

# THE MICROBIAL TAXONOMIST

A Newsletter Published by Bergey's Manual Trust

## Welcome From the President of BISMIS

Brian Austin



As my Presidency gets underway, I am focusing on two goals. First, we need to increase the membership, especially by targeting members of the culture collections and known microbial taxonomists. Secondly, I am looking forward to working with Kamlesh Jangid, our Secretary and the Convenor of the local organising committee, in developing the second conference in Pune, India during September 2016.

One suggestion that has already been made is that we should include a session on cultures and culturing. This is a topic of great interest to me because, despite the developments in culture-independent techniques, we still rely on pure cultures to carry out much of our work. However, it is all too apparent that there is a reliance on traditional culturing methods, which are not always appropriate, particularly when dealing with organisms from the natural environment. As scientists, we often forget about the types and concentrations of nutrients that are likely to be available to an organism in its natural habitat. It is far easier to use readily prepared commercial preparations than to formulate special purpose media.

But what of the cultures themselves? There is an assumption that a pure culture is essentially a clone of a single cell. Yet, there is evidence that cultures may comprise genetically diverse collections of cells in essence sharing a common pool of genes. In other cases, the so-called pure cultures may comprise microbial consortia with two or more species interacting together and displaying a single phenotype. Several years ago, one of my students was working with a culture of an aquatic

purple-pigmented bacterium which, when stressed, revealed the presence of cells of a second taxon, the fish pathogen *Aeromonas salmonicida*. There was not any indication for the presence of the aeromonad until the stressor was applied. Yet, *A. salmonicida* is biologically interesting in its own right. Cells contain as much as 40% of their DNA on plasmids. In addition, bacteriophage DNA may contribute extra genes to the cells. We await the availability of a plasmid- and bacteriophage-free culture.

Taxonomy is certainly at the forefront of science as we encompass new technologies. The importance of taxonomy to studies of biodiversity should not be understated. Whereas taxonomy may not have been attracting the research funding, biodiversity certainly does. To finish on a critical note, I have a personal dislike for the current trend of naming most new taxa on the basis of only single cultures. Personally, I encourage colleagues to try to obtain multiple cultures before embarking on a naming process. Notwithstanding, I see a great future for microbial taxonomy, and look forward to the challenges ahead.

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## A New Executive Board for the ICSP

*Milton S. da Costa, Chair ICSP*

A new Executive Board (EB) of the International Committee on Systematics of Prokaryotes (ICSP) was elected at the Plenary Session held on July 31<sup>st</sup> during the Congress of the International Union of Microbiological Societies (IUMS) in Montreal, Canada. The new EB consists of the following:

Chair (Milton S. da Costa)  
 Vice-Chair (Fred A. Rainey)  
 Executive Secretary (Lenie Dijkshoorn)  
 Treasurer (William B. Whitman)  
 Secretary for Subcommittees (Daniel R. Brown)  
 Members-at-Large (Stephanus N. Venter and Erika M.Tóth)  
 Chair of the Judicial Committee (Brian J. Tindall)

The ICSP works within the framework of the IUMS and is responsible for matters associated with prokaryotic nomenclature and systematics. This committee includes a number of subcommittees that oversee matters related to the taxonomy of some specific groups of prokaryotes. One of the primary functions of the ICSP is the publication of the International Code of Nomenclature of Bacteria, commonly called the Bacteriological Code, and the International Journal of Systematic and Evolutionary Microbiology (IJSEM) where the names of new taxa must be validated when published in other journals.

The EB-ICSP is now guided by revised Statutes that were updated and modified at the Plenary meetings of the ICSP in Montreal.

Within the ICSP, the Judicial Commission is responsible for ruling on any problems, which arise in the nomenclature of prokaryotes, and serves as the editorial board of the Bacteriological Code. Thus, it is responsible for overseeing and publishing changes to the published version of the Code.

