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# Conservation of the Name *Micropolyspora* Lechevalier, Solotorovsky, and McDurmont and Designation of *Micropolyspora faeni* Cross, Maciver, and Lacey as the Type Species of the Genus Request for an Opinion

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We propose that the Judicial Commission of the International Committee on Systematic Bacteriology conserve the genus name *Micropolyspora* with *Micropolyspora faeni* Cross, Maciver, and Lacey 1968 (Approved Lists of Bacterial Names, 1980) as the type species. This proposal is made in the interest of nomenclatural stability and in order to avoid confusion in the literature after the reclassification of the original type species, *Micropolyspora brevicatena* Lechevalier, Solotorovsky, and McDurmont 1969 (Approved Lists, 1980), as *Nocardia brevicatena* (Lechevalier, Solotorovsky, and McDurmont) Goodfellow and Pirouz 1982 and demonstration of the synonymy of *M. faeni* with *Micropolyspora reactivigula* Krassilnikov and Agre 1964 (Approved Lists, 1980). *M. faeni* is the main causative agent of farmer's lung disease and other forms of hypersensitivity pneumonitis. Consequently, the binomial *M. faeni* has been used in numerous scientific and medical publications, whereas *M. reactivigula* appears in few. The genus *Micropolyspora* so conserved would also include *Micropolyspora angiospora* Zhukova, Tsyganov, and Morozov 1968 (Approved Lists, 1980) and *Micropolyspora internatus* Agre, Guzeva, and Dorkhova 1974 (Approved Lists, 1980).

This request for an opinion concerns two closely related problems arising from recent taxonomic decisions regarding species of the genus *Micropolyspora* Lechevalier, Solotorovsky, and McDurmont 1961 (Approved Lists of Bacterial Names, 1980). The genus *Micropolyspora* was erected to accommodate actinomycetes which form chains of spores on both the aerial and substrate mycelia. The type species *Micropolyspora brevicatena* Lechevalier, Solotorovsky, and McDurmont 1961 (Approved Lists, 1980), was based on two strains isolated from the sputa of patients who had undergone treatment for tuberculosis (28). Other actinomycetes with similar morphology were described by a number of workers, and by 1974 a total of eight species were listed in *Bergey's Manual of Determinative Bacteriology* (7). Subsequently, three additional species were proposed, and other specific names also appeared in the literature without formal descriptions. When the Ad Hoc Committee of the Judicial Commission of the International Committee on Systematic Bacteriology reviewed bacterial taxa in preparation for the Approved Lists of Bacterial Names (33),

taxa were retained only if they were considered to be adequately described and if a type, neotype, or reference strain was available. Only the following five *Micropolyspora* species filled these criteria: *Micropolyspora angiospora*, *Micropolyspora brevicatena*, *Micropolyspora faeni*, *Micropolyspora internatus*, and *Micropolyspora reactivigula*.

Although the genus *Micropolyspora* has remained essentially morphological in concept, the possession of wall chemotype IV, as defined by Lechevalier and Lechevalier (30), has become incorporated in the genus definition (8, 26). This improved circumscription of the genus resulted in the transfer of "*Micropolyspora rubrobrunea*" and "*Micropolyspora viridinigra*" (19) to the genus *Excellospora* Agre and Guzeva 1975 (Approved Lists, 1980) (1), strains of which have wall chemotype III. However, *Micropolyspora* remained heterogeneous (12). Mycolic acids similar in chain length to those found in *Nocardia sensu stricto* were found in the type species, *M. brevicatena* (5), whereas other species, including *M. faeni*, Cross, Maciver, and Lacey 1968 (Approved Lists, 1980), *M. reactivir-*

*gula* (Krassilnikov and Agre 1964) Prauser and Momirova 1970 (Approved Lists, 1980) (18, 32), and "*Micropolyspora caesia*" did not contain mycolic acids (5, 20, 31). Data on menaquinones (5), phospholipids (29), and fatty acids (20) also suggested that *M. brevicatena* is more closely related to *Nocardia* spp. than to members of the genus *Micropolyspora*. Finally, based on these chemotaxonomic findings and on the results of an extensive numerical phenetic study, Goodfellow and Pirouz (12) proposed that *M. brevicatena* be transferred to the genus *Nocardia* as *Nocardia brevicatena* comb. nov. A similar recommendation has been made by Kurup (21).

