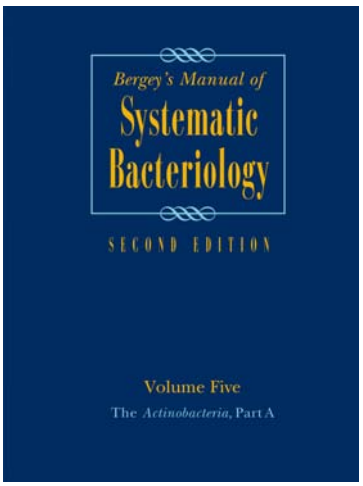
The Microbial Taxonomist

A Newsletter Published by Bergey's Manual Trust

The *Actinobacteria* Published In May 2012

The 2nd edition of Bergey's Manual of Systematic Bacteriology was completed this spring with the publication of Volume 5, The *Actinobacteria*, edited by Michael Goodfellow, Peter Kämpfer, Hans-Jürgen Busse, Martha E. Trujillo, Ken-ichiro Suzuki, Wolfgang Ludwig, and William B. Whitman. With the contributions of 125 authors, this work comprises two hefty tomes, parts A and B, and more than 2000 pages. With 320 tables and 431 figures, highlights include the descriptions of 230 genera, 53 families, 23 orders, and 6 classes within the phylum.

The descriptions of genera of great biotechnological or medical interest are included in volume 5. The 533 species of the genus *Streptomyces* are described by Peter Kämpfer. This chapter is supplemented with nine tables summarizing the media, distinctive chemotaxonomic markers, and major phenotypic properties. An extensive 16S rRNA phylogenetic tree of the type strains of the species is also included in the description of the family *Streptomycetaceae*. John Magee and Alan Ward describe 126 species within the family *Mycobacteriaceae* and genus *Mycobacterium*. Included are extensive analyses of the 16S rRNA phylogeny and tables of the phenotypes of individual species. Kathryn Bernard and Guido Funke describe 84 species with the



genus *Corynebacterium*. Klaus Schaal and Atteyet Yassin describe the family *Actinomycetaceae* and genus *Actinomyces*. Their chapters cover the 39 species of the genus and include extensive figures illustrating colony and cellular morphologies. Among the nine tables are the signature nucleotide sequences for the genera of the family and lists of distinguishing phenotypic features for the species. Hans-Jürgen Busse, Monika Wieser and Sandra Buczolits description of the 63 species of the genus *Arthrobacter* includes extensive analyses of the rRNA clusters and subclades as well as chemotaxonomic groups, whose growth and chemotaxonomic properties are summarized in tables.

The Road Map proposes a major reorganization of the higher taxa based upon an updated 16S rRNA phylogenetic tree from Wolfgang Ludwig. The classification does not use the taxonomic ranks of subclass and suborder, and the clades previously represented by these ranks are mostly elevated to the ranks of class and order, respectively. By reducing the number of subdivisions within the higher ranks from six (class, subclass, order, suborder, family, and genus) to four, this modification makes the taxonomy of the *Actinobacteria* more consistent with that of other prokaryotes and facilitates comparisons between phyla. This change has a number of important consequences. With the elevation of the subclasses *Acidimicrobidae*, *Coriobacteridae*, *Nitriliruptoridae*, and *Rubrobacteridae*, to classes, these organisms are now excluded from the class *Actinobacteria*. In addition, with the elevation of suborders to orders, the order *Actinomycetales* is now restricted to members of the family *Actinomycetaceae*, and many suborders that are well established in the literature, such as *Micrococcineae* and *Pseudonocardineae*, are not used. It is hoped that the possible confusion that might result from these changes is outweighed by the advantages of a simpler classification which more closely resembles that found in other prokaryotic phyla.

SUMMARY OF TAXA DESCRIBED IN THE 2ND EDITION OF BMSB

Upon its completion, the 2nd edition of BMSB includes the descriptions of 1754 higher taxa of prokaryotes; these taxa are summarized below.

Volume	Domain	Phylum	Class	Subclass	Order[1]	Family	Genus[1]	Genus *Incertae sedis*	Grand total
1	2	14	19	1	32	33	158	3	262
2		1	5		35	76	430	21	568
3		1	3		6	44	246		300
4		12	18		28	53	208		319
5		1	6		23	53	222		305
Grand total	2	29	51	1	124	259	1264	24	1754

[1]Includes the seven cyanobacterial "subsections" as orders and the 55 cyanobacterial "form-genera" as genera.

