infecting Bacteria*
- + 578.945.3 Astroviridae  
Including: Avastrovirus (Avian nephritis virus) and Mamastrovirus  
IN: *Viruses infecting mammals*
- + 578.945.4 Hepeviridae  
Including: Orthohepevirus (Hepatitis E virus)  
IN: *Viruses infecting vertebrates*
- + 578.945.5 Nodaviridae  
Including: Betanodavirus (Nervous necrosis virus, NNV)  
IN: *Viruses infecting invertebrates and vertebrates*
- + 578.95 Group V ((-)ssRNA viruses)
- + 578.951 Mononegavirales
- + 578.951.1 Bornaviridae  
Including: Bornavirus (Bornaviruses)  
IN: *Viruses infecting vertebrates*
- + 578.951.2 Filoviridae  
Including: Cuevavirus (Lloviu virus) and Marbugvirus (Marburg virus)  
IN: *Viruses infecting vertebrates*
- + 578.951.21 Ebolavirus (genus)  
Including: Ebola virus
- + 578.951.3 Paramyxoviridae  
Including: Avulavirus (Avian paramyxovirus); Henipavirus (Hendra, Nipah and Cedar viruses); Respirovirus (Sendai virus) and Rubulavirus (Mumps virus)  
IN: *Viruses infecting vertebrates*
- + 578.951.31 Morbillivirus (genus)  
Including: Measles virus
- + 578.951.4 Rhabdoviridae

- Including: Cytorhabdovirus (Lettuce necrotic yellows virus) and Nucleorhabdovirus (Potato yellow dwarf virus)  
IN: *Viruses infecting plants, invertebrates and vertebrates*
- + 578.951.41 Lyssavirus (genus)  
Including: Rabies virus
- + 578.951.5 Nyamiviridae  
Including: Nyavirus (Midway virus)  
IN: *Viruses infecting invertebrates and vertebrates*
- + 578.952 Unassigned families  
Including: Ophioviridae
- + 578.952.1 Arenaviridae  
Including: Mammarenavirus (Lymphocytic choriomeningitis virus, Guanarito virus, Junin virus, Lassa virus, Lujo virus, Machupo virus and Sabia virus)  
IN: *Viruses infecting mammals*
- + 578.952.2 Bunyaviridae  
Including: Orthobunyavirus (Alajuela virus, Batai virus and Tete virus)  
IN: *Viruses infecting plants, invertebrates and vertebrates*
- + 578.952.21 Hantavirus (genus)  
Including: Hanta virus
- + 578.952.22 Nairovirus (genus)  
Including: Crimean-Congo hemorrhagic fever virus, Ganjam virus and Hazara virus
- + 578.952.3 Orthomyxoviridae  
Including: Thogotovirus (Araguari virus and Bourbon virus)  
IN: *Viruses infecting invertebrates and vertebrates*
- + 578.952.31 Influenzavirus (genus)  
Including: Influenza virus A, B and C
- + 578.96 Group VI (ssRNA-RT viruses)
- + 578.961 Unassigned families
- + 578.961.1 Retroviridae  
Including: Alpharetrovirus (Avian leukosis virus and Rous sarcoma virus); Betaretrovirus (Simian retroviruses, SRV); Gammaretrovirus (Feline leukemia virus); Deltaretrovirus (Bovine leukemia virus); Spumavirus (foamy viruses)  
IN: *Viruses infecting vertebrates*
- + 578.961.11 Lentivirus (genus)  
Including: Human immunodeficiency viruses (HIV)
- + 578.97 Group VII (dsDNA-RT viruses)
- + 578.971 Unassigned families
- + 578.971.1 Caulimoviridae

- Including: Solendovirus (Tobacco vein clearing virus); Soymovirus (Soybean chlorotic mottle virus); Caulimovirus (Cauliflower mosaic virus)  
 IN: *Viruses infecting plants and invertebrates*
- + 578.971.2 Hepadnaviridae  
 IN: *Viruses infecting vertebrates*
- + 578.971.21 Orthohepadnavirus (genus)  
 Including: Hepatitis B virus
- + 578.99 Unclassified viruses and virus-like particles
- ! 579.8 **Classification of bacteria**  
 SN: *For systematics of bacteria, see 579.9*
- + 579.81/82 Bacteria according to energy and carbon source
- ! 579.81 **Autotrophic bacteria**  
 SN: *Class phototrophic bacteria at 579.812*  
 [Revision comment: *The scope of this class is broadened: the previous description was "Phototrophic bacteria"*]
- x 579.811 (*Rhodospirillales*) → 579.931  
 x 579.811.1 (*Rhodospirillaceae*) → 579.931.5  
 x 579.811.2/.3 (*Chromatiaceae*) → 579.935.2  
 x 579.811.4 (*Chlorobiaceae*) → 579.946.1
- + 579.812 Phototrophic bacteria
- + 579.812.1 Photoheterotrophic bacteria  
 Including: Green and purple non-sulphur bacteria and AAPB (aerobic anoxygenic photoheterotrophic bacteria)
- + 579.812.2 Photoautotrophic bacteria  
 Including: Oxygenic (cyanobacteria) and anoxygenic photosynthetic bacteria (green and purple sulphur bacteria)
- + 579.813 Chemotrophic bacteria
- + 579.813.1 Chemoheterotrophic bacteria
- + 579.813.2 Chemoautotrophic bacteria  
 Including: Chemolithotrophic bacteria
- + 579.813.21 Sulphur bacteria  
 Including: Genus *Beggiatoa*
- + 579.813.22 Hydrogen bacteria  
 Including: Genus *Hydrogenobacter*
- + 579.813.23 Iron bacteria  
 Including: Genera *Thiobacillus* and *Leptospirillum*
- + 579.813.24 Methane bacteria