Electronic meetings are now permissible with the new Statutes, making it possible to conduct meetings among the members of the EB-ICSP. In this way the EB will have the opportunity to meet regularly or when important matters arise. The new EB will strive to advance modern taxonomy in an era where genomics have come to be

## Update on Bergey's Manual of Systematics of Archaea and Bacteria

*Fred A. Rainey, Chair, Bergey's Manual Trust*

We have continued to work with John Wiley & Sons, Inc. the new publisher of Bergey's Manual of Systematics of Archaea and Bacteria (BMSAB) as we prepare to launch this new online product in 2015. The initial phase of the project involves the reformatting of legacy material into an online searchable form. The second phase will involve the solicitation of new and updated manuscripts that will be peer-reviewed and edited before being added on a regular basis to the existing material. We plan to start the solicitation of new material early 2015.

The Board of Trustees of Bergey's Manual Trust has appointed two new Trustees to help on the new Manual: Dr. Svetlana Dedysh who is the Head of the Laboratory of Wetland Microbiology at Winogradsky Institute of Microbiology in Moscow, Russia and Dr. Brian Hedlund from the School of Life Sciences at University of Nevada, Las Vegas, USA. These new editors bring the number of Trustees to eight. We are looking forward to working with old and new contributors in the coming years as we make Bergey's Manual content available to a wider audience through the online portal.

important for assessing the relationships of organisms, just as 16S rRNA gene sequencing and analysis caused a revolution in taxonomy more than two decades ago.

The EB-ICSP believes that nomenclature has to be correctly applied based on the Bacteriological Code and also believes that there are new possibilities to pursue to make taxonomy even more visible and appreciated than it is now perceived to be. The board will work to make the ICSP more visible to the general community of the microbiologists who study the taxonomy of bacteria and archaea.

## Actinobacteria in Mexico

Luis A. Maldonado and Erika T. Quintana



Figure 1: Greetings from Mexico during a meeting in Cancún, June 2013

Search and discovery programs on bioactive compounds obtained from microorganisms have traditionally been oriented to the class Actinobacteria due to their intrinsic abilities to synthesize secondary metabolites. One could look for Actinobacteria “almost” everywhere. But no matter where you look, systematic studies to establish the accurate identity of the producing strain and its relationship(s) to previously described species are often overlooked. A major drawback from this latter approach is the re-discovery of the same old friends over and over, especially since dereplication strategies are generally also ignored. Given the intrinsic ability of the Actinobacteria and the vast amount of uncultured-unrecovered but reported microbial diversity, one approach would be to improve selective isolation methods and/or to search for Actinobacteria in unusual or “hotspot” places.

Mexico is considered as one of the top hot-spots places in the planet and, therefore, is also a “*microbial hotspot*”, not only for Actinobacteria but also for any

other microbial group(s). Our research is oriented to unravel a little part of such inherent actinobacterial biodiversity in Mexican ecosystems, namely from aquatic and terrestrial environments. Selective isolation methods (both “new” and “old”) to recover a minor part of such actinobacterial diversity can be coupled to molecular biology techniques to secure robust and solid biological databases for each isolate, based not only on 16S rRNA gene sequences and/or other highly conserved genes, but also on genomic fingerprints, both of which may or may not eventually be overrun by genome sequencing. Biological databases for each isolate normally include chemotaxonomic markers and a full range of phenotypic traits to create a full and true profile for each isolated Actinobacteria and for comparison purposes when identifying putative novel genera/species.

Current projects mostly focus on *in vitro* activities of our Actinobacteria isolates against bacteria and fungi and the search for novel species that may