LOOKING AHEAD TO THE FUTURE OF THE *MANUAL*

With the completion of the 2nd edition of *Bergey's Manual of Systematic Bacteriology* (BMSB), the Trust is looking ahead to the 3rd edition. Because the isolation and description of new prokaryotes are rapidly proceeding in laboratories worldwide, a 3rd edition of BMSB is needed to keep pace with this growing understanding of prokaryotic life. On average, greater than 110 genera and 620 species have been described during each of the last five years. Upon completion of the 2nd edition, BMSB will contain descriptions of only about 1200 of the 2071 genera known at the beginning of 2012. Part of the reason for the low coverage is that the descriptions in Volume 1 are now more than 10 years out of date. For instance, only 65% of the currently described genera in the phylum *Euryarchaeota* are included in Volume 1 and only two of the four archaeal phyla described. In addition, there has been very rapid discovery and characterization of novel organisms in some groups, and many recently covered taxa are also now incomplete. A particularly extreme example is the phylum *Bacteroidetes*, where only 75% of the currently named genera were included in Volume 4 when it was published in 2011. Lastly, even for well-known genera, new information that is suitable for inclusion in BMSB is continually being discovered. Thus, there is ample scientific justification for a 3rd edition.

Because of the cumbersome nature of print and the rapid progress in systematics in the last decade, volumes are out of date even as they are published. Although plans are still tentative, we are envisioning an electronic format so the updates can be rapidly incorporated. Ideas about how an electronic BMSB might be realized are welcome.

Barny Whitman

REQUEST FOR NOMINATIONS FOR THE BERGEY AWARD

Nominations are sought for the 2014 Bergey Award.

The Award was initiated in 1979 to honor an individual for outstanding contributions to microbial taxonomy. The Award, donated by the Board of Trustees of Bergey's Manual Trust, consists of a certificate, a $2000 prize and expenses for travel to receive the Award at the society meeting. Previous winners of the Bergey Award are listed at the Bergey's website. Nominations in the form of a letter of nomination and a CV of the nominee should be forwarded to bergeys@uga.edu by 1 May 2013.

NEW HOME FOR BISMIS WEBSITE

A new website for Bergey's International Society for Microbial Systematics (BISMiS) is available at www.bismis.org. Featured at the site include news of the society and its members, its history and constitution, its officers and contact information, information about *The Bulletin of BISMiS* and forthcoming meetings. The website was graciously constructed and hosted by Chunlab. Founded by Jongsik Chun in 2009, Chunlab, Inc. provides high quality and affordable bioinformatics solutions for next-generation sequencing. With its database and software solutions, its goal is to bring next generation sequencing technology to bio-medical laboratories worldwide.

CALLING ALL MENTORS AND STUDENTS: STUDENT ARTICLES FOR *THE BULLETIN OF BISMIS*

As Editor of *The Bulletin of BISMiS*, I am calling on the younger members of our community to become involved and to communicate their own experiences. In our efforts to attract a wider audience and facilitate discussion, a Facebook page is now available (http://www.facebook.com/pages/Bergeys-International-Society-for-Microbial-Systematics-BISMiS/248730865152521).

In this era of molecular-based 16S-based inventories, many investigators are budding taxonomists without being fully aware of this. For example, years ago a student joined a lab with a particular interest; much of their investigations would concern the cultivation of isolates and the subsequent morphological, physiological and biochemical characterizations. By virtue of this approach the student would only be familiar with a limited number of closely related taxa. However, many PIs and students now favor molecular tools and construct phylogenetic frameworks consisting of hundreds, if not thousands, of OTUs, that may represent previously uncultivated taxa along with recognized reference species. The student then must begin the task of comparing these different phylogenetic groups and so becoming involved in taxonomy! Of course many of these students would not think of themselves of taxonomists, but none-the-less they are using systematics as a tool in their investigations.

