

Note on Mollicute nomenclature

For queries about the taxonomy of *Mollicutes*, please contact the Subcommittee on the Taxonomy of *Mollicutes* of the [International Committee on Systematics of Prokaryotes](#) (Chair, Vicki Chalker, Vicki.Chalker@phe.gov.uk).

The terms mollicutes versus mycoplasma.

Both terms are used interchangeably in practice. However, scientifically, mollicutes covers more than just mycoplasma. To be correct *Mycoplasma* is a Genus within the Class *Mollicutes*.

Within the Phylum *Tenericutes*, the Class *Mollicutes* includes minute wall-less prokaryotes with small genomes (usually 0.5–1.5 Mb) and low G+C DNA content (from 23–40 mol%).

The Class *Mollicutes*:

Mollicutes is Latin for “soft / pliable skin”.

Mol’li.cutes or Mol.li.cu’tes. Latin adjective *mollis*: soft, pliable; Latin noun *cutis*: skin.

The Class *Mollicutes* includes the following Genera:

The Genus *Mycoplasma*:

Mycoplasma is Greek for “fungus form”.

My.co.plas’ma. Greek noun *myces*: fungus; Greek noun *plasma*: something formed or moulded, a form.

The Genus *Ureaplasma*:

Ureaplasma is Latin and Greek for “urea form”.

U.re.a.plas'ma. Latin noun **urea**; Greek noun **plasma**: something formed or moulded, a form.

The provisional Genus '*Candidatus Phytoplasma*':

Phytoplasma is Greek for “plant form”.

Phy.to.plas'ma. Greek noun **phytos**: plant; Greek noun **plasma**: something formed or moulded, a form.¹

The Genus *Spiroplasma*:

Spiroplasma is Greek for “spiral form”.

Spi.ro.plas'ma. Greek noun *speira* (Latin transliteration **spira**): coil, spiral; Greek noun **plasma**: something formed or moulded, a form.²

The Genus *Entomoplasma*:

Entomoplasma is Greek for “insect form”.

En.to.mo.plas'ma. Greek noun **entomos**: insect; Greek noun **plasma**: something formed or moulded, a form. Note, Mesoplasma was proposed for combination into Entomoplasma in 2019³

¹ Gasparich, G.E., Bertaccini, A., and Zhao, Y. (2020). '*Candidatus Phytoplasma*'. In Bergey's Manual of Systematics of Archaea and Bacteria (eds M.E. Trujillo, S. Dedysh, P. DeVos, B. Hedlund, P. Kämpfer, F.A. Rainey and W.B. Whitman). <https://doi.org/10.1002/9781118960608.gbm01259.pub3>. Published December 2020.

² Gasparich, G.E. and Brown, D.R. (2021). *Spiroplasma*. In Bergey's Manual of Systematics of Archaea and Bacteria (eds M.E. Trujillo, S. Dedysh, P. DeVos, B. Hedlund, P. Kämpfer, F.A. Rainey and W.B. Whitman). <https://doi.org/10.1002/9781118960608.fbm00247.pub2>. Published February 2021.

The Genus *Acholeplasma*:

Acholeplasma is Greek for “no cholesterol (bile) form”.

A.cho.le.plas'ma. Greek prefix *a*: not; Greek noun ***chole***: bile; Greek noun ***plasma***: something formed or moulded, a form.

The Genus *Anaeroplasma*:

Anaeroplasma is Greek for “no air (anaerobic)”form”.

A.na.e.ro.plas'ma. Greek prefix ***an***: without; Greek noun ***aer***: air; Greek noun ***plasma***: something formed or moulded, a form.

The Genus *Asteroleplasma*:

Asteroleplasma is Greek and Latin for “no sterol form”.

A.ste.rol.e.plas'ma. Greek prefix *a*: not; Latin noun *sterolum*: sterol; Greek noun ***plasma***: something formed or moulded, a form.

³ Gasparich, G.E., Kuo, C.-H. and Brown, D.R. (Under Review). Entomoplasma. In Bergey's Manual of Systematics of Archaea and Bacteria (eds M.E. Trujillo, S. Dedysh, P. DeVos, B. Hedlund, P. Kämpfer, F.A. Rainey and W.B. Whitman).

Note on describing and naming a new species.

The International Committee on Systematics of Prokaryotes (ICSP) oversees the nomenclature of prokaryotes, naming rules and issues Judicial Commission Opinions concerning taxonomy, Bacteriological Code revisions, etc. Mycoplasma is represented by a subcommittee of experts on behalf of the International Organization for Mycoplasma (IOM). Taxonomy of Mollicutes standards (Brown et al., 2007) include deposition: (i) type strains into two culture collections; (ii) 16S rRNA gene sequences with phylogenetic analysis; (iii) demonstration type strains differ from known valid species; (iv) assignment to an order, family and genus in the class. (v) description of novel Mollicutes species should also follow the proposed minimal standards for the use of genome data for the taxonomy of prokaryotes in which genome sequence (complete or draft) the proposed type strain is required (this is not required for Candidatus assignment) (Chun et al., 2018). Antiserum is no longer required (Firrao and Brown 2012).

Note on Submission of Mollicutes to culture collections is imperative to assist the community longer term by accessing strains, retaining them for future work and is required when describing a new species. In 2021 the ICSP reviewed international culture collections accepting depositions of Mollicutes. The following collections indicated they accept strains (*with no charge for deposition, shipping fees apply):

USA: ATCC*

France: CIP*

Germany: DSMZ*

Japan: NBRC

UK: NCTC*

Taiwan: BCRC (case by case review)

Taxonomic naming of new species: Recent publications suggest renaming of species to unusual/unconventional names (Gupta and Oren, 2020). The ICSP Mollicutes Subcommittee is committed to retaining nomenclature aligned to the agreed code and existing scientific/clinical practice, retaining standards for authors naming Mollicutes. Balish et al., 2020 recommended rejection of published names within the class Mollicutes. When considering naming new species, we recommend contacting the committee for advice prior to publication, engage with the Mollicute community prior to publication of controversial changes, especially impacting pathogenic relevant bacteria.