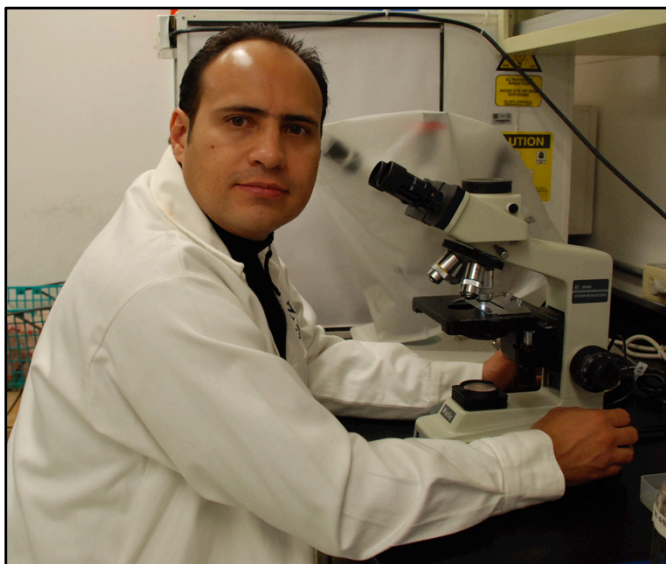


Figure 2: Luis A. Maldonado at the bench. Genome sequencing still cannot tell you about the microscopic traits of a strain

produce novel bioactive compounds. Lecturing is an integrative part of this strategy in order to promote microbial systematics and its importance at all levels from bioprospecting and clinical perspectives. Luis concentrates on Actinobacteria from aquatic origin while Erika on the terrestrial counterpart(s). Their work is supported by a major collaborative agreement between their two academic institutions; the Universidad Nacional Autónoma de México (UNAM) and the Instituto Politécnico Nacional (IPN), respectively. This secures a constant flow of students from both institutions to tackle the unexpected-unforeseen but yet uncultivated actinobacterial diversity.



Figure 3: Erika T. Quintana taking notes during the first BISMIS meeting in Beijing, May 2011

## Get Ready for BISMIS 2016

*Kamlesh Jangid*

Continuing on from the grand success of the first two BISMIS meetings, the third meeting of the society will be held from September 12-15, 2016, at the newly formed Microbial Culture Collection (MCC) in Pune, India. BISMIS-2016 will focus on the *changing face of microbial systematics and the use of genomics/envirogenomics data for description of novel taxa*. Although a session was dedicated to this theme in the recently concluded BISMIS-2014 meeting, the interesting discussion that followed the session and vast information generated from the merger of these two branches demands that the next meeting be focused on this aspect.

### Plan for the Meeting

Venue for BISMIS-2016 will be MCC (located at Sai Trinity Complex, Pashan, Pune- 411021, India), whereas accommodation will be arranged in nearby hotels. Vehicles will be arranged by the host to pick-up and drop-off participants.

The Bergey's Award presentation and lecture by the recipient will mark the opening of BISMIS-2016. An opening mixer will follow this in the evening. The remaining three days of the meeting will begin with a sunrise talk by renowned systematists, followed by theme-based sessions that will include talks by the session chair and speakers along with poster presentations. The specifics of the sessions will be decided in due course depending on how the field is developing or influenced in the next two years by some newer methods. An Indian cultural program performed by local student artists is planned before the closing dinner on the last day of the meeting.

### Travel Awards for Students

A total of four-student travel awards; two each for international (max \$1500 each) and national (max \$400 each) participants are planned. The awards will cover travel and accommodations, but not registration for these participants.

### Industry Sponsors

HiMedia® and ThermoFischer Scientific®, India, have kindly agreed to sponsor the BISMIS meeting.

### Ancillary Workshops during BISMIS-2016

BISMIS-2016 is strategically sandwiched between two other important events planned at that time. Proceeding BISMIS, a board meeting of the National Biodiversity Authority, India, which governs the exchange of biological samples between countries, will be held in Pune. Inputs from renowned microbial systematists, some of whom would be participating in both meetings, are likely to change obsolete laws to allow a more open exchange of cultures for taxonomic purposes by Indian researchers.

While BISMIS will offer an unique opportunity to exchange specialized expertise, a more general one-and-half-day workshop is planned immediately following BISMIS. This workshop will specifically target undergraduate and master students from nearby colleges and universities and will contain general talks on microbial systematics and ecology by some of the invited speakers to generate interest for the field among the younger generation. The participation for this workshop is limited to 350.

