

**International Journal of Systematic and Evolutionary Microbiology**  
**Is the bacterial genus name Rhodococcus Zopf 1891 illegitimate? Request for an**  
**Opinion.**  
 --Manuscript Draft--

<b>Manuscript Number:</b>	IJSEM-D-23-00591R1
<b>Full Title:</b>	Is the bacterial genus name Rhodococcus Zopf 1891 illegitimate? Request for an Opinion.
<b>Article Type:</b>	ICSP Matters
<b>Section/Category:</b>	Request for opinion
<b>Keywords:</b>	Actinomycetota; Cyanobacteriota; Homonym; International Code of Nomenclature of Prokaryotes; Request for an Opinion.
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<b>Manuscript Region of Origin:</b>	UNITED KINGDOM
<b>Abstract:</b>	In 2014, it was reported that the bacterial genus name Rhodococcus Zopf 1891 was illegitimate due to the priority of the cyanobacterial genus name Rhodococcus Hansgirg 1884. Since that time the consequences of this conclusion have been largely ignored, whilst changes have been made to relevant Rules of the International Code of Nomenclature of Prokaryotes, including significant changes to the way in which the Code treats the names of members of Cyanobacteriota. Given the complexity of the nomenclatural issues, we request the opinion of the Judicial Commission of the International Committee on Systematics of Prokaryotes as to whether the genus name Rhodococcus Zopf 1891 (Approved Lists 1980) is illegitimate.
<b>Author Comments:</b>	
<b>Opposed Reviewers:</b>	Markus Goeker DSMZ: Leibniz Institut - Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH markus.goeker@dsmz.de As a member of the JC he will see the mss in due course  Jose Vasquez-Boland The University of Edinburgh v.boland@ed.ac.uk Prejudiced against our work on rhodococcal taxonomy
<b>Suggested Reviewers:</b>	
<b>Additional Information:</b>	
<b>Question</b>	<b>Response</b>
Does this article report on work with humans or animals?	No
Does this article include details (names, initials, hospital numbers), images, or videos relating to an individual person?	No

Funding Information:

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1 **Is the bacterial genus name *Rhodococcus* Zopf 1891 illegitimate? Request for**  
2 **an Opinion.**

3

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18

19 **Abstract**

20 In 2014, it was reported that the bacterial genus name *Rhodococcus* Zopf 1891 was  
21 illegitimate due to the priority of the cyanobacterial genus name *Rhodococcus*  
22 Hansgirg 1884. Since that time the consequences of this conclusion have been largely  
23 ignored, whilst changes have been made to relevant Rules of the International Code  
24 of Nomenclature of Prokaryotes, including significant changes to the way in which the  
25 Code treats the names of members of *Cyanobacteriota*. Given the complexity of the  
26 nomenclatural issues, we request the opinion of the Judicial Commission of the  
27 International Committee on Systematics of Prokaryotes as to whether the genus name  
28 *Rhodococcus* Zopf 1891 (Approved Lists 1980) is illegitimate.

30 **Main Text**

31 In 2014, Tindall published a characteristically scholarly 'Note on the genus name  
32 *Rhodococcus* Zopf 1891 and its homonyms' [1], in which he stated that "The wording  
33 of the 1975 and subsequent revisions of the Code dealing with bacteria/prokaryotes  
34 is such that the name *Rhodococcus* Zopf 1891 is illegitimate", as a consequence of  
35 the bacterial genus name being a later homonym of the algal (cyanobacterial) genus  
36 name *Rhodococcus* Hansgirg 1884 [2,3]. This conclusion was based on the wording  
37 of the 1975 and 1990 revisions of the International Code of Nomenclature of  
38 Prokaryotes (ICNP; [4,5]), in which Principle 2 states that "The nomenclature of  
39 bacteria is independent of botanical nomenclature, except for algae and fungi, and of  
40 zoological nomenclature, except protozoa" [5]. The illegitimate nature of the name was  
41 reinforced by the then wording of Rule 51b(4) which stated that a name is illegitimate  
42 "If it is a junior homonym of a name of a taxon of bacteria, fungi, algae, protozoa, or  
43 viruses" ('junior homonym' meaning the same as the more commonly used term 'later

44 homonym', the terminology adopted in the more recent revisions of the ICNP [6,7];  
45 see below).

46 Although the illegitimacy of the bacterial genus name *Rhodococcus* Zopf 1891  
47 (Approved Lists 1980) [8,9] has been noted in several discussions of rhodococcal  
48 taxonomy (e.g. [10-13]), no action to address this has been taken either by  
49 taxonomists or the wider microbiological community, despite Rule 51a of the ICNP  
50 clearly stating that "A name contrary to a Rule is illegitimate and may not be used" [5-  
51 7] and Rule 54 providing clear guidance on the replacement of names [7]. Indeed, a  
52 recent reappraisal of the systematics of *Rhodococcus* provided an emended  
53 description of the genus and yet made no reference to the apparent illegitimacy of the  
54 name itself [14]. Moreover, it is notable that the authoritative LPSN resource [15] lists  
55 *Rhodococcus* Zopf 1891 as a correct name and suggests that it is only a "Potential  
56 later homonym of the algal genus *Rhodococcus* Hansgirg 1884"  
57 (<https://lpsn.dsmz.de/genus/rhodococcus>).

