

1. Record Nr.	UNINA9910629286503321
Autore	Haslberger Alexander G.
Titolo	Advances in precision nutrition, personalization and health aging // Alexander G. Haslberger
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2022] ©2022
ISBN	9783031101533 9783031101526
Descrizione fisica	1 online resource (302 pages)
Disciplina	612.67
Soggetti	Aging - Nutritional aspects Older people - Nutrition Nutrició Vellesa Persones grans Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Foreword -- Reference -- Contents -- 1 Trends in Personalised Precision Nutrition, Objectives -- 1.1 The Rise of Molecular Nutrition -- 1.2 The Way to Personalisation -- 1.3 Consequences of Personalisation -- References -- 2 Individualization, Precision Nutrition Developments for the 21st Century -- 2.1 Introduction -- 2.2 Evolution of Nutrition Science in the 20th Century Toward Personalization -- 2.2.1 Nutrition in the Post-genomic Era -- 2.2.2 New Horizons in Personalized Nutrition -- 2.3 Individualization and Food Choices Based on Personalized/Precision Nutrition and Involvement of Diet in Chronic Diseases -- 2.4 Translating Personalized Nutrition for Society -- 2.4.1 Social Impact Regarding PN -- 2.4.2 PN-Associated Business and Value Creation Models -- 2.4.3 Social Concerns and Their Impact on PN Development -- 2.4.4 Consumer Attitudes Toward Personalized Nutrition -- 2.5 Future Outlook -- 2.6 Concluding Remarks -- 2.7 Financial Support -- References -- 3 Precision Nutrition from the View of Genetics

and Epigenetics -- 3.1 Introduction -- 3.2 Nutrigenetics and Nutrigenomics -- 3.3 Epigenetic Mechanisms -- 3.4 The DOHaD Theory: The Importance of the Maternal Diet in Animal and Human Models -- 3.5 Epigenetic Mechanisms and Nutrients -- 3.6 Epigenetic Mechanisms of Antioxidants -- 3.7 Aging, Epigenetics, Nutrition -- 3.8 The Importance of the Gender in Precision Nutrition Medicine -- 3.9 Concluding Remarks -- References -- 4 Precision Nutrition from the View of the Gut Microbiome -- 4.1 Introduction -- 4.2 The Human Gut Microbiome-(Un)limited Possibilities for Improving Human Health -- 4.3 Exploring the Human Gut Microbiome: Start Low Go Slow-Advances in Microbiome Research -- 4.3.1 Eubiosis versus Dysbiosis -- 4.4 The Microbiome Study in PN Research-Important Aspects (see Figs. 4.3 and 4.4, Box 2).  
4.4.1 Setting Standards in the Microbiome Field -- 4.4.2 Visualizing Methods in Microbiome Research -- 4.5 From the Clinical Trial to the Personal Recommendation: Putting the Individual Pieces of the Puzzle Together -- 4.6 Conclusion -- References -- 5 Personalized Nutrition for Healthy Aging, A Review -- 5.1 Healthy Aging -- 5.1.1 Genetics and Healthy Aging -- 5.1.2 Epigenetics and Healthy Aging -- 5.1.3 Histones and Healthy Aging -- 5.1.4 Noncoding RNAs (NcRNAs) and Aging -- 5.1.5 Aging of the Immune System (I.S.) and Epigenetics -- 5.1.6 Neurodegenerative Diseases, Aging, and Epigenetics -- 5.1.7 Microbiota and Healthy Aging -- 5.1.8 Individual-Specific Aging -- 5.2 Ways to Personalization -- 5.2.1 Missing Heritability -- 5.2.2 Markers Enable a Personalized Pre-and Intervention -- 5.3 Developments of Precision Medicine -- 5.4 Development of Personalized Precision Nutrition -- 5.4.1 Personalized Nutrition and Nutriepigenetics -- 5.4.2 Personalized Nutrition and Gene Expression -- 5.4.3 Personalized Nutrition and Microbiota-Epigenetic Interactions -- 5.5 Omics Approaches and Data Integration -- 5.5.1 Translation of Personalized Precision Nutrition into Praxis -- 5.5.2 Personalization or Stratification, Metabotypes -- 5.5.3 Personalized Precision Nutrition and Consumer Aspects -- 5.5.4 Consumer Supporting Organizations in Between Multiple Interests, Discussion -- References -- 6 Precise Nutrition and Metabolic Syndrome, Remodeling the Microbiome with Polyphenols, Probiotics, and Postbiotics -- 6.1 Introduction -- 6.2 Metabolic Syndrome-Definition, Prevalence, and Pathophysiology -- 6.3 The Microbiome-Composition, Establishment, and Functions -- 6.4 Role of Microbiome in Development of Metabolic Syndrome -- 6.5 Precision Nutrition-Gut Microbiota as a Target for Metabolic Syndrome Treatment -- 6.5.1 Probiotics -- 6.5.2 Postbiotics -- 6.5.3 Polyphenols.  
6.6 Conclusion -- Literatures -- 7 Precision Nutrition and Metabolomics, a Model of Alzheimer's Disease -- 7.1 Introduction -- 7.2 Metabolomics and the -Omics Cascade -- 7.3 How Metabolomics Provides Actionable Insights into Disease Pathophysiology -- 7.4 Western-Style Diet, Metabolism, and the Epidemiology of Chronic Disease -- 7.5 Western-Style Diet, the Association with Intracellular Malnutrition, and Nutritional Interventions in Alzheimer's Disease -- 7.6 A Metabolic Model of Alzheimer's Disease, and Its Relationship with Nutritional and Microbiome-Related Factors -- 7.6.1 Lipid Metabolism -- 7.6.2 Glucose Homeostasis and Alterations in Energy Supply -- 7.6.3 Bile Acid Metabolism -- 7.6.4 The Metabolic Model of Alzheimer's Disease (AD) -- 7.7 Conclusion -- References -- 8 Precision Nutrition and Cognitive Decline -- 8.1 Introduction -- 8.2 Nutrients and Dietary Patterns -- 8.2.1 Antioxidants -- 8.2.2 Vitamins -- 8.2.3 Omega-3 Fatty Acids -- 8.2.4 Dietary Patterns -- 8.3 Individualized Response

