

International Committee on Systematic Bacteriology Subcommittee on the Taxonomy of Phototrophic Bacteria

Minutes of the Meetings, 14 September 1994, Urbino, Italy

Session 1. Closed meeting.

Minute 1. Call to order. The closed meeting was called to order by the Chairman, J. F. Imhoff, at 4:40 p.m. on 14 September 1994.

Minute 2. Record of attendance. The members present were R. W. Castenholz (Eugene, Oreg.), P. Caumette (Arcachon, France), L. Giovannetti (Viterbo, Italy), V. M. Gorlenko (Moscow, Russia), J. F. Imhoff (Kiel, Germany), M. T. Madigan (Carbondale, Ill.), R. Rippka (Paris, France), H. G. Trüper (Bonn, Germany), S. Ventura (Florence, Italy), J. B. Waterbury (Woods Hole, Mass.), and A. Wilmotte (Mol, Belgium). Apologies for absence had been received from E. I. Friedmann (Tallahassee, Fla.), J. Komarek (Trebon, Czech Republic), E. N. Kondratieva (Moscow, Russia), A. Oren (Jerusalem, Israel), J. Weckesser (Freiburg, Germany), and B. A. Whitton (Durham, England).

Minute 3. Minutes of previous meeting. The minutes of the meeting held in Amherst, Mass., on 24 July 1991 were approved.

Minute 4. Chairman's report. Because of the decision of the subcommittee at the meeting held in Amherst, Mass., there was no meeting of the subcommittee at the International Union of Microbiological Sciences meeting held in Prague, Czech Republic, on 3 to 8 July 1994. This had been reported to the Secretary for Subcommittees. The next meeting of the subcommittee will be in 3 years during the next International Congress on Phototrophic Prokaryotes in Vienna, Austria.

Minute 5. Changes in membership. The election of new members P. Caumette, L. Giovannetti, A. Oren, S. Ventura, and A. Wilmotte at the meeting held in Amherst, Mass., was approved. The subcommittee unanimously elected M. Herdman (Paris, France) and A. Hiraishi (Kawasaki, Japan) new members.

Minute 6. Subject of the subcommittee. The subcommittee confirmed that it will be concerned with all chlorophyll- or bacteriochlorophyll-containing prokaryotes. This includes the so-called aerobic phototrophic bacteria. A brief discussion of the taxonomy of cyanobacteria occurred, and further discussion was postponed until the open meeting.

Minute 7. Adjournment. The closed meeting was adjourned at 5:15 p.m. on 14 September 1994.

Session 2. Open meeting.

Minute 8. Call to order. The open meeting was called to order at 5:20 p.m. on 14 September 1994. This meeting was attended by the members who were at the closed meeting. New member M. Herdman also attended. The guests present were K. A. Malik (Braunschweig, Germany), T. E. Meyer (Tucson, Ariz.), J. Overmann (Oldenburg, Germany), F. Garcia-Pichel (Bremen, Germany), and N. Tandeau du Marsac (Paris, France).

Minute 9. Reports of new developments. R. Rippka described new developments in the systematics of cyanobacteria and in particular addressed nomenclatural aspects of and relationships between the botanical and bacteriological codes of nomenclature. J. F. Imhoff reported on new taxa and new combinations of phototrophic purple bacteria that had been

