

International Committee on Systematics of Prokaryotes Subcommittee on the taxonomy of *Halobacteria* and Subcommittee on the taxonomy of *Halomonadaceae*. Minutes of the joint open meeting, 11 July 2017, Valencia, Spain

David R. Arahal,¹ Aharon Oren^{2,*} and Antonio Ventosa³

MINUTE 1. CALL TO ORDER

The meeting was held at the Feria de Valencia Convention and Exhibition Centre, Valencia, Spain. The chairman, Dr A. Ventosa, opened the meeting at 09:05.

MINUTE 2. RECORD OF ATTENDANCE

The subcommittee members present were Drs A. Ventosa (Chairman, Subcommittee on the Taxonomy of *Halobacteria* and Subcommittee on the Taxonomy of *Halomonadaceae*), A. Oren (Secretary, Subcommittee on the Taxonomy of *Halobacteria*), D. R. Arahal (Secretary, Subcommittee on the Taxonomy of *Halomonadaceae*), M. A. Amoozegar, V. Bejar and F. Rodríguez-Valera. Apologies were received from H.-L. Cui, M. L. Dyall-Smith, R. R. de la Haba, M. Kamekura, Y. Ma, H. Minegishi, R. Montalvo-Rodríguez, M. R. Mormile, R. T. Papke, H. Stan-Lotter, B. J. Tindall and R. H. Vreeland. X.-W. Xu. R. Hahnke (Germany) served as alternate for B. J. Tindall. In addition, the meeting was attended by R. Cojoc (Romania), M. Enache (Romania), S. A. S. Fazerli (Iran) and I. Gomoiu (Romania).

MINUTE 3. APPOINTMENT OF SECRETARY

A. Oren (Secretary, Subcommittee on the Taxonomy of *Halobacteria*) and D. R. Arahal (Secretary, Subcommittee on the Taxonomy of *Halomonadaceae*) were appointed joint secretaries of the joint subcommittee meeting.

MINUTE 4. APPROVAL OF AGENDA

The agenda of the meeting was approved.

MINUTE 5. MINUTES OF PREVIOUS MEETING

The minutes of the joint meeting of the Subcommittee on the taxonomy of *Halobacteriaceae* and Subcommittee on the taxonomy of *Halomonadaceae* held in San Juan, Puerto Rico [Oren and Ventosa, *Int J Syst Evol Microbiol* 66 (2016), 4291–4295] were unanimously approved.

