

Minutes

Günter Klein, *Secretary*

International Committee on Systematics of Prokaryotes

Subcommittee on the taxonomy of *Bifidobacterium*, *Lactobacillus* and related organisms

Minutes of the meetings, 3 September 2008, Egmond aan Zee, The Netherlands

Session 1. Open meeting

Minute 1. Call to order. The open meeting was called to order at 15:15 on 3 September 2008 by the Chairman, F. Dellaglio, as part of the 9th Symposium on Lactic Acid Bacteria (LAB9), Hotel Zuiderduin, Egmond aan Zee, Netherlands.

Minute 2. Record of attendance. The members present were J. Björkroth, C. Bonaparte, F. Dellaglio (Chairman), L. M. T. Dicks (Deputy Chairman) and G. Klein (Secretary). Apologies for absence were received from B. Biavati, W. P. Hammes, W.-H. Holzapfel, B. Pot, G. Reuter, B. Sgorbati and M. Vancanneyt. No apologies were received from M. D. Collins. The guests present were Akihito Endo, Giovanna Felis, Charles Franz and Paola Mattarelli.

Minute 3. Call for research reports. Research reports on topics related to taxonomy of *Lactobacillus* and related organisms and bifidobacteria were presented by Akihito Endo, Giovanna Felis, Charles Franz and Paola Mattarelli. A brief discussion followed each presentation.

Minute 4. Adjournment. The chairman thanked all presenters for their contributions. The open meeting was adjourned at 16:15 on 3 September 2008.

Session 2. Closed meeting

Minute 5. Call to order. The Chairman F. Dellaglio called the closed meeting to order at 16:20 on 3 September 2008.

Minute 6. Record of attendance. The members present were J. Björkroth, C. Bonaparte, F. Dellaglio (Chairman), L. M. T. Dicks (Deputy Chairman), G. Klein (Secretary). Apologies for absence were received from B. Biavati, W. P. Hammes, W.-H. Holzapfel, B. Pot, G. Reuter, B. Sgorbati, and M. Vancanneyt. No apologies were received from M. D. Collins. The guests present were Akihito Endo, Giovanna Felis, Charles Franz and Paola Mattarelli.

Minute 7. Approval of the agenda. The proposed agenda was approved.

Minute 8. Minutes of the previous meetings. The minutes of the meetings of the subcommittee held in Bologna, Italy, on 30 August and 1 September 2006, were approved [Klein, *Int J Syst Evol Microbiol* 57 (2007), 1367–1369].

Minute 9. Membership. The subcommittee stated the termination of the membership of M. D. Collins. G. Felis and C. M. A. P. Franz were present as candidates for membership. The subcommittee accepted both candidates as new members. A. Endo and P. Mattarelli were considered as candidates.

Minute 10. Scope of the subcommittee. The genera within the purview of the subcommittee are as follows: *Bifidobacterium*, *Lactobacillus*, *Carnobacterium*, *Leuconostoc*, *Fructobacillus*, *Pediococcus*, *Tetragenococcus*, *Isobaculum*, *Lactosphaera*, *Desemzia*, *Weissella*, *Oenococcus*, *Vagococcus*, *Catelicoccus*, *Gardnerella*, *Paralactobacillus*, *Alloscardovia*, *Metascardovia*, *Scardovia*, *Aeriscardovia* and *Parascardovia*. The new genus *Sharpea* with its species *Sharpea azabuensis* [Morita *et al.*, *Int J Syst Evol Microbiol* 58 (2008), 2682–2686] should be considered for inclusion within the scope of the subcommittee. The subcommittee briefly discussed the inclusion of the genus *Enterococcus* as a physiologically related micro-organism within the scope of the subcommittee. However, because of historical affiliations, the genus *Enterococcus* is covered by the subcommittee on *Streptococcus*.

