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EDITORIAL

Year's comments for 1999

In contrast with what you may see elsewhere, INTERNATIONAL MICROBIOLOGY will not present you with discoveries and breakthroughs of the millennium, not even those of the century, in part because the century and millennium seem to end in December 31, 2000. No matter that scientists such as Stephen Jay Gould have kept explaining why it is so, and even the highest authority in Spain has stated his agreement with scientists, celebrations of the turning of the millennium have been scheduled around the world for December 31, 1999. We will comment on events and discoveries of only 1999. Among the notable discoveries, one is entitled to enter the book of records: a bacterium that exceeds by up to 100-fold the biovolume of the largest known prokaryotes was described (Schulz et al., *Science* 284:493–496). This huge sulfur bacterium was found in large populations in continental shelf sediments underlying the oxygen minimum zone of the Benguela Current upwelling system, off Namibia coast. The name *Thiomargarita* [pearl of sulfur] *namibiensis* is suggested for this organism. Mariona Hernández Mariné, from the School of Pharmacy of the University of Barcelona is one of the authors of the article. The mass media have no paid much attention to this finding, probably because the authors did not pretend that the newly-discovered organism could have any application in the cure of cancer.

Cover of the April 16, 1999, issue of *Science*. The photograph corresponds to the large sulfur bacterium *Thiomargarita*, which was discovered in sediments off the coast of Namibia. The image was taken by Ferran Garcia-Pichel. One of the authors of the article (Schulz et al. *Science* 284:493–495) is Mariona Hernández Mariné. (Reprinted with permission. Copyright 1999 American Association for the Advancement of Science.)

As in previous years, because of their roles as gene vectors in biotechnology, microorganisms have been involved indirectly in public debates. Mass media have again devoted much time and space to "inform" the public of genetically modified organisms (GMOs); they talk about the potential dangers of the uncontrolled spread of genes with a pessimistic envisage. Environmentalists in most European countries have organized campaigns against GMOs and, along with the media, have influenced consumers to be reluctant to genetically modified products. The controversy aroused by topics such as the release of GMOs and human cloning make it obvious the need for what has been called "public understanding of science." According to the *Eurobarometer* published by the European Commission DG XII in 1997, when asked whom they trusted most about genetically engineered crops, only 6% of European citizens named universities and 4% public authorities. Some 26% trusted environmental organizations the most. The media released news of a nosocomial "epidemics" in Spanish Public hospitals caused by the fungus *Aspergillus* in late January. Even though health authorities made it clear that nosocomial infection levels in Spanish hospitals were similar—or even lower—to those in other Western countries, and that there was no reason for alarm, the lack of confidence in such authorities lingered. This example of the power of mass media in the spread of information reinforces the results of the European Commission survey. Nevertheless, a survey carried out by the Spanish Center for Sociologic Research in December 1998 revealed that 60% Spaniards believe that a cure for cancer will be found in the next ten years, and that a vaccine against AIDS will be achieved during the 21st Century.

The race for new total DNA sequences has increased its pace. At the end of 1998 the first sequence of an animal, the nematode

Caenorhabditis elegans, was published; it showed that the so called "higher" organisms do not differ radically from "lower" ones, as thought. Until November 1999, the complete microbial genomes published this year were those of *Helicobacter pylori* (Alm et al., *Nature* 397:176–180), *Chlamydia pneumoniae* (Kalman et al., *Nature Genet* 21:385–389), *Aeropyrum pernix* (Kawarabayasi et al., *DNA Research* 6:83–101) and *Thermotoga maritima* (Nelson et al., *Nature* 399:323–329). In the process of sequencing two major human parasites, chromosome 2 of *Plasmodium falciparum* and chromosome 1 of *Leishmania major* were also published. In addition, the sequences of *Campylobacter jejuni*, *Deinococcus radiodurans* and *Pyrococcus abyssi* were also completed but are not yet published. According to the Institute for Genomic Research (TIGR, www.tigr.org/tdb/mdb/mdb.html), the sequences of *Bacillus halodurans*, *Bartonella henselae*, *Corynebacterium glutamicum*, *Enterococcus faecalis*, *Methanosarcina mazei*, *Mycobacterium tuberculosis* (strain CSU#93, clinical isolate), *Mycoplasma mycoides* subsp. *mycoides*, *Porphyromonas gingivalis*, *Rhodobacter capsulatus*, *Streptococcus pneumoniae*, *Thermus thermophilus*, *Ureaplasma urealyticum*, and *Vibrio cholerae* are expected to be completed soon.