- + 579.813.25      Nitrifying bacteria  
Including: Genera Nitrosomonas and Nitrobacter
- ! 579.82            **Heterotrophic bacteria**  
**SN: Class gliding bacteria at 579.839.1**
- x 579.821            (*Myxobacteriales*) → 579.937
- x 579.821.1          (*Myxococcaceae*) → 579.937.1
- x 579.821.2          (*Archangiaceae*) → 579.937.2
- x 579.821.3          (*Cystobacteriaceae*) → 579.937.3
- x 579.821.4          (*Polyangiaceae*) → 579.937.4
- x 579.822            (*Cytophagales*) → 579.943
- x 579.822.1          (*Cytophagaceae*) → 579.943.1
- x 579.822.2          (*Beggiatoaceae*) → 579.936.5
- x 579.822.3          (*Simonsiellaceae*) → 579.934.8
- x 579.822.4          (*Leucotrichaceae*) → 579.936.5
- x 579.822.9          (*Families and genera of uncertain affiliation*) → 579.943
- + 579.823            Saprophytic bacteria  
Including: Genera Zygomonas, Acetobacter and Lactobacillus
- + 579.824            Parasitic bacteria  
Including: Genera Salmonella, Mycobacterium and Clostridium
- + 579.825            Symbiotic bacteria  
Including: Genera Rhizobium and Azotobacter
- ! 579.83            **Bacteria according to several criteria**  
**[Revision comment: The scope of this class is changed: the previous description was "Sheathed bacteria"]**
- x 579.83              (*Sheathed bacteria...*) → 579.837.1; 579.837.2
- x 579.831              (*Sheathed bacteria*) → 579.837.1
- x 579.832/833        (*Budding and/or appendaged bacteria*) → 579.837.2
- x 579.834              (*Spirochaetes*) → 579.96
- x 579.834.1          (*Spirochaetales*) → 579.961
- x 579.835              (*Spiral and curved bacteria*) → 579.836.3; 579.836.4
- x 579.835.1          (*Spirillaceae*) → 579.933.2
- x 579.835.9          (*Genera of uncertain affiliation*) → 579.836.3; 579.836.4
- + 579.836            Bacteria according to shape
- + 579.836.1          Cocci
- + 579.836.2          Rods
- + 579.836.3          Curved bacteria
- + 579.836.4          Spiral bacteria
- + 579.837            Bacteria according to structure
- + 579.837.1          Sheathed bacteria

- + 579.837.2 Budding and/or appendaged bacteria  
Including: Prosthecate and non-prosthecate bacteria and morphologically unusual budding bacteria (involved in iron and manganese deposition)
- + 579.837.3 Non-budding bacteria
- + 579.838 Bacteria according to spore formation
- + 579.838.1 Sporing bacteria
- + 579.838.2 Non-sporing bacteria
- + 579.839 Bacteria according to movement
- + 579.839.1 Gliding bacteria  
Including: Single celled gliding bacteria, filamentous gliding bacteria, sulphur-oxidizing gliding bacteria and fruiting gliding bacteria
- + 579.839.2 Flagellated bacteria
- + 579.839.3 Ciliated bacteria
- + 579.84/.86 Bacteria according to Gram staining and shape
- ! 579.84 **Gram negative cocci and rods**  
*SN: Class Gram negative bacteria in general at 579.93/.96*  
*[Revision comment: The scope of this class is broadened: the previous description was "Gram-negative bacteria"]*
- ! 579.841 **Gram negative aerobic and facultative anaerobic cocci**  
**Including:** Genera Neisseria and Moraxella  
*SN: Class Gram negative aerobic rods at 579.842. Class Legionella at 579.935.5*  
*[Revision comment: The scope of this class is narrowed: the previous description was "Gram-negative aerobic rods and cocci"]*
- x 579.841.1 (*Pseudomonadaceae*) → 579.936.2
- x 579.841.2 (*Azotobacteriaceae*) → 579.936.2
- x 579.841.3 (*Rhizobiaceae*) → 579.932.3
- x 579.841.4 (*Methylomonadaceae*) → 579.935/.936
- x 579.841.5 (*Halobacteriaceae*) → 579.991.3
- x 579.841.9 (*Genera of uncertain affiliation*) → 579.841
- ! 579.842 **Gram negative aerobic and facultative anaerobic rods**  
**Including:** Genera Salmonella, Pseudomonas, Vibrio and Haemophilus  
*[Revision comment: The scope of this class is broadened: the previous description was "Gram-negative facultatively anaerobic rods"]*
- x 579.842.1/.2 (*Enterobacteriaceae*) → 579.935.3
- x 579.843 (*Vibrionaceae*) → 579.936.7
- x 579.843.9 (*Genera of uncertain affiliation*) → 579.936.7
- ! 579.844 **Gram negative anaerobic rods**  
**Including:** Genera Bacteroides and Fusobacterium  
*SN: Class Gram negative anaerobic cocci at 579.845*

[Revision comment: The scope of this class is narrowed: the previous description was "Gram-negative anaerobic bacteria"]

- x 579.844.1 (Bacteroidaceae) → 579.941.1
- x 579.844.9 (Genera of uncertain affiliation) → 579.844

! 579.845 **Gram negative anaerobic cocci**  
Including: Genus Veillonella

- x 579.845.1 (Veillonellaceae) → 579.928.1
- x 579.846 (Gram-negative chemolithotrophic bacteria) → 579.813.2
- x 579.846.1 (Nitrobacteraceae) → 579.932.4; 579.933.1
- x 579.846.2 (Bacteria metabolizing sulphur) → 579.813.21
- x 579.846.3 (Siderocapsaceae) → 579.912.1

! 579.85 **Miscellaneous (poorly staining species)**

[Revision comment: The scope of this class is changed: the previous description was "Methane-producing bacteria. Endospore-forming rods and cocci"]

- x 579.851 (Methane-producing bacteria) → 579.813.24; 579.991
- x 579.852 (Endospore-forming rods and cocci) → 579.838.1
- x 579.852.1 (Bacillaceae) → 579.923.1
- x 579.852.11 (Bacillus spp) → 579.923.1
- x 579.852.13 (Clostridium) → 579.921.2
- x 579.852.9 (Genera of uncertain affiliation) → 579.838.1

! 579.86 **Gram positive cocci and rods**

SN: Class Gram positive bacteria in general at 579.91/92

[Revision comment: The scope of this class is broadened: the previous description was "Gram-positive cocci. Asporogenous rod-shaped bacteria"]

- x 579.861 (Micrococcaceae) → 579.912.1
- x 579.862 (Streptococcaceae) → 579.924.2
- x 579.863 (Peptococcaceae) → 579.921.1
- x 579.864 (Lactobacillaceae) → 579.924.1
- + 579.865 Gram positive aerobic and facultative anaerobic cocci  
Including: Genera Staphylococcus, Streptococcus and Enterococcus
- + 579.866 Gram positive anaerobic cocci  
Including: Genus Peptostreptococcus
- + 579.867 Gram positive aerobic and facultative anaerobic rods  
Including: Genera Bacillus, Listeria and Corynebacterium
- + 579.868 Gram positive anaerobic rods  
Including: Genera Actinomyces and Clostridium
- x 579.869 (Genera of uncertain affiliation) → 579.86
- x 579.87 (Actinomycetes and related organisms) → 579.911/913
- x 579.871 (Coryneform group of bacteria) → 579.911.4
- x 579.872 (Propionibacteriaceae) → 579.912.8
- x 579.873 (Actinomycetales) → 579.911/913