MINUTE 6. REPORT OF THE CHAIRMAN

A. Ventosa explained the work of the ICSP subcommittees on taxonomy.

MINUTE 7. NEW TAXA WITHIN THE CLASS *HALOBACTERIA*

As of May, 2017, the class *Halobacteria* contained three orders, six families, 57 genera and 233 species whose names have standing in the nomenclature (genus name, recommended three-letter abbreviation and number of species): *Halobacterium* (*Hbt.* 4 – not including *Hbt. piscisalsi*), *Haladaptatus* (*Hap.* 4), *Halalkalicoccus* (*Hac.* 3), *Halanaeroarchaeum* (*Haa.* 1), *Halapricum* (*Hpr.* 1), *Halarchaeum* (*Hla.* 6), *Haloarchaeobius* (*Hab.* 5), *Haloarcula* (*Har.* 9), *Halobaculum* (*Hbl.* 3), *Halobellus* (*Hbs.* 8), *Halobiforma* (*Hbf.* 3), *Halobium* (*Hbm.* 1), *Halocalculus* (*Hcl.* 1), *Halococcus* (*Hcc.* 9), *Haloferax* (*Hfx.* 12), *Halogeometricum* (*Hgm.* 4), *Halogramum* (*Hgn.* 4), *Halohasta* (*Hht.* 2), *Halolamina* (*Hlm.* 6), *Halomarina* (*Hmr.* 2), *Halomicroarcula* (*Hma.* 3), *Halomicrobium* (*Hmc.* 3), *Halonotius* (*Hns.* 1), *Haloparvum* (*Hpv.* 2), *Halopelagius* (*Hpl.* 3), *Halopenitus* (*Hpt.* 3), *Halopiger* (*Hpg.* 6), *Haloplanus* (*Hpn.* 6), *Haloprofundus* (*Hpd.* 1), *Haloquadratum* (*Hqr.* 1), *Halorhabdus* (*Hrd.* 2), *Halorientalis* (*Hos.* 3), *Halorubellus* (*Hrb.* 3), *Halorubrum* (*Hrr.* 36), *Halorussus* (*Hrs.* 4), *Halosarcina* (*Hsn.* 0 – its two species were transferred to *Halogeometricum*), *Halosiccatus* (*Hsc.* 1), *Halosimplex* (*Hsx.* 4), *Halostagnicola* (*Hst.* 4), *Halostella* (*Hsl.* 1), *Haloterrigena* (*Htg.* 10), *Halovarius* (*Hvr.* 1), *Halovenus* (*Hvn.* 3), *Halovivax* (*Hvx.* 4), *Natrialba* (*Nab.* 6), *Natribaculum* (*Nbl.* 2), *Natrinema* (*Nnm.* 7), *Natronoarchaeum* (*Nac.* 3), *Natronobacterium* (*Nbt.* 2), *Natronococcus* (*Ncc.* 4), *Natronolimnobiobius* (*Nln.* 2), *Natronomonas* (*Nmn.* 3), *Natronorubrum* (*Nrr.* 6), *Salarchaeum* (*Sar.* 1), *Salinarchaeum* (*Saa.* 1), *Salinigranum* (*Sgn.* 2), *Salinirubrum* (*Srr.* 1).

The number of *Halococcus* species listed does not include *Halococcus formicarii* Takahashi 1951 which is a scale insect named under the International Code of Zoological Nomenclature.

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Keywords: *Halobacteria*; minutes.

Reports on the following new taxa with validly published names and emendation of existing taxa were presented, as published between May 2016 and May 2017:

