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PUBLICATIONS IN FOOD SCIENCE AND NUTRITION

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DEDICATIONS

To my mother, Leah Moskowitz. You have encouraged me over the years to develop my ideas, to write them down, and to share with others through publishing. To your constant support and guidance, I owe so much. Thank you.

HOWARD R. MOSKOWITZ

To my son Ryan. Your being, smiles and love are my encouragement, inspiration and drive as a mother and a professional. My experiences and accomplishments are enriched by your presence and love.

ALEJANDRA M. MUÑOZ

To my parents, Maximo Sr. and Elena Calo. Thank you so much for planting in me the value of education, courage, respect, and love while growing up, which became the foundation of my daily life.

MAXIMO C. GACULA, JR.
PREFACE

We, the authors, thank you for spending some time with us by reading this book. You may have noticed from the title that the book is not a simple presentation of a field with a unified focus. Rather, we deal with controversies. Our field of sensory science has grown mightily in the past decades. To a great extent the growth has come from the resolution of different points of view regarding what is appropriate in sensory science, what are reasonable truths, and what are good practices hallowed by the experience of practitioners. In no case do we present points of view as ultimate truths. As the construction of the book reveals, we rather present different approaches to the same problem, and even different ways to look at the same type of data. In our discussions amongst ourselves and in our evidencing disagreements with each other, we sincerely hope that we provoke you to think more deeply about the issues involved in product assessment, the design of studies, and the analyses of data. If we cause you to think more critically about the problems and even take issue with our points of view (joint and several), we will have succeeded in our task.

HOWARD R. MOSKOWITZ
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CHAPTER 1

THE ROLE OF SENSORY SCIENCE
IN THE COMING DECADE

HOWARD R. MOSKOWITZ

Sensory Science is enjoying a period of strong growth, both at the intellectual and at the practical levels. At the intellectual level the influx of statisticians, psychologists, in addition to the usual complement of food scientists, continues to increase the knowledge base and skill set. At the practical level Sensory Science has graduated to first class membership from its former role of a second-class citizen in both academia and corporations. Product developers and product marketers seek out sensory scientists for advice in designing studies, for assistance in collecting data from experts and consumers, and for guidance in interpreting results. Yet, for many years Sensory Science lacked solid intellectual foundations in many of its aspects, perhaps because Sensory Science grew organically, in an undisciplined fashion. The growth was dictated by the early use of Sensory Science as a practical, albeit "kitchen tool," and only later by the concerted efforts of researchers in science and business that would then establish the field on a more rigorous foundation.

The beginnings of Sensory Science involved practitioners, and only later would involve scientists. This history flies counter to the usual order of events, whereby a field begins with science and evolves to practice. As a consequence, sensory scientists are only beginning to have available to them a coherent corpus of knowledge, embodied in textbooks and refereed journals, respectively. The first major text in the field (Principles of Sensory Evaluation of Food, Amerine et al. 1965) comprised short abstracts and mini-discussions of much of the work known to the researcher 35 years ago. The book reflects the bias and approach of Rose Marie Pangborn, one of the first in the field, and certainly the most prominent for the three decades during which she published and flourished. However, the literature in this seminal book was abstracted from contributions in many diverse fields, since Sensory Science itself had not been established. The current state of affairs is far different. Beginning in the early 1980s, authors in the field have contributed numerous volumes, both authored and edited. These volumes provide the reader with overviews as to how the senses work, how to describe product, how to measure sensory and hedonic responses, and how to combine sensory data with analytic data. Journals in the field include Journal of Sensory Studies (published by Food & Nutrition Press, Inc.), and Food Quality and Preference (published by Elsevier Ltd.), respectively. These journals were introduced in the late 1980s and middle 1990s, and reflect the demand for a