On reviewing the membership list of our society, it is apparent that currently only a very small number of students are members. Admittedly, our society is still a fledging entity, but I would like to encourage student members to submit biographical articles to the *Bulletin*. Of specific interest are articles describing how they became involved in taxonomy and a brief overview of their work and experience. Of course, students are also welcome to submit mini-reviews, opinion, reports and other types of articles normally covered by the *Bulletin*. I look forward to hearing from both mentors and students alike on how we can make BISMiS more attractive and useful for our student members.

Paul A. Lawson
(paul.lawson@ou.edu)

LIST OF PROKARYOTIC NAMES WITH STANDING IN NOMENCLATURE TO FIND A NEW CURATOR

Upon the retirement of Jean Euzéby in July 2013, our own Aidan Parte has agreed to assume responsibility for this important resource. Aidan is excellently qualified for this role. Former Managing Editor of the *International Journal of Systematic and Evolutionary Microbiology* (1998–2003), he also served as Managing Editor of Volumes 3–5 of *Bergey's Manual of Systematic Bacteriology* and played a crucial role in its completion. Aidan brings his fine sense of prokaryotic systematics, nomenclature, and attention to detail to the task. Aidan will be looking to run the site from a database in order to improve searching and linking, and to make maintenance more efficient. We are confident that Euzéby's LPSN will be in good hands.

Barny Whitman

NEWS OF THE WORLD

NEW MICROBIAL CULTURE COLLECTION AT PUNE, INDIA

The Microbial Culture Collection (MCC) was established by the Department of Biotechnology (DBT), Government of India, in April 2009 at one of its premier research institutes, the National Centre for Cell Science (NCCS) in Pune, with a broad charter to preserve, characterize and authenticate microbial resources. MCC is now an affiliate member of the World Federation for Culture Collections and registered with the World Data Centre for Microorganisms. In April 2011, MCC was recognized by the World Intellectual Property Organization, Geneva, Switzerland, as an International Depository Authority (IDA) for the deposit of patent microorganisms under the Budapest Treaty.

MCC holds one of the largest culture collections in the world and offers numerous services to its customers (see boxed highlights). MCC was originally created to serve the preservation and supply requirements of the DBT's microbial prospecting project, under which >150,000 bacterial cultures were collected from diverse ecological niches in India, such as soils from Western Ghats & North East, mangroves, marine environment, industrial effluent polluted sites, and insect guts. At present, MCC has successfully preserved all these cultures. A major effort is now underway to identify and characterize these safe deposit cultures using rRNA gene sequencing and fatty acid methyl ester (FAME) analyses. About 8000 cultures have already been identified using 16S rRNA sequencing. In addition, MCC will soon begin to supply these cultures to industrial partners selected for various bioactivity screening programs. Recently, MCC has begun to accept other deposits, and it currently holds 43 cultures (26 bacteria and 17 fungi) under general deposit and five cultures as an IDA. The MCC is already offering rRNA gene sequence based microbial identification services to academic and industrial clients. In the last year, ~2000 samples of bacteria and fungi have been identified. Very soon, MCC expects to offer additional identification services, such as phenotypic characterization, FAME analysis, G+C mol%, and DNA–DNA hybridization. MCC is also working toward obtaining ISO certification for its service activities so as to achieve highest quality standards.

The Team at the Microbial Culture Collection, Pune, India

Along with providing high-quality services to its customers, MCC faculty and staff also conduct active research in microbial ecology and systematics. Currently, its 48 members include 12 scientists with diverse expertise. They are working in specific areas to improve the quality of services at MCC. In addition, MCC is actively involved in training new staff to carry out research in microbial ecology and systematics by conducting workshops and symposia at both local and national level. Further, MCC is continually recruiting new team members to keep up with rising customer demands.

MCC has undergone a major transition since its establishment. For almost three years, it was housed in a 6000 sq. ft start-up facility located 15 km north of NCCS, Pune. In March 2012, it moved to an interim facility on the main NCCS campus. In early 2013, MCC is expected to move locally to a much larger (40,000 sq. ft.) long-term facility, where additional services will be offered. Concurrently, MCC will transform into an autonomous institute under DBT, tentatively named as the National Centre for Microbial Resource and Research, and will continue to provide the highest standard of services along with focused research on microbial ecology and systematics.