- *Haloparvum* gen. nov. [Chen et al., *Int J Syst Evol Microbiol* 2016;66 : 2332], with type species *Haloparvum sedimenti*. Recommended three-letter abbreviation: *Hpv*.
- *Haloparvum sedimenti* sp. nov. [Chen et al., *Int J Syst Evol Microbiol* 2016;66 : 2333], with type strain DYS4 (=CGMCC 1.14998=JCM 30891).
- *Halanaeroarchaeum* gen. nov. [Sorokin et al., *Int J Syst Evol Microbiol* 2016;66 : 2380], with type species *Halanaeroarchaeum sulfurireducens*. Recommended three-letter abbreviation: *Haa*.
- *Halanaeroarchaeum sulfurireducens* sp. nov. [Sorokin et al., *Int J Syst Evol Microbiol* 2016;66 : 2380], with type strain HSR2 (=JCM 30661=UNIQEM U935).
- *Haloarculaceae* fam. nov. [Gupta et al., *Int J Syst Evol Microbiol* 2016; 66 : 2464 (Validation List no. 170); effective publication: *Antonie van Leeuwenhoek* 2016; 109 : 582], with type genus *Haloarcula*.
- *Halococcaceae* fam. nov. [Gupta et al., *Int J Syst Evol Microbiol* 2016;66 : 2464 (Validation List no. 170); effective publication: *Antonie van Leeuwenhoek* 2016;109 : 583], with type genus *Halococcus*.
- *Halorhabdus rudnickae* sp. nov. [Albuquerque et al., *Int J Syst Evol Microbiol* 2016;66 : 2464 (Validation List no. 170); effective publication: *Syst Appl Microbiol* 2016;39 : 103], with type strain WSM-64 (=DSM 29498=CECT 8673).
- *Halorubraceae* fam. nov. [Gupta et al., *Int J Syst Evol Microbiol* 2016;66 : 2464 (Validation List no. 170); effective publication: *Antonie van Leeuwenhoek* 2016;109 : 583], with type genus *Halorubrum*.
- *Halostella* gen. nov. [Song et al., *Int J Syst Evol Microbiol* 2016;66 : 2745], with type species *Halostella salina*. Recommended three-letter abbreviation: *Hsl*.
- *Halostella salina* sp. nov. [Song et al., *Int J Syst Evol Microbiol* 2015;66 : 2745], with type strain CBA1114 (=JCM 30111=KCTC 4206).
- *Halorubrum pallidum* sp. nov. [Chen et al., *Int J Syst Evol Microbiol* 2016;66 : 2985], with type strain PJ61 (=CGMCC 1.15212=JCM 30955).
- *Salinigranum salinum* sp. nov. [Wang et al., *Int J Syst Evol Microbiol* 2016;66 : 3019], with type strain YJ-50-52 (=CGMCC 1.12572=JCM 30033).
- *Halolamina litorea* sp. nov. [Xu et al., *Int J Syst Evol Microbiol* 2016;66 : 3762 (Validation List no. 171); effective publication: *Microbiol China* 2016, 905], with type strain YJ-41 (=CGMCC 1.12859=JCM 30237).
- *Halobium* gen. nov. [Mori et al., *Int J Syst Evol Microbiol* 2016;66 : 3803], with type species *Halobium palmae*. Recommended three-letter abbreviation: *Hbm*.
- *Halobium palmae* sp. nov. [Mori et al., *Int J Syst Evol Microbiol* 2016;66 : 3803], with type strain 2a_47_2 (=InaCC Ar34=NBRC 111368).
- *Halomarina salina* sp. nov. [Xu et al., *Int J Syst Evol Microbiol* 2016;66 : 4301 (Validation List no. 172); effective publication: *Antonie van Leeuwenhoek* 2016 : 124], with type strain ZS-57-S (=CGMCC 1.12543=JCM 30039).
- *Halopiger djelfmassiliensis* corrig. [Hassani et al., *Int J Syst Evol Microbiol* 2016;66 : 4301 (Validation List no. 172); effective publication: *Standards Genomic Sci* 2013 : 171], with type strain IIH2 (=CSUR P3035=DSM 27506).
- *Halopiger goeimassiliensis* corrig. [Hassani et al., *Int J Syst Evol Microbiol* 2016;66 : 4301 (Validation List no. 172); effective publication: *Standards Genomic Sci* 2014 : 966], with type strain IIH3 (=CSUR P3036=DSM 27562).
- *Halopiger thermotolerans* sp. nov. [Minegishi et al., *Int J Syst Evol Microbiol* 2016;66 : 4979], with type strain SR-441 (=JCM 19583=KCTC 4248).
- *Haloparvum alkalitolerans* sp. nov. [Kondo et al., *Int J Syst Evol Microbiol* 2016;66 : 5317], with type strain MK62-1 (=JCM 30442=KCTC 4214).
- *Haloprofundus* gen. nov. [Zhang et al., *Int J Syst Evol Microbiol* 2017;67 : 14], with type species *Haloprofundus marisrubri*. As the authors had not indicated a recommended three-letter abbreviation for the genus name, the subcommittee recommended *Hpd*.
- *Haloprofundus marisrubri* sp. nov. [Zhang et al., *Int J Syst Evol Microbiol* 2017;67 : 14], with type strain SB9 (=CGMCC 1.14959=JCM 19565).
- *Halorussus salinus* sp. nov. [Xu et al., *Int J Syst Evol Microbiol* 2017;67 : 529 (Validation List no. 174); effective publication: *Arch Microbiol* 2016, 960], with type strain YJ-37-H (=CGMCC 1.12571=JCM 30032).
- *Halobaculum roseum* sp. nov. [Chen et al., *Int J Syst Evol Microbiol* 2017;67 : 822], with type strain D90 (=CGMCC 1.15501=JCM 31273).
- *Haloterrigena mahii* sp. nov. [Ding et al., *Int J Syst Evol Microbiol* 2017;67 : 1337], with type strain H13 (=BCRC 910151=NBRC 111885).
- *Halorubrum trueperi* sp. nov. [Chen et al., *Int J Syst Evol Microbiol* 2017;67 : 1569], with type strain Y73 (=CGMCC 1.15503=JCM 31271).

