Minutes

Günter Klein, *Secretary*

International Committee on Systematics of Prokaryotes

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

Minutes of the meetings, 14 and 15 June 2002, Verona, Italy

Session 1. Open meeting

Minute 1. Call to order. The open meeting was called to order at 16:00 on 14 June 2002 by the Chairman, F. Dellaglio.

Minute 2. Record of attendance. The members present were B. Biavati, F. Dellaglio, F. Gasser, W. P. Hammes, W.-H. Holzapfel, A. Kagermeier-Callaway, E. Lauer, B. Pot, B. Sgorbati and G. Reuter. Apologies for absence were received from: M. D. Collins, L. M. T. Dicks, G. Klein, M. C. Montel, J. London and T. Mitsuoka. The guests present were G. Felis, G. Pérez-Martínez, S. Torriani and other members of the Università degli Studi di Verona.

Minute 3. Call for research reports. The following individuals presented research reports on topics related to taxonomy of lactobacilli and bifidobacteria: B. Biavati, G. Felis, V. Ferrarini, F. Gasser, W. P. Hammes, W. H. Holzapfel and G. Pérez-Martínez. A brief discussion followed each presentation.

Minute 4. Adjournment. The chairman thanked all presenters for their contributions. The open meeting was adjourned at 18:00 on 14 June 2002.

Session 2. Closed meeting

Minute 5. Call to order. Chairman F. Dellaglio called the closed meeting to order at 09:00 on 15 June 2002.

Minute 6. Record of attendance. The members present were B. Biavati, F. Dellaglio, F. Gasser, W. P. Hammes, W. H. Holzapfel, A. Kagermeier-Callaway, G. Klein, E. Lauer, B. Pot, B. Sgorbati and G. Reuter. Apologies for absence were received from: M. D. Collins, L. M. T. Dicks, M. C. Montel, J. London and T. Mitsuoka. The guests present were G. Felis and G. Pérez-Martínez.

Minute 7. Agenda. The proposed agenda was approved.

Minute 8. Approval of minutes. The minutes of the meetings of the subcommittee in Prague, Czech Republic, on 4 and 6 July 1994, in Budapest, Hungary, on 26 and 29 August 1996, and in Veldhoven, The Netherlands, on 22 and 23 September 1999, were approved.

Minute 9. Scope of the subcommittee. During the last meeting, the secretary was charged with contacting the Secretary for Subcommittees to request permission to include the new genera *Oenococcus* and *Vagococcus* as well as the previously described genus *Gardnerella* within the scope of the subcommittee. In the meantime, this permission has been given. Several new genera have been described which should be within the scope of the subcommittee according to their taxonomic position. The secretary was therefore charged to request permission to include the new genera *Paralactobacillus*, *Scardovia* and *Parascardovia* within the scope of the subcommittee, whereas, for the genus *Olsenella*, the request was postponed until additional information has been received. At the moment, the genera *Aerococcus*, *Carnobacterium*, *Tetragenococcus* and *Vagococcus* fall within the scope of the subcommittee. However, the subcommittee on the taxonomy of staphylococci and streptococci intended at their meeting in Paris (1996) to include these genera within the purview of their subcommittee [*Int J Syst Evol Microbiol* **51** (2001), 717–718]. The members of the subcommittee were of the opinion that the food-related cocci should be left within the scope of the subcommittee. The secretary was charged to contact the Secretary for Subcommittees. At the moment, the following genera fall within the purview of the subcommittee: *Bifidobacterium*, *Lactobacillus*, *Aerococcus*, *Carnobacterium*, *Leuconostoc*, *Pediococcus*, *Tetragenococcus*, *Weissella*, *Oenococcus*, *Vagococcus* and *Gardnerella*.

Minute 10. Call for old business. The problem of differentiation of the species *Bifidobacterium longum*/*B. infantis*/*B. suis* is still unsolved. E. Lauer proposed to describe subspecies of *B. longum* with respective phenotypic characteristics. B. Biavati and E. Lauer agreed to review the literature and to work on this item in order to draft a proposal. Additionally, a paper from T. Mitsuoka was expected to be published concerning this problem.

