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ON THE SYNONYMY OF MYCOBACTERIUM MARIANUM
PENSO 1952 AND MYCOBACTERIUM SCROFULACEUM
PRISSICK AND MASSON 1956 AND THE RESOLUTION OF
A NOMENCLATURAL PROBLEM

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ABSTRACT. Mycobacterium marianum Penso 1953 and Mycobacterium scrofulaceum Prissick and Masson 1956 are regarded as subjective synonyms on the basis of comparative studies of the original descriptions and of authentic strains of each of the organisms. (Subjective synonyms are names based on different nomenclatural types, which types are regarded as similar enough to belong to the same taxon (species in this case).) Mycobacterium marianum, being the older of the two names, would appear to be the correct name for the species formed by the union of the two species. However the specific epithet in the name M. marianum, although etymologically distinct from the specific epithet in the name Mycobacterium marinum Aronson 1926, is so similar orthographically to the earlier specific epithet marinum that it causes confusion. Therefore these epithets are to be regarded as orthographic variants of the same epithet, and the corresponding species names are to be treated as homonyms. M. marianum is therefore illegitimate as a later homonym of M. marinum and must be rejected even if the earlier homonym is illegitimate or is treated as a synonym on taxonomic grounds. On the basis, then, that M. marianum and M. scrofulaceum are subjective synonyms, the

correct name for the species is M. scrofulaceum Prissick and Masson, of which M. marianum is an unavailable, illegitimate synonym. Prissick and Masson's strain 1356 (ATCC 19981) is herein designated as the type strain of Mycobacterium scrofulaceum Prissick and Masson.

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Penso (1953) proposed the name Mycobacterium marianum for a slow-growing, pigmented, acid-fast organism isolated by Sister Marie Suzanne from a skin lesion of a leprosy patient (see Penso and Suzanne 1954). This name was validly published according to the rules of the current International Code of Nomenclature of Bacteria (1966).

A few years later Prissick and Masson (1956; 1957) described a slow-growing, yellow-pigmented, acid-fast organism which they isolated from lesions of cervical adenitis in children; these authors also regarded their organism as a new species and proposed the name Mycobacterium scrofulaceum for it. This name was also validly published.

In a recent numerical-taxonomy study of scotochromogenic mycobacteria, Wayne et al. (1967) showed that a high degree of similarity exists between authentic strains of M. marianum and M. scrofulaceum. They concluded, therefore, that the two organisms belong to one and the same species and that the names of these organisms are synonyms. This position was reinforced by their observation that M. marianum and M. scrofulaceum share a methanol- and acetone-soluble antigen not found among members of the "tap water" types of scotochromogenic (Runyon Group II) mycobacteria. Further evidence of the relatedness of the two organisms was provided by Magnusson (1967) in dermal hypersensitivity studies employing purified sensitins and by W. Schaefer (personal communication to L. G. W.) in a study of agglutinating serotypes of mycobacteria. The most distinctive properties shared by these two organisms are a slow growth rate, scotochromogenicity, failure to hydrolyze Tween 80 within 10 days, ability to hydrolyze urea, nicotinamide and pyrazinamide, production of more than 45 mm of foam in the semiquantitative catalase test and little or no ability to reduce nitrate to nitrite.

Among the 51 strains of the "Scrofula Group" studied by Wayne et al. (1967) were four strains (1637, 1327, 1356 and 3536) of M. scrofulaceum received directly from F. H. Pris-

sick and two strains (R and S) of M. marianum obtained from G. Penso. In addition to the examination of authentic strains by Wayne et al., the original descriptions of the two organisms have been compared and have been found to be compatible.

Accepting, then, the opinion that M. marianum Penso 1953 and M. scrofulaceum Prissick and Masson 1956 belong to one and the same species, the next step is to determine the correct name for this species. At first glance M. marianum, being the earlier name, would appear to be the correct name for this species, and M. scrofulaceum would be illegitimate as a later synonym (see Rules 19 and 24b, Bacteriological Code, 1966). However the name Mycobacterium marinum, the specific epithet of which is orthographically similar to marianum, was proposed in 1926 by Aronson for an organism isolated from tubercles on various organs of salt-water fish. The name proposed by Aronson was validly published, and is legitimate. The specific epithet marianum, although etymologically distinct from the specific epithet marinum, is so similar orthographically to marinum that it can and indeed has caused confusion, particularly among students of mycobacterial diseases. The senior author of this paper inadvertently provided an illustration of the ease with which the similarity of the two names can cause confusion by not detecting in his proofreading a typographical error in the explanation of Figure 4 on page 92 of one of his recent publications (Wayne et al. 1967), where marinum appears where marianum was meant (see Wayne 1968); in this particular case a strain designation appended to the name made it clear that marianum, not marinum was intended. Unfortunately scientific names of bacteria are frequently used, even in the literature, without author citations. In these cases, especially when scientific names which are easily confused are used in the same paper or if one such name is used only once in a paper, for example, it may be very difficult if not impossible to determine which organism actually is being referred to because of the possibility of typographical or other errors.

Whereas M. marinum (of which Mycobacterium balnei Linell and Nördén 1952 is usually considered a subjective synonym by active investigators in the field) may cause superficial skin lesions of abraded knees and elbows, M. marianum is not uncommonly associated with cervical adenitis in children. Inasmuch as both M. marinum and M. marianum are clinically significant, it is of more than aca-

demic importance that they should be easily distinguished nomenclaturally from one another.

According to Rule 27 of the Bacteriological Code (1966): "When ... two or more specific epithets in the same genus ... are so similar as to cause confusion, they are treated as orthographic variants of the same ... epithet." The Note to Rule 24 (Bacteriological Code 1966) states that: "Mere orthographic variants of the same name are treated as homonyms when they are based on different types." Rule 24 further states that: "A name of a taxon is illegitimate ... d. If it is a later homonym of the name of a taxon of bacteria, ... that is, if it duplicates a name previously and validly published for a taxon of the same rank based on a different type. Even if the earlier homonym is illegitimate, or is generally treated as a synonym on taxonomic grounds, the later homonym must be rejected." From the preceding it is clear that as an orthographic variant of M. marinum Aronson 1926, M. marianum Penso 1953 is illegitimate as a later homonym and must be rejected. As a result M. scrofulaceum Prissick and Masson is the correct name of the species formed by the union of M. marianum Penso and M. scrofulaceum. Because these names were based on different types which subsequently were shown to be similar enough to belong to the same species, they are designated as subjective synonyms.

In a personal communication to one of us (E. F. L.), F. H. Prissick selected strain 1356 of Prissick and Masson, one of the strains on which the original description was based, as the type strain of M. scrofulaceum. In view of the fact that the designation of the type strain of this species has not been published to date, the authors hereby designate strain 1356 of Prissick and Masson (ATCC 19981) as the type strain of Mycobacterium scrofulaceum Prissick and Masson 1956.

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