Response to Tindall (2014) on the legitimacy of the names Solimonadaceae Losey et al. 2013, Xanthomonadaceae Saddler and Bradbury 2005 and Xanthomonadales Saddler and Bradbury 2005

A recent proposal by Tindall [Tindall, B. J. (2014). Int J Syst Evol Microbiol 64, 293–297] fails to recognize the importance of taxonomy in nomenclature. Thus, it incorrectly asserts that the family name Solimonadaceae Losey et al. 2013 is illegitimate. While Tindall (2014) correctly asserts that the family and order names Xanthomonadaceae Saddler and Bradbury 2005 and Xanthomonadaleae Saddler and Bradbury 2005 are illegitimate, the reasons given are wrong. The names are illegitimate because the proposed circumscription included the genus Nevskia, which has priority over the genus Xanthomonas. It is the priority of the nomenclatural type and not the name itself which determines its legitimacy.

Tindall (2014) fails to recognize that nomenclature only has meaning within the context of a specific taxonomy and makes numerous errors in interpretation of the Bacteriological Code (Tindall, 2014). After some simple rules are met, the correctness and legitimacy of a name depends on its circumscription or its taxonomic usage (Lapage et al., 1992). Tindall followed directly from Principle 9, which states that taxonomic studies are one of the reasons that can justify changing the name of a taxon. It is also stated explicitly in the Code in Rule 51a, which states, ‘However, a name of a taxon which is illegitimate when the taxon is in one taxonomic position is not necessarily illegitimate when the taxon is in another taxonomic position.’

The replacement of the family Sinobacteraceae with Solimonadaceae illustrates this distinction well. The genus and family names Sinobacter and Sinobacteraceae, respectively, were validly published by Zhou et al. (2008) with Sinobacter flavus as the type and only species (Zhou et al., 2008). Subsequently, it was proposed by Sheu et al. (2011) that the species Sinobacter flavus should be transferred to the same genus as Solimonas soli (Kim et al., 2007; Sheu et al., 2011).

Because the name Solimonas was validly published before Sinobacter, the principle of priority requires that the name of the genus that is formed be Solimonas (Lapage et al., 1992). This resulted in the valid publication of the new combination Solimonas flavus and emendation of the genus Solimonas. Subsequently, Losey et al. (2013) proposed that the genus Solimonas should be combined with other genera to form a new family Solimonadaceae (Losey et al., 2013). Tindall (2014) claimed on the basis of the revised Rule 15 (Garrity et al., 2011) that Losey et al. (2013) should have considered the priority, validly published family name Sinobacteraceae. However, the revision of Rule 15 only states that, ‘the nomenclatural type ... is that element of the taxon with which the name is permanently associated, whether as the correct name or as a later heterotypic synonym [underline added to illustrate revision], and has no bearing on this issue. This revision only states that Sinobacter flavus remains the type species of the genus Sinobacter and Sinobacter remains the type genus of the family Sinobacteraceae. It does not require that the family Sinobacteraceae be utilized in a taxonomy, which is not a nomenclatural issue.

Under the taxonomy of Losey et al. (2013), Sinobacteraceae is clearly illegitimate because it violates Rules 9 and 15. Rule 9 states that the name of a family is formed by adding the suffix –aceae to the name of the type genus. Rule 15 designates the nomenclatural type of the family to be the genus on which the name is based. In the taxonomy of Losey et al. (2013), the genus Sinobacter is considered a later heterotypic synonym of Solimonas and is illegitimate. Thus, it cannot be the type genus for a family. The family Sinobacteraceae is then illegitimate because it lacks a type genus. Moreover, in this taxonomy where four genera (Solimonas, Sinobacter, Singularimonas and Fontimonas) are united into a single family, Solimonas must be the type genus under Rule 51b(1) (Lapage et al., 1992). This rule states that one of the reasons a name can be illegitimate is the following: ‘If the taxon to which the name was applied, as circumscribed by the author, included the nomenclatural type of a name which the author ought to have adopted under one or more of the Rules’. Simply stated, Solimonas was the first genus name validly published within this family and has priority to serve as the type genus, and the assignment of any other genus as the type of the family is illegitimate. In case of doubt concerning the meaning of the rule, this interpretation is clearly illustrated in the example given with the rule. ‘Example: If an author circumscribes a genus to include Bacillus subtilis, type species of the genus Bacillus, then the circumscribed genus must be named Bacillus.’ Because this is an example, this reasoning was obviously meant to apply to other taxa and ranks. This rule promotes stability within the nomenclature by associating names with the earliest valid publications. Thus, while the circumscription of a taxon may change with new information and developments in taxonomic theory, the name will remain unchanged. For instance, in the above example, the species associated with the genus Bacillus may change, but there will always be a genus that contains the species Bacillus subtilis and it will always be called Bacillus.