B. Biavati and E. Lauer should report to the subcommittee at the next meeting. B. Biavati pointed out that a recent paper [Cai *et al.*, *Microbiol Immunol* **44** (2000), 815–820] showed that *Bifidobacterium lactis* is a heterotypic synonym of *Bifidobacterium animalis*. Nevertheless, the members decided to draft an official Request for an Opinion. Data from a presentation from H. M. Mayer and C. Bonaparte did not support a species description of *B. lactis*. B. Biavati, E. Lauer and B. Pot agreed to draft a Request for an Opinion. The problems within the *Bifidobacterium indicum*/*B. coryneforme*/*B. asteroides* group were raised again. E. Lauer explained that *B. indicum* and *B. asteroides* could be clearly distinguished, but *B. indicum* and *B. coryneforme* could not. The type strains should be compared with their original descriptions to clarify this issue. If they were not identical, a proposal of new type strains should be drafted. E. Lauer, B. Biavati and B. Pot agreed to reinvestigate the type strains and to report to the subcommittee. Since the last meeting of the subcommittee, no decision has been taken by the Judicial Commission concerning the rejection of *Lactobacillus paracasei*, to designate strain ATCC 334 as neotype of *Lactobacillus casei* and to reclassify the current type strain of *Lactobacillus casei*, ATCC 393. The subcommittee strongly supports this reclassification and awaits the final decision. To prove the separate species status of *Lactobacillus animalis* and *Lactobacillus murinus*, SDS-PAGE studies were tried by B. Pot; however, the number of strains available was too small to perform a reliable protein-fingerprinting study. B. Pot agreed to undertake DNA–DNA hybridization studies. No decision was made concerning *Lactobacillus brevis* since the status of this species is still unclear because of the heterogeneity of the strains. B. Pot proposed to perform DNA–DNA hybridization studies and to contact M. Vancanneyt.

Minute 11. Minimal standards. The minimal standards for description of novel species within the genus *Bifidobacterium* were prepared by E. Lauer and G. Klein had submitted them as secretary to the *International Journal of Systematic and Evolutionary Microbiology*. However, no response had so far been received from the editors. Therefore, a letter to the editor should be prepared. W. P. Hammes proposed to include also the requirement for descriptions of the ecology, quantities in the respective environment, information about the status in the environment (contamination or autochthonous) and viability. A draft proposal for minimal standards for *Lactobacillus* was agreed to be prepared by W. H. Holzapfel with the optional inclusion of additional DNA-based methods. The draft should be circulated to the members.

Minute 12. Membership. Two scientists were proposed as candidates for membership at the last meeting: C. Bonaparte (Vienna, Austria) was nominated by G. Klein, and the nomination was seconded by E. Lauer (by correspondence). G. W. Tannock (Dunedin, New

Zealand) was nominated by F. Dellaglio and the nomination was seconded by W. P. Hammes. The members of the subcommittee were in favour of the candidates but decided not to activate the membership of either candidate until the following conditions are fulfilled: in case of C. Bonaparte, a position in the field of the subcommittee, in the case of G. W. Tannock, until he attended a meeting of the subcommittee. The members agreed to invite D. Roy (Canada) and E. Ringø (Norway) to the next meeting.

