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EDITORIAL

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Comments on food science and technology from a university department of microbiology

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Food science and technology have acquired unforeseen implications in different fields, among which the following stand out: (1) industries related to agriculture, animal husbandry, fisheries, and transport; (2) hygiene, in order to establish scientifically the appropriate types of food processing along with a more rational approach to dietetics; and (3) legislative, in order to enact laws protecting consumers against fraud by developing adequate and uniform analytic methods. The most urgent tasks are achieving better food-preserving methods, fighting agents responsible for food spoilage – applying the same strategies used to combat pathogenic ones – , finding new raw materials, and obtaining new kinds of food.

Food science must provide answers to new social demands, pursuing four main objectives: (1) producing the quantity of food necessary for a healthy diet for a population that is constantly increasing, which will contribute to palliating famine throughout the developing world; (2) increasing or at least maintaining the nutritional value of food in order to secure consumers' health; (3) extending the shelf-life of food products; and (4) producing tasty food and variety in the diet. Nowadays, consumers demand not only that food covers their nutritional needs, but that it be of good quality, appropriately elaborated, efficiently stored and preserved, uncontaminated, tasty and appetizing.

Many years ago developed countries, particularly in Europe and North America, started to offer university degrees in food science aimed at creating experts in the area of food and its properties, including its production, transformation, control, analysis, preservation and role in human nutrition. In these degree programs, microbiology, especially food microbiology and industrial microbiology, play a major role. In Spain, until 1990 there had been no specific degree in food science, and graduate studies on this subject were carried out in a disorganized and unconnected way in various university centres. The new degree in Food Science and Technology (FST) was established to provide adequate scientific training in basic and applied aspects of food production and processing. The degree in FST, currently available in more than 20 Spanish universities, has filled a gap in Spanish university programs. In 1991, the University of Burgos – at that time still associated with the University of Valladolid – was the first to establish officially the FST degree in Spain. As in other developed countries, subjects such as microbiology, food microbiology, and industrial microbiology, which are usually taught by microbiology departments, play a major role in the curriculum of this degree.

Just 10 years later, there are many Spanish centres offering the FST degree. One may wonder whether the reason for this proliferation is scientific, industrial, or social. The establishment of a degree program in FST should take into consideration the professional perspectives that it may offer to graduate students, as well as the needs of the industrial food and agriculture sectors. Potential professional opportunities in the labor market in food science include those related to all aspects of the food industry, research, development and innovation (R + D + I), teaching, food-company management, the distribution sector, dietetics and nutrition, and food legislation. The introduction of these studies depends not only on the relationship between universities and companies in this sector, but also on the

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development of research – especially applied research – in the university departments involved. Moreover, the benefits obtained from applied research, will allow universities to develop basic research programs, which will ultimately benefit both applied research and further university education, especially postgraduate studies. In addition, the practical work that students undertake in food and agriculture companies will help them to become acquainted with the labor market that they will enter after having taken their degrees. There is no magic recipe to gain the involvement of industrialists, professionals and social agents in this scientific sponsorship task, which, moreover, presents difficulties such as excessive bureaucracy, the need for self-management, and the lack of interest in training students. To make scientific projects attractive, the government should offer tax advantages to sponsors, while collaboration with the universities would aid in supporting and increasing such sponsorships.

Microbiology is one of the life sciences that have evolved the most over the last several decades. Many of the Nobel Prizes awarded in science were, at least in part, in recognition of research on microorganisms. This continuing interest has led to the development of different microbiological specialties that diversify and enrich microbiology without it losing its unitary character. Food microbiology stands out due to economic and social reasons, along with important scientific breakthroughs in this field. It is related to other specialties such as industrial microbiology, regarding food production, and clinical microbiology, which deals with food hygienic-sanitary aspects.

Departments of microbiology in the field of food sciences should not confine themselves exclusively to the FST degree. Even though this is the most specific degree, other degree programs also linked to the topic of food, such as general microbiology, food and agricultural microbiology, enology, and industrial microbiology, should be established.

The effort of universities to strengthen their microbiology departments should be carried out in collaboration both with companies and with public and private organizations. This task has been successfully carried out by the Spanish Society for Microbiology (SEM) through its Food Microbiology group. The official journal of the SEM – International Microbiology – contributes to this task in a remarkable way, as does the SEM newsletter, *Actualidad SEM*. Lastly, dear reader, I ask for your collaboration in spreading and promoting microbiology through the SEM and its publications. By doing so, you will contribute to the development of microbiology in and out of Spain and Latin America.