Minutes

P. Kuhnert, *Secretary*
H. Christensen, *Chairman*

International Committee on Systematics of Prokaryotes

Subcommittee on the taxonomy of *Pasteurellaceae*

Minutes of the meetings, 6 August 2008, Istanbul, Turkey

Session 1 – Closed meeting

Minute 1. Call to order. The closed meeting was held on 6 August 2008, in room Sultan 3 at the Istanbul Convention and Exhibition Centre, Istanbul, Turkey. The Chairman, H. Christensen, opened the meeting at 11:15.

Minute 2. Record of attendance. The members present were H. Christensen (Chairman), P. Kuhnert (Secretary), H.-J. Busse and N. Nørskov Lauritsen. Apologies were received from M. Bisgaard, P. Blackall, R. Davies, T. Inzana, R. Mutters and O. Gaillot.

Minute 3. Approval of agenda. The agenda was circulated electronically. No additional points to the agenda were made.

Minute 4. Minutes of the previous meeting. H. Christensen informed the members that the minutes of the previous subcommittee meeting held in San Francisco, USA, 25 July 2005 had been published [*Int J Syst Evol Microbiol* **56** (2006), 675–676].

Minute 5. Changes in membership and election of officers. No changes in membership were announced and both Chairman and Secretary agreed to continue for one more term. The election was initiated electronically before the subcommittee meeting and concluded at this meeting. All members as well as Chairman and Secretary were re-elected.

Minute 6. Current membership. The current membership of the subcommittee is as follows: H. Christensen (Copenhagen, Denmark) (Chairman), P. Kuhnert (Bern, Switzerland) (Secretary), R. Mutters (Marburg, Germany), M. Bisgaard (Copenhagen, Denmark), H.-J. Busse (Wien, Austria), P. Blackall (Moorooka, Australia), T. Inzana (Blacksburg, VA, USA.), R. Davies (Glasgow, UK), O. Gaillot (Lille, France) and N. Nørskov Lauritsen (Århus, Denmark).

Minute 7. Minimal standards. It was decided at the San Francisco meeting to establish a working group consisting of M. Bisgaard, H.-J. Busse, H. Christensen and P. Kuhnert to define minimal standards for the description of new taxa within the family. During the process, a former member of the subcommittee, W. Frederiksen, was also invited to join

the group and participate in the process. Members of this group became co-authors on the paper, whereas the other members of the subcommittee were acknowledged for their participation in the work. The paper ‘Proposed minimal standards for the description of genera, species and subspecies of the *Pasteurellaceae*’ by Christensen *et al.* has been published [*Int J Syst Evol Microbiol* **57** (2007), 166–178].

Minute 8. Taxonomic changes. Reclassification of the four species *Actinobacillus actinomycetemcomitans*, *Haemophilus aphrophilus*, *Haemophilus paraphrophilus* and *Haemophilus segnis* within the new genus *Aggregatibacter* was published, including the reclassification of *Haemophilus paraphrophilus* as *Aggregatibacter aphrophilus*, by Nørskov-Lauritsen & Kilian [*Int J Syst Evol Microbiol* **56** (2006), 2135–2146].

Reclassification of *Pasteurella trehalosi* as *Bibersteinia trehalosi* was published by Blackall *et al.* [*Int J Syst Evol Microbiol* **57** (2007), 666–674].

An emended description of *Actinobacillus capsulatus* was published by Kuhnert *et al.* [*Int J Syst Evol Microbiol* **57** (2007), 625–632]. When the species was investigated by using 16S rRNA gene sequencing in the early 1990s this species was found to be quite distantly related to the other species of *Actinobacillus sensu stricto*, which was surprising when compared with DNA–DNA hybridization results. Extensive analysis including comparison of housekeeping genes documented that *Actinobacillus capsulatus* should be classified as a true member of *Actinobacillus* and that use of 16S rRNA gene sequence comparison is misleading with this species.

A novel species of *Avibacterium*, *Avibacterium endocarditidis*, named by Bisgaard *et al.*, was published [*Int J Syst Evol Microbiol* **57** (2007), 1729–1734].

Minute 9. New book on *Pasteurellaceae*. At the meeting in San Francisco the need for an updated monograph on the *Pasteurellaceae* was discussed. Originally two books were planned, one focusing on taxonomy and the other on pathogenicity. Subsequently, some of the subcommittee members became involved in writing a book covering both aspects and being more general. At least three chapters deal with the taxonomy of members of *Pasteurellaceae*. ‘*Pasteurellaceae: Biology, Genomics and Molecular Aspects*’ was edited by P. Kuhnert and H. Christensen and was

published by Caister Academic Press (ISBN 978-1-904455-34-9; <http://www.horizonpress.com/past>).