Papers describing the following new taxa were in press in the IJSEM as of 31 May 2017:

- *Natrinema soli* sp. nov. [Amoozegar et al., *Int J Syst Evol Microbiol* 2017;67, in press], with type strain 5–4 (=IBRC M 11063=LMG 29247).
- *Natronoarchaeum persicum* sp. nov. [Naghoni et al., *Int J Syst Evol Microbiol* 2017;67, in press], with type strain WIIL99 (=IBRC M 11062=LMG 29814).

The following names of members of the *Halobacteria* were effectively but not validly published as of 31 May 2017:

- *Haloferax namakaokahaiae* sp. nov. [McDuff et al., *FEMS Microbiol Ecol* 2016;92 : fiw028, 6], with type strain Mke2.3 (=DSM 29988=LMG 29162).
- *Halodesulfurarchaeum* gen. nov. [Sorokin et al., *ISME J* 2017;11 : 1256], with type species *Halodesulfurarchaeum*

formicicum. Recommended three-letter abbreviation: *Hda*.

- *Halodesulfurarchaeum formicicum* sp. nov. [Sorokin et al., *ISME J* 2017;11:1257], with type strain HSR6 (=JCM 30662=UNIQUEM U983).

The following emended descriptions were published outside the IJSEM:

- Emended description of *Halobacteriaceae* Gibbons 1974 (Approved Lists 1980) emend. Gupta et al. 2016, 1521 [Gupta et al., *Antonie van Leeuwenhoek* 2016;109:1621–1523].
- Emended description of *Haloferacaceae* Gupta 2015 emend. Gupta et al. 2016:1523 [Gupta et al., *Antonie van Leeuwenhoek* 2016;109:1621–1523].

A recently published paper [Amoozegar, Siroosi, Atashgahi, Smidt and Ventosa, *Microbiology* 163 (2017), 623–645] provides a good overview of the current status of the systematics of the *Halobacteria*.

MINUTE 8. NEW TAXA WITHIN THE FAMILY HALOMONADACEAE

As of May 2017 the family *Halomonadaceae* contained 12 genera (name and number of species with validly published names): *Halomonas* (90); *Aidingimonas* (1); *Carnimonas* (1); *Chromohalobacter* (8); *Cobetia* (5); *Halotalea* (1); *Kushneria* (6); *Larsenimonas* (2); *Modicisalibacter* (1); *Pistricoccus* (1), *Salinicola* (6); *Zymbacter* (1), total 123 species.

Reports on the following new taxa with validly published names were presented, as published between May 2016 and May 2017:

- *Halomonas urumqiensis* sp. nov. [Zhang et al., *Int J Syst Evol Microbiol* 2016;66:1967], with type strain BZ-SZ-XJ27 (=CGMCC 1.12917=JCM 30202).
- *Larsenimonas suaedae* sp. nov. [Xia et al., *Int J Syst Evol Microbiol* 2016;66:2956], with type strain ST307 (=CGMCC 1.8902=DSM 22428).
- *Halomonas sedimicola* sp. nov. [Lee et al., *Int J Syst Evol Microbiol* 2016;66:3869], with type strain CPS11 (=KACC 18262=NBRC 110636).
- *Halomonas lutescens* sp. nov. [Wang et al., *Int J Syst Evol Microbiol* 2016;66:4702], with type strain Q1U (=CGMCC 1.15122=KCTC 42517).
- *Pistricoccus* gen. nov. [Xu et al., *Int J Syst Evol Microbiol* 2017;67:1096 (Validation List 175); effective publication: *Antonie van Leeuwenhoek* 109 (2016) 1598] with type species *Pistricoccus aurantiacus*.
- *Pistricoccus aurantiacus* sp. nov. [Xu et al., *Int J Syst Evol Microbiol* 2017;67:1096 (Validation List 175); effective publication: *Antonie van Leeuwenhoek* 109 (2016) 1599] with type strain SS9 (=KCTC 42586=MCCC 1H00111).
- *Halomonas alkalicola* sp. nov. [Tang et al., *Int J Syst Evol Microbiol* 2017;67:1549], with type strain 56-1-4-10aEn (=CICC 11012 s=DSM 103354).

