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CONSERVATION OF THE FAMILY NAMES THIORHODACEAE
MOLISCH 1907, 27 AND ATHIORHODACEAE MOLISCH 1907,
28 AND DESIGNATION OF CHROMATIUM PERTY 1852, 174
AS THE TYPE GENUS OF THE THIORHODACEAE AND OF
RHODOSPIRILLUM MOLISCH 1907, 24 AS THE TYPE GENUS
OF THE ATHIORHODACEAE

A Recommendation to the Judicial Commission

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It is proposed that the Judicial Commission of the International Committee on Nomenclature of Bacteria approve an Opinion conserving the bacterial family names Thiorhodaceae Molisch 1907, 27 and Athiorhodaceae Molisch 1907, 28, together with designation of a type genus for each family.

1. The names of the families Thiorhodaceae Molisch 1907, 27 and Athiorhodaceae Molisch 1907, 28 are not based upon the name of an included type genus in either case. They were apparently validly published but are illegitimate. They contravene several rules of the International Code of Nomenclature of Bacteria (1966), particularly Rule 9a and Rule 3.

2. The two family names have been used by most authors since their proposal by Molisch in 1907. There are no objective synonyms of these family names in the literature.

3. It would seem that there is precedent for the present request in the approval in Opinion 15 of the family Enterobacteriaceae Rahn 1937 as a conserved family name with the genus Escherichia being designated as the type genus of the family.

4. There are several precedents to be found in the botanical code, which makes legitimate the use of certain old family names (such as Gramineae, Compositae, Leguminosae) even though these are not based upon the names of contained genera. It is there emphasized that all of these names have been used for more than 50 years.

5. The bacterial family names Thiorhodaceae and Athiorhodaceae were proposed by Molisch more than 50 years ago,

and have been generally accepted (van Niel 1931, 1944, 1954, 1962, 1963; Bergey's Manual of Determinative Bacteriology, 6th ed., 1948, 7th ed., 1957; Kondratieva 1963, 1965; Pfennig 1967; and numerous handbooks and textbooks of microbiology such as, e.g., Thimann 1955, 1963; Stanier, Doudoroff and Adelberg 1963; Schlegel 1969).

Attention is directed to Principle 1 of the International Code of Nomenclature of Bacteria (1966), which states:

"The essential points in nomenclature are:

- (1) to aim at fixity of names;
- (2) to avoid or reject the use of names which may cause error or ambiguity or throw science into confusion."

6. Molisch's suggestion of 1907 to differentiate two physiological groups among the purple bacteria, the Thiorhodaceae and Athiorhodaceae, has been established experimentally on the basis of pure culture studies; all species hitherto considered as members of the Thiorhodaceae are able to grow phototrophically with hydrogen sulfide and elemental sulfur as electron donors while all species regarded as Athiorhodaceae are unable to utilize elemental sulfur and hydrogen sulfide as photosynthetic electron donors and are even inhibited by the latter compound.

Thus the most important and selective nutritional and ecological characteristics of these two groups are implicit in the family names Thiorhodaceae and Athiorhodaceae.

7. No type genera have been proposed for either of the two families in the past. A type genus should be the most typical and best known genus of a family. Applying this principle, Chromatium Perty 1852, 174 should be the type genus of the Thiorhodaceae, and Rhodospirillum Molisch 1907, 24 should be the type genus of the Athiorhodaceae. Most of our present knowledge of the physiology and biochemistry of the two families has been obtained through the study of members of the genera Chromatium and Rhodospirillum.

We propose that the Judicial Commission approve the following recommendation:

1. The bacterial family names Thiorhodaceae Molisch 1907, 27 and Athiorhodaceae Molisch 1907, 28 are conserved and placed in the list of nomina familiarum conservanda.
2. The designated type genus of the family Thiorhodaceae is Chromatium Perty 1852, 174.

3. The designated type genus of the family Athiorhodaceae is Rhodospirillum Molisch 1907, 24.

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Literature Cited

- Bergey's Manual of Determinative Bacteriology, 6th ed. (R. S. Breed, E. G. D. Murray and A. P. Hitchens, eds.) Baillière, Tindall and Cox, London 1948.
- _____, 7th ed. (R. S. Breed, E. G. D. Murray and N. R. Smith, eds.) Williams and Wilkins, Baltimore 1957.
- International Code of Nomenclature of Bacteria. 1966.
- Intl. J. System. Bact. 16:459-490.
- Kondratieva, E. N. 1963. Photosynthetic Bacteria (in Russian). Akademiya Nauk SSSR, Inst. Mikrobiol. (English translation 1965).
- Molisch, H. 1907. Die Purpurbakterien nach neuen Untersuchungen. Fischer, Jena 1907.
- Perty, M. 1852. Zur Kenntnis kleinster Lebensformen. Jent and Reinert, Bern 1852.
- Pfennig, N. 1967. Photosynthetic bacteria. Ann. Rev. Microbiol. 21:285-324.
- Schlegel, H. G. 1969. Allgemeine Mikrobiologie. Georg Thieme Verlag, Stuttgart 1969.
- Stanier, R. Y., M. Doudoroff and E. A. Adelberg. 1963. General Microbiology, 2nd ed., Macmillan, London 1963.
- Thimann, K. V. The life of bacteria. Macmillan, New York 1955.
- _____. Ibid., 2nd ed. Macmillan, New York 1963.
- van Niel, C. B. 1931. On the morphology and physiology of the purple and green sulphur bacteria. Arch. Mikrobiol. 3:1-112.
- _____. 1944. The culture, general physiology, morphology and classification of the non-sulfur purple and brown bacteria. Bacteriol. Rev. 8:1-118.
- _____. 1954. The chemoautotrophic and photosynthetic bacteria. Ann. Rev. Microbiol. 8:105-132.
- _____. 1962. The present status of the comparative study of photosynthesis. Ann. Rev. Plant Physiol. 13:1-26.
- _____. 1963. A brief survey of the photosynthetic bacteria. pp. 459-467, in: H. Gest, A. San Pietro, and L. P. Vernon (eds.), Bacterial photosynthesis. Antioch Press, Yellow Springs, Ohio.