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Clinical and Preclinical Models for Maximizing Healthspan

Methods and Protocols

Edited by

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Preface

The health span of most living organisms is limited by physical decline and an increase in chronic diseases during later life. It has been an ongoing quest of mankind to understand this process and apply this knowledge towards maximizing the amount of time that we can spend free of illness during our lives. This is important as most chronic diseases in the world are intertwined with old age. According to the World Health Organization, noncommunicable diseases affect mainly adults and aged individuals, and this imposes the greatest burden on global health with staggering associated costs to the healthcare services.

People worldwide can now expect to live well beyond their 60th birthday due to advances in public health which began in the nineteenth century. The members of the population that comprise this super-60-year-old group have been projected to double from what it is today and reach a total of 2.1 billion people by the year 2050. Thus far, this increase in life span has not been accompanied by an increase in the health span. Aging is still the biggest risk factor for deficits in cellular, tissue, and organ function, which set the stage for diseases that ultimately lead to death.

Thousands of studies have now been carried out with the aim of testing special diets, additives, and even ancient remedies from the Orient. These have led to new insights into the physiological and molecular aspects of health and disease using both epidemiological and model organism approaches and, as a result, significant advancements have been made in maximizing health and the overall health span. This book presents reviews and a series of protocols in multiple disease areas affected by the aging process along with several methods which have shown progress in nutrient- or intervention-based approaches to maximize the health span. The authors in this series come from 5 of the 6 habitable continents from countries such as Australia, China, Germany, India, Indonesia, Iran, Italy, Japan, Russia, South Africa, Thailand, Turkey, the United Kingdom, and the United States. This underscores the keen interest in this topic throughout the world. It is hoped that further preclinical and clinical research efforts in this area will eventually lead to a world society in which individuals are not only living longer lives, but also more productive and healthier ones.

The book will be of high interest to researchers in the areas of chronic disease, gerontology, physical exercise, and nutrition as well as to clinical scientists, physicians, and the major drug companies since it gives insights into the latest ideas and technologies enabling progress in this area. It will also be of high interest to both technical and bench scientists as it gives detailed instructions on how to carry out the various presented methods along with important notes which give insights beyond the traditional protocols. Lastly, it will provide important information on disease mechanisms and novel drug targets as each protocol will be presented in the context of specific chronic diseases or different therapeutic areas.

Campinas, Brazil

Paul C. Guest

Contents

<i>Preface</i>	<i>v</i>
<i>Contributors</i>	<i>xi</i>

PART I REVIEWS

1 The Impact of New Biomarkers and Drug Targets on Age-Related Disorders	3
<i>Paul C. Guest</i>	
2 Vitamin D and Muscle Sarcopenia in Aging	29
<i>Behnaz Abiri and Mohammadreza Vafa</i>	
3 Quantitative Assays of Plasma Apolipoproteins	49
<i>Anne Poljak, Mark W. Duncan, Tharusha Jayasena, and Perminder S. Sachdev</i>	
4 Protocol for the Use of the Ketogenic Diet in Preclinical and Clinical Practice	83
<i>Ann-Katrin Kraeuter, Paul C. Guest, and Zoltán Sarnyai</i>	

PART II PROTOCOLS

5 An In Vivo/Ex Vivo Study Design to Investigate Effects of Chronic Conditions and Therapeutic Compounds on Adipose Stem Cells in Animal Models	101
<i>Hanél Sadie-Van Gijsen, Liske Kotzé-Hörstmann, and Barbara Huisamen</i>	
6 Model for Studying the Effects of Chronic Metabolic Disease on Endogenous Bone Marrow Stem Cell Populations	119
<i>Yashar Mehrbani Azar, Maria Jacoba Kruger, Dalene de Swardt, Michelle Maartens, Ascentia Mathapelo Seboko, William Frank Ferris, and Mari van de Vyver</i>	
7 Investigating Alcohol Behavior and Physiology Using <i>Drosophila melanogaster</i>	135
<i>Aliza K. De Nobrega, Kristine V. Luz, Katherine N. Lyons, and Lisa C. Lyons</i>	
8 Using Genome-Editing Tools to Develop a Novel In Situ Coincidence Reporter Assay for Screening ATAD3A Transcriptional Inhibitors	159
<i>Liwei Lang and Yong Teng</i>	
9 Visualizing and Evaluating Cancer Cell Growth and Invasion by a Novel 3D Culture System	167
<i>Chloe Shay, Liwei Lang, and Yong Teng</i>	