Minute 11. Call for old business. Regarding problems with the type strains within the *Bifidobacterium indicum*/*B. coryneforme*/*B. asteroides* group, B. Biavati had collected the type strains from different culture collections and compared them by DNA fingerprinting. First results from type strains derived from the ATCC, DSMZ and LMG-BCCM indicate that differences exist between the deposited type strains. B. Biavati and P. Mattarelli agreed to proceed with the reinvestigation of the type strains by DNA fingerprinting, including the collections where the type strains were first deposited and from Bologna University Scardovi Collection of Bifidobacteria (BUSCOB). The origin of the type strain of *Bifidobacterium animalis* subsp. *lactis* (the former species *Bifidobacterium lactis*) remains unclear (isolation from yoghurt or reisolation).

The subcommittee will prepare a Request for an Opinion concerning the designation of a neotype strain. No new developments could be recorded, since the Judicial Commission rejected a formal request introduced by B. Pot and supported by the subcommittee [Klein, *Int J Syst Evol Microbiol* **56** (2006), 2501–2503] regarding the *Lactobacillus casei* group. The name *Lactobacillus paracasei* is still validly published, and neotype strains have not been designated despite the scientific data presented.

Minute 12. Minimal standards. The draft of the minimal standards, entitled ‘Recommended minimal standards for new species of *Bifidobacterium*, *Lactobacillus* and related genera’, has been discussed thoroughly by the subcommittee. The draft consisted mainly of requirements for bifidobacteria prepared by B. Biavati. The subcommittee proposed to transfer the cell-wall composition analysis from general to additional criteria specifically applicable to bifidobacteria. Further editorial comments were included. The minimal standards will contain also a general description, including an overview of the genera included. L. M. T. Dicks, G. Felis and G. Klein agreed to draft sections for lactobacilli, C. M. A. P. Franz agreed to draft a section for pediococci and J. Björkroth will draft sections for *Leuconostoc* and *Weissella*.

Minute 13. Call for new business. The three new genera *Fructobacillus*, *Alloscardovia* and *Metascardovia* can be included within the scope of the subcommittee. The type of metabolism of the novel species *Bifidobacterium tsurumiense* and of the new genus *Metascardovia* is defined by the authors as ‘facultative anaerobe’. This new definition of bifidobacterial metabolism does not agree with the definition of ‘anaerobic’ which describes the metabolism of all bifidobacteria so far. The subcommittee agreed to investigate the correctness of this definition.

Minute 14. Review of novel species and subspecies. The following novel species and subspecies were acknowledged by the subcommittee: *Bifidobacterium longum* subsp. *longum* Reuter 1963 [Mattarelli *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 767–772], *Bifidobacterium longum* subsp. *infantis* comb. nov. (basonym *Bifidobacterium infantis* Reuter 1963) [Mattarelli *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 767–772], *Bifidobacterium longum* subsp. *suis* comb. nov. (basonym *Bifidobacterium suis* Matteuzzi *et al.* 1971) [Mattarelli *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 767–772], *Bifidobacterium tsurumiense* [Okamoto *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 144–148], *Lactobacillus bobalius* [Manes-Lazaro *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 2699–2703], *Lactobacillus camelliae* [Validation List no. 116, *Int J Syst Evol Microbiol* **57** (2007), 1371–1373; Tanasupawat *et al.*, *J Gen Appl Microbiol* **53** (2007), 7–15], *Lactobacillus capillatus* [Chao *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 2555–2559], *Lactobacillus ceti* [Vela *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 891–894; erratum 1782], *Lactobacillus*