- x 579.873.1 (Actinomycetaceae) → 579.911.1  
x 579.873.2 (Mycobacteriaceae) → 579.911.5  
x 579.873.3 (Frankiaceae) → 579.911.8  
x 579.873.4 (Actinoplanaceae) → 579.911/913  
x 579.873.5 (Dermatophilaceae) → 579.912.3  
x 579.873.6 (Nocardiaceae) → 579.911.6  
x 579.873.7 (Streptomycetaceae) → 579.913.1  
x 579.873.8 (Micromonosporaceae) → 579.913.4  
x 579.88 (Rickettsias. Mycoplasmas) → 579.926.1; 579.931.1  
x 579.881 (Rickettsiales) → 579.931  
x 579.881.1 (Rickettsiaceae) → 579.931.1  
x 579.881.2 (Bartonellaceae) → 579.932.1  
x 579.881.3 (Anaplasmataceae) → 579.931.2  
x 579.882 (Chlamydiales) → 579.948  
x 579.887 (Mycoplasmas) → 579.926.1  
x 579.887.1 (Mycoplasmatales) → 579.926  
x 579.887.9 (Genera of uncertain affiliation) → 579.9236.1
- + 579.9 Systematics of bacteria  
SN: *Class here bacteria in general*  
IN: *Bacteria were also known as Eubacteria*
- + 579.91/92 Gram positive bacteria  
SN: *Class here Gram positive bacteria in general. Class Gram positive cocci and rods at 579.86*
- + 579.91 Actinobacteria  
Including: Sphaerobacterales
- + 579.911/913 Actinomycetales  
Including: Actinoplanaceae  
IN: *Actinomycetales were also known as Actinomycetes*
- + 579.911 Actinomycinae. Corynebacterineae. Frankineae  
Including: Gordoniaceae, Geodermatophilaceae, Kineosporiaceae and Nakamurellaceae  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.911.1 Actinomycetaceae  
Including: Genera Actinomyces and Arcanobacterium
- + 579.911.4 Corynebacteriaceae  
Including: Genus Corynebacterium
- + 579.911.5 Mycobacteriaceae  
Including: Genus Mycobacterium
- + 579.911.6 Nocardiaceae  
Including: Genera Rhodococcus and Nocardia
- + 579.911.8 Frankiaceae  
Including: Genus Frankia

- + 579.912      Micrococcineae. Propionibacterineae  
Including: Dermacoccaceae, Promicromonosporaceae and Intrasporangiaceae  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.912.1    Micrococcaceae  
Including: Genera Micrococcus, Kocuria and Arthrobacter  
IN: *Arthrobacter used to belong to deprecated taxon Siderocapsaceae*
- + 579.912.2    Microbacteriaceae  
Including: Genera Microbacterium, Agromyces, Leifsonia and Clavibacter
- + 579.912.3    Dermatophilaceae  
Including: Genus Dermatophilus
- + 579.912.4    Brevibacteriaceae  
Including: Genus Brevibacterium
- + 579.912.5    Cellulomonadaceae  
Including: Genus Cellulomonas
- + 579.912.6    Pseudonocardiaceae  
Including: Genera Pseudonocardia, Saccharomonospora, Saccharopolyspora and Amycolatopsis
- + 579.912.7    Nocardiodaceae  
Including: Genera Nocardioides and Kribbella
- + 579.912.8    Propionibacteriaceae  
Including: Genus Propionibacterium
- + 579.913      Streptomycineae. Micromonosporineae. Streptosporangiineae  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.913.1    Streptomycetaceae  
Including: Genera Streptomyces and Kitasatospora
- + 579.913.4    Micromonosporaceae  
Including: Genera Micromonospora, Catellatospora and Actinoplanes
- + 579.913.7    Streptosporangiaceae  
Including: Genera Streptosporangium, Nonomurea and Microbispora
- + 579.913.8    Nocardioisporaceae  
Including: Genera Nocardioisporis and Thermobifida
- + 579.913.9    Thermomonosporaceae  
Including: Genus Actinomadura
- + 579.915      Bifidobacteriales
- + 579.915.1    Bifidobacteriaceae  
Including: Genera Bifidobacterium and Gardnerella

- + 579.916 Acidimicrobiales
- + 579.916.1 Acidimicrobiaceae  
Including: Genus Acidimicrobium
- + 579.917 Coriobacteriales
- + 579.917.1 Coriobacteriaceae  
Including: Genera Cryptobacterium and Atopobium
- + 579.918 Rubrobacterales
- + 579.918.1 Rubrobacteraceae  
Including: Genus Rubrobacter
- + 579.92 Firmicutes  
IN: *Firmicutes are also known as Tenericutes*
- + 579.921/922 Clostridia  
Including: Thermoanaerobacterales
- + 579.921 Clostridiales  
Including: Heliobacteriaceae, Syntrophomonadaceae and Acidaminococcaceae
- + 579.921.1 Peptococcaceae  
Including: Genera Peptococcus and Desulfotomaculum
- + 579.921.2 Clostridiaceae  
Including: Genus Clostridium
- + 579.921.3 Eubacteriaceae  
Including: Genera Eubacterium and Acetobacterium
- + 579.921.4 Lachnospiraceae  
Including: Genera Lachnospira and Ruminococcus
- + 579.921.5 Peptostreptococcaceae  
Including: Genera Anaerococcus, Peptoniphilus and Peptostreptococcus
- + 579.922 Halanaerobiales
- + 579.922.1 Halanaerobiaceae  
Including: Genus Halanaerobium
- + 579.923/924 Bacilli
- + 579.923 Bacillales
- + 579.923.1 Bacillaceae  
Including: Genera Bacillus, Virgibacillus, Geobacillus, Halobacillus, Exiguobacterium and Anoxybacillus
- + 579.923.2 Listeriaceae  
Including: Genus Listeria

- + 579.923.3 Staphylococcaceae  
Including: Genera Staphylococcus and Macrococcus
- + 579.923.4 Alicyclobacillaceae  
Including: Genus Alicyclobacillus
- + 579.923.5 Paenibacillaceae  
Including: Genera Paenibacillus and Brevibacillus
- + 579.923.6 Planococcaceae  
Including: Genera Planococcus, Planomicrobium and Sporosarcina
- + 579.924 Lactobacillales
- + 579.924.1 Lactobacillaceae  
Including: Genera Lactobacillus and Pediococcus
- + 579.924.2 Streptococcaceae  
Including: Genera Streptococcus and Lactococcus
- + 579.924.3 Enterococcaceae  
Including: Genus Enterococcus
- + 579.924.4 Leuconostocaceae  
Including: Genera Leuconostoc and Weissella
- + 579.924.5 Carnobacteriaceae  
Including: Genera Carnobacterium and Trichococcus
- + 579.926/927 Mollicutes
- + 579.926 Mycoplasmatales. Haloplasmatales. Acholeplasmatales  
*SN: This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.926.1 Mycoplasmataceae  
Including: Genera Mycoplasma and Ureaplasma
- + 579.926.4 Haloplasmataceae
- + 579.926.7 Acholeplasmataceae  
Including: Genera Acholeplasma and Phytoplasma
- + 579.927 Entomoplasmatales. Anaeroplasmatales  
*SN: This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.927.1 Spiroplasmataceae  
Including: Genus Spiroplasma
- + 579.927.2 Entomoplasmataceae  
Including: Genera Entomoplasma and Mesoplasma
- + 579.927.5 Anaeroplasmataceae  
Including: Genus Anaeroplasma