Papers describing the following new taxa were in press in the IJSEM as of 30 May 2017:

- *Halomonas aestuarii* sp. nov. [Koh et al., *Int J Syst Evol Microbiol* 2017;67, in press], with type strain Hb3 (=JCM 31415=KCTC 52253).

The following new names of members of the *Halomonadaceae* were effectively but not validly published as of 30 May 2017:

- *Halomonas xiaochaidanensis* sp. nov. [Liu et al., *Arch Microbiol* 2016;198:764], with type strain CUG 00002 (=CCTCC AB 2014152=KCTC 42685).
- *Halomonas massiliensis* sp. nov. [Seck et al., *New Microbe and New Infect* 2016;14:20], with type strain Marseille-P2426 (=CSUR P2426).
- *Halomonas saudii* sp. nov. [Bibi et al., *New Microbe and New Infect* 2017;15:43], with type strain Saudii DR2 (=CSUR P2512).

The following emended descriptions were published outside the IJSEM:

- *Halomonas caseinilytica* Wu et al. 2008 pro synon. *Halomonas sinaiensis* Romano et al. 2011 [Hwang et al., *Antonie van Leeuwenhoek* 2016;109:1345–1352].
- *Halomonas sinaiensis* Romano et al. 2011 emend. Hwang et al. 2016, 1350 [Hwang et al., *Antonie van Leeuwenhoek* 2016;109:1345–1352].

MINUTE 9. FAMILIES AND ORDERS IN THE CLASS HALOBACTERIA

Since the discussions in the previous meeting of the subcommittee about the splitting of the class *Halobacteria* into a number of orders and families as proposed by Radhey Gupta and coworkers (*Int J Syst Evol Microbiol* 2015;65:1050–1069; *Antonie van Leeuwenhoek* 2016;109:565–587), an erratum to the latter paper was published (*Antonie van Leeuwenhoek* 2016;109:1521–1523) in which the genus *Natronomonas* was transferred from the *Halobacteriaceae* to the *Haloarculaceae* and the genus *Halogranum* assigned to the family *Haloferacaceae*, the descriptions of the families *Halobacteriaceae* and *Haloferacaceae* were emended and corrected descriptions of the families *Haloarculaceae* and *Halorubraceae* were presented.

Based on the data presented in these papers by Gupta and coworkers and on further analyses by A. Oren and A. Ventosa of the 16S rRNA gene sequences of members of genera not used in Gupta's phylogenomic analyses, the genera within the class *Halobacteria* can be assigned as follows to orders and families:

- Order *Halobacteriales*, families *Halobacteriaceae*, *Haloarculaceae*, *Halococcaceae*.
 - Genera of the family *Halobacteriaceae*:
 - *Halobacterium*, *Haladaptatus*, *Halalkalicoccus*, *Halanaeroarchaeum*, *Halararchaeum*, *Haloarchaeobius*, *Halocalculus*, *Halomarina*,

Halorubellus, *Halorussus*, *Halostella*, *Halovenus*, *Natronoarchaeum*, *Salarchaeum*, *Salinirubrum*.

- Genera of the family *Haloarculaceae*:
 - *Haloarcula*, *Halapricum*, *Halomicroarcula*, *Halomicrobium*, *Halorhabdus*, *Halorientalis*, *Halosiccatus*, *Halosimplex*, *Natronomonas*.
- Genera of the family *Halococcaceae*:
 - *Halococcus*.
- Order *Haloferacales*, families *Haloferacaceae*, *Halorubraceae*.
 - Genera of the family *Haloferacaceae*:
 - *Haloferax*, *Halobellus*, *Halogeometricum*, *Halogranum*, *Halopelagius*, *Haloplanus*, *Haloprofundus*, *Haloquadratum*, *Halosarcina*.
 - Genera of the family *Halorubraceae*:
 - *Halorubrum*, *Halobaculum*, *Halobium*, *Halohasta*, *Halolamina*, *Halonotius*, *Haloparvum*, *Halopenitus*, *Salinigranum*.
- Order *Natrialbales*, family *Natrialbaceae*.
 - Genera of the family *Natrialbaceae*:
 - *Natrialba*, *Halobiforma*, *Halopiger*, *Halostagnicola*, *Haloterrigena*, *Halovarius*, *Halovivax*, *Natribaculum*, *Natrinema*, *Natronobacterium*, *Natronococcus*, *Natronolimnobius*, *Natronorubrum*, *Salinarchaeum*.