By following internationally accepted guidelines and validated protocols, MCC is strongly committed to providing the highest quality services for microbial preservation and identification and supplying of authentic cultures. MCC intends to become a premier microbial resource centre in India with a strong focus on in-house research and periodic training of personnel. For further details on the services offered, fee structure and other information; please visit the MCC website at http://www.nccs.res.in/mcc.

Kamlesh Jangid & Yogesh S Shouche

Submit ideas for News of the World features in future issues to Barny Whitman (whitman@uga.edu)

SERVICES OFFERED BY MCC

Deposit Services

General Deposit for Public Access

Safe Deposit

IDA Deposit

Supply of Cultures

Identification Services

16S/18S rRNA gene sequencing (both partial and complete)

Phenotypic characterization

Phylogenetic trees

Coming soon: FAME analysis; BIOLOG system (oxidation pattern of 95 C substrates); API NE, API 50 CH, API ZYM, Vitek; G+C mol% (T_m and HPLC); DNA–DNA hybridization.

Educational Services

Training

Workshops

Symposia

Address

Microbial Culture Collection, National Centre for Cell Science, Pune University Campus, Pune 411007, Maharashtra, India

Tel: +91 20 25708237

Fax: +91 20 25692259

Email: mcc@nccs.res.in

Web: http://www.nccs.res.in/mcc

THOUGHTS OF A MICROBIAL ECOLOGIST APPOINTED AS EDITOR-IN-CHIEF OF THE *INTERNATIONAL JOURNAL OF SYSTEMATIC AND EVOLUTIONARY MICROBIOLOGY*[1]

On 12 August 2012 I took over the role of Editor-in-Chief of the *International Journal of Systematic and Evolutionary Microbiology* (IJSEM) from Peter Kämpfer, who has held this function for nine years (Oren, 2012). I hope to serve the journal in the coming years as faithfully as Peter has done.

At first sight my appointment may not be a very obvious one, and some may even wonder whether I have the credentials required for the job. After all, I am a microbial ecologist, and I never received any formal training as a taxonomist. Therefore the question may be asked whether indeed I can be a worthy successor to Peter Kämpfer and to the other well-known prokaryote taxonomists who have served as Editors of IJSEM and its predecessors, the *International Bulletin of Bacteriological Nomenclature and Taxonomy* and the *International Journal of Systematic Bacteriology*, since the first issue was published in January 1951.

However, looking back at the period I was a high school student in the Netherlands in the 1960s, I realize that biological systematics and nomenclature were already important for me. At the time botany was my hobby, and I still remember most of the Latin names of the higher plants of the flora of Western Europe. When I started my biology studies in Groningen in 1969, my intention was to specialize in plant systematics. I knew nothing about bacteria then beyond what my high school teacher had explained, namely that they are some kind of very primitive plants and that some cause nasty diseases. During my first year at the university, I discovered the true nature of the bacterial world, and I then quickly realized that that diverse world of these smallest of all living creatures fascinated me much more than that of higher plants.

My training and further career in microbiology always had a strong emphasis on microbial ecology. This can only be expected when looking at the list of eminent microbiologists with whom I had the pleasure to study: Hans Veldkamp who taught me the basics of the discipline, Moshe Shilo who was one of my mentors in my first years in Jerusalem, and Ralph Wolfe with whom I did post-doctoral studies in Urbana, IL. All were graduates of the famous summer course organized in Pacific Grove, CA, by Cornelis van Niel. My education was thus influenced by the Delft School of Microbiology, and I have always felt closer to the world of Martinus Beijerinck and Sergei Winogradsky than to the world of Robert Koch and Ferdinand Cohn.

Aharon Oren (left) presents Peter Kämpfer (right) with a token of appreciation for his nine years of service as Editor of IJSEM. Copenhagen, 21 August 2012. Photograph: Karen Rowlett, The Society for General Microbiology.

My research work has over the years focused on two main topics: hypersaline environments and the sulfur cycle. In the course of the years I have worked with quite a variety of prokaryotes, from purple

[1]*Upon his appointment as Editor-in-Chief of IJSEM, we asked Professor Aharon Oren to introduce himself and provide some insights on the future of the journal.*

sulfur bacteria and cyanobacteria to halophilic and methanogenic *Archaea*, as well as a great diversity of halophilic and halotolerant *Bacteria*, aerobic as well as anaerobic. Most organisms I have studied were pigmented, and somehow I have always been attracted to those prokaryotes that can be recognized by their bright colors. My studies on hypersaline environments and the microorganisms inhabiting these led to the discovery of a number of new types of *Archaea* and *Bacteria*, and therefore I had to familiarize myself with all that is needed for the description of new species and genera. During my career I have authored or co-authored descriptions of one new family, 16 new genera and nearly 40 new species of prokaryotes.