58 Subsequent to the publication of Tindall [1], in which it is clearly concluded that  
59 *Rhodococcus* Zopf 1891 is an illegitimate name, there have been revisions to both  
60 Principle 2 and Rule 51b. Principle 2 currently reads "The nomenclature of prokaryotes  
61 is **not independent** of botanical and zoological nomenclature" although this is clarified  
62 by "Note. This principle takes effect with publication of acceptance of this change by  
63 the ICSP (from 1 January 2001) and is not retroactive" [7]. The stipulation that Principle  
64 2 is not retroactive thus, potentially, circumvents the synonymy of *Rhodococcus* Zopf  
65 1891 and *Rhodococcus* Hansgirg 1884. However, following a proposal by Tindall in  
66 2016 [16] and subsequent consideration by the International Committee on  
67 Systematics of Prokaryotes [17], Rule 51b(4) of the ICNP was amended and currently  
68 states that the reasons which render a name illegitimate include "If a new name or

69 combination validly published before 31 December 2000 is a later homonym of a name  
70 of a taxon of prokaryotes, fungi, algae, protozoa or viruses” [7]. Thus, it would seem  
71 clear from this new wording, and the date inserted, that *Rhodococcus* Zopf 1891  
72 remains an illegitimate name, as originally concluded by Tindall [1].

73 As an addendum to his central argument, Tindall [1] also addressed the  
74 potential significance of the observation that *Rhodococcus* Hansgirg 1884 may itself  
75 be a later heterotypic synonym of the cyanobacterial genus name *Chroococcus* Nägeli  
76 1849. However, Tindall highlighted that “It should be noted that Principle 2 and Rule  
77 51b (4) make no reference to the status of names under the [botanical and zoological  
78 codes]” meaning the wording of ICNP does not require “that only legitimate/acceptable  
79 or validly published/available names be taken into consideration with regards  
80 establishing whether names are homonyms” [1]. The current wording [7] of ICNP  
81 Principle 2 and Rule 51b(4) are the same in this regard and this interpretation does  
82 not seem to be affected by subsequent changes to the ICNP that ensure that  
83 cyanobacterial names validly published under the International Code of Nomenclature  
84 of algae, fungi and plants (ICN, botanical code; [18]) are now recognised as valid under  
85 the ICNP [19,20], again with no caveats regarding the status of cyanobacterial names  
86 as synonyms or otherwise. Also of note is that Tindall [1] refers to an AlgaeBase entry  
87 as the source of “the information that *Rhodococcus* Hansgirg 1884 is regarded as a  
88 synonym of the cyanobacterial/cyanophyte genus name *Chroococcus* Nägeli 1849”.  
89 However, a version of the AlgaeBase entry on *Rhodococcus* Hansgirg 1884  
90 ([https://www.algaebase.org/search/genus/detail/?genus\\_id=42893](https://www.algaebase.org/search/genus/detail/?genus_id=42893), updated by M.D.  
91 Guiry on 2023-10-31) made no reference to the apparent synonymy of those two algal  
92 genera, and stated “This name is of an entity that is currently accepted taxonomically”  
93 and that the genus is a member of the family *Chroococcaceae*; subsequently this entry

94 was updated on 2023-12-19 to note that the currently accepted name for the type  
95 species *Rhodococcus caldiariorum* Hansgirg is *Gloeocapsa bituminosa* (Bory) Kützing  
96 1849 [21]. The Index Nominum Genericorum also lists *Rhodococcus* Hansgirg 1884  
97 as a name in current use [22]. In contrast, the CyanoDB 2.0 database of cyanobacterial  
98 genera [23] lists *Rhodococcus* Hansgirg in Wittrock et Nordstedt 1884 as a synonym  
99 of *Chroococcus* Nägeli 1849. The synonymy, or otherwise, of *Rhodococcus* Hansgirg  
100 1884 and *Chroococcus* Nägeli 1849 (or *Gloeocapsa* Kützing 1843) evidently requires  
101 further study, ideally using contemporary molecular methods. Nevertheless, it appears  
102 that *Rhodococcus* Hansgirg 1884, *Chroococcus* Nägeli 1849 and *Gloeocapsa* Kützing  
103 1843 are cyanobacterial genus names that are validly published under the ICN and so  
104 should be recognised as validly published under the reciprocation now embedded in  
105 the ICNP. The recognition of cyanobacterial *Rhodococcus* Hansgirg 1884 as validly  
106 published under the ICN would thus appear to confirm that *Rhodococcus* Zopf 1891  
107 is indeed an illegitimate name.

108 In considering Judicial Opinion 106, the Judicial Commission of the ICSP  
109 deemed the “potential issue with the genus name *Rhodococcus*” as “beyond the scope  
110 of this Judicial Opinion” [24]. In view of the complexity of the above summarised  
111 nomenclatural issues, and the potential significance if the names of multiple  
112 *Rhodococcus* species names are deemed illegitimate and so need to be replaced, we  
113 request here the opinion of the Judicial Commission as to whether the genus name  
114 *Rhodococcus* Zopf 1891 (Approved Lists 1980) is illegitimate.

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117 **Acknowledgements:** We thank Mike Guiry (National University of Ireland, Galway)  
118 for his advice concerning the AlgaeBase entries and Dr. Jan Mareš (České Budějovice,  
119 Czech Republic) for helpful comments.

120

121

## 122 **Funding information**

123 The authors have not received any support for this work from funding agencies.

124

## 125 **Conflicts of interest**

126 The authors declare they have no conflicts of interest.

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