- + 579.928 Negativicutes. Selenomonadales
- + 579.928.1 Veillonellaceae  
Including: Genera Veillonella and Selenomonas
- + 579.93/96 Gram negative bacteria  
SN: *Class here Gram negative bacteria in general. Class Gram negative cocci and rods at 579.84*
- + 579.93 Proteobacteria
- + 579.931/932 Alphaproteobacteria  
Including: Magnetococcales, Pelagibacterales, Holosporales and Parvularculales
- + 579.931 Rickettsiales. Rhodospirillales. Rhodobacterales  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.931.1 Rickettsiaceae  
Including: Genus Rickettsia
- + 579.931.2 Anaplasmataceae  
Including: Genera Anaplasma, Neorickettsia, Wolbachia and Ehrlichia
- + 579.931.3 Acetobacteraceae  
Including: Genera Acetobacter and Gluconacetobacter
- + 579.931.5 Rhodospirillaceae  
Including: Genera Rhodospirillum and Azospirillum
- + 579.931.7 Rhodobacteraceae  
Including: Genera Rhodobacter, Maricaulis, Paracoccus, Rhodovulum and Hyphomonas
- + 579.932 Rhizobiales. Sphingomonadales. Caulobacterales  
Including: Hyphomicrobiaceae, Rhodobiaceae and Methylobacteriaceae  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.932.1 Bartonellaceae  
Including: Genus Bartonella
- + 579.932.2 Brucellaceae  
Including: Genera Brucella and Ochrobactrum
- + 579.932.3 Rhizobiaceae  
Including: Genera Rhizobium, Ensifer and Agrobacterium
- + 579.932.4 Bradyrhizobiaceae  
Including: Genera Bradyrhizobium and Nitrobacter  
IN: *Nitrobacter used to belong to deprecated taxon Nitrobacteraceae*
- + 579.932.5 Phyllobacteriaceae  
Including: Genera Aminobacter, Mesorhizobium and Phyllobacterium
- + 579.932.6 Sphingomonadaceae

- Including: Genera *Sphingomonas*, *Sphingobium*, *Novosphingobium* and *Erythrobacter*
- + 579.932.8 Caulobacteraceae  
Including: Genera *Caulobacter* and *Brevundimonas*
- + 579.933/934 Betaproteobacteria  
Including: Hydrogenophilales, Methylophilales and Rhodocyclales
- + 579.933 Nitrosomonadales
- + 579.933.1 Nitrosomonadaceae  
Including: Genera *Nitrosomonas* and *Nitrospira*  
IN: *Nitrosomonas* used to belong to deprecated taxon *Nitrobacteraceae*
- + 579.933.2 Spirillaceae  
Including: Genus *Spirillum*
- + 579.934 Burkholderiales. Neisseriales  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.934.1 Alcaligenaceae  
Including: Genera *Alcaligenes*, *Achromobacter* and *Bordetella*
- + 579.934.2 Burkholderiaceae  
Including: Genera *Burkholderia* and *Cupriavidus*
- + 579.934.3 Comamonadaceae  
Including: Genera *Sphaerotilus* and *Leptothrix*
- + 579.934.4 Oxalobacteraceae  
Including: Genera *Oxalobacter* and *Herbaspirillum*
- + 579.934.5 Comamonadaceae  
Including: Genera *Comamonas* and *Acidovorax*
- + 579.934.8 Neisseriaceae  
Including: Genera *Neisseria* and *Aquaspirillum*  
SN: *Class here species included in deprecated taxon Simonsiellaceae*
- + 579.935/936 Gammaproteobacteria  
Including: Acidithiobacillales, Alteromonadales, Cardiobacteriales and Methylococcales  
SN: *Class here species included in deprecated taxon Methylomonadaceae*
- + 579.935 Aeromonadales. Chromatiales. Enterobacteriales. Legionellales. Oceanospirillales  
Including: Ectothiorhodospiraceae and Halothiobacillaceae  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.935.1 Aeromonadaceae  
Including: Genus *Aeromonas*
- + 579.935.2 Chromatiaceae  
Including: Genera *Chromatium* and *Thiocapsa*

- + 579.935.3 Enterobacteriaceae  
Including: Genera Salmonella, Brenneria, Pectobacterium, Escherichia, Yersinia, Proteus, Enterobacter, Klebsiella, Serratia and Citrobacter
- + 579.935.5 Legionellaceae  
Including: Genus Legionella
- + 579.935.6 Coxiellaceae  
Including: Genera Coxiella and Rickettsiella
- + 579.935.8 Halomonadaceae  
Including: Genera Halomonas and Chromohalobacter
- + 579.935.9 Oceanospirillaceae  
Including: Genera Oceanospirillum and Marinomonas
- + 579.936 Pasteurellales. Pseudomonadales. Thiotrichales. Vibrionales. Xanthomonadales  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.936.1 Pasteurellaceae  
Including: Genera Pasteurella, Actinobacillus and Haemophilus
- + 579.936.2 Pseudomonadaceae  
Including: Genera Rhizobacter, Azotobacter and Pseudomonas  
SN: *Class here species belonging to deprecated taxon Azotobacteriaceae*
- + 579.936.3 Moraxellaceae  
Including: Genera Moraxella, Psychrobacter and Acinetobacter
- + 579.936.4 Francisellaceae  
Including: Genus Francisella
- + 579.936.5 Thiotrichaceae  
Including: Genera Beggiatoa, Thiothrix and Leucothrix  
SN: *Class here species included in deprecated taxa Beggiatoaceae and Leucotrichaceae*
- + 579.936.7 Vibrionaceae  
Including: Genera Vibrio and Photobacterium
- + 579.936.8 Xanthomonadaceae  
Including: Genera Xanthomonas, Stenotrophomonas and Lysobacter
- + 579.937/938 Deltaproteobacteria  
Including: Desulfobacterales, Desulfarculales, Desulfovibrionales, Desulfurellales and Syntrophobacterales
- + 579.937 Myxococcales  
IN: *Myxococcales were also known as Myxobacterales*
- + 579.937.1 Myxococcaceae  
Including: Genus Myxococcus
- + 579.937.2 Archangiaceae

