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# Pericyte Biology in Different Organs

 Springer

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# Preface

This book's initial title was "Pericyte Biology: Development, Homeostasis and Disease." However, due to the current great interest in this topic, we were able to assemble more chapters than would fit in one book, covering pericyte biology under distinct circumstances. Therefore, the book was subdivided into three volumes entitled *Pericyte Biology - Novel Concepts*, *Pericyte Biology in Different Organs*, and *Pericyte Biology in Disease*.

This book *Pericyte Biology in Different Organs* presents contributions by expert researchers and clinicians in the multidisciplinary areas of medical and biological research. The chapters provide timely detailed overviews of recent advances in the field. This book describes the major contributions of pericytes to different organs' biology in physiological and pathological conditions. Further insights into the biology of pericytes will have important implications for our understanding of organ development, homeostasis, and disease. The authors focus on the modern methodologies and the leading-edge concepts in the field of cell biology. In recent years, remarkable progress has been made in the identification and characterization of pericytes in several tissues using state-of-the-art techniques. These advantages facilitated the identification of pericyte subpopulations and definition of the molecular basis of pericytes' role within different organs. Thus, the present book is an attempt to describe the most recent developments in the area of pericyte behavior which is one of the emergent hot topics in the field of molecular and cellular biology today. Here, we present a selected collection of detailed chapters on what we know so far about the pericytes in various tissues and under distinct pathophysiological conditions. Thirteen chapters written by experts in the field summarize the present knowledge about the roles of pericytes in different organs.

Herbert A. Reitsamer and colleagues from Paracelsus Medical University/SALK discuss the role of pericytes in the retina. Limor Landsman from Tel Aviv University describes pericytes in the pancreas. Lynn M. Schnapp and colleagues from the Medical University of South Carolina compile our understanding of pericyte biology in the lung. Jyoti Gautam and Yao Yao from the University of Georgia update us with what we know about skeletal muscle pericytes. Mercedes Fernandez and colleagues from the University of Barcelona summarize current knowledge on gut

pericytes. Yuya Kunisaki from Kyushu University Hospital addresses the importance of pericytes in the bone marrow. Martin Canis and Mattis Bertlich from the University Hospital Munich focus on cochlear pericytes. Maria Angelica Miglino and colleagues from the University of São Paulo introduce our current knowledge about placental pericytes. Enis Kostallari and Vijay H. Shah from the Mayo Clinic discuss the roles of pericytes in the liver. Motohiro Komaki from Kanagawa Dental University introduces what we know about pericytes in the periodontal ligament. Linda L. Lee and Vishnu Chintalgattu from Amgen Inc. talk about pericytes in the heart. Clifford L. Librach and colleagues from the University of Toronto focus on umbilical cord pericytes. Finally, Michail S. Davidoff from the *University Medical Center Hamburg-Eppendorf* gives an overview of pericytes in the testis.

It is hoped that the articles published in this book will become a source of reference and inspiration for future research ideas. I would like to express my deep gratitude to my wife Veranika Ushakova and Mr. Murugesan Tamilsevan from Springer, who helped at every step of the execution of this project.

This book is dedicated to the memory of my grandfather Pavel Sobolevsky, PhD, a renowned mathematician, who passed away during the creation of this piece.



**My grandfather Pavel Sobolevsky z"l, PhD (March 26, 1930–August 16, 2018)**

New York, NY, USA  
Belo Horizonte, MG, Brazil

Alexander Birbrair

# Contents

<b>1</b>	<b>Pericytes in the Retina</b> .....	<b>1</b>
	Andrea Trost, Daniela Bruckner, Francisco J. Rivera, and Herbert A. Reitsamer	
<b>2</b>	<b>Pancreatic Pericytes in Glucose Homeostasis and Diabetes</b> .....	<b>27</b>
	Limor Landsman	
<b>3</b>	<b>Pericytes in the Lung</b> .....	<b>41</b>
	Chi F. Hung, Carole L. Wilson, and Lynn M. Schnapp	
<b>4</b>	<b>Pericytes in Skeletal Muscle</b> .....	<b>59</b>
	Jyoti Gautam and Yao Yao	
<b>5</b>	<b>Pericytes in the Gut</b> .....	<b>73</b>
	Marta Ramirez, Nuria Pell, Marc Mejias, and Mercedes Fernandez	
<b>6</b>	<b>Pericytes in Bone Marrow</b> .....	<b>101</b>
	Yuya Kunisaki	
<b>7</b>	<b>Cochlear Capillary Pericytes</b> .....	<b>115</b>
	Martin Canis and Mattis Bertlich	
<b>8</b>	<b>Pericytes in the Placenta: Role in Placental Development and Homeostasis</b> .....	<b>125</b>
	Rodrigo S. N. Barreto, Patricia Romagnolli, Addressa Daronco Cereta, Leda M. C. Coimbra-Campos, Alexander Birbrair, and Maria Angelica Miglino	
<b>9</b>	<b>Pericytes in the Liver</b> .....	<b>153</b>
	Enis Kostallari and Vijay H. Shah	
<b>10</b>	<b>Pericytes in the Periodontal Ligament</b> .....	<b>169</b>
	Motohiro Komaki	

**11 Pericytes in the Heart** ..... 187  
Linda L. Lee and Vishnu Chintalgattu

**12 Pericytes in the Umbilical Cord** ..... 211  
Andrée Gauthier-Fisher, Peter Szaraz, and Clifford L. Librach

**13 The Pluripotent Microvascular Pericytes Are the Adult Stem  
Cells Even in the Testis** ..... 235  
Michail S. Davidoff

**Index** ..... 269

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