Minute 13. Acceptance of novel species and subspecies. The following novel species and subspecies were acknowledged by the subcommittee: *Bifidobacterium thermacidophilum* [Dong *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 119–125], *Bifidobacterium scardovii* [Hoyles *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 995–999], *Lactobacillus paralimentarius* [Cai *et al.*, *Int J Syst Bacteriol* **49** (1999), 1451–1455], *Lactobacillus perolens* [Back *et al.*, *Syst Appl Microbiol* **22** (1999), 354–359; valid publication in *Int J Syst Evol Microbiol* **50** (2000), 3–4], *Lactobacillus mucosae* [Roos *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 251–258], *Lactobacillus nagelii* [Edwards *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 699–702], *Lactobacillus algidus* [Kato *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1143–1149], *Lactobacillus fornicalis* [Dicks *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1253–1258], *Lactobacillus acidipiscis* [Tanasupawat *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1479–1485], *Lactobacillus kimchii* [Yoon *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1789–1795], *Lactobacillus arizonensis* [Swezey *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1803–1809], *Lactobacillus frumenti* [Muller *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 2127–2133], *Lactobacillus cypri-casei* [Lawson *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 45–49], *Lactobacillus psittaci* [Lawson *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 967–970], *Lactobacillus coleohominis* [Nikolaitchouk *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 2081–2085], *Lactobacillus equi* [Morotomi *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 211–214], *Lactobacillus diolivorans* [Krooneman *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 639–646], *Lactobacillus durianis* [Leisner *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 927–931], *Leuconostoc kimchii* [Kim *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1915–1919], *Leuconostoc gasicomitatum* [Björkroth *et al.*, *Appl Environ Microbiol* **66** (2000), 3764–3772; valid publication in *Int J Syst Evol Microbiol* **51** (2001), 263–265], *Leuconostoc ficulneum* [Antunes *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 647–655], reclassification of *Lactobacillus fructosus* as *Leuconostoc fructosum* comb. nov. [Antunes *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 647–655], *Aerococcus sanguinicola* [Lawson *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 475–479], *Aerococcus urinaehominis* [Lawson *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 683–686], *Carnobacterium inhibens* [Jöborn *et al.*, *Int J Syst Bacteriol* **49** (1999), 1891–1898], *Weissella thailandensis* [Tanasupawat *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 1479–1485], *Weissella cibaria* [Björkroth *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 141–148], *Weissella kimchii*

[Choi *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 507–511] and *Weissella soli* [Magnusson *et al.*, *Int J Syst Evol Microbiol* **52** (2002), 831–834]. *Weissella kimchii* has since been reclassified as a later heterotypic synonym of *Weissella cibaria* [Ennahar & Cai, *Int J Syst Evol Microbiol* **54** (2004), 463–465]. Furthermore, the transfer of *Bifidobacterium inopinatum* and *Bifidobacterium denticolens* to the species *Scardovia inopinata* gen. nov., comb. nov., and *Parascardovia denticolens* gen. nov., comb. nov., respectively [Jian & Dong, *Int J Syst Evol Microbiol* **52** (2002), 809–812], was recognized by the subcommittee.

Minute 15. Acceptance of new genera. The new genera *Paralactobacillus* [Leisner *et al.*, *Int J Syst Evol Microbiol* **50** (2000), 19–24] and *Olsenella* [Dewhirst *et al.*, *Int J Syst Evol Microbiol* **51** (2001), 1797–1804] and the respective novel species *Paralactobacillus selangoresis* and *Olsenella uli* comb. nov. (reclassified from *Lactobacillus uli*) as well as *Olsenella profusa* were acknowledged as valid by the subcommittee.

Minute 16. Present membership. The following individuals are members of the subcommittee on the taxonomy

of *Bifidobacterium*, *Lactobacillus* and related organisms: Bruno Biavati (Deputy Chairman), Bologna, Italy; Matthew D. Collins, Reading, UK; Franco Dellaglio (Chairman), Verona, Italy; Leon M. T. Dicks (Deputy Chairman), Stellenbosch, South Africa; Francis Gasser, Paris, France; Walter P. Hammes, Stuttgart, Germany; Wilhelm H. Holzapfel, Karlsruhe, Germany; Angelika Kagermeier-Callaway, Mainz, Germany; Günter Klein (Secretary), Berlin, Germany; Eckhard Lauer, Berlin, Germany; Jack London, Bethesda, MD, USA; Tomotari Mitsuoka, Tokyo, Japan; Marie-Christine Montel, Saint-Genès-Champagnelle, France; Bruno Pot, Gent, Belgium; Gerhard Reuter, Berlin, Germany; Barbara Sgorbati, Bologna, Italy; Norbert Weiss, Braunschweig, Germany.

Minute 17. Date and place of the next meeting. The next meeting of the subcommittee will be, at the latest, together with the Food Micro meeting in 2004 in Slovenia, or together with an other appropriate meeting in 2004 or 2005.

Minute 18. Adjournment. The closed meeting was adjourned at 13:00 on 15 June 2002.