However, if one rejects the taxonomy of Losey et al. (2013) and believes that...
Sinobacter is not synonymous with Solimonas and that the genera Sinobacter and Solimonas should not be placed within the same family, the family Sinobacteraeaceae remains legitimate and correct. It is within this circumscription, which was the original description of the family by Zhou et al. (2008), that the revision of Rule 15 cited by Tindall (2014) has meaning.

Tindall (2014) also mistakenly states that the family Lysobacteraeaceae, which was proposed by Christensen & Cook (1978), has priority over the family Xanthomonadaceae, which was proposed by Saddler & Bradbury (2005a). In the original circumscription, Lysobacteraeaceae included only the genus Lysobacter. With this circumscription, the family name is legitimate and correct. However, if Xanthomonas is added to this family, the genus Xanthomonas would have priority as the type, and the family would have to be named Xanthomonadaceae.

As pointed out by Tindall (2014), the family Xanthomonadaceae as circumscribed by Saddler & Bradbury (2005a) also included the genus Nevskia. This genus name was validly described in 1892 (Skerman et al., 1989). Although subsequently described in enrichments, pure cultures were not available until 1998 (Henrici & Johnson, 1935; Stürmeyer et al., 1998). Nevertheless, deposition of type strains was not required for validation at this time, and the name Nevskia retains priority over the name Xanthomonas, which was validly described in 1935 (Skerman et al., 1989). Because under Rule 51b(1) priority is determined by the type, the family Xanthomonadaceae with the circumscription of Saddler & Bradbury (2005a) is illegitimate and should have been named Nevskiaeaceae. However, if there is a taxonomic decision to place the genus Nevskia in a family different from the genus Xanthomonas, the emended family Xanthomonadaceae would become legitimate. The same reasoning should also be applied to the orders Lysobacterales (Christensen & Cook, 1978) and Xanthomonadales (Saddler & Bradbury, 2005b), both of which would be illegitimate if their circumscription included the genus Xanthomonas in the former case and the family Nevskiaeaceae in the latter.

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Tindall, B. J. (2014). The family name Solimonadaceae Losey et al. 2013 is illegitimate, proposals to create the names ‘Sinobacter soli’ comb. nov. and ‘Sinobacter varicoloris’ contravene the Code, the family name Xanthomonadaceae Saddler and Bradbury 2005 and the order name Xanthomonadales Saddler and Bradbury 2005 are illegitimate and notes on the application of the family names Solibacteraeaceae Zhou et al. 2008, Nevskiaeaceae Henrici and Johnson 1935 (Approved Lists 1980) and Lysobacteraeaceae Christensen and Cook 1978 (Approved Lists 1980) and order name Lysobacteriales Christensen and Cook 1978 (Approved Lists 1980) with respect to the classification of the corresponding type genera Solibacter Zhou et al. 2008, Nevskia Famintzin 1892 (Approved Lists 1980) and Lysobacter Christensen and Cook 1978 (Approved Lists 1980) and importance of accurately expressing the link between a taxonomic name, its authors and the corresponding descriptive circumscription/emendation. Int J Syst Evol Microbiol 64, 293–297.