The Microbial Taxonomist

A Newsletter Published by Bergey's Manual Trust

MIKE GOODFELLOW AND PETER KÄMPFER BECOME NEW CHAIR AND VICE CHAIR

New officers were elected to fill the Chair and Vice-Chair positions of Bergey's Manual Trust at the Salem, Massachusetts, meeting of Bergey's Manual Trust on May 30 – June 1, 2008. The newly elected Chair is Michael Goodfellow. Professor Goodfellow is currently Chair of the Department of Microbiology at the University of Newcastle and previously served as Vice Chair of the Trust. Peter Kämpfer was elected to the Vice Chair position. Professor Kämpfer is located at the Universität Giessen in Germany and currently Editor-in-Chief of the International Journal of Systematic and Evolutionary Microbiology.

Other officers remain as is, namely William Whitman as Director of the Editorial Office and Treasurer and Fred Rainey as Secretary. Aidan Parte will continue as Managing Editor. Jim Staley, the former Chair retired from the Trust at the time of the meeting but will continue to serve the Trust as an Emeritus Trustee, Contributing Editor of the *The Microbial Taxonomist* and Editor of Volume 4 of the second edition of *Bergey's Manual of Systematic Bacteriology*.

JUERGEN WIEGEL RECEIVES 2007 BERGEY AWARD

Juergen Wiegel was presented the Bergey Award at the International Union of Microbiological Societies meeting in Istanbul, Turkey on August 18, 2008. Professor Wiegel received his BS, MS and PhD degrees as well as his Habilitation at the University of Göttingen, Germany. In 1977 he became a Research Associate and subsequently an Associate Professor at the University of Georgia where, in 1990, he was promoted to full Professor in the Department of Microbiology.

Professor Wiegel has served on numerous editorial boards and on national and international committees. He is a member of the American Academy of Microbiology.

Professor Wiegel has made considerable contributions to microbial taxonomy. He described the family *Clostridiaceae* and many genera for the first and second editions of *Bergey's Manual of Systematic Bacteriology* as well as *The Prokaryotes*. He is an expert on *Xanthobacter*, *Thermosyntropha*, *Gracilibacter*, *Desulfitobacterium*, *Thermoanaerobacterium*, *Anaerobranca*, *Carboxydothermus* and *Thermo-anaerobacter*. In addition, he has conducted research on the microorganisms that are involved in important biochemical transformations, including the acetogenic bacteria, anaerobic and thermophilic cellulolytic bacteria, bacteria involved in ethanol and butanol fermentations, thermoalkaliphilic anaerobes and bacteria responsible for reductive dehalogenation.

More recently Professor Wiegel and his colleagues have described a group of extremophiles able to grow under the combination of high salt, alkaline pH and high temperature; the halophilic alkalithermophiles. "To imagine this habitat," his colleague Dr Noha Mesbah says, "mix 250 ml of drain cleaner and 1 kg of salt in 8 liters of water. Then heat to 60°C." These bacteria constitute the novel order *Natranaerobiales* within the phylum *Firmicutes*."

One of his best known publications is one in which he distinguishes between the Gram stain and Gram type of an organism. The bacterial species *Thermoanaerobacterium wiegelii* has been named in his honor.

Volume 3 launch at FEMS meeting in Gothenburg

You are cordially invited to attend a reception in celebration of the launch of Bergey's Volume 3 at the Springer booth (#24A) on Monday, June 29th at 3:00pm.

You will be able to preview pre-publication copies of the much-anticipated third volume and order copies at a 20% discount!

JAMES T. STALEY—AN INQUIRING MIND

On Jim Staley's retirement from the Trust.

Microbes of desert varnish in Death Valley? Psychrophiles in polar sea ice? Tubulin homologs in bacteria? Microbial gas vesicles? Organisms that grow on phenanthrene? These are just a few of Professor James T. Staley's many interests during his distinguished career in microbial diversity.

Jim Staley received his BA degree at the University of Minnesota, MSc from Ohio State University, and PhD from the University of California, Davis. He is presently an emeritus faculty member of the University of Washington, Seattle. Jim has served as Chairman of the Bergey's Manual Trust since 2000 and is a member of the editorial boards of several journals, as well as a member of the American Academy of Microbiology. In addition to over 100 research articles, Jim is also the senior author of a major general microbiology textbook, *Microbial Life*, now in its second edition.

Jim has been a wellspring for exciting projects in microbial diversity. After the eruption of Mount St. Helens in 1980, Jim was soon at the site taking samples from the lakes that had been in the blast zone. He showed that these lakes quickly exhibited tremendous increases in heterotrophic bacterial numbers compared to their normal oligotrophic state. The increases were probably due to the extensive leaching of organic materials in the watersheds due to the devastation and decomposition of the indigenous flora and fauna.