I got further involved in issues of prokaryote systematics when I became active in the International Committee on Systematics of Prokaryotes (ICSP). It started with memberships in a number of subcommittees that deal with taxonomic issues for groups of organisms with which I am particularly familiar: the Subcommittees on the Taxonomy of *Halobacteriaceae* of which I serve as the secretary, the Subcommittee on the Taxonomy of Phototrophic Prokaryotes, and the Subcommittee on the Taxonomy of *Halomonadaceae*. Quite unexpectedly I was elected chairman of the ICSP at its meeting in Paris in 2002; at the time I was an outsider who had never been a member of the committee before (and formally my election was even in violation of the ICSP statutes!). Thus my involvement as past chairman and current executive secretary/treasurer can also be added to my credentials for Editor of IJSEM, the official journal of the ICSP.

The rules of the International Code of Nomenclature of Prokaryotes, including the registration and indexing of validly published names of taxa up to the rank of Class in IJSEM, provide an admirable framework, as at all times it is exactly known which prokaryotes have been described with names that have standing in the nomenclature (Tindall et al., 2006). The cyanobacteria are an exceptional case here, as their nomenclature is traditionally covered by the International Code of Botanical Nomenclature (recently renamed the International Code of Nomenclature for algae, fungi, and plants) (Oren and Tindall, 2005). I have recently summarized the role of IJSEM as a suitable platform for the publication of taxonomic papers dealing with this interesting group (Oren, 2011). A Special Committee on Harmonization of Nomenclature of Cyanophyta/Cyanobacteria (established by the General Committee on Botanical Nomenclature in association with relevant appointees from the ICSP and its Subcommittee on the Taxonomy of Phototrophic Prokaryotes) was recently appointed to bridge the gap between the two nomenclature systems for the cyanobacteria (Wilson, 2012). I serve as the secretary of this Special Committee.

I have thus in the past decade become more and more involved in issues related to prokaryote systematics and nomenclature, and I have served as an Associate Editor of IJSEM since 2001. I hope that the experience gained will enable me to perform my new duties as Editor of IJSEM in a satisfactory manner.

Being the Editor of IJSEM is a major assignment. Annually, the journal publishes 12 issues with a total number of about 3000 pages and more than 500 articles. As the official journal of the ICSP, it serves the community of microbiologists by keeping a record of novel prokaryotic names and by validly publishing new names in accordance with the rules of the International Code of Nomenclature of Prokaryotes, both in the Validation Lists in which names of new organisms published in other journals obtain standing in the nomenclature and in the original articles (Tindall et al., 2006).

A unique feature of IJSEM is the low rate of rejection of taxonomic papers with description of new taxa submitted to the journal. When an organism was isolated that merits description as a novel species, it always has been the policy of the editors, reviewers, and editorial office staff to assist the authors as much as possible in publication of their papers. The editors and reviewers often spend much time and effort in guiding the authors on how to improve the quality of their manuscripts so that the current standard for species descriptions can be met. I never consider this as wasted time. To educate the community of microbiologists worldwide on how to produce state-of-the-art species descriptions is one of our most important tasks. This task has become somewhat easier recently since the publication of a uniform set of standards for the description of new species of prokaryotes (Tindall et

al., 2010). Thus, there now are detailed instructions to guide authors on how to fully document the properties of newly isolated organisms toward their description as new taxa. These guidelines are based on a "polyphasic" approach. For a complete characterization of a newly discovered organism, genotypic information (small subunit rRNA gene sequence, multilocus sequence typing or even a complete genome sequence) is not sufficient; a thorough characterization of the phenotypic and chemotaxonomic properties is needed as well. These guidelines are now used not only by the editors of IJSEM but also by editors of other journals that publish new species descriptions. As a result, the standard of the description of new taxa toward the valid publication of their names has markedly improved in recent years. When following such guidelines, authors can be confident that their papers will be accepted for publication in IJSEM. When, from time to time, the editors must reject papers that do not meet the current standards, we encourage authors to resubmit their papers after the additional work necessary for a complete description of a new taxon has been completed.

