

# Contents

## Part I History and Origins

- 1 Origins of the Hayflick System, the Phenomenon and the Limit . . . . .** 3  
Suresh I.S. Rattan
- 2 Experimental Foundations of the Hayflick System . . . . .** 15  
Suresh I.S. Rattan

## Part II Serial Passaging and Progressive Changes

- 3 Slowing Down of the Cell Cycle During Fibroblast Proliferation . . . . .** 29  
Alvaro Macieira-Coelho
- 4 Influence of Donor Age and Species Longevity  
on Replicative Cellular Senescence . . . . .** 49  
Antonello Lorenzini and Andrea B. Maier
- 5 Ageing of the Stem Cells: The Conjoined Twosome  
Growing Old: Stem Cell and Its Niche . . . . .** 71  
Günter Lepperdinger
- 6 Ageing and Senescence in Immune Cells In Vitro and In Vivo . . . . .** 85  
Graham Pawelec and Yvonne Barnett
- 7 Telomeres Shortening: A Mere Replicometer? . . . . .** 97  
Stella Victorelli and João F. Passos
- 8 Modeling Cellular Aging: An Introduction –  
Mathematical and Computational Approaches . . . . .** 117  
Tarynn M. Witten

## Part III Ageing, Cancer and Senescence

- 9 Cell Cycle Checkpoints and Senescence . . . . .** 145  
Renu Wadhwa, Zeenia Kaul, and Sunil C. Kaul

<b>10 Mitochondrial Reactive Oxygen Species in Cellular Senescence .....</b>	<b>169</b>
Timothy Nacarelli, Claudio Torres, and Christian Sell	
<b>11 Cellular Aging and Tumor Regulation .....</b>	<b>187</b>
Andreas Simm, Barbara Seliger, and Lars-Oliver Klotz	
<b>12 Biomarkers of Replicative Senescence Revisited .....</b>	<b>203</b>
Jan O. Nehlin	
 <b>Part IV Ageing Modulators</b>	
<b>13 Stress-Induced (Premature) Senescence .....</b>	<b>243</b>
Florence Debacq-Chainiaux, Randa Ben Ameer, Emilie Bauwens, Elise Dumortier, Marie Toutfaire, and Olivier Toussaint	
<b>14 Implications of Cellular Senescence on Aging and Disease in the Brain .....</b>	<b>263</b>
Elizabeth P. Crowe, S. Ferit Tuzer, Justin Cohen, Emre C. Yetkin, Luca D'Agostino, Christian Sell, and Claudio Torres	
<b>15 Small Noncoding RNAs in Senescence and Aging .....</b>	<b>287</b>
Joseph M. Dhahbi	
<b>16 Targeting Senescent Cells to Improve Human Health .....</b>	<b>313</b>
Tobias Wijshake and Jan M.A. van Deursen	
 <b>Part V Recapitulation and Future Expectations</b>	
<b>17 Unlike the Stochastic Events That Determine Ageing, Sex Determines Longevity .....</b>	<b>347</b>
Leonard Hayflick	
<b>Index .....</b>	<b>363</b>

Cellular Ageing and Replicative Senescence

Rattan, S.; Hayflick, L. (Eds.)

2016, VIII, 364 p. 27 illus., 18 illus. in color., Hardcover

ISBN: 978-3-319-26237-6