A. Oren read messages received from B. J. Tindall, R. T. Papke and M. Kamekura. B. J. Tindall commented: ‘Like all names the work of Gupta and colleagues needs to stand the test of time. Differing opinions may accept all or only some of these proposals and lead to either names being treated as synonyms or to the definitions attached to the names also changing. In essence this is a principle behind the use of different data sets (popularly called the polyphasic approach) and something underlying the workings of the International Code of Nomenclature of Prokaryotes’ and ‘sometimes one forgets that and sometimes relying on a limited data set can either revolutionize our way of thinking or in some cases be counter-productive. However, only time and careful evaluation puts all this in perspective’. R. T. Papke wondered to what extent the groups proposed by Gupta *et al.* are stable, especially when considering the indels, as it is not clear how many indels disagree with his groupings. Moreover, the effects of horizontal gene transfer and homologous recombination within and between lineages is largely unknown. It may be wise to wait until the work can be confirmed and verified by other groups to get a stronger consensus on the matter, resulting in more taxonomic stability. Moreover, not all type strains of the species within the class *Halobacteria* have yet been sequenced. The analyses by Gupta *et al.* are a good starting point, but more work must be done to confirm the proposed reclassification of the group. F. Rodríguez-Valera stated that his studies on gene alignments largely confirmed the divisions proposed by Gupta *et al.* M. Kamekura commented that the type of analysis on which Gupta *et al.* based their conclusions is too complicated for routine studies by most workers in the field.

The subcommittee strongly recommends that each description of new species within the *Halobacteria* be accompanied by the deposition of good-quality genomic data so that all new taxa can be included in comparative phylogenomic analyses.

MINUTE 10. PHENOTYPIC TESTING OF STRAINS OF HALOBACTERIA

A letter was received from H. Minegishi and M. Kamekura about the often poor quality of the polar lipid data in descriptions of new taxa within the class *Halobacteria*. Based on the proposed minimal standards, any description of a new species should include a characterization of polar lipids, with special emphasis on the pattern of the glycolipids present. Many recently published descriptions contain statements such as ‘polar lipids were unidentified glycolipids’ or ‘sulfated mannosyl glucosyl archaeol was detected’ without indicating to which type of sulfated diglycosyl diether lipid this refers. ‘Identification’ is often based on two-dimensional thin-layer chromatography (TLC) without proper comparison with the authentic glycolipids. It is recommended to first use one-dimensional TLC with the same solvent system used in references and to compare R_f values with those of the authentic glycolipids. Two-dimensional TLC is a good tool to separate PGS from PGP-Me. B. J. Tindall added in an email to the members of the subcommittee that a standard ‘single mix’ reagent works equally well as the two-stage α -naphthol spray reagent for detection of glycolipids. Similarly, it would be useful to confirm the presence of different diethers by TLC of the hydrolysed lipids. B. J. Tindall also commented that he had noted that over the years chemotaxonomic data have been published on members of the class *Halobacteria* that do not bear up to closer scrutiny. This phenomenon also applies to some of the data published on members of the family *Halomonadaceae*. R. Hahnke stressed the need for more in-depth characterization of physiological properties and chemotaxonomic studies of the genera and species within the class *Halobacteria*, and he suggested that it may be worthwhile to organize a course to teach advanced methods for the characterization of the lipids and other chemotaxonomic properties to be applied in taxonomic studies of the group. He further commented that for descriptions of new members of the *Halobacteria* growth must be tested over a wide range of salt concentrations, including in the lower range, and that activity of extracellular enzymes such as amylase and protease must be tested also at the highest salt concentrations enabling growth as such enzymes may not be active in the lower salinity range.