- .....
- Including: Genus Archangium
  - + 579.937.3 Cystobacteraceae  
Including: Genus Cystobacter
  - + 579.937.4 Polyangiaceae  
Including: Genera Polyangium, Chondromyces and Sorangium
  - + 579.938 Desulfuromonadales. Bdellovibrionales  
*SN: This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
  - + 579.938.1 Geobacteraceae  
Including: Genus Geobacter
  - + 579.938.2 Desulfuromonadaceae  
Including: Genus Desulfuromonas
  - + 579.938.4 Bdellovibrionaceae  
Including: Genus Bdellovibrio
  - + 579.939 Epsilonproteobacteria
  - + 579.939.1 Helicobacteraceae  
Including: Genera Helicobacter and Sulfurimonas
  - + 579.939.2 Campylobacteraceae  
Including: Genus Campylobacter
  - + 579.94 FCB group. PVC group  
*SN: This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
  - + 579.941/946 FCB group (Bacteroidetes-Fibrobacteres-Chlorobi)
  - + 579.941/944 Bacteroidetes
  - + 579.941 Bacteroidales
  - + 579.941.1 Bacteroidaceae  
Including: Genus Bacteroides
  - + 579.941.2 Porphyromonadaceae  
Including: Genus Porphyromonas
  - + 579.941.3 Prevotellaceae  
Including: Genus Prevotella
  - + 579.942 Flavobacteriales
  - + 579.942.1 Flavobacteriaceae  
Including: Genera Flavobacterium, Chryseobacterium, Gillisia, Tenacibaculum and Bizionia
  - + 579.942.2 Cryomorphaceae  
Including: Genus Algoriphagus

- + 579.943 Cytophagales
- + 579.943.1 Cytophagaceae  
Including: Genus Cytophaga
- + 579.944 Sphingobacteriales  
Including: Saprospiraceae and Flammeovirgaceae
- + 579.944.1 Sphingobacteriaceae  
Including: Genera Sphingobacterium and Pedobacter
- + 579.944.2 Flexibacteraceae  
Including: Genus Flexibacter
- + 579.944.3 Crenotrichaceae  
Including: Genus Chitinophaga
- + 579.945 Fibrobacteres. Fibrobacterales
- + 579.945.1 Fibrobacteraceae  
Including: Genus Fibrobacter
- + 579.946 Chlorobi. Chlorobiales
- + 579.946.1 Chlorobiaceae  
Including: Genera Chlorobium and Chlorobaculum
- + 579.947/949 PVC group (Planctomycetes-Verrucomicrobia-Chlamydiae)
- + 579.947 Planctomycetes. Planctomycetales
- + 579.947.1 Planctomycetaceae  
Including: Genera Planctomyces and Gemmata
- + 579.948 Chlamydiae. Chlamydiales  
Including: Parachlamydiaceae, Simkaniaceae and Waddliaceae
- + 579.948.1 Chlamydiaceae  
Including: Genera Chlamydia and Chlamydothrix
- + 579.949 Verrucomicrobia. Verrucomicrobiales
- + 579.949.1 Verrucomicrobiaceae  
Including: Genus Verrucomicrobium
- + 579.95 Fusobacteria. Gemmatimonadetes. Nitrospira. Aquificae. Deinococcus-Thermus  
*SN: This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 579.951 Fusobacteria. Fusobacteriales
- + 579.951.1 Leptotrichiaceae  
Including: Genus Leptotrichia
- + 579.951.2 Fusobacteriaceae

- .....
- Including: Genera *Fusobacterium* and *Streptobacillus*
  - + 579.952 Gemmatimonadetes. Gemmatimonadales
  - + 579.952.1 Gemmatimonadaceae  
Including: Genus *Gemmatimonas*
  - + 579.953 Nitrospira. Nitrospirales
  - + 579.953.1 Nitrospiraceae  
Including: Genera *Nitrospira* and *Leptospirillum*
  - + 579.954 Aquificae. Aquificales
  - + 579.954.1 Aquificaceae  
Including: Genera *Aquifex*, *Hydrogenobacter* and *Persephonella*
  - + 579.955/956 Deinococcus-Thermus
  - + 579.955 Deinococcales
  - + 579.955.1 Deinococcaceae  
Including: Genus *Deinococcus*
  - + 579.956 Thermales
  - + 579.956.1 Thermaceae  
Including: Genera *Thermus* and *Meiothermus*
  - + 579.96 Spirochaetes
  - + 579.961 Spirochaetales
  - + 579.961.1 Spirochaetaceae  
Including: Genera *Borrelia*, *Spirochaeta* and *Treponema*
  - + 579.961.2 Leptospiraceae  
Including: Genus *Leptospira*
  - + 579.961.3 Brevinemataceae  
Including: Genus *Brevinema*
  - + 579.961.4 Brachyspiraceae  
Including: Genus *Brachyspira*
  - + 579.97 Cyanobacteria  
IN: *Cyanobacteria* were also known as *Cyanophyta* and *blue-green algae*
  - + 579.971 Chroococcales  
Including: Aphanothecaceae, Cyanothrichaceae, Entophysalidaceae, Gomphosphaeriaceae and Stichosiphonaceae  
IN: *Chroococcales* is also known as *Cyanobacteria* (!)
  - + 579.971.1 Chroococcaceae  
Including: Genus *Chroococcus*

- + 579.971.2 Cyanobacteriaceae  
Including: Genus Cyanobacterium
- + 579.971.3 Microcystaceae  
Including: Genus Microcystis
- + 579.972 Pleurocapsales  
Including: Hydrococcaceae  
IN: *Pleurocapsales is also known as Cyanobacteria (II)*
- + 579.972.1 Dermocarpellaceae  
Including: Genera Dermocarpella, Cyanocystis and Stanieria
- + 579.972.2 Pleurocapsaceae  
Genera Myxosarcina, Chroococciopsis and Pleurocapsa
- + 579.972.3 Xenococcaceae  
Including: Genus Xenococcus
- + 579.973 Oscillatoriales  
Including: Coleofasciculaceae, Cyanothecaceae, Gomontiellaceae and Homoeotrichaceae  
IN: *Oscillatoriales is also known as Cyanobacteria (III)*
- + 579.973.1 Borziaceae  
Including: Genus Borzia
- + 579.973.2 Microcoleaceae  
Including: Genera Arthrospira and Microcoleus
- + 579.973.3 Oscillatoriaceae  
Including: Genus Oscillatoria
- + 579.973.4 Spirulaceae  
Including: Genus Spirulina
- + 579.974 Nostocales  
Including: Capsosiraceae, Chlorogloeopsidaceae, Fortieaceae, Godleyaceae, Hapalosiphonaceae, Scytonemataceae, Stigonemataceae, Symphyonemataceae and Tolypothrichaceae  
IN: *Nostocales is also known as Cyanobacteria (IV)*
- + 579.974.1 Aphanizomenonaceae  
Including: Genera Anabaenopsis, Cyanospira and Nodularia
- + 579.974.2 Gloeotrichiaceae  
Including: Genus Calothrix
- + 579.974.3 Nostocaceae  
Including: Genera Anabaena, Nostoc and Cylindrospermum
- + 579.974.4 Rivulariaceae  
Including: Genus Rivularia
- + 579.975 Stigonematales