to Diet -- 8.3.1 Human Genome -- 8.3.2 Epigenome -- 8.3.3 Microbiome -- 8.4 Risk Factors for Dementia -- 8.5 Challenges and Future Directions -- References -- 9 Algorithms for and Challenges in the Analysis of Markers in Personalized Health Care -- 9.1 Introduction -- 9.2 Supervised Learning -- 9.2.1 Basic Definitions and the Learning Task -- 9.2.2 Loss Functions -- 9.2.3 Errors -- 9.2.4 Model Selection, Model Assessment, and Datasets -- 9.2.5 Learnability and Data -- 9.2.6 Bias and Variance -- 9.3 Algorithms -- 9.3.1 KNN -- 9.3.2 Linear Regression -- 9.3.3 Logistic Regression -- 9.3.4 Artificial Neural Networks -- 9.3.5 Naive Bayes Classifiers -- 9.3.6 Decision Trees and Random Forests -- 9.4 The Challenges -- 9.4.1 Overfitting -- 9.4.2 (Epi-)genetic Problems -- 9.4.3 A Numerical Example -- 9.5 Quality Metrics.

9.5.1 True and False Positives and Negatives -- 9.5.2 Positive and Negative Rates -- 9.5.3 Predictive Values Etc. -- 9.5.4 Prevalence, Accuracy, and Informedness -- 9.5.5 Weighted Informedness or Weighted Youden's Index -- 9.5.6 Confusion Matrix -- 9.5.7 A Numerical Example -- 9.6 Probably Approximately Correct -- 9.7 Conclusions -- 10 Precise Nutrition and Functional Foods -- 10.1 Novel Food, Food Supplements, Nutraceuticals, Phytoceuticals, Medicinal Foods -- 10.2 Fasting, Caloric Restriction (CR) -- 10.3 Modulating the Diet-Gut Microbiome Interplay -- 10.4 Probiotics -- 10.5 Prebiotics -- 10.6 Nutraceuticals -- 10.7 Medical Foods -- 10.8 Mechanistic Aspects of Special Foods -- 10.8.1 Epigenetic Active Foods -- 10.8.2 Sirtuin Activation by "Sirtfoods" -- 10.9 Senolytic Foods -- 10.9.1 Fasting Mimetics -- 10.10 Personalization, Discussion -- References -- 11 Precision Nutrition from a Practical Clinical View, Case Study -- 11.1 Introduction -- 11.2 Chances of Diagnostics and Markers -- 11.3 Case Study -- 11.4 Conclusion -- 12 Translational Aspects in Precision Nutrition, Personalization, Biomarkers and Healthy Aging -- 12.1 Boom in Medical Self-tests-Since Corona Pandemic -- 12.2 From One Fits-All Recommendations to Personalized Tests -- 12.3 Nutrigenetics -- 12.4 Impact of Genetic Lifestyle Tests -- 12.5 Compliance of Lifestyle Change -- 12.6 Nutrigeneomics -- 12.7 Personalized Epigenetic Testing -- 12.8 Personalized Microbiota Analysis -- 12.9 Legal Responsibility -- 12.10 Validation of Study Results and Generation of Limit Values -- 12.11 Conclusion -- Appendix -- References.

---