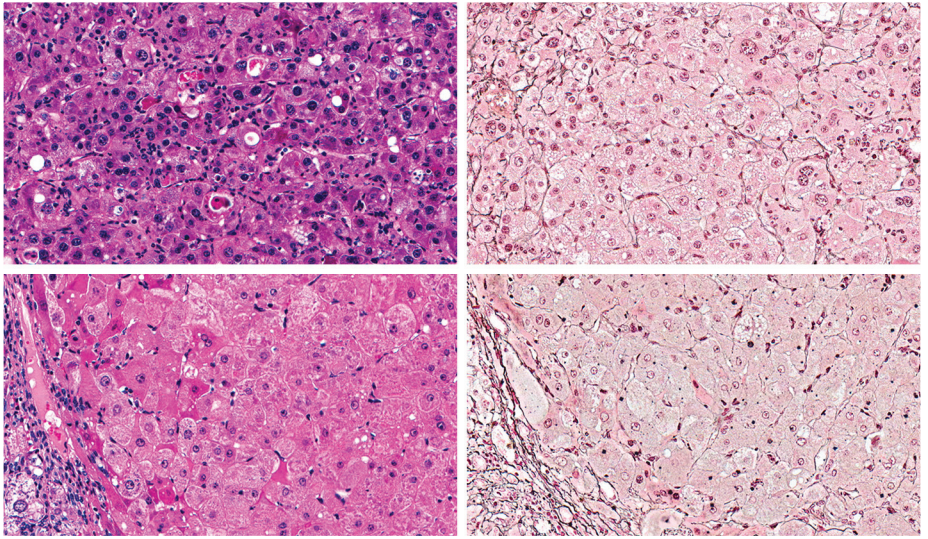


# Hepatocellular Carcinoma

**Janina E.E. Tirnitz-Parker**  
Editor



# Hepatocellular Carcinoma

**Cover image:** CDE or TAA-induced liver tumor. See page 78, chapter 4 for details.

# Hepatocellular Carcinoma

Edited by

JANINA E.E. TIRNITZ-PARKER, MSc, PhD

## **Hepatocellular Carcinoma**

ISBN: 978-0-9944381-8-8

DOI: <http://dx.doi.org/10.15586/hepatocellularcarcinoma.2019>

### **Edited by**

Janina E.E. Tirnitz-Parker, MSc, PhD, School of Pharmacy and Biomedical Sciences and Curtin Health Innovation Research Institute, Curtin University, Bentley, WA, Australia

### **Published by**

Codon Publications  
Brisbane, Australia

### **Copyright© 2019 Codon Publications**

Copyright of individual chapters belongs to the respective authors. The authors grant unrestricted publishing and distribution rights to the publisher. The electronic versions of the chapters are published under Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0). <https://creativecommons.org/licenses/by-nc/4.0/>. Users are allowed to share and adapt the chapters for any non-commercial purposes as long as the authors and the publisher are explicitly identified and properly acknowledged as the original source. The book in its entirety is subject to copyright by the publisher. The reproduction, modification, republication and display of the book in its entirety, in any form, by anyone, for commercial purposes are strictly prohibited without the written consent of the publisher.

### **Notice to the user**

The views and opinions expressed in this book are believed to be accurate at the time of publication. The publisher, editors or authors cannot be held responsible or liable for any errors, omissions or consequences arising from the use of the information contained in this book. The publisher makes no warranty, implicit or explicit, with respect to the contents of this book, or its use.

First Published in October 2019

Printed in Australia

# CONTENTS

<b>Foreword</b>	<b>vii</b>
<b>Preface</b>	<b>ix</b>
<b>List of Contributors</b>	<b>xi</b>
<b>1 Cellular Origin of Hepatocellular Carcinoma</b>	<b>1</b>
Doris Schneller, Peter Angel	
<b>2 The Role of the Tumor Microenvironment in the Development and Progression of Hepatocellular Carcinoma</b>	<b>29</b>
Ina Sevic, Fiorella Mercedes Spinelli, María José Cantero, Andrea Reszegi, Ilona Kovalszky, Mariana Gabriela García, Laura Alaniz	
<b>3 In Vitro Models of the Liver: Disease Modeling, Drug Discovery and Clinical Applications</b>	<b>47</b>
Scott D. Collins, Gloria Yuen, Thomas Tu, Magdalena A. Budzinska, Kevin Spring, Katherine Bryant, Nicholas A. Shackel	
<b>4 Mouse Models of Hepatocellular Carcinoma</b>	<b>69</b>
Rodrigo Carlessi, Julia Köhn-Gaone, John K. Olynyk, Janina E. E. Tirnitz-Parker	
<b>5 The Role of Lipids in Hepatocellular Carcinoma</b>	<b>95</b>
C. Nelson Hayes, Peiyi Zhang, Kazuaki Chayama	
<b>6 Current Topics and Perspectives in Surgical Management of Hepatocellular Carcinoma</b>	<b>111</b>
Sebastian Lünse, Claus-Dieter Heidecke, Lars Ivo Partecke	

<b>7</b>	<b>Tyrosine Kinase Inhibitors in the Treatment of Hepatocellular Carcinoma</b>	<b>127</b>
	Tiffany Sandra Wai Ling Khoo, Arif Rehman, John K. Olynyk	
<b>8</b>	<b>Multidrug Resistance in Hepatocellular Carcinoma</b>	<b>141</b>
	Baojun Duan, Chen Huang, Jun Bai, Yu Lian Zhang, Xi Wang, Juan Yang, Jun Li	
	<b>Index</b>	<b>159</b>

Doi:<http://dx.doi.org/10.15586/hepatocellularcarcinoma.2019>