- IN: *Stigonematales* is also known as *Cyanobacteria* (V)
- + 579.975.1 Stigonemataceae  
Including: Genus *Stigonema*
  - + 579.98 Acidobacteria. Chloroflexi. Chrysiogenetes. Deferribacteres. Dictyoglomi.  
Thermodesulfobacteria. Thermotogae. Thermomicrobia  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
  - + 579.981 Acidobacteria. Acidobacteriales
  - + 579.981.1 Acidobacteriaceae  
Including: Genera *Acidobacterium* and *Geothrix*
  - + 579.982 Chloroflexi
  - + 579.982.1 Chloroflexaceae  
Including: Genus *Chloroflexus*
  - + 579.982.2 Herpetosiphonaceae  
Including: Genus *Herpetosiphon*
  - + 579.982.3 Anaerolineaceae  
Including: Genus *Anaerolinea*
  - + 579.983 Chrysiogenetes. Chrysiogenales
  - + 579.983.1 Chrysiogenaceae  
Including: Genus *Chrysiogenes*
  - + 579.984 Deferribacteres. Deferribacterales
  - + 579.984.1 Deferribacteraceae  
Including: Genera *Deferribacter* and *Geovibrio*
  - + 579.985 Dictyoglomi. Dictyoglomales
  - + 579.985.1 Dictyoglomaceae  
Including: Genus *Dictyoglomus*
  - + 579.986 Thermodesulfobacteria. Thermodesulfobacteriales
  - + 579.986.1 Thermodesulfobacteriaceae  
Including: Genera *Thermodesulfobacterium* and *Thermodesulfatator*
  - + 579.987 Thermotogae. Thermotogales
  - + 579.987.1 Thermotogaceae  
Including: Genera *Thermotoga* and *Petrotoga*
  - + 579.988 Thermomicrobia
  - + 579.988.1 Thermomicrobiaceae  
Including: Genus *Thermomicrobium*

- + 579.99 Archaea  
IN: *Archaea were also known as Archaeobacteria*
- + 579.991 Euryarchaeota  
SN: *Class here methane-producing bacteria (methanogenes) in general*
- + 579.991.1 Thermoplasmata. Thermoplasmatales. Thermoplasmataceae  
Including: Genus Thermoplasma
- + 579.991.2 Methanobacteria. Methanobacteriales. Methanobacteriaceae  
Including: Genera Methanobacterium and Methanobrevibacter
- + 579.991.3 Halobacteria. Halobacteriales. Halobacteriaceae  
Including: Genera Halobacterium, Haloferax, Halorubrum, Natrialba and Haloarcula
- + 579.991.4 Methanococci. Methanococcales. Methanococcaceae  
Including: Genera Methanococcus and Methanocaldococcus
- + 579.991.5 Thermococci. Thermococcales. Thermococcaceae  
Including: Genus Thermococcus
- + 579.991.6 Archaeoglobi. Archaeoglobales. Archaeoglobaceae  
Including: Genus Archaeoglobus
- + 579.991.7 Methanopyri. Methanopyrales. Methanopyraceae  
Including: Genus Methanopyrus
- + 579.991.8/9 Methanomicrobia
- + 579.991.8 Methanomicrobiales. Methanomicrobiaceae  
Including: Genera Methanomicrobium and Methanoculleus
- + 579.991.9 Methanosarcinales. Methanosarcinaceae  
Including: Genera Methanosarcina and Methanolobus
- + 579.992 Nanoarchaeota
- + 579.992.1 Nanoarchaceae  
Including: Genus Nanoarchaeum
- + 579.993 Crenarchaeota. Thermoprotei  
IN: *Crenarchaeota were also known as Eocyta*
- + 579.993.1 Sulfolobales. Sulfolobaceae  
Including: Genus Sulfolobus
- + 579.993.3 Thermoproteales. Thermoproteaceae  
Including: Genera Thermoproteus and Pyrobaculum
- + 579.993.5 Caldisphaerales. Caldisphaeraceae  
Including: Genus Caldisphaera
- + 579.993.7/8 Desulfurococcales
- + 579.993.7 Desulfurococcaceae

- Including: Genera *Desulfurococcus* and *Staphylothermus*
- + 579.993.8 Pyrodictiaceae  
Including: Genus *Pyrodictium*
- x 582.23 (*Bacteria*) → 579.9
- x 582.231 (*Schizomycota (Bacteriophyta). Bacteria (as plants)*) → 579.9
- x 582.232 (*Cyanophyta (Cyanophyceae...)*) → 579.97
- x 582.233 (*Archaea...*) → 579.99; 579.991.1; 579.991.2; 579.991.3; 579.993.1
- x 582.24 (*Protista (Protoctista). Chromista. Protozoa*) → 582.25; 593.1
- x 582.241 (*Myxomycota (Mycetozoa...)*) → 593.122.1
- x 582.243 (*Hyphochytriomycota*) → 582.256.7
- x 582.244 (*Oomycota (Oomycetes)*) → 582.256.8
- x 582.244.1 (*Saprolegniales*) → 582.256.81
- x 582.244.2 (*Peronosporales*) → 582.256.82
- x 582.245 (*Plasmodiophoromycota*) → 593.141
- x 582.245.1 (*Plasmodiophorales*) → 593.141
- + 582.25 Chromista  
IN: *Chromista* were also known as *Chromophyta*, *Chromobiota* and *Chromobionta*
- + 582.255 Bacillariophyta (diatoms)
- + 582.255.1 Coscinodiscophyceae  
Including: Asterolamprales (*Asterolampraceae*, genus *Asteromphalus*); Melosirales (*Melosiraceae*, genus *Melosira* and *Hyalodiscaceae*, genus *Hyalodiscus*); Rhizosoleniales (*Rhizosoleniaceae*, genus *Rhizosolenia*); Stephanopyxales (*Stephanopyxidaceae*, genus *Stephanopyxis*); Triceratiales (*Triceratiaceae*, genus *Triceratium*)  
IN: *Coscinodiscophyceae* were also known as *Centrales*
- + 582.255.11 Coscinodiscales  
Including: *Coscinodiscaceae* (genus *Coscinodiscus*); *Heliopeltaceae* (genus *Actinoptychus*); *Hemidiscaceae* (genera *Actinocyclus*, *Hemidiscus* and *Azpeitia*)
- + 582.255.2 Bacillariophyceae  
Including: Cocconeidales (*Cocconeidaceae*, genus *Cocconeis* and *Achnanthidiaceae*, genera *Achnanthidium* and *Planothidium*); Cymbellales (*Gomphonemataceae*, genera *Gomphonema* and *Encyonema*, and *Cymbellaceae*, genus *Cymbella*); Eunotiales (*Eunotiaceae*, genera *Eunotia* and *Actinella*); Fragiliales (*Fragilariaceae*, genera *Fragilaria* and *Synedra*); Lyrellales (*Lyrellaceae*, genus *Lyrella*); Rhabdonematales (*Rhabdonemataceae*, genus *Rhabdonema*); Surirellales (*Surirellaceae*, genus *Surirella*); Tabellariales (*Tabellariaceae*, genera *Asterionella*, *Meridion* and *Tabellaria*); Thalassiophysales (*Catenulaceae*, genus *Amphora*)
- + 582.255.21 Bacillariales  
Including: *Bacillariaceae* (genera *Bacillaria*, *Nitzschia*, *Fragilariopsis*, *Denticula* and *Cylindrotheca*)
- + 582.255.22 Naviculales  
Including: *Naviculaceae* (genera *Navicula* and *Gyrosigma*) and *Diploneidaceae* (genus *Diploneis*)
- + 582.255.3 Mediophyceae  
Including: Eupodiscales (*Eupodisceaeae*, genera *Odontella* and *Auliscus*); Chaetocerotales (*Chaetoceraceae*, genus *Chaetoceros*); Stephanodiscales (*Stephanodiscaceae*, genera *Cyclotella*

