Guest Editorial

Two years ago in May 1990 a Nato workshop on “New biosynthetic, biodegradable polymers of industrial interest from microorganisms” was held in Sitges, Barcelona. This meeting directed attention to polymers such as polysaccharides, polyesters and polyphosphates. The polyesters dominated. Therefore the organizing committee, which prepared the present symposium, restricted the theme of the scientific program to deal exclusively with the polyhydroxyalkanoates (PHA). In the meantime scientists understood that they discovered a goldmine of very special characters.

Already the classic poly-β-hydroxybutyric acid presents an intellectual challenge to understand its structure in vivo and in vitro, the significance as a storage compound and as a constituent of membranes, its association with proteins, polyphosphate and glycoproteins, its conversion, denaturation, reutilization, intracellular and extracellular degradation—in short, to understand its structure and function in the bacterial cell. The second special character of PHA research concerns the variety of monomers. More than 40 different monomers have now been detected as constituents of bacterial PHA. Each polymer will require as much research effort as the original polyester. The third special character of PHA’s concerns their suitability to provide plastic utensils and commodity chemicals. These properties together with the opportunity to produce them from renewable resources and their biodegradability render them highly acceptable to the public, especially since ecologically oriented arguments become increasingly important. In the year dedicated to remember Columbus we may feel like entering a new subcontinent of multidisciplinary research.

The progress in research on polyhydroxyalkanoates was covered in plenary lectures, short talks and posters. Only the authors of the oral presentations were asked to submit a review of their presentation. To ensure widespread dissemination of recent progress in relevant research we agreed to have the contributions published in a special issue of FEMS Microbiology Reviews. The present issue contains 33 papers representing the major aspects discussed.

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