

---

# Contents

<i>Foreword</i> . . . . .	v
<i>Preface</i> . . . . .	vii
<i>Contributors</i> . . . . .	xv
1. General Review on In Vitro Hepatocyte Models and Their Applications . . . . .	1 <i>Christiane Guguen-Guilhouzo and Andre Guilhouzo</i>
2. Human Foetal Hepatocytes: Isolation, Characterization, and Transplantation . . . . .	41 <i>Anne Weber, Thomas Touboul, Sylvie Mainot, Julie Branger,         and Dominique Mahieu-Caputo</i>
3. Isolation and Culture of Primary Hepatocytes from Resected Human Liver Tissue . . . . .	57 <i>Edward L. LeCluyse and Eliane Alexandre</i>
4. Optimisation of the Cryopreservation of Primary Hepatocytes . . . . .	83 <i>Nicola J. Hewitt</i>
5. Cryopreservation of Human Hepatocytes for Clinical Use . . . . .	107 <i>Ragai R. Mitry, Sharon C. Lebec, and Robin D. Hughes</i>
6. Hepatocyte Differentiation . . . . .	115 <i>Katy M. Olsavsky Goyak, Elizabeth M. Laurenzana,         and Curtis J. Omiecinski</i>
7. Reversible Manipulation of Apoptosis Sensitivity in Cultured Hepatocytes by Matrix-Mediated Manipulation of Signaling Activities . . . . .	139 <i>Patricio Godoy, Markus Schug, Alexander Bauer,         and Jan G. Hengstler</i>
8. Markers and Signaling Factors for Stem Cell Differentiation to Hepatocytes: Lessons from Developmental Studies . . . . .	157 <i>Frédéric Lemaigre</i>
9. Hepatic Stem Cells . . . . .	167 <i>Robert E. Schwartz and Catherine Verfaillie</i>
10. Hepatic Stem Cells and Liver Development . . . . .	181 <i>Nalu Navarro-Alvarez, Alejandro Soto-Gutierrez, and Naoya Kobayashi</i>
11. Generation of Hepatocytes from Human Embryonic Stem Cells . . . . .	237 <i>Neta Lavon</i>

12. Isolation and Culture of Adult Human Liver Progenitor Cells: In Vitro Differentiation to Hepatocyte-Like Cells . . . . . 247  
*Sabine Gerbal-Chaloin, Cédric Duret, Edith Raulet, Francis Navarro, Pierre Blanc, Jeanne Ramos, Patrick Maurel, and Martine Daujat-Chavanieu*
13. The HepaRG Cell Line: Biological Properties and Relevance as a Tool for Cell Biology, Drug Metabolism, and Virology Studies . . . . . 261  
*Marie-Jeanne Marion, Olivier Hantz, and David Durantel*
14. Transdifferentiation of Pancreatic Cells to Hepatocytes . . . . . 273  
*Chia-Ning Shen and David Tosh*
15. Evaluation of Drug Metabolism, Drug–Drug Interactions, and In Vitro Hepatotoxicity with Cryopreserved Human Hepatocytes . . . . . 281  
*Albert P. Li*
16. The Use of Human Hepatocytes to Investigate Drug Metabolism and CYP Enzyme Induction . . . . . 295  
*Sylvie Klieber, François Torreilles, François Guillou, and Gérard Fabre*
17. The Use of Hepatocytes to Investigate UDP-Glucuronosyltransferases and Sulfotransferases . . . . . 309  
*Sylvie Fournel-Gigleux, Michael W.H. Coughtrie, Mohamed Ouzzine, and Jacques Magdalou*
18. The Use of Hepatocytes to Investigate Drug Uptake Transporters . . . . . 327  
*Kazuya Maeda and Yuichi Sugiyama*
19. Metabonomic Studies on Human Hepatocyte in Primary Culture . . . . . 355  
*Vincent Croixmarie, Thierry Umbdenstock, Olivier Cloarec, Amélie Moreau, Jean-Marc Pascussi, Yannick Parmentier, Claire Boursier-Neyret, and Bernard Walther*
20. The Application of HepRG Cells in Evaluation of Cytochrome P450 Induction Properties of Drug Compounds . . . . . 375  
*Tommy B. Andersson*
21. The Use of Hepatocytes to Investigate Drug Toxicity . . . . . 389  
*Maria José Gómez-Lechón, José V. Castell, and María Teresa Donato*
22. The Use of Human Hepatocytes to Investigate Bile Acid Synthesis . . . . . 417  
*Ewa C. S. Ellis and Lisa-Mari Nilsson*
23. Use of Human Hepatocytes to Investigate Blood Coagulation Factor . . . . . 431  
*Christine Biron-Andréani, Edith Raulet, Lydiane Pichard-Garcia, and Patrick Maurel*
24. Use of Human Hepatocytes to Investigate HCV Infection . . . . . 447  
*Lydiane Pichard-Garcia, Philippe Briolotti, Dominique Larrey, Antonio Sa-Cunha, Bertrand Suc, Sylvain Laporte, and Patrick Maurel*

25. The Use of Hepatocytes to Investigate HDV Infection: The HDV/HepaRG Model . . . . .	463
<i>Camille Sureau</i>	
26. Rodent Models of Liver Repopulation . . . . .	475
<i>Helène Gilgenkrantz</i>	
27. Chimeric Mice with Humanized Liver: Tools for the Study of Drug Metabolism, Excretion, and Toxicity . . . . .	491
<i>Stephen C. Strom, Julio Davila, and Markus Grompe</i>	
28. Bioartificial Liver Support Systems . . . . .	511
<i>Gesine Pless</i>	
29. Human Hepatocyte Transplantation . . . . .	525
<i>Anil Dhawan, Stephen C. Strom, Etienne Sokal, and Ira J. Fox</i>	
<i>Subject Index</i> . . . . .	535



<http://www.springer.com/978-1-60761-687-0>

Hepatocytes  
Methods and Protocols  
Maurel, P. (Ed.)  
2010, XX, 554 p., Hardcover  
ISBN: 978-1-60761-687-0  
A product of Humana Press