Throughout history, human beings have sought ways to enhance the flavor of the foods they eat. In the 21st century, biotechnology plays an important role in the flavor improvement of many types of foods. This book covers many of the biotechnological approaches currently being applied to flavor enhancement. The contribution of microbial metabolism to flavor development in fermented beverages and dairy products has been exploited for thousands of years, but the recent availability of whole genome sequences of the yeasts and bacteria involved in these processes is stimulating targeted approaches to flavor enhancement.

Chapters discuss recent developments in the flavor modification of wine, beer, and dairy products through the manipulation of the microbial species involved. Biotechnological approaches to the production of specific flavor molecules in microbes and plant tissue cultures, and the challenges that have been encountered, are also covered, along with the metabolic engineering of food crops for flavor enhancement - also a current area of research. Biotechnology is also being applied to crop breeding through marker-assisted selection for important traits, including flavor, and the book looks at the application of the biotechnological approach to breeding for enhanced flavor in rice, apple, and basil. These techniques are subject to governmental regulation, and this is addressed in a dedicated chapter.

This updated second edition features five brand new chapters, and the topics covered in the book will be of interest to those in the flavor and food industries as well as to academic researchers interested in flavors.