Preface

It is our great pleasure to have you at the 2022 4th International Conference on Biotechnology and Food Science (BFS 2022), which took place in Guangzhou, China from 16th to 18th December 2022 (virtual form). BFS 2022 was hosted by Guangzhou University, and chaired by Zhigang Liu (Northwest Agriculture and Forestry University, China) and Zhen Gu (Zhejiang University, China). The series conference of BFS has been successfully held for three sessions, and received unanimous praise from various experts and scholars all over the world.

BFS 2022 exists as an international forum for academic communications between experts and scholars in the fields of biotechnology and food science. It promoted the continuous development and collaborative innovation in related fields at home and abroad, and promoted the establishment of exchange and cooperation in technological research and development, industrial application and transformation of results among related industries, universities and research institutes.

After months of well preparation and hard work, the Proceedings of BFS 2022 covering a bunch of papers, having been checked through rigorous review and processes to meet the requirements of publication, are smoothly published. These papers feature but are not limited to the following topics: Micro/Nano Bioengineering, Microbial Physiology, Biodiversity and Dietary Diversity, Biomedical Engineering and Technology, Natural Products and Innovations, Agricultural Biotechnology, Nutrition and Food Security, etc.

We had about 80 participations both as speakers and participants, including researchers, teachers, students, industrial experts, and professionals. During the keynote speech part, each keynote speaker was given 30-40 minutes for keynote speech. The keynote speeches cover many topics, including: a) Accelerate the Innovation and Development of Precision Nutrition and Healthy Food -- Precision Nutrition: A Strong Guarantee for the Realization of Human Health; b) Intelligent Delivery Systems: Innovation and Transformation; c) Spatiotemporal Omics Techniques in Nutrition and Health; d) Study on the Regulation Mechanism of Betaine and Calcium Treatment on Chilling Injury of Fruit; e) Preparation and Application of Oil-Soluble Anthocyanins based on Enzymatic Acylation; etc.. The insightful speeches of each keynote speakers triggered interesting discussions and a good number of informal talks among all the participants.

We would like to express our gratitude to the organizers, keynote speakers and all the participants of BFS 2022, for their fruitful work and contribution to the success of the Conference. We are thankful to all the reviewers for providing constructive criticisms, stimulated comments and suggestions to the authors. Particularly, our special thanks go to the E3S Web of Conferences, for the endeavor of all its colleagues in publishing this paper volume.

May this event be a spark that ignites many new inventions in the fields related to biotechnology and food science!

The Committee of BFS 2022
Committee Member

Conference Chairmen
Prof. Zhigang Liu, Northwest Agriculture and Forestry University, China
Prof. Zhen Gu, Zhejiang University, China

Academic Committee Chairman
Prof. Jia Li, Guangzhou University, China

Technical Committee Chairman
Assoc. Prof. Zhen Gu, Zhejiang University, China

Organizing Committee Chairman
Assoc. Prof. Yongsheng Chen, Jinan University, China
Assoc. Prof. Yingbin Shen, Guangzhou University, China

Organizing Committees
Prof. Wenhua Yu, Guangzhou University, China
Prof. Xiaohu Luo, Ningbo University, China
Prof. Zhiyun Du, Guangdong University of Technology, China
Prof. Ruifen Zhang, Guangdong Academy of Agricultural Sciences, China
Prof. Furao Lai, South China University of Technology
Assoc. Prof. Dongxiao Su, Guangzhou University, China
Assoc. Prof. Jun Liu, China Agricultural University, China
Assoc. Prof. Jie Zheng, Jinan University, China
Assoc. Prof. Anand Mohan, University of Georgia, USA
Assoc. Prof. Junyan Liu, University of Maryland, USA
Assoc. Prof. Parvati Sharma, Chaudhary Bansi Lal University, India
Assoc. Prof. Yi-Tao Yu, University of Rochester Medical Center, USA
Assoc. Prof. Hossein Hosseinkhani, Matrix, Inc, USA
Assoc. Prof. Deepika Koundal, University of Petroleum & Energy Studies, India

Academic Committees
Prof. Qingzhu Zeng, Guangzhou University, China
Prof. Weirong Hu, Guangzhou University, China
Prof. Shiyi Ou, Jinan University, China
Researcher. Xinquan Yang, Yazhouwan Seed Lab, China
Prof. Hongtao Lei, South China Agricultural University, China
Post Dr. Junyan Liu, University of Maryland, USA
Assoc. Prof. Anand Mohan, University of Georgia, USA
Assoc. Prof. Eugenio Demartini, University of Milan, Italy
Assoc. Prof. Vajiheh Fadaei, Islamic Azad University, Iran
Assoc. Prof. Anna Gaviglio, University of Milan, Italy