Editorial

Editors: Prof. Peter Schreier
and Prof. Hans-Ulrich Humpf

P. Schreier (above) and H.-U. Humpf (left)

Food and Nutrition: Focus on the Molecular Level

Traditionally, in order to develop and maintain high-quality food, interdisciplinary cooperation takes place, both in academia and industry, between chemists, biochemists, microbiologists, technologists, nutritionists, and toxicologists. Over the last decade, this wide range of various scientific disciplines in food research has increasingly emerged as a central link between innovative food production and consumer protection.

The rapid progress in the fields of traditional and genetic methodologies in plant and animal breeding, together with the development of novel food production techniques, requires particular attention in evaluating the effects on various food quality parameters. The increasing health awareness among consumers and a number of new findings concerning the influence of food on the human body have focused attention on the health-promoting effects of particular food constituents. Therefore, more and more research activities are being devoted around the world to the development of new food products with defined functional effects.

One of the traditional tools of food research is an evaluation of the consequences of food production and manufacturing processes on the composition of food and also its environmental impacts. However, in relation to the particular functionality of defined food constituents, nutritional aspects including food safety considerations have reached new dimensions. At present, food research, with all its facets of life sciences, is at the center of innovative industrial strategies of food production and also of nutritional and safety considerations. It thus plays an essential role in risk/benefit analyses of foods.

Risk and benefit aspects are both important food quality parameters, and are supplemented by others such as nutritional value and flavor. In spite of the great progress made over the years in all fields of food and nutrition research, there is still a lack of basic information, in particular concerning the exact structures of bioactive constituents and their selective effects on the human body, for example. There is a need for an elucidation of the molecular basis, by way of cooperation among the individual disciplines involved in food and nutrition research. The interdisciplinary field of food and nutrition research, with its extensive range of methodologies, ranging from instrumental-analytical techniques, via cell cultures and molecular-biological as well as *in-vivo* methods, right up to the classical and new emerging methods of food technology, is in a unique position to fulfill the requirements of research and application in a fast developing field.

Compared to other areas of life sciences, the interdisciplinary construct of food and nutrition implies many advantages; and these benefits need to be adequately exploited in the international discussion of results and developments. Unfortunately, there is no adequate journal to date and most of the important data, with its attractive facets, is widely distributed in a large number of varied journals.

An appropriate forum is needed for the increasing number of people who are keen on preserving the link between the scientific disciplines involved in food and nutrition research, or who are even interested in reinforcing this interdisciplinary approach. This is the reason why MOLECULAR NUTRITION & FOOD RESEARCH was created.

This journal will deal, on a molecular level, with all the above-mentioned areas integrated in food and nutrition, i.e.

Bioactivity and Safety: Aspects covering food constituents as studied *in vitro* and *in vivo*, thus comprising a wide range from chemical to nutritional and medical effects as well as integrated risk/benefit evaluations.

Chemistry: Isolation, structural elucidation and analytical characterization of bioactive food ingredients, in particular, with emphasis given to nutritional biochemistry and metabolomics. In addition, environmental aspects will also be considered.

Immunology: Immunological research into food and agriculture as well as environmental applications, including research focused on understanding interactions at the interface of food and the immune system.

Microbiology: Food spoilage, food pathogens, chemical and physical approaches of fermented foods, novel microbial processes and biotechnological aspects.

Nutrition: All aspects of molecular nutrition, i.e. nutritional biochemistry, genomics and metabolomics with the focus on chemoprevention, diet and disease.

Technology: The impact of traditional and modern processing of food and food constituents as well as their interactions on nutritional aspects.

Besides the regular contributions to MOLECULAR NUTRITION & FOOD RESEARCH, our aim is to include a series of special issues each year, in which current topics from one of the above mentioned fields will be covered in detail under the guidance of a pertinent guest editor.

Additional sections in the journal are "MNF Interview", where experts will address current topics, and "MNF Education", which will provide basic information on the essentials of important facets in the field at a high, but generally comprehensive level. We hope that these educational papers will help scientists to overcome the loss of contact and understanding, and that scientists will be encouraged to cross the border from one increasingly specialized field to another. Since the safety of the food chain is a primary objective of food and safety authorities world-wide, starting with one of the next issues "MNF Report" will provide news, commentaries and scientific contributions on new policy-driven legislative or regulatory discussions. Finally, "MNF Meetings Diary" will list important symposia and meetings.

We are confident that MOLECULAR NUTRITION & FOOD RESEARCH will fill the gap for an interdisciplinary journal in the field of food and nutrition research and will serve the needs of professionals working in this area.

Professor Peter Schreier
University of Würzburg

Professor Hans-Ulrich Humpf
University of Münster