The reclassification of *M. brevicatena* as *N. brevicatena* (12, 21) leaves *Micropolyspora* without a type species and nomenclaturally invalid (25). The other *Micropolyspora* species cited on the Approved Lists (33) (i.e., *M. faeni*, *M. rectivirgula*, *M. angiospora* Zhukova, Tsyganov, and Morozov 1968 [34], and *M. internatus* Agre, Guzeva, and Dorokhova 1974 [1]) cannot be accommodated in *Nocardia* as presently defined or in any other genus of the *Actinomycetales*. However, retention of a name in a sense which excludes the type is possible through Rules 23a and 37a of the *International Code of Nomenclature of Bacteria* (25). Therefore, we propose that the genus name *Micropolyspora* be conserved on the basis of the following considerations. Since the name *Micropolyspora* was introduced by Lechevalier et al. (28), it has gained worldwide acceptance by bacteriologists. Consequently, rejection of the name *Micropolyspora* would cause considerable confusion, especially in the medical literature, where the binomial *M. faeni* is widely used to describe the organism causing farmer's lung disease and other forms of hypersensitivity pneumonitis. We suggest that conservation of the genus name *Micropolyspora* can be justified by citing Principle 1 of the *International Code of Nomenclature of Bacteria* (25). The essential aims in nomenclature are as follows: stability of names; to avoid or reject the use of names which may cause error or confusion; and to avoid the useless creation of names. The stability of nomenclature would be served best by conserving the name *Micropolyspora*, as opposed to introducing a new genus name to accommodate species currently classified in the genus *Micropolyspora*. Therefore, we request that the Judicial Commission of the International Committee on Systematic Bacteriology issue an opinion conserving genus name *Micropolyspora* for the species remaining in the genus *Micropolyspora*.

Definition of a type species presents further problems. *M. angiospora* and *M. internatus* are not well characterized, and it is possible that further studies could lead to reclassification of

these organisms in other actinomycete genera (21, 23, 24). By contrast, the characteristics of *M. faeni* and *M. rectivirgula* have been fully described (3, 7), and these two organisms clearly conform to the genus definition of *Micropolyspora* (8, 29). These two species, which were then named "*Thermopolyspora polyspora*" and "*Thermopolyspora rectivirgula*," respectively, were found by Kalakoutsii et al. (16) to have similar modes of spore formation and similar cultural characteristics, but synonymy was not proposed; later detailed taxonomic studies by Arden-Jones et al. (3) and Kurup (21) confirmed that they represent a single taxon. Prauser and Momirova (32) reached the same conclusion on the basis of phage sensitivity.

The epithet *rectivirgula* was first published in 1964 (18) for a species of "*Thermopolyspora*" on the basis of three isolates obtained from soils from the Pamirs and Spitzbergen. Colonies were described as colorless, yellowish, or faint yellow with no true pigmentation and had well-developed aerial mycelia that were pale yellow, dark cream, or sand color. The mycelium was non-septate and did not fragment into bacteroid or coccal elements. Spores were formed by "separation of the tip of the conidiophores, by constriction or by cross walls" into straight chains up to 10 spores long on both aerial and substrate mycelia. The spores were spherical, oval, or oblong and 1.2 to 1.5  $\mu\text{m}$  in diameter and had a smooth or tuberculate membrane. Subsequently (10), septa were found, and spores were shown to be variable in shape. Transfer to *Micropolyspora* was proposed in 1970 by Prauser and Momirova (32). The species *M. rectivirgula* is known only by the three original isolates and perhaps two or three others, all from soil (3, 32), and has only rarely been referred to in publications. It has never been implicated in hypersensitivity pneumonitis.