composti [Endo & Okado, *Int J Syst Evol Microbiol* **57** (2007), 870–872], *Lactobacillus crustorum* [Scheirlinck *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 1461–1467], *Lactobacillus farraginis* [Endo & Okado, *Int J Syst Evol Microbiol* **57** (2007), 708–712], *Lactobacillus equigenerosi* [Endo *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 914–918], *Lactobacillus ghanensis* [Nielsen *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 1468–1472], *Lactobacillus hayakitensis* [Morita *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 2836–2839], *Lactobacillus hordei* [Rouse *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 2013–2017], *Lactobacillus kapialis* [Pakdeeto *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 364–369], *Lactobacillus namurensis* [Scheirlinck *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 223–227], *Lactobacillus parafarraginis* [Endo & Okado, *Int J Syst Evol Microbiol* **57** (2007), 708–712], *Lactobacillus secaliphilus* [Ehrmann *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 745–750], *Lactobacillus senmaizukei* [Hiraga *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 1625–1629], *Lactobacillus thailandensis* [Validation List no. 116, *Int J Syst Evol Microbiol* **57** (2007), 1371–1373; Tanasupawat *et al.*, *J Gen Appl Microbiol* **53** (2007), 7–15], *Lactobacillus tucseti* [Validation List no. 127, *Int J Syst Evol Microbiol* **59** (2009), 923–929; Chenoll *et al.*, *Syst Appl Microbiol* **29** (2006), 389–395], *Leuconostoc holzapfelii* [De Bruyne *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 2952–2959], *Pediococcus argentinicus* [De Bruyne *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 2909–2916], *Pediococcus siamensis* [Validation List no. 116, *Int J Syst Evol Microbiol* **57** (2007), 1371–1373; Tanasupawat *et al.*, *J Gen Appl Microbiol* **53** (2007), 7–15], *Vagococcus elongatus* [Lawson *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 751–754] and *Weissella ghanensis* [De Bruyne *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 2721–2725]. *Lactobacillus sobrius* has been reclassified as a later synonym of *Lactobacillus amylovorus* [Viljanen *et al.*, *Int J Syst Evol Microbiol* **58** (2008), 910–913]. The name ‘*Bifidobacterium crudilactis*’ [Dalcenserie *et al.*, *Syst Appl Microbiol* **30** (2007), 381–389] is effectively published but not yet validly published.

Minute 15. Review of new genera. The new genus *Fructobacillus* with the species *Fructobacillus fructosus* comb. nov. (basonym *Lactobacillus fructosus* Kodama 1956), *Fructobacillus durionis* comb. nov. (basonym *Leuconostoc durionis* Leisner *et al.* 2005), *Fructobacillus ficulneus* comb. nov. (basonym *Leuconostoc ficulneus* Antunes *et al.* 2002) and *Fructobacillus pseudoficulneus* comb. nov. (basonym *Leuconostoc pseudoficulneus* Chambel *et al.* 2006) [Endo & Okado, *Int J Syst Evol Microbiol* **58** (2008), 2195–2205] was acknowledged by the subcommittee. The new genus *Alloscardovia* with the novel species *Alloscardovia omnicoles* [Huys *et al.*, *Int J Syst Evol Microbiol* **57** (2007), 1442–1446] was acknowledged by the subcommittee. The new genus *Metascardovia* with the novel species *Metascardovia criceti* [Validation List no. 118, *Int J Syst Evol Microbiol* **57** (2007), 2449–2450; Okamoto *et al.*, *Microbiol Immunol* **51** (2007), 747–754] was acknowledged by the subcommittee.

Minute 16. Present membership. The following individuals are members of the Subcommittee on *Bifidobacterium*, *Lactobacillus* and related organisms: Bruno Biavati (Deputy Chairman), Bologna, Italy; Johanna Björkroth, Helsinki, Finland; Christine Bonaparte, Hannover, Germany; Franco Dellaglio (Chairman), Verona, Italy; Leon M. T. Dicks (Deputy Chairman), Stellenbosch, South Africa; Giovanna Felis, Verona, Italy; Charles M. A. P. Franz, Karlsruhe, Germany; Walter P. Hammes, Stuttgart, Germany; Wilhelm H. Holzapfel, Karlsruhe, Germany; Günter Klein (Secretary),

Hannover, Germany; Bruno Pot, Gent, Belgium; Gerhard Reuter, Berlin, Germany; Barbara Sgorbati, Bologna, Italy; and Marc Vancanneyt, Gent, Belgium.

Minute 17. Date and place of the next meeting. The next meeting of the subcommittee will hopefully take place together with the Food Micro meeting in 2010 in Copenhagen, Denmark.

Minute 18. Adjournment. The closed meeting was adjourned at 18:00 on 3 September 2008.