Another special feature of our journal is the involvement of specialized chemotaxonomy and nomenclature reviewers. While all the members of the editorial board have at least a basic knowledge of matters related to chemotaxonomy and nomenclature issues, the quality of the reviewing process is greatly enhanced by the work of specialists. Hans-Jürgen Busse is always willing to check issues of lipids, fatty acids, quinones, polyamines, cell wall components, and other chemotaxonomic properties which are an integral part of "polyphasic" description of new taxa. All new names proposed in the journal are checked by our nomenclature reviewers Bernhard Schink and Jean Euzéby; the latter also serves as the journal's List Editor. Prof. Euzéby has notified us that he will retire in July 2013. At the Editorial Board meeting held in August, it was decided that the task of List Editor, involving the preparation of the Notification Lists and the Validation Lists published in IJSEM, will be taken over jointly by George Garrity (chairman of the ICSP and chairman of the IJSEM editorial board) and by me. However, it will be much more difficult, if not impossible, to find someone with Jean Euzéby's encyclopedic knowledge of Latin and Greek and his profound interest in the nomenclature of the prokaryotes.

The journal never rejects manuscripts describing new taxa for the sole reason that they may be "uninteresting", "dull", "for the record only", and are therefore not likely to be cited in the future – reasons used by some other journals to reject otherwise sound manuscripts. When the organisms are novel and their descriptions are satisfactory and meet the current standards, IJSEM will publish those descriptions and record the new names based on the rules of the Code. It is always possible that some of those species will later become popular objects of research, for example when the ongoing sequencing projects of the genomes of type strains of prokaryote species will show the presence of genes of special interest.

A somewhat unfortunate result of this editorial policy is the rather low impact factor of IJSEM. Many of the species descriptions published "for the record only" are seldom cited, if at all. Another explanation for the lowered impact factors in the past years is the sharp increase in the numbers of papers published annually (546 papers in 2011, nearly double the number of 287 in 2000). The impact factor of 3.187 in 2003 dropped gradually to 1.930 in 2010. I was pleased to see a reversal of this trend in 2011, when the impact factor rose to 2.268. I hope that this trend will continue in the coming years.

The editorial staff of the journal at the headquarters of the Society for General Microbiology in Reading, UK, is extremely efficient, competent, and dedicated to the timely publication of good papers in a high-quality journal. However, a major problem currently exists: there is a large backlog of papers waiting to be printed. Presently the time between acceptance of a "standard" manuscript with descriptions of prokaryotic species and the publication of the paper in the printed journal is nearly a year. This is highly problematic: as long as the paper has not appeared in print in its final form, the newly proposed names are not validly published according to the rules of the International Code of Nomenclature of Prokaryotes. The fact that soon after acceptance a temporary version, not yet copy-edited, is posted online on the journal's web site does not solve the problem. Some authors may therefore prefer publishing their descriptions of new

taxa in other journals that produce the final version of the article much quicker. The new names can then be submitted for rapid validation in the lists that appear bimonthly in IJSEM. Currently our publisher is searching for ways to reduce the backlog of papers. It must be noted that no such backlog exists for mini-reviews, articles in the categories "Evolution, Phylogeny and Diversity" and "Methods", and descriptions of new species of eukaryotic microorganisms. These are printed soon after acceptance. As soon as we will have the OK from the publisher to (temporarily) exceed the current limit of 3000 pages per year, the problem of the backlog can be solved.

When the name of the journal was changed from "*International Journal of Systematic Bacteriology*" to "*International Journal of Systematic and Evolutionary Microbiology*" in 2000, it was made clear that the journal is an excellent platform for the publication of papers on microbial evolution. However, in the period between January 2011 and September 2012, only 22 papers were published in the category "Evolution, Phylogeny and Diversity" and only two papers in the category "Methods". I encourage submission of papers on evolution, as well as papers on new methods and evaluation of methodologies used in microbial taxonomy. Mini-reviews on all aspects of systematics and evolution of microorganisms are also highly welcome.

