

# Contents

Contributors	xii
Preface	xix
<b>Introduction</b> Ralph M. Steinman and Jacques Banchereau	<b>xxiii</b>
I ORIGIN OF DENDRITIC CELLS	
<b>CHAPTER 1</b> Hematopoietic Cell Fate and the Development of Dendritic Cells Anne Galy, Katia Georgopoulos and Li Wu	<b>3</b>
<b>CHAPTER 2</b> Thymic Dendritic Cells Ken Shortman and Li Wu	<b>15</b>
<b>CHAPTER 3</b> Cell Fate Development in the Myeloid System James W. Young	<b>29</b>
<b>CHAPTER 4</b> Origin of Follicular Dendritic Cells John G. Tew, Zoher Kapasi, Dahui Qin, JiuHua Wu, Stephen T. Haley and Andras K. Szakal	<b>51</b>
<b>CHAPTER 5</b> Developmental Pathways of Human Myeloid Dendritic Cells Christophe Caux, Serge Lebecque, Yong-Jun Liu and Jacques Banchereau	<b>63</b>
<b>CHAPTER 6</b> Lymphoid-Related Dendritic Cells Eugene Maraskovsky, Bali Pulendran and Ken Shortman	<b>93</b>
II DENDRITIC CELLS IN THE PERIPHERY	
<b>CHAPTER 7</b> Dendritic Cells in the Context of Skin Immunity Dieter Maurer and Georg Stingl	<b>111</b>
<b>CHAPTER 8</b> Dendritic Cells in the Lung A.S. McWilliam, P.A. Stumbles and P.G. Holt	<b>123</b>

<b>CHAPTER 9</b>	<b>Intestinal Dendritic Cells</b>	<b>141</b>
G. Gordon MacPherson and LiMing Liu		
<b>CHAPTER 10</b>	<b>Dendritic Cells in the Liver, Kidney, Heart and Pancreas</b>	<b>153</b>
Raymond J. Steptoe and Angus W. Thomson		
<b>CHAPTER 11</b>	<b>Dendritic Cells in Spleen and Lymph Node</b>	<b>179</b>
Jonathan M. Austyn		
<b>CHAPTER 12</b>	<b>Dendritic Cells in the Central Nervous System and Eye and Their Associated Supporting Tissues</b>	<b>205</b>
P.G. McMenamin and J.V. Forrester		

### **III. DENDRITIC CELLS AND INTERACTION WITH OTHER CELLS**

<b>CHAPTER 13</b>	<b>The Role of Dendritic Cells in T Cell Priming: The Importance of Being Professional</b>	<b>251</b>
Antonella Viola, Giandomenica Iezzi and Antonio Lanzavecchia		
<b>CHAPTER 14</b>	<b>NK Cells</b>	<b>257</b>
Benedict J. Chambers and Hans-Gustaf Ljunggren		
<b>CHAPTER 15</b>	<b>Interactions between Dendritic Cells and B-Lymphocytes</b>	<b>269</b>
Francine Brière, Christophe Caux, Bertrand Dubois, Jérôme Fayette, Stéphane Vandenabeele and Jacques Banchereau		
<b>CHAPTER 16</b>	<b>Dendritic Cells and Cells of the Monocyte/Macrophage Lineage</b>	<b>281</b>
Yasuo Yamaguchi and Michio Ogawa		
<b>CHAPTER 17</b>	<b>Langerhans Cell Migration and Cellular Interactions</b>	<b>295</b>
Ian Kimber, Marie Cumberbatch, Rebecca J. Dearman and Stella C. Knight		

<b>CHAPTER 18</b>	<b>Dendritic Cells in the Reproductive Tract</b>	<b>311</b>
Adriana Larregina and Adrian Morelli		