- and Stephanodiscus); Thalassionematales (Thalassionemataceae, genus Thalassionema); Thalassiosirales (Thalassiosiraceae, genus Thalassiosira, and Skeletonemataceae, genus Skeletonema)
- + 582.256 Heterokonta / Stramenopiles
- + 582.256.1 Bolidophyceae (bolidophytes)  
Including: Parmales (triparmaceae, genus Triparma)
- + 582.256.2 Chrysophyceae (golden algae)  
Including: Chromulinales (Chromulinaceae, genera Chromulina and Ochromonas, and Dinobryaceae, genera Chrysococcus, Epipyxis and Dinobryon); Eustigmatales (Eustigmataceae, genus Eustigmatos); Hibberdiales (Stylococcaceae, genus Chrysopyxis); Prymnesiales (Prymnesiaceae, genus Prymnesium)  
IN: *Chrysophyceae were also known as Chrysophyta or chrysomonads. Chromulinales were also known as Chromomonadina*
- + 582.256.3 Phaeophyceae (brown algae)  
Including: Desmarestiales (Desmarestiaceae, genus Desmarestia); Dictyotales (Dictyotaceae, genus Dictyota); Sphacelariales (Sphacelariaceae, genus Sphacelaria)  
IN: *Phaeophyceae were also known as Phaeophyta*
- + 582.256.31 Fucales  
Including: Durvillaeaceae (the Cochayuyo, genus Durvillaea) and Himanthaliaceae (the Thongweed, genus Himanthalia)
- + 582.256.311 Fucaceae  
Including: Wracks (genera Fucus, Pelvetia and Ascophyllum)
- + 582.256.312 Sargassaceae  
Including: The Hijiki, the Japanese Wireweed and the Sargassum (genus Sargassum) and genera Cystoseira and Turbinaria
- + 582.256.32 Laminariales  
Including: Agaraceae (genus Agarum); Alariaceae (the Dabberlock, genus Alaria and the Wakame, genus Undaria); Lessoniaceae (the Arame, genus Eisenia)
- + 582.256.321 Laminariaceae  
Including: Kelps and the Oarweed (genus Laminaria); the Giant Kelp (genus Macrocystis); the Kombu and the Sugar Kelp (genus Saccharina)
- + 582.256.33 Ectocarpales  
Including: Chordariaceae (the Mozuku, genus Cladosiphon, and genera Streblonema and Punctaria) and Ectocarpaceae (genus Ectocarpus)
- + 582.256.4 Raphidophyceae  
Including: Chattonellales (Chattonellaceae, genera Chattonella and Heterosigma, and Vacuolariaceae, genera Goniostonum and Vacuolaria)  
IN: *Raphidophyceae were also known as Raphidophyte, Chloromonadophyceae and Chloromonadineae*
- + 582.256.5 Synurophyceae (synurids)  
Including: Synurales (Mallomonadaceae, genus Mallomonas and Synuraceae, genus Synura)
- + 582.256.6 Xanthophyceae (yellow-green algae)

- Including: Botrydiales (Botrydiaceae, genus Botrydium); Mischococcales (Pleurochloridaceae, genus Pleurochloris); Tribonematales (Heteropediaceae, genus Heterococcus and Tribonemataceae, genus Tribonema); Vaucheriales (Vaucheriaceae, genus Vaucheria)  
IN: *Xanthophyceae* were also known as *Xanthophyta*
- + 582.256.7 Hyphochytriomycetes  
IN: *Hyphochytriomycetes* were also known as *Hyphochytriomycota*
- + 582.256.8 Oomycetes (water moulds)  
IN: *Oomycetes* were also known as *Oomycota*
- + 582.256.81 Saprolegniales
- + 582.256.82 Peronosporales
- + 582.257 Cryptophyta. Haptophyta  
SN: *This class is provided for the convenience of grouping, when more specific classification is not required or is not possible*
- + 582.257.1 Cryptophyta  
Including: Cryptomonadales (Cryptomonadaceae, genus Cryptomonas) and Pyrenomonadales (Chroomonadaceae, genus Chroomonas and Pyrenomonadaceae, genus Rhodomonas)  
IN: *Cryptophyta* used to be known as *cryptomonads*
- + 582.257.2 Haptophyta  
Including: Coccolithales (Coccolithaceae, genus Coccolithus and Calyptosphaeraceae, genus Calyptosphaera) and Prymnesiales (Prymnesiaceae, genera Chrysochromulina and Prymnesium)  
IN: *Haptophyta* used to be known as *Prymnesiophyta*
- x 582.261 (*Chrysophyta*) → 582.256.2
- x 582.261.1 (*Bacillariophyceae. Diatoms*) → 582.255; 582.255.2
- x 582.261.2 (*Chrysophyceae: Golden-brown algae*) → 582.256.2
- x 582.268 (*Xanthophyta: Yellow-green algae*) → 582.256.6
- ! 582.27 Algae  
Including: Seaweeds, pond scum, phytoplankton  
SN: *Class here algae in general. Class Rhodophyta, Glaucophyta, Chlorophyta and Charophyta at 582.31 and its subdivisions. Class Chrysophyceae, Phaeophyceae and Xanthophyceae at 582.252 and its subdivisions. Class here also phycology. Alternatively denote phycology as a branch of study by colon combination with 001*  
IN: *Algae is a traditional, informal group (folk division), encompassing taxa and species belonging to different kingdoms. It has been preserved in UDC for the convenience of indexing*
- x 582.272 (*Phaeophyta...*) → 582.256.3; 582.256.301; 582.256.321
- x 582.276 (*Pyrrophyta. Dinoflagellates. Cryptophytes...*) → 582.257.1; 593.18
- x 582.277 (*Euglenophyta: Euglenoids*) → 593.161
- ! 593.1 **Protista**  
SN: *Class here Protozoa in general. Class here Heliozoa and Myxosporidia*  
IN: *Protista are also known as Protoctista and Protozoa*  
**[Revision comment: The scope of this class is broadened: the previous description was "Protozoa"]**