Jim's interest in other inhospitable environments on earth led him to wonder about the nature of "desert varnish," a type of a dark coating on desert rocks that contains clay minerals. Jim's recent use of culture-independent methods to analyze the varnish on rocks in Death Valley, California showed that a wide variety of prokaryotic microorganisms occur in varnish coatings, including non-thermophilic crenarchaeota. In contrast to hot, arid deserts, the frigid environments of the Arctic led Jim to isolate *Psychromonas ingrahamii* from a sea ice core from Point Barrow, Alaska. This remarkable organism grows at –12 to 10°C and has gas vesicles. In fact, gas vesicles have long fascinated Jim, beginning with *Microcyclus* (now *Ancylobacter*) in 1971. In regard to other "tough" environments, Jim has investigated creosote-contaminated marine sediments, which led to his discovery of *Vibrio cyclotrophicus*—an organism that can actually use phenanthrene and naphthalene as sole carbon and energy sources. Jim's interest in unusual bacteria that live in oligotrophic environments is also evident from his naming of several prosthecate genera, including *Prosthecobacter*, *Prosthecomicrobium*, and *Ancalomicrobium*.

Jim's experience with the diversity and taxonomy of environmental bacteria was highly valued when he joined the Bergey's Trust in 1976. At the beginning of the 1980s, Jim and the other Trust members were deeply involved in the transition of *Bergey's Manual* from a merely determinative work to a much broader systematic work.

DAVID BERGEY HONORED AT DEDICATION OF MILESTONE IN MICROBIOLOGY

The Laboratory of Hygiene at the University of Pennsylvania, where David Bergey studied, conducted research and taught from 1893-1931 was designated a Milestone in Microbiology by the American Society for Microbiology on May 15, 2009. On hand were the archivist from the Eastern Pennsylvania branch of the ASM, James Poupard, the president of the ASM, Alison O'Brien, Treasurer of BMT, Barny Whitman, and a host of interested microbiologists. Other Milestones include the Hopkins Marine Station, where Cornelis B. van Niel offered his famous summer course.

Barny Whitman (l) and James Poupard standing in front of the plaque.

Jim and the other editors decided to ask the most knowledgeable authorities on the various taxa to prepare the individual chapters, thus allowing the *Manual* to become a truly international project. In the 1970s and early 1980s, various methods to determine phylogenetic relatedness using molecular phylogenetic approaches were being done, but at differing levels of resolution and interpretation, and many of the studies were fragmentary. For these reasons, the Trust decided not to attempt a general phylogenetic classification; instead, they opted for an interim classification in which the higher taxa were arranged mainly according to traditional phenotypic features. Jim's excellent choice of authors and his fine editing allowed Volume 3 of the *Manual* to cover the most diverse collection of prokaryotes of any of the four volumes—a vast array of the chemoautotrophs, myxobacters, gliding nonfruiting bacteria, budding and appendaged bacteria, the nonoxygenic and oxygenic phototrophs, and the archaeobacteria (now the *Archaea*).

Like many other taxonomists, Jim has long been puzzled by the relatively low number of prokaryotic species (about 5,000), seemingly in contradiction to the great genetic diversity of microbial life. After all, there are about 900,000 known insect species; should not prokaryotes also have a great number of species? As Jim has noted, the present definition of a bacterial species is far too broad, although it has served microbiology fairly well in the past. Conceptually, the bacterial species is in fact in a state of dynamic genetic flux, and Jim recently proposed the genomic–phylogenetic species concept (GPSC) [Phil. Trans. R. Soc. B (2006) 361, 1899–1909], in which species are considered to be an irreducible cluster of organisms that can be distinguished from other such clusters and in which there is a parental pattern of ancestry and descent. Jim has suggested that a detailed sequencing of the genomes of organisms that are closely related by DNA–DNA hybridization and/or rDNA sequencing but that have been isolated from geographically disparate locations or from phylogenetically different hosts could greatly aid our understanding of prokaryotic speciation. For instance, his work on the taxonomy of *Simonsiella* bacteria—large trichomes that glide along the epithelial surfaces of the mouth and upper respiratory tract of humans and other mammals—has suggested that the divergence of the genus into host-specific ecospecies was forced by speciation events in the mammalian hosts. Similarly, environmental factors associated with different geographical locations may force speciation by selecting for certain genes, such as those acquired by lateral gene transfer.

With his love of microbial diversity and his sense of excitement in studying and classifying organisms from unusual habitats, Jim continues to exemplify all that is best in microbiology, in the tradition of Leeuwenhoek, Cohn, and Stanier.

Noel Krieg

PUBLICATION MATTERS

The last content for Volume 3, excepting the front matter and an appendix, were sent to press in early November. Right now, we are almost finished checking the first round of revised proofs. Other tasks that remain include obtaining the last few missing copyright and permissions forms from the authors. A pre-production copy of Volume 3 will be available at the Springer booth at the FEMS meeting in Göteborg, Sweden, at the end of June.

Volume 4 is well into its editorial phase, with only a small amount of content yet to be accepted. We are aiming to start sending content for typesetting in the summer, for a late-2009 publication.

Volume 5 is also coming along well, with 170 accepted chapters in hand. We have started copy-editing this material already, so our freelance copy-editors are kept busy.