### About Pune

Known as 'Oxford of the East', the city of Pune (formerly known as Poona) has a rich legacy in education. It is the seventh largest metropolis in India and the second largest in the state of Maharashtra (Fig. 1). Being the cultural capital of Maharashtra, the city has always had an intrinsic connection with history, theatre, music, arts and literature and been a centre of learning and research in all fields (Fig. 2). It is home to more than a hundred educational institutes and nine universities.

Pune has a rich microbiology history. The first laboratory of Microbiology, the original 'Imperial Bacteriological Laboratory', was established in December 1889 at the College of Science at Pune. Pune is also the birthplace of biotechnology / industrial microbiology in India with the establishment of the 'Penicillin Factory' at Pimpri, Pune, in 1952. It is probably due to the early exposure to science that Pune is home to some of India's important research institutes, including several military and armament research organisations. With so many centres of international repute and larger research involvement in microbial systematics, organizing BISMIS in Pune was an obvious choice.



Figure 1: Location of Pune on the map of India. Source: Google Images

### About the hosts

MCC, which is affiliated, with the National Centre for Cell Science, Department of Biotechnology, Government of India will host BISMIS-2016. Established in 2008, MCC now holds the largest collection of microbes in India and second largest in the world. It is amongst the topmost provider of services to the nation in the field of microbial systematics and is actively involved in research in the field of culture preservation, microbial ecology and systematics, bioinformatics and other allied branches of microbiology. It is registered with the World Federation of Culture Collections, is an International Depository Authority under the Budapest treaty, and a Designated National Repository of the Ministry of Environment and Forests.

Along with MCC, the meeting will be co-hosted by the Pune unit of the Association of Microbiologists of India (AMI). Established in 1938, AMI is one of the oldest and reputed scientific organizations of the country. Since its inception, it has contributed significantly towards development of microbiology, particularly in areas of research, teaching and commerce. The Association publishes a quarterly journal, "Indian Journal of Microbiology" for the last 45 years and holds a National convention annually at one of the well-established centers of microbiology in the country.

A local organizing committee comprising Dr. Yogesh Shouche, Principal Investigator-MCC as the Chair, Dr. Kamlesh Jangid, Secretary-BISMIS, as the Convener and four other MCC-faculties will be responsible for the management and organization of the meeting.

BISMIS-2016 will be an excellent opportunity for researchers to empower themselves with the latest trends in the field of microbial systematics. In view of the significant contribution by Indian researchers to microbial systematics, this meeting will further motivate them to pursue research and contribute to the advancement of this field.

Indeed as rightly said by Prof. Michael Goodfellow during the opening session of the 'Workshop on Actinomycetes' at the Institute of Microbial Technology, India, 1992:

*"The Sun of Taxonomy is rising in the East"*

For more information contact:

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jangidk@nccs.res.in



Figure 2: Aga Khan Palace that served as a prison for Mahatma Gandhi. Source: Google Images.



Figure 3: Entrance of Shaniwar Wada, the palace of the Peshwa rulers until 1818 Source: Google Images.

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# Bergey's International Society for Microbial Systematics (BISMiS)

## Full Membership Application Form

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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 online *Bergey's International Society for Microbial Systematics Bulletin*, which is published twice a year, and the online 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](http://www.bismis.org).*

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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

Full member US\$ 50.00

Full member two years US\$ 100.00

Full member five years US\$ 200.00

Lifetime US\$ 500.00

Institutional US\$ 1000.00

This is a renewal: Yes or No

Amount paid

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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.

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# Bergey's International Society for Microbial Systematics (BISMiS)

## Student Membership Application Form

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

The annual dues are US\$ 30.00. Student members are entitled to receive the online *Bergey's International Society for Microbial Systematics Bulletin*, which is published twice a year, and the online Bergey's Manual Trust Newsletter *The Microbial Taxonomist*. Full members will also receive a reduced registration fee for attendance of

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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](mailto:bergeys@uga.edu).*

Applicant's signature: \_\_\_\_\_

Membership dues

Amount paid

Student member	US\$ 30.00	_____
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Student member renewal	US\$ 30.00	_____
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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.

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