

# IN THIS ISSUE

DigitVision



Improving radiation therapy p526

RCB Ventures, LLC dba SuperStock/Alamy



Targeting inflammation in COPD p543

**D**espite recent advances in the planning and delivery of radiation therapy in cancer treatment, acute toxicity and potential long-term side effects often limit its use. Given that over half of all patients with cancer receive radiation therapy, substantial effort is being invested in the development of approaches to improve outcomes following treatment while sparing effects on normal tissues. In their Review article, Kirsch and colleagues discuss recent advances in the understanding of the signalling pathways mediating the cellular response to radiation and the mechanisms by which tumours evade treatment, focusing on progress in the development of a new generation of targeted radiosensitizers and radioprotectors. Chronic obstructive pulmonary disease (COPD) is associated with chronic inflammation, which leads to progressive obstruction of the airways, but this is not effectively targeted by current treatments. Barnes overviews the inflammatory processes involved in the pathophysiology of COPD, highlighting promising emerging therapeutics, including antioxidants and kinase inhibitors, and target pathways such as epigenetic regulation of inflammatory gene expression and cellular senescence. Challenges and future directions for drug development for COPD are also highlighted. Finally, Longo and Massa review the mammalian family of neurotrophins, proteins that are involved in the regulation of neuronal survival and maintenance of synaptic plasticity, describing their multiple receptors and complex downstream signalling pathways, as well as their normal and pathological effects in the brain. They discuss emerging opportunities for therapeutically modulating neurotrophin receptor activity for the treatment of neurological disorders such as Alzheimer's disease, particularly the selective targeting of individual neurotrophin receptors using small-molecule ligands.

## EDITORIAL OFFICE

**LONDON** NatureReviews@nature.com  
The Macmillan Building, 4 Crinan Street,  
London N1 9XW, UK  
Tel: +44 (0)20 7843 3620;  
Fax: +44 (0)20 7843 3629

To subscribe and for more detailed information visit  
[www.nature.com/reviews/drugdisc](http://www.nature.com/reviews/drugdisc)

**CHIEF EDITOR:** Peter Kirkpatrick  
**SENIOR EDITORS:** Alexandra Fleming,  
Charlotte Harrison, Sarah Crunkhorn,  
Monica Hoyos Flight  
**SENIOR NEWS EDITOR:** Asher Mullard  
**ASSISTANT EDITOR:** Man Tsuey Tse  
**SENIOR COPY EDITOR (NRD):** Mariam Faruqi  
**SENIOR COPY EDITORS:** Matthew Smyllie,  
Isabel Woodman, Lucie Wootton  
**COPY EDITING MANAGER:** Catriona Rodwell  
**ART CONTROLLER:** Susanne Harris  
**SENIOR ART EDITORS:** Vicky Summersby,  
Patrick Morgan, Kirsten Lee

**MANAGING PRODUCTION EDITOR:** Judith Shadwell  
**SENIOR PRODUCTION EDITOR:** Simon Fenwick  
**PRODUCTION CONTROLLER:** Natalie Smith  
**SENIOR EDITORIAL ASSISTANTS:** Laura Corns,  
Ella Lines  
**WEB PRODUCTION MANAGER:** Dipti Shah  
**MARKETING MANAGERS:** Tim Redding, Nazly De La Rosa  
**PUBLISHING DIRECTOR:** Peter Collins

**NEW YORK** [nature@natureny.com](mailto:nature@natureny.com)  
Nature Publishing Group, 75 Varick Street, 9th floor,  
New York, NY 10013-1917, USA  
Tel: +1 212 726 9200;  
Fax: +1 212 696 9006

**PUBLISHER (BIOPHARMA):** Melanie Brazil

**CUSTOMER SERVICES:** [Feedback@nature.com](mailto:Feedback@nature.com)

Copyright © 2013 Nature Publishing Group  
Printed in Wales by Cambrian Printers on acid-free paper.

## EDITORS



PETER KIRKPATRICK



ALEXANDRA FLEMING



CHARLOTTE HARRISON



SARAH CRUNKHORN



ASHER MULLARD



MAN TSUEY TSE