#### **IV DENDRITIC CELLS IN DISEASE**

<b>CHAPTER 19</b>	<b>Cancer</b>	<b>325</b>
Michael T. Lotze and Ronald Jaffe		
<b>CHAPTER 20</b>	<b>Dendritic Cells in Rejection and Acceptance of Solid Organ Allografts</b>	<b>339</b>
A.J. Demetris, N. Murase, J.J. Fung and T.E. Starzl		
<b>CHAPTER 21</b>	<b>Dendritic Cells in Autoimmunity</b>	<b>361</b>
H.A. Drexhage, F.G.A. Delemarre, K. Radosevic and P.J.M. Leenen		
<b>CHAPTER 22</b>	<b>Interaction of Dendritic Cells with Bacteria</b>	<b>403</b>
M. Rescigno, M. Rittig, S. Citterio, M.K. Matyszak, M. Foti, F. Granucci, M. Martino, U. Fascio, P. Rovere and P. Ricciardi-Castagnoli		
<b>CHAPTER 23</b>	<b>Dendritic Cells during Infection with HIV-1 and SIV</b>	<b>421</b>
Ralph M. Steinman, Angela Granelli-Piperno, Klara Tenner-Racz, Paul Racz, Sarah Frankel, Elena Delgado, Ralf Ignatius and Melissa Pope		
<b>CHAPTER 24</b>	<b>Dendritic Cells in Allergy</b>	<b>435</b>
A.E. Semper, J.A. Hartley, I.G. Reischl and S.T. Holgate		

#### **V DC-BASED THERAPIES**

<b>CHAPTER 25</b>	<b>Dendritic Cell Therapy of Cancer and HIV Infection</b>	<b>459</b>
Michael T. Lotze, Hassan Farhood, Cara C. Wilson and Walter J. Storkus		

- CHAPTER 26 Dendritic Cell Tolerogenicity and Prospects for Dendritic Cell-based Therapy of Allograft Rejection and Autoimmunity** 487

Lina Lu, Samia J. Khoury, Mohamed H. Sayegh  
and Angus W. Thomson

## VI TECHNIQUES AND OTHER TOPICS IN DC BIOLOGY

- CHAPTER 27 A Guide to the Isolation and Propagation of Dendritic Cells** 515
- Gerold Schuler, Manfred Lutz, Armin Bender,  
Beatrice Thurner, Claudia Röder, James W. Young  
and Nikolaus Romani
- CHAPTER 28 Propagation and Culture of Dendritic Cells** 535
- Shannon J. Turley, Ralph M. Steinman,  
Ira Mellman and Kaya Inaba
- CHAPTER 29 Phenotypic Characterization of Dendritic Cells** 555
- Georgina J. Clark and Derek N.J. Hart
- CHAPTER 30 Targeted Gene Knockouts: Insights into Dendritic Cell Biology** 579
- Mary T. Crowley and David Lo
- CHAPTER 31 Mobilization, Migration, and Localization of Dendritic Cells** 595
- Simon M. Barratt-Boyes and Louis D. Falo, Jr.
- CHAPTER 32 Genetic Engineering of Dendritic Cells** 607
- Thomas Tüting, Laurence Zitvogel and  
Yasuhiko Nishioka
- CHAPTER 33 Dendritic-Tumor Cell Fusions** 617
- Jianlin Gong, David Avigan and Donald Kufe

<b>CHAPTER 34</b>	<b>Regulation of Antigen Capture, MHC Biosynthesis and Degradation Optimizes Presentation of Infectious Antigens in Maturing Dendritic Cells</b>	<b>631</b>
	Marina Cella, Mariolina Salio, Doris Scheidegger, Anneke Engering, Jean Pieters, Federica Sallusto and Antonio Lanzavecchia	
<b>CHAPTER 35</b>	<b>Development and Testing of Dendritic Cell Lines</b>	<b>637</b>
	Giampiero Girolomoni, Maria Rescigno and Paola Ricciardi-Castagnoli	
<b>CHAPTER 36</b>	<b>Dendritic Cell-derived Exosomes: Potent Immunogenic Cell-free Vaccines</b>	<b>643</b>
	Laurence Zitvogel, Armelle Regnault, Anne Lozier, Graça Raposo and Sebastian Amigorena	
<b>CHAPTER 37</b>	<b>Dendritic Cells as Donors and Recipients of Cytokine Signals</b>	<b>653</b>
	Nikolaus Romani, Franz Koch, Christine Heufler, Eckhart Kämpgen and Gerold Schuler	
<b>CHAPTER 38</b>	<b>Apoptosis in Dendritic Cells</b>	<b>673</b>
	Michael R. Shurin, Clemens Esche, Anna Lokshin and Michael T. Lotze	
<b>CHAPTER 39</b>	<b>Studies of Endocytosis</b>	<b>693</b>
	Wendy S. Garrett and Ira Mellman	
<b>Index</b>		<b>709</b>