Editorial

Preface: Microbial spoilers in food: Knowing the enemy

The Microbial Spoilers in Food 2017 symposium (SPOILERS 2017) (http://www.spoilers2017.com/) was held in Quimper, France, from June 28th to 30th 2017. This was the second edition of the only symposium specifically dedicated to microbial food spoilage. While almost a billion people are undernourished worldwide, a third of all food produced for human consumption is lost or wasted. If the reasons for this massive food waste are diverse, microbial spoilage plays a major role. The presence of undesirable microorganisms that can survive food processes, grow in the food matrix and affect overall product organoleptic qualities (e.g. gas production, color and texture deterioration, off-flavor production) is therefore a major concern.

While for many decades a focus has been on microbial food pathogens, which has led to many advancements in food safety, microbial spoilers also need the same attention so that agri-food professionals can innovate and create high quality food products. In this context, public and private sector scientists and the concerned industries are looking for means to control the considered spoilage microorganisms by gaining better knowledge about these spoilers via several main research axes. As classically stated, to overcome the enemy, one has to know this enemy. These different research axes represented the backbone of the SPOILERS 2017 symposium.

The first research axis corresponded to spoiler biodiversity: Who is the enemy? Spoilage microorganisms belong to various microbial taxonomic groups and include both eukaryotes and prokaryotes, among them molds, yeasts, spore-forming bacteria, lactic acid bacteria, and Gram negative bacteria. Notions related to taxonomy, phylogeny, boundaries between pathogens and spoilers, impact of new agricultural or production practices but also climate changes on microbial ecology (biodiversity and dynamics) were presented and discussed at Spoilers 2017.

The second axis was related to spoiler physiology and metabolism: What are the enemy's strengths and weaknesses? Concerning physiology, it is crucial to better understand spoiler behavior in food matrices or under stress conditions. On the other hand, metabolic studies were also described to understand and decipher spoilage phenomena by identifying enzymes, undesirable aromas or secondary metabolites and their expression.

The third axis corresponded to innovative methodologies and the importance of preventive measures: How to detect and characterize the enemy? In this context, specific, robust, rapid and cost efficient methods are needed to detect, identify, quantify and fingerprint these microorganisms. A special focus on the use of cutting edge technologies, such as "omics", MALDI-ToF and microfluidic devices, and their contribution to this research field was featured.

Finally, the last axis focused on control strategies: How to fight and

defeat the enemy? These strategies corresponded to physical treatments, such as thermal treatment, pulsed light, high pressure; chemical treatments and their natural alternatives, e.g. biopreservation; and specific packaging conditions, e.g. active or modified atmosphere packaging. All topics are of current interest due to a strong societal demand for less-processed and preservative-free commodities. Part of the corresponding session was dedicated to industrial problematics with strong links to applied research.

These different research axes were addressed during 32 oral presentations including 6 keynotes, 13 flash-poster presentations and more than 40 posters. The Microbial Spoilers in Food 2017 symposium gathered 130 participants (scientists, food quality and production managers, and project leaders, among which 42% were from the industry) coming from 18 countries to share expertise and experience on microbial spoilers in food. We hope that the selection of articles presented in this Special Issue will allow the reader to get a glance at the topics and recent advances presented at SPOILERS 2017.

Finally, the Special Issue Committee would like to thank everyone involved in making SPOILERS 2017 a success, including the attendees, sponsors, scientific committee with a special acknowledgment to the local organizing committee consisting of members from the LUBEM EA3882, ADRIA Food Technology Institute and Technopôle Quimper-Cornouaille. The members of the special issue committee are also thankful to Mary-Lou Tortorello, Food Microbiology editor, and Elsevier members for allowing and facilitating the creation of this issue.

On behalf of the Special Issue Committee

Managing Guest Editor
Pr. Emmanuel Coton
Université de Brest, EA 3882 Laboratoire Universitaire de Biodiversité et d'Ecologie Microbienne, Plouzané, France
E-mail address: emmanuel.coton@univ-brest.fr (P.E. Coton)

Special Issue Guest Editors
Pr. Louis Coroller
Université de Brest, EA 3882 Laboratoire Universitaire de Biodiversité et d'Ecologie Microbienne, Quimper, France

Anne-Gabrielle Mathot (Dr.)
Université de Brest, EA 3882 Laboratoire Universitaire de Biodiversité et d'Ecologie Microbienne, Quimper, France

Florence Postollec (Dr.)
ADRIA Food Technology Institute - UMT14.01SPORE RISK, Food Quality & Safety Unit, Quimper, France