The epithet *faeni* was published in 1968 (9) for isolates that were obtained from hays associated with farmer's lung disease and were originally referred incorrectly to "*Thermopolyspora polyspora*" (6). In contrast to *M. rectivirgula*, *M. faeni* was described as having orangish yellow to yellowish brown colonies with white aerial mycelia. Although fragmentation of the vegetative mycelium was not observed, intercalary spores were sometimes present. Spore chains were usually up to five spores long and had a beaded appearance in stained preparations due to thick interspore pads. Spores were globose to oval, sometimes irregular, with a smooth membrane and 0.7 to 1.3  $\mu\text{m}$  long. *M. faeni* has been isolated frequently, often in very large numbers, from moldy hays and similar substrates in most countries in Europe, east to Finland, Poland, Czechoslovakia, and Yugoslavia, and from the

United States, Canada, Iceland, Japan, Australia, Iran, and perhaps Kuwait. As the main causative agent of farmer's lung disease and related forms of hypersensitivity pneumonitis, *M. faeni* has been the subject of more than 350 scientific and medical publications and is well known to medical microbiologists.

Thus, there are considerable discrepancies between the original descriptions of *M. rectivirgula* and *M. faeni*, although subsequent studies have shown that these two organisms are similar and that *M. rectivirgula* produces a white aerial mycelium (3, 16, 22, 23, 32). Also, when *M. faeni* was described, the taxonomic position of "*T. rectivirgula*" was in doubt. Krassilnikov and co-workers (16, 17) had questioned the separate status of "*Thermopolyspora*" and its distinction from *Micropolyspora*, but did not classify their new isolate with the specific epithet *rectivirgula* in the genus *Micropolyspora* either when they first described it (18) or when they subsequently studied it in more detail (16). The other species placed in the genus "*Thermopolyspora*" by Krassilnikov and Agre (18), "*Thermopolyspora flexuosa*," was found to produce spores on the aerial mycelium only (4) and to resemble closely actinomycetes which were then still included in the genus *Nocardia* (*madurae-pelletieri* type) but which later formed the nucleus of the new genus *Actinomadura* Lechevalier and Lechevalier 1970. "*T. flexuosa*" was also found to have chemotype III walls, as *Actinomadura* does, in contrast to the chemotype IV walls of the genus *Micropolyspora* (4). The chemotype IV wall composition of *M. rectivirgula* was only demonstrated subsequently (26). Although we recognize that *M. rectivirgula* has priority under Rule 23a of the *International Code of Nomenclature of Bacteria*, 1975 revision (25), we believe that *M. faeni*, as proposed by Arden-Jones et al. (3), should be retained as a nomen conservandum (Rule 56b [25]), both in the interest of nomenclatural stability and in order to avoid confusion.

There are precedents for such a request. Principle 1 of the *International Code of Nomenclature of Bacteria and Viruses*, 1958 revision (14), states that the essential aims of nomenclature are fixity of names and avoidance or rejection of names which may cause error or ambiguity or throw science into confusion. Farmer et al. (11) and Holmes (13) cite this principle in requesting, respectively, conservation of the specific epithet *tarda* over *anguillimortiferum* for the organism known as *Edwardsiella tarda* Ewing and McWhorter 1965 (Approved Lists, 1980) and conservation of the specific epithet *liquefaciens* over *proteamaculans* for *Serratia liquefaciens* (Grims and Hennerty 1931) Bascomb et al. 1971 (Approved Lists, 1980). Holmes (13) also argued

that the epithet *liquefaciens* was well known to clinical microbiologists, whereas the epithet *proteamaculans* existed only for the type culture. On the basis of common usage of the epithet *typhi* and in order to minimize confusion in the literature, the Judicial Commission of the International Committee on Bacteriological Nomenclature again cited Principle 1 of the *International Code* (14) in support of their decision to conserve the epithet *typhi* over *typhosa* for the organism of typhoid (15).

In consideration of these arguments, to maintain stable nomenclature for the organisms causing farmer's lung disease, which are well known to medical microbiologists, and to avoid confusion in the literature, especially in light of the misleading description of "*T. rectivirgula*," we request that the Judicial Commission of the International Committee on Systematic Bacteriology issue an opinion conserving the specific epithet *faeni* over *rectivirgula* for the organism known as *Micropolyspora faeni* (type strain, ATCC 15347). If both proposals are accepted by the Judicial Commission, *Micropolyspora faeni* should be cited as the new type species of *Micropolyspora*.

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