described during the previous 3 years. The new species were *Rhodobacter marinus* (J. G. Burgess, R. Kawaguchi, and A. Yamada, *Microbiology* **140**:965–970, 1994), *Rhodospirillum sodomense* (E. Mack, L. Mandelco, C. R. Woese, and M. T. Madigan, *Arch. Microbiol.* **160**:363–371, 1993), *Rhodoferax fermentans* (A. Hiraishi, Y. Hoshino, and T. Satoh, *Arch. Microbiol.* **155**:330–336, 1991), *Rhodopseudomonas rosea* (P. Janssen and C. G. Harfoot, *Int. J. Syst. Bacteriol.* **41**:26–30, 1991), and *Thiorhodovibrio winogradskii* (J. Overmann, U. Fischer, and N. Pfennig, *Arch. Microbiol.* **157**:329–335, 1992). The new combinations were *Rhodocista centenaria* (basonym *Rhodospirillum centenum*) (H. Kawasaki, Y. Hoshino, H. Kuraishi, and K. Yamasato, *J. Gen. Appl. Microbiol.* **38**:541–551, 1992), *Rubrivivax gelatinosus* (basonym *Rhodocyclus gelatinosus*) (A. Willems, M. Gillis, and J. De Ley, *Int. J. Syst. Bacteriol.* **41**:65–73, 1991), *Rhodovulum sulfidophilum* (basonym *Rhodobacter sulfidophilus*) (A. Hiraishi and Y. Ueda, *Int. J. Syst. Bacteriol.* **44**:15–23, 1994), *Rhodovulum adriaticum* (basonym *Rhodobacter adriaticus*) (A. Hiraishi and Y. Ueda, *Int. J. Syst. Bacteriol.* **44**:15–23, 1994), *Rhodovulum euryhalinum* (basonym *Rhodobacter euryhalinus*) (A. Hiraishi and Y. Ueda, *Int. J. Syst. Bacteriol.* **44**:15–23, 1994), and *Rhodobacter blastica* (basonym *Rhodopseudomonas blastica*) (H. Kawasaki, Y. Hoshino, A. Hirata, and K. Yamasato, *Arch. Microbiol.* **160**:358–362, 1993). *Rhodopseudomonas rutila* had been recognized as a later synonym of *Rhodopseudomonas palustris* (A. Hiraishi, T. S. Santos, J. Sugiyama, and K. Komagata, *Int. J. Syst. Bacteriol.* **42**:186–188, 1992). V. M. Gorlenko described the current status of the aerobic phototrophic purple bacteria, including the genera *Erythrobacter*, *Roseobacter*, *Erythromicrobium*, *Roseococcus*, *Porphyrobacter*, *Methylobacterium*, *Photorhizobium*, and *Acidiphilium*. R. W. Castenholz described new developments and prospective new genera of multicellular, filamentous green bacteria that do not belong to the true family *Chloroflexaceae*. M. T. Madigan described new isolates and species of green sulfur bacteria and pointed out that it will be necessary to determine more 16S rRNA sequences before the systematics of this group can be clearly resolved; he also described new heliobacteria and endospore formation in several of these bacteria.

Minute 10. Minimum standards. On the basis of a list of properties, a discussion concerning the minimum standards for descriptions of new species was continued. There was general agreement concerning a list of properties that are required as minimum standards for descriptions of new species of the anoxygenic phototrophic bacteria. It was agreed that a similar list of properties for the oxygenic phototrophic bacteria would be different in several respects because of the special demands of this group and that separate lists of properties for each of the two groups of bacteria will be prepared.

Minute 11. Discussion. J. F. Imhoff described the uncertain status of the type strains of several species of anoxygenic phototrophic bacteria, some of which appear to be lost and others of which had not been deposited in a culture collection yet. He also pointed out that taxonomists should be encouraged to determine additional 16S rRNA sequences, particularly the sequences of phototrophic purple and green sulfur bacteria. In this context it was emphasized that sequence information is of

inestimable value for taxonomic decisions, but that for the descriptions of new taxa knowledge of phenotypic properties (morphology, physiology, molecular structures) is indispensable. Because of the rapid increase in species and genus names, the widespread use of single letters to abbreviate genus names has become problematical. There was general agreement concerning three-letter designations to abbreviate the genus names of phototrophic bacteria and concerning

a list of designations for the names of the currently recognized genera of anoxygenic phototrophic bacteria. These designations will be distributed and recommended to journals and editors.

Minute 12. *Adjournment.* The meeting was adjourned at 7:15 p.m. on 14 September 1994.

M. T. Madigan, *Secretary*
J. F. Imhoff, *Chairman*