Aidan Parte, Managing Editor

FERGUS PRIEST AND JIM STALEY RECEIVE BERGEY'S MEDALS

Fergus Priest and James Staley were each awarded the 2008 Bergey Medal, which is given in recognition of life-long contributions to the field of systematic bacteriology. Fergus recently retired as Head of the School of Life Sciences at Heriot-Watt University in Edinburgh, UK. During his distinguished career that spanned more than three decades, he made lasting contributions to the systematics of *Bacillus* and related genera. Moreover, he had the good fortune to study the microbiology of malt whiskies. See the more detailed account of his career the newsletter

Jim recently retired from the Bergey's Manual Trust, in which he had several different roles since become a trustee in 1973 – a very long sentence indeed! See the more detailed account of his career the newsletter.

INTERNATIONAL SOCIETY FOR MICROBIAL TAXONOMY

Following the session sponsored by Bergey's Manual Trust at the Istanbul IUMS meeting, there was a meeting for those interested in the formation of an International Society for Microbial Taxonomy. About 50 scientists attended the lunch hour meeting. Jim Staley, the outgoing Chair of Bergey's Manual Trust led the discussion. He mentioned that he believed there were several main goals that could be achieved by the proposed society. First it would enable microbial taxonomists to have a social network of members who could come to know one another better and allow them to share information. Second, it would enable better scientific communications with one another through the Internet. Third, the society could organize meetings and other events that members wished to pursue. Finally, the society could serve as an advocacy group for microbial taxonomy. At this time, microbial taxonomy is a small subfield within microbiology that has relatively few scientists in each country. However, if taxonomists organized on a global scale they could develop a critical mass that could provide political clout on addressing issues of importance to science and society. Thus, the society could make policy recommendations to countries on funding research and education needs in the field.

The ensuing discussion lasted about 30 minutes and then attendees were asked to complete a questionnaire expressing their interest in the society. Other questionnaires were received through the Internet for a total of 67.

Results of the questionnaire

1. Should a society be formed? 60 yes, 1 undecided

2. Would you join such a society? 60 yes, 1 undecided

3. What type of service would you want to see?

Newsletter: 49 yes; On-line chat room, 29 yes; Workshops, 36 yes; Meetings with IUMS, 31 yes; ; More frequent meetings, 22 yes; Special ad hoc meetings, 23 yes.

4. Should there be an honorific group?* 37 yes.

5. Should there be a journal? 28 yes.

6. Other suggestions?

Many answered this last question and expressed a variety of interesting views. Bergey's Manual Trust will communicate with those who have returned the questionnaires and include them on the Newsletter mailing list. A decision will be made at the annual meeting on whether to pursue the formation of the society.

**The purpose of an honorific group would be to provide a means of recognizing those who have made significant contributions to microbial taxonomy. This honor would be viewed as an important factor that would enhance the standing of the honorees in the eyes of other microbiologists. The honor would be useful professionally because it could enhance promotions within the individual's department and university, aid with competition for grants and allow appropriate recognition for services to the greater scientific community.*

Jim Staley

FERGUS PRIEST: A MAN OF MANY PARTS

Fergus (Gus) was first introduced to systematics in his undergraduate days in the Department of Microbiology at the University of Newcastle where he was taught in his final year by a newly appointed lecturer, Mike Goodfellow. He moved to the University of Birmingham in 1970 and three years later completed his PhD thesis on the "Taxonomy and industrial significance of a common brewery bacterium: *Obesumbacterium proteus*". His next move was to Heriot-Watt University in Edinburgh where he was appointed a Reader (1994) prior to being appointed to a Personal Chair (1996). He was awarded a D.Sc. by Heriot-Watt University in 1995 based on his contributions to microbial systematics.

At Heriot-Watt, Gus developed his interests in applied prokaryotic systematics maintaining his commitment to studying the microbiology of brewing. In particular, he characterized a host of lactobacilli isolated from Scotch malt whisky distilleries, an arduous task that involved the collection of samples from distilleries across the length and breadth of Scotland. However, he may well be best remembered for his many contributions to the systematics of aerobic, endospore-forming bacilli, almost invariably from an applied perspective that became his trademark. He is well-known for his elegant work on the systematics of the insect pathogen *Bacillus sphaericus*. In more recent times he had been heavily involved in trying to unravel the complex systematics and evolution of members of the *Bacillus cereus* group, notably *B. anthracis*, *B. cereus* and *B. thuringiensis*, an area that has taken him into the realm of population genetics and thence into studies on the origins of pathogenesis in these fascinating organisms. These research journeys have led to an impressive flow of high quality original papers though he has also written several excellent review articles, as well as writing the chapter on the genus *Paenibacillus* for the current edition of Bergey's Manual of Systematic Bacteriology.

Until recently, Gus was Head of the School of Life Sciences at Heriot-Watt, a role that involved him in twelve years of administrative work! It is also very much to his credit that he found time to play an active role in the UK Society for General Microbiology, serving as Editor of the Journal of General Microbiology (1984-1989) and Convener of the Microbial Systematics Group (1987-1993). In addition, he has excelled as a teacher, PhD supervisor and external examiner. It is clear that Gus has made remarkable contributions to systematics across the board and is a most worthy recipient of the Bergey Medal.

Fergus receiving his medal from Karl-Heinz Schleifer at the FEMS council meeting.

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