MINUTE 11. TREATMENT OF THE HALOBACTERIA AND THE HALOMONADACEAE IN BERGEY'S MANUAL

As of 1 July 2017, updated or newly prepared chapters had been published in *Bergey's Manual of Systematics of Archaea and Bacteria*, published online by John Wiley and Sons:

The genera: *Haladaptatus* (Oren), *Halanaeroarchaeum* (Sorokin, Yakimov, Kublanov and Oren), *Halapricum* (Roh), *Haloarchaeum* (Minegishi), *Halobellus* (Cui), *Halobiforma* (Xu and Oren), *Halogramnum* (Cui, Xu and Oren), *Halohasta* (Oren), *Halolamina* (Cui), *Halomarina* (Inoue and Kogure), *Halomicroarcula* (Echigo), *Halomicrobium* (Oren), *Halonotius* (Oren), *Halopelagius* (Cui, Xu, Wu and Oren), *Haloplanus* (Oren), *Haloquadratum* (Rodríguez-Valera, Martín-Cuadrado and Bolhuis), *Halorhabdus* (Antunes, Ferrer and Yarza), *Halorientalis* (Cui), *Halorubellus* (Cui), *Halorussus* (Cui), *Halosarcina* (Oren), *Halosimplex* (Vreeland and Cui), *Natribaculum* (Zhang and Oren), *Natronoarchaeum* (Shimane), *Natronolimnobius* (Itoh), *Salarchaeum* (Shimane), *Salinarchaeum* (Cui), *Salinigranum* (Cui), *Salinirubrum* (Cui).

Updated or newly written chapters on the higher taxa have been accepted for publication and are currently in production: (class-level) *Halobacteria* (Oren, Ventosa and Kamekura), (order-level) *Halobacteriales* (Oren, Ventosa and Kamekura), *Haloferacales* (Oren and Ventosa), *Natrialbales* (Oren and Ventosa), (family-level) *Halobacteriaceae* (Oren, Ventosa and Kamekura), *Halococcaceae* (Oren and Ventosa), *Haloferacaceae* (Oren and Ventosa), *Halorubraceae* (Oren and Ventosa), *Haloarcuaceae* (Oren and Ventosa), *Natrialbaceae* (Oren and Ventosa).

The following updated genus-level chapters have been accepted for publication and are currently in production: *Halobacterium* (Oren and Ventosa), *Halobaculum* (Oren), *Halococcus* (Oren).

An updated chapter on the genus *Haloarcula* (Ventosa) is currently in preparation, and so are new genus-level chapter on *Halalkalicoccus* (Ventosa and Sánchez-Porro), *Haloarchaeobius* (Ventosa and Amoozegar), *Halocalculus* (Minegishi), *Haloparvum* (Chen), *Halopenitus* (Ventosa and Amoozegar), *Halopiger* (Ventosa and de la Haba),

Halosiccatus (Amoozegar), *Halostagnicola* (Ventosa and Sánchez-Porro), *Halostella* (Roh), *Halovarius* (Amoozegar), *Halovenus* (Ventosa and Amoozegar), *Halovivax* (Ventosa and de la Haba).

We hope that the editors of Bergey's Manual will send out invitations for the preparation of updated chapters for the remaining genera of the class *Halobacteria* based on the chapters published in the 2nd edition of *Bergey's Manual of Systematic Bacteriology*.

The chairman and the secretary of the Subcommittee on the taxonomy of *Halomonadaceae* will inquire with the editors of Bergey's Manual about the possibility to start soon with the updating of the older chapters (the family *Halomonadaceae*, the genera *Halomonas*, *Carnimonas*, *Chromohalobacter* and *Zymobacter*) and the preparation of chapters for the 8 new genera added in recent years.

MINUTE 12. NEXT MEETING OF THE SUBCOMMITTEES

The next joint meeting of both subcommittees is scheduled to be held in association with the Halophiles 2019 conference, scheduled to be held in Cluj, Romania, in June 2019.

MINUTE 13. ANY OTHER BUSINESS

D. R. Arahal called for nominations for a new member of the ICSP Subcommittee on the taxonomy of *Halomonadaceae* following the retirement of E. Quesada.

MINUTE 14. ADJOURNMENT

The meeting was adjourned at 10:00 on 11 July 2017.

David R. Arahal, Secretary; Aharon Oren, Secretary and Antonio Ventosa, Chairman.

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