I am looking forward to collaborating with all members of the journal's excellent and highly committed Editorial Board and with the new Associate Editors to be recruited to replace retiring colleagues, with the staff of the editorial office in Reading, with the Society for General Microbiology which publishes the journal, and with the ICSP and its Executive Board. And, most importantly, I look forward to working with authors to assist the publication of high-quality papers describing new prokaryotic and eukaryotic microorganisms, new methods for the study of taxonomy and systematics of microorganisms, and new insights obtained by the application of such methods. And last but not least, mini-reviews highlighting different aspects of the discipline are always welcome.

Aharon Oren

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Bergey's International Society for Microbial Systematics (BISMiS)
Full Membership Application Form

The Society invites applications for full membership from any person who is interested in the subject of microbial systematics and holds a bachelor's degree in microbiology or a related subject.

The annual dues are US$50.00. Members are entitled to receive the journal *The Bulletin of BISMiS*, which is published twice a year, and the Bergey's Manual Trust Newsletter, *The Microbial Taxonomist*. Full members will also receive a reduced registration fee for attendance of meetings.

Memberships will be renewed on 1 January of each year. Unless indicated otherwise, applications received before 1 November will be credited to the current year. Applications received after 1 November will become effective the following year. Return the form with payment to: **BISMiS, Bergey's Manual Trust, 527 Biological Sciences Building, The University of Georgia, Athens, GA 30602-2605, USA or by Fax to +1-706-542-6599**.

Alternatively, please join BISMiS online using our secure credit card facility at www.bismis.org.

First name: _____ Initial(s): _____ Last name: _____

Title: _____ Email address: _____ _____

Mailing address

Street: _____

City: _____ _____

State and Zip/Post Code: _____

Country: _____

Phone no. incl. Country/Area Code: _____

Highest degree: _____ Year received: _____ Subject: _____

Degree-granting institution: _____

Current position: _____

Applicant's signature: _____

Membership dues			Amount paid
Full member	US$	50.00	_____
Full member renewal	US$	50.00	_____
Lifetime	US$	500.00	_____
Institutional	US$	1000.00	_____

Credit card no.: _____ Name on card: _____

Card type: _____ Expiry date (mm/yy): _____ Card ID (CVV2/CID) no.: _____

Checks in US$ should be made payable to: Treasurer, Bergey's International Society for Microbial Systematics.

Bergey's International Society for Microbial Systematics (BISMiS)
Student Membership Application Form

The Society invites applications for student membership from any person who is interested in the subject of microbial systematics and is enrolled as an undergraduate or graduate student in microbiology or a related subject.

The annual dues are US$30.00. Student members are entitled to receive the journal *The Bulletin of BISMiS*, which is published twice a year, and the Bergey's Manual Trust Newsletter, *The Microbial Taxonomist*. Student members will also receive a reduced registration fee for attendance of meetings. Memberships will be renewed on 1 January of each year. Unless indicated otherwise, applications received before 1 November will be credited to the current year. Applications received after 1 November will become effective the following year. Return the form with payment to: **BISMiS, Bergey's Manual Trust, 527 Biological Sciences Building, The University of Georgia, Athens, GA 30602-2605, USA or by Fax to +1-706-542-6599**.

Alternatively, please join BISMiS online using our secure credit card facility at www.bismis.org.

First name: _____ Initial(s): _____ Last name: _____

Title: _____ Email address: _____

Mailing address

Street: _____

City: _____ _____

State and Zip/Post Code: _____

Country: _____

Phone no. incl. Country/Area Code: _____

Degree in progress (BS, BA, MS or PhD, etc.): _____ Subject: _____

Degree-granting institution: _____

Head of Department*: _____

**Head must write a brief supporting letter verifying that the student is in their department, and it must accompany the application. For online applications, please send letter to the address above or by email to bergeys@uga.edu.*

Applicant's signature: _____

Membership dues			Amount paid
Student member	US$	30.00	_____
Student member renewal	US$	30.00	_____

Credit card no.: _____ Name on card: _____

Card type: _____ Expiry date (mm/yy): _____ Card ID (CVV2/CID) no.: _____

Checks in US$ should be made payable to: Treasurer, Bergey's International Society for Microbial Systematics.