10	Exploiting Plug-and-Play Electrochemical Biosensors to Determine the Role of FGF19 in Sorafenib-Mediated Superoxide and Nitric Oxide Production in Hepatocellular Carcinoma Cells	175
	<i>Lixia Gao and Yong Teng</i>	
11	Proteomic Analysis of the Anoikis-Resistant Human Breast Cancer Cell Lines	185
	<i>Chareeporn Akekawatchai, Sittiruk Roytrakul, Narumon Phaonakrop, Janthima Jaresitthikunchai, and Sarawut Jitrapakdee</i>	
12	Real-Time PCR Analysis of Metabolism-Related Genes in a Long-Lived Model of <i>C. elegans</i>	195
	<i>Sumino Yanase</i>	
13	Clinical Assessment of the NADome as Biomarkers for Healthy Aging	207
	<i>Tharusha Jayasena, Sonia Bustamante, James Clement, Robert Welschinger, Gideon A. Caplan, Perminder S. Sachdev, and Nady Braidy</i>	
14	Two-Dimensional Gel Electrophoresis Combined with Matrix-Assisted Laser Desorption/Ionization Time-of-Flight Mass Spectrometry Analysis of Eye Lens to Identify Biomarkers of Age-Related Cataract	217
	<i>Paul C. Guest</i>	
15	Testing the Effects of Dietary Seafood Consumption on Depressive Symptoms	233
	<i>Maximus Berger, G. Paul Amminger, Robyn McDermott, Paul C. Guest, and Zoltán Sarnyai</i>	
16	Assays for Monitoring the Effects of Nicotinamide Supplementation on Mitochondrial Activity in <i>Saccharomyces cerevisiae</i>	243
	<i>Ivan Orlandi and Marina Vai</i>	
17	Measurement of a Surrogate Biomarker for Arginine Vasopressin Secretion in Association with Physiometric and Molecular Biomarkers of Aging	251
	<i>Paul C. Guest, Hans-Gert Bernstein, Henrik Dobrowolny, Katrin Borucki, Sabine Westphal, and Johann Steiner</i>	
18	Liquid Chromatography Tandem Mass Spectrometry Analysis of Proteins Associated with Age-Related Disorders in Human Pituitary Tissue	263
	<i>Paul C. Guest and Daniel Martins-de-Souza</i>	
19	Coenzyme Q ₁₀ Assessment and the Establishment of a Neuronal Cell Model of CoQ ₁₀ Deficiency	277
	<i>Robert Heaton, Kate Duberley, and Iain P. Hargreaves</i>	
20	Analyzing Mitochondrial Function in Brown Adipocytes with a Bioenergetic Analyzer	289
	<i>Justin Darcy, Chih-Hao Wang, and Yu-Hua Tseng</i>	
21	Quantitative Analysis of DNA Methylation by Bisulfite Sequencing	297
	<i>Vasily V. Ashapkin, Lyudmila I. Kutueva, and Boris F. Vanyushin</i>	
22	Histomorphometric Analysis of Anti-Aging Properties on Rat Skin	313
	<i>Idha Kusumawati, Kresma Oky Kurniawan, Subhan Rullyansyah, and Eka Pramyrtha Hestianah</i>	

23	Integration of qRT-PCR and Immunohistochemical Techniques for mRNA Expression and Localization of m1AChR in the Brain of Aging Rat	323
	<i>S. Asha Devi and S. Abhijit</i>	
24	Randomized Study Design to Test Effects of Vitamin D and Omega-3 Fatty Acid Supplementation as Adjuvant Therapy in Colorectal Cancer Patients.....	337
	<i>Fatemeh Haidari, Behnaz Abiri, Masood Iravani, Kambiz Ahmadi-Angali, and Mohammadreza Vafa</i>	
25	Effect of Vitamin D Supplementation on Muscle Strength, Muscle Function, and Body Composition in Vitamin D-Deficient Middle-Aged Women	351
	<i>Behnaz Abiri, Mohsen Dehghani, and Mohammadreza Vafa</i>	
26	The Association of Food Intake and Physical Activity with Body Composition, Muscle Strength, and Muscle Function in Postmenopausal Women.....	363
	<i>Mohammadreza Vafa, Behnaz Abiri, and Mohsen Dehghani</i>	
27	Absolute Quantification of Plasma Apolipoproteins for Cardiovascular Disease Risk Prediction	373
	<i>Betul Ozdemir, Zeliha Selamoglu, and Nady Braidy</i>	
28	Multiplex Analysis of Circulating Hormone Levels in Rat Models of Age-Related Diseases	381
	<i>Paul C. Guest</i>	
29	Proteomic Analysis of Brain Tissue from a Chronic Model of Stress Using a Combined 2D Gel Electrophoresis and Mass Spectrometry Approach.....	391
	<i>Paul C. Guest</i>	
30	Proteomic Analysis of Rat Hippocampus for Studies of Cognition and Memory Loss with Aging	407
	<i>Paul C. Guest, Hassan Rahmoune, and Daniel Martins-de-Souza</i>	
31	Brain Proteomic Analysis on the Effects of the Antidepressant Fluoxetine	419
	<i>Paul C. Guest</i>	
32	MK-801 Treatment of Oligodendrocytes as a Cellular Model of Aging.....	431
	<i>Paul C. Guest</i>	
	<i>Index</i>	449

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