Minute 10. Next meeting. The next official subcommittee meeting is planned to be held at the IUMS meeting in Sapporo, Japan. As discussed at the San Francisco meeting, the tri-annual 'Pasteurellaceae Conference' is better attended by members of the subcommittee as well as others working on *Pasteurellaceae*. It was therefore planned that, at the 'Pasteurellaceae Conference' in Sorrento (12–15 October 2008), Italy, the Subcommittee on the taxonomy of *Pasteurellaceae* should be introduced and its work and tasks be presented in an informal open meeting. This has been done in the meantime and proved very fruitful, as researchers in the field of *Pasteurellaceae* are not always aware of the taxonomic changes and problems within the family. Therefore, it was decided to include in the agenda of future 'Pasteurellaceae Conferences' a presentation on the topics dealt within the subcommittee.

Minute 11. Varia. The use of multiple sequence analysis (MLSA) for the description of new taxa was discussed. At the previous meeting the usefulness of *recN*, *rpoA* and *thdF* in combination or *recN* alone to deduce whole genome similarity in *Pasteurellaceae* was presented. This work has been published in the meantime by Kuhnert & Korczak [*Microbiology* **152** (2006), 2537–2548]. H.-J. Busse suggested that this approach should be applied for well-defined groups of taxa to further show its usefulness. A relevant group could be a well-known genus where DNA–DNA hybridization data are available for all existing species and where novel species need to be classified as well.

H. Christensen mentioned the EzTaxon server (www.eztaxon.org) for sequence-based identification of bacteria. It contains 16S rRNA gene sequences of type strains and is publicly available.

P. Kuhnert said that a study is being carried out with the aim to cover the most relevant members of *Pasteurellaceae* on Vitek 2 (bioMérieux), in order to improve diagnostics.

Minute 12. Adjournment. The closed meeting was adjourned at 12:00 on 6 August 2008.

Section 2 – Open meeting

Minute 13. Call to order. The open meeting was held on 6 August 2008, in room Sultan 3 at the Istanbul Convention and Exhibition Centre, Istanbul, Turkey. The Chairman, H. Christensen, opened the meeting at 12:15.

Minute 14. Record of attendance. Members attending the open meeting were H. Christensen, N. Nørskov Lauritsen and P. Kuhnert.

Minute 15. Taxonomic changes in progress. N. Nørskov Lauritsen said that studies are being undertaken to clarify the taxonomic status of *Haemophilus parahaemolyticus* and *Haemophilus paraphrohaemolyticus*. The differentiation between the two is uncertain and is mainly based on improved growth of the latter in an elevated CO₂ atmosphere. Input and collaboration from others working with these organisms would be welcomed.

H. Christensen announced several future changes. Species previously classified as Bisgaard taxon 2 and taxon 3 will be described as a novel species of the genus *Gallibacterium*. Also the genus *Volucribacter* will be extended with novel species. Furthermore, a new genus 'Chelonobacter' will be proposed for isolates from turtle. The taxonomic status of isolates from sea lions and seals is currently being investigated.

P. Kuhnert mentioned the problem of describing strains tentatively named as 'Actinobacillus porcitonisillarum' as a species. These non-pathogenic, probably commensal strains pose a diagnostic problem, as they share epitopes and growth characteristics (e.g. NAD-dependency, haemolysis) with *Actinobacillus pleuropneumoniae*, which causes severe disease in pigs [Gottschalk *et al.* *Vet Microbiol* **92** (2003), 87–101]. Proper description of 'A. porcitonisillarum' is hampered by the absence of enough phenotypic markers to separate it from the species *Actinobacillus minor*. These two species differ only in haemolysis and form close, although distinct branches, in phylogenetic trees based on several genes [Kuhnert & Korczak, *Microbiology* **152** (2006), 2537–2548].

The status of the subspecies of *Pasteurella multocida* was further discussed. Whereas the subspecies *P. multocida* subsp. *multocida* and *P. multocida* subsp. *gallicida* are phenotypically and genetically very close, *P. multocida* subsp. *septica* is separate from the other two. The current discussion concerns the separation of *P. multocida* subsp. *septica* as a separate species or the combination of the other two subspecies into one and keeping *P. multocida* subsp. *septica*. Currently, staying with *P. multocida* subsp. *septica* and a combined subspecies of *multocida/gallicida* is favoured.

Minute 16. Application for 'COST-action on population genetics including the impact of horizontal gene transfer'. M. Bisgaard sent an electronic proposal for new activities. An EU-funded COST-action on population genetics, including the impact of horizontal gene transfer, could be initiated. Explaining the genetic diversity demonstrated recently for isolates of *Pasteurellaceae* from large cats is very difficult, but phylogenetically very interesting. Rethinking of our present concepts is needed.

Minute 17. Adjournment. The open meeting was closed at 13:15 on 6 August 2008.