Over the last decades, infectious diseases such as tuberculosis and some sexually transmissible diseases have reemerged, whereas others, such as legionellosis and Lyme disease have been described for the first time. Fortunately, other diseases have disappeared. In 1980 the World Health Organization (WHO) announced the eradication of smallpox. Nevertheless, stocks of the variola virus, which causes the disease, have been kept in cultures in the United States (at the Centers for Disease Control and Prevention in Atlanta, Georgia) and Russia (at Vector, Russia's State Research Center for Virology and Biotechnology, near Novosibirsk). The WHO proposed those two remaining stocks be destroyed in 1966. The US first backed that proposal whereas Russia has always been against it. After a report from the Institute of Medicine in Washington DC, President Clinton decided that the US would also keep the virus stock. The decision of both countries was made official at the World Health Assembly held in Geneva in May this year. Among the reasons to justify not to destroy the virus is the potential loss of scientific research and the potential to develop treatments against other viruses such HIV. Those in favor of destroying it alleged that it would be the only way to prevent the reemergence of smallpox—provided that all countries kill the virus.

A gleam of hope in the fight against tuberculosis has been provided by the possible application of DNA vaccines. In experiments carried out in mice, besides preventing infection by *Mycobacterium tuberculosis*, DNA vaccines have proven to be efficient therapeutic agents which stimulate the immune system in infected individuals. Their combination with conventional chemotherapeutic antibacterial drugs can speed up the cure of the disease (Lowrie et al., *Nature* 400:269–271). (The DNA Vaccine Web, www.genweb.com/Dnavax.html, provides recent information on this kind of vaccines.) Another step to prevent infectious diseases for which no vaccines are yet available has been the discovery of a gene that controls the activity of other genes needed for the infection by *Salmonella typhimurium*. Bacteria in which the gene was eliminated no longer infected their host, although they still caused a strong immune response in mice (Douglas et al. *Science* 284:967–970). The same team found other regulator genes, such as *dam* (DNA adenine methylase), which is involved in DNA repair and in the formation of pili. The absence of the gene altered the expression of virulence. A new generation of antibiotics are anticipated to result from the search for drugs that block Dam.

This issue of INTERNATIONAL MICROBIOLOGY completes the second year of the renewed journal of the Spanish Society for Microbiology (SEM). The goals that the SEM aimed in relaunching the journal have been achieved: to produce an up-to-date visually attractive publication that keeps pace with other international journals. Our highest priority is to maintain an excellent standard of published articles. Three monographic issues have been published in this period (1998–1999): "Perspectives in non-conventional fungi research" (vol. 1[2], June 1998), "Ten years of CIBE-Merck Symposia" (vol. 1[4], December 1998) and "Microbial pathogenesis" (vol. 2[3], September 1999).

INTERNATIONAL MICROBIOLOGY publishes two kind of papers: Articles (either research and review ones) and Complements (editorials, perspectives and opinion). Through Perspectives and Opinion papers we generate snapshots of microbiology's history in the biological context. Such papers, not usually found on specialized scientific journals, have been welcomed by our readers. A novelty in the journal has been publishing color photographs. Unfortunately, our journal cannot afford the expense of color and must request the authors themselves cover it.

We have received 92 submissions of manuscripts in 1999. The four issues of the year comprise 32 Articles and 14 Complements, with a total of 290 pages. Do you remember that some people in Europe used special glasses to watch the solar eclipse in August 11? Now you will need also special glasses to see properly the 3D micrograph on the cover of this issue of INTERNATIONAL MICROBIOLOGY. We make a call to those of you who have good micrographs of viruses, bacteria, protists or fungi (see the cover's background of each issue). Please send them as soon as possible for tentative publication throughout 2000. The SEM is privileged to produce a "young" 50-year old microbiology publication that aims to be among the best in Europe. Please help us to achieve this goal by sending us your best scientific contributions and by asking your libraries and departments to take out an institutional subscription.

Ricardo Guerrero
Editor-in-Chief