- ! 593.11      **Basic Opisthokonta**  
**Including:** Rozellida, Fonticulida, Nucleariida, Mesomycetozoea, Filasterea and Choanoflagellata  
**SN:** *Class Rhizopoda at 593.12*  
*[Revision comment: The scope of this class is broadened: the previous description was "Rhizopoda in general"]*
- ! 593.12      Amoebozoa  
**SN:** *Class Foraminifera at 593.142*  
**IN:** *Amoebae were also known as Rhizopoda*
- ! 593.121      **Lobosa**  
**SN:** *Class Amoebae at 593.121.2*  
*[Revision comment: The scope of this class is broadened: the previous description was "Amoebae"]*
- + 593.121.1      Discosea
- + 593.121.2      Tubulinea  
**Including:** Amoebidae (genera Amoeba and Chaos); Hartmannellidae (limax amoebae, genus Hartmannella); Arcellinidae (lobose testate amoebae, genus Arcella)
- + 593.122      Conosa
- + 593.122.1      Mycetozoa  
**Including:** Protostelia, Myxogastria and Dictyostelia  
**IN:** *Mycetozoa were also known as Myxomycota*
- + 593.122.2      Archamoebae  
**Including:** Genera Entamoeba and Endolimax
- x 593.13      (*Heliozoa*) → 593.1
- ! 593.14      **Rhizaria**  
**SN:** *Class Radiolaria at 593.143*  
*[Revision comment: The scope of this class is broadened: the previous description was "Radiolaria. Marine plankton"]*
- + 593.141      Cercozoa  
**Including:** Chlorarachniophyta, Phytomyxea (Plasmodiophoromycota and Phagomyxida), Proteomyxidea, Sarcomonadea / Monadoflora, Imbricatea / Silicoflora and Phaeodarea
- + 593.142      Foraminifera  
**Including:** Globigerinida, Lagenida, Miliolida, Rotaliida and Textulariida, as well as strictly extinct Fusulinida and Involutinida
- + 593.143      Radiolaria  
**Including:** Spasmaria (Acantharea and Taxopodida) and Polycistina (Nassellaria and Spumellaria)  
**IN:** *Radiolaria are also known as Radiozoa*
- ! 593.16      **Excavata**  
*[Revision comment: The scope of this class is broadened: the previous description was "Flagellata / Mastigophora"]*

- ! 593.161      **Euglenozoa**  
**SN:** *Class Trypanosomatidae at 593.161.1*  
**IN:** *Euglenozoa were also known as Euglenophyta*  
**[Revision comment: The scope of this class is broadened: the previous description was "Euflagellata. Trypanosomatidae"]**
- + 593.161.1      Kinetoplastida  
Including: Trypanosomatidae (genus Trypanosoma)
- + 593.161.2      Diplonemea  
Including: Diplonemidae (genus Diplonema)
- ! 593.161.3      **Euglenida**  
**IN:** *Euglenida are also known as Euglenophyceae*  
**Including:** Euglenaceae (genus Euglena)
- x 593.161.4      (*Chromomonadina*) → 582.256.2  
x 593.161.52      (*Volvocidae*) → 582.303.2  
x 593.162      (*Dinoflagellata. Peridiniidae*) → 593.18; 593.181  
x 593.163      (*Cystoflagellata. Noctiluca*) → 593.182
- + 593.164      Percolozoa  
**IN:** *Percolozoa are also known as Heterolobosea*  
Including: Schizopyrenida and Acrasida
- + 593.165      Metamonada  
Including: Retortamonadida, Diplomonadida, Parabasalia and Oxymonadida
- + 593.17/19      Alveolata
- ! 593.17      **Ciliophora (ciliates)**  
**IN:** *Ciliophora are also known as Ciliata or Infusoria*
- ! 593.171      **Peniculida (peniculids)**  
**Including:** *Parameciidae (genera Paramecium and Frontonia)*
- ! 593.172      **Heterotrichea**  
**Including:** *Stentoridae (trumpet animalcules, genus Stentor) and Spirostomidae (genus Spirostomum)*
- ! 593.173      **Oligotrichia**
- ! 593.174      **Hypotrichia**
- ! 593.175      **Peritrichia**  
**Including:** *Trichodinidae (genus Trichodina)*
- 593.176      Suctoria
- + 593.18      Dinoflagellata (dinoflagellates)  
**IN:** *Dinoflagellata were also known as Pyrrophyta, Dinophyta and Dinophyceae*
- + 593.181      Dinophyceae  
Including: Peridinales (Glenodiniaceae, genus Glenodinium; Proto-peridiniaceae,

- genus Protoperidinium; Thoracosphaeraceae, genus Thoracosphaera); Gymnodiniales (Gymnodiniaceae, genera Gymnodinium and Gyrodinium; Polykrikaceae, genus Polykrikos; Warnowiaceae); Gonyaulacales (Ceratiaceae, genera Tripos and Ceratium, and Gonyaulacaceae, genus Gonyaulax); Dinophysiales (Dinophysaceae, genus Dinophysis)
- + 593.182      **Noctiluca**  
Including: Noctilucales (Noctilucaceae, genus Noctiluca and Leptodiscaceae, genus Leptodinium)  
IN: *Noctiluca* were also known as *Noctiluciphyceae* and used to be included in taxon *Cystoflagellata*
- + 593.183      **Syndinea**  
Including: Coccidinales / Syndiniales (Syndiniaceae, genera Syndinium and Hematodinium, and Coccidiniaceae, genus Coccidinium)  
IN: *Syndinea* were also known as *Syndiniophyceae*
- ! 593.19        **Apicomplexa**  
IN: *Apicomplexa* were also known as *Sporozoa*
- ! 593.191        **Gregarina**  
IN: *Gregarina* are also known as *Gregarinasina*
- ! 593.192        **Coccidia**  
IN: *Coccidia* are also known as *Coccidiasina*
- + 593.192.1     **Sarcocystidae**  
Including: Genera *Toxoplasma*, *Isospora* and *Sarcocystis*  
IN: *Sarcocystidae* were also known as *Sarcosporidia*
- + 593.192.2     **Eimeriidae**  
Including: Genus *Cyclospora*
- + 593.192.3     **Cryptosporidiidae**  
Including: *Cryptosporidium*
- x 593.193        (*Sarcosporidia*) → 593.192.1
- x 593.194        (*Myxosporidia*) → 593.1
- x 593.195        (*Microsporidia*) → 582.289
- + 593.196        **Aconoidasida**  
IN: *Aconoidasida* were among the groups known as *Hematozoa*
- + 593.196.1     **Plasmodiidae**  
Including: Genus *Plasmodium*
- + 593.196.2     **Babesiidae**  
Including: Genus *Babesia*