Stem Cell Biology and Regenerative Medicine Hossein Baharvand Nasser Aghdami Editors Advances in Stem Cell Research EXPENSIVE ITEM This item must be returned by recorded delivery Humana Press m12



Hossein Baharvand · Nasser Aghdami Editors

Advances in Stem Cell Research

BRITISH LIBRARY
DOCUMENT SUPPLY CENTRE

0 2 AUG 2012





Editors
Hossein Baharvand
Royan Institute
University of Science and Culture
Tehran
Iran

Nasser Aghdami Regenerative Medicine Royan Institute for Stem Cell Biology and Technology Tehran Iran

ISBN 978-1-61779-939-6 DOI 10.1007/978-1-61779-940-2 Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2012937779

© Springer Science + Bussines Media, LLC 2012

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Humana Press is a brand of Springer

Springer is part of Springer Science+Business Media (www.springer.com)



Contents

1	ES Cell Lines from Tetraploid Mouse Blastocysts	1
2	The Significance of Culture Adaptation of Embryonic Stem Cells for Regenerative Medicine	17
3	Biomanufacturing Human Pluripotent Stem Cells for Therapeutic Applications	29
4	hESC-Derived Hepatocytes	49
5	Advances in Induced Pluripotent Stem Cell Biology Ali Seifinejad	67
6	iPS Cells: New Applications for Metabolic Liver Diseases Tobias Cantz, Abbas Beh-Pajooh and Malte Sgodda	85
7	Vascular Differentiation of Human Pluripotent Stem Cells Helena Vazão, Mário Grãos and Lino Ferreira	97
8	Mechanism of MicroRNA-Mediated Global DNA Demethylation in Human iPS Cells	117
9	Microtechnological Approaches in Stem Cell Science	135



ix

Contents

10	Application of Micro/Nanotechnology to Stem Cell Research and Technology Amir R. Aref	167
11	Spermatogonial Stem Cells	191.
12	Cellular Reprogramming and Fate Conversion	211
13	Omics in Stem Cell Therapy: The Road Ahead	227
14	Microglia: The Bodyguard and the Hunter of the Adult Neurogenic Niche Jorge Valero, Maria Francisca Eiriz, Tiago Santos, Ismael Neiva, Raquel Ferreira and João O. Malva	245
15	Immunosuppressive Properties of Mesenchymal Stromal Cells Francesco Lanza, Diana Campioni, Endri Mauro, Annalisa Pasini and Roberta Rizzo	281
16	Cellular Therapy for Hematology Malignancies: Allogeneic Hematopoietic Stem Transplantation, Graft-Versus-Host Disease, and Graft Versus Leukemia Effects. James L. M. Ferrara and Pavan Reddy	303
17	Cardiac Versus Non-Cardiac Stem Cells to Repair the Heart: The Role of Autocrine/Paracrine Signals	367
18	Adult Neurogenesis in Alzheimer's Disease and Therapies Philippe Taupin	383
A	uthor's Biography	395
	the second secon	39



DOCKET

Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.

