# JOURNAL OF

# DEVELOPMENTAL ORIGINS OF HEALTH AND DISEASE







# **CONTENTS**

IN THIS ISSUE		Pre- and postnatal determinants of childhood body size:	
Michael G. Ross	71	cohort and sibling analyses M. B. Terry, Y. Wei, D. Esserman, I. W. McKeague	
ORIGINAL ARTICLES		and E. Susser	99
Maternal distress in early life predicts the waist-to-hip ratio in schoolchildren  A. L. Kozyrskyj, Y. Zeng, I. Colman, K. T. HayGlass, E. A. C. Sellers, A. B. Becker and B. J. MacNeil  Pregnancy and neonatal outcomes following hyperemesis gravidarum	72	Perinatal programming of murine immune responses by polyunsaturated fatty acids N. van Vlies, A. Hogenkamp, A. L. Fear, B. C. van Esch, A. Oosting, B. van de Heijning, E. van der Beek, P. C. Calder and J. Garssen	112
R. L. Coetzee, B. Cormack, L. Sadler and F. H. Bloomfield	81		
Cord blood immune biomarkers in small for gestational age births N. Matoba, F. Ouyang, K. K. L. Mestan, N. F. M. Porta, C. M. Pearson, K. M. Ortiz, H. C. Bauchner, B. S. Zuckerman		Maternal malnutrition and placental insufficiency induce global downregulation of gene expression in fetal kidneys O. Denisenko, B. Lin, S. Louey, K. Thornburg, K. Bomsztyk	
and X. Wang	89	and S. Bagby	124

### **EDITORIAL POLICY**

Journal of Developmental Origins of Health and Disease publishes leading research in the field of developmental origins of health and disease (DOHaD), focusing on how the environment during early animal and human development, and interactions between environmental and genetic factors, influence health in later life and risk of disease. It publishes original research articles, short communications and reviews, and plans regular themed issues, with guest editors; it is also a platform for conference/workshop reports, and for opinion, comment and interaction. The journal is multi-disciplinary, with contributions from basic scientists working in the fields of physiology, nutrition, endocrinology and metabolism, developmental biology, molecular biology and epigenetics, human biology and anthropology, evolutionary developmental biology, and clinicians, nutritionists, epidemiologists, social scientists, economists, public health specialists and policy makers.

# **SUBSCRIPTIONS**

Journal of Developmental Origins of Health and Disease (print ISSN 2040-1744, electronic ISSN 2040-1752) is published bimonthly in February, April, June, August, October and December, 6 parts forming a volume, by Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, UK/Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013–2473, USA. The institutional subscription price (excluding VAT) including electronic access of Volume 2 (2011) is £250 net (US \$413 in the USA, Canada and Mexico). The electronic-only price available to institutional subscribers is £210 (US \$347 in USA, Canada and Mexico). The print-only price available to institutional subscribers is £230 (US \$380 in the USA, Canada and Mexico). Single parts are £42 (US \$70 in the USA, Canada and Mexico) plus postage. Back volumes are also available.

Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the publisher: Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, UK; or in the USA, Canada and Mexico: Cambridge University Press, Journals Fulfillment Department, 100 Brook Hill Drive, West Nyack, New York 10994–2133. EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number. Japanese prices for institutions are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan. Prices include delivery by air.

### DOHaD MEMBERS SUBSCRIPTION

Members of the International Society for Developmental Origins of Health and Disease (DOHaD) receive electronic access to the journal as part of their subscription to the Society (Standard membership rate: £45 / US\$70 / €50; Student membership rate: £20 / US\$30 / €22; Developing Country rate: see www.mrc.soton.ac.uk/dohad). For membership application details please visit www.mrc.soton.ac.uk/dohad. For additional print subscription members are asked to contact the Membership Secretary (dohad@mrc.soton.ac.uk) at DOHaD.

# **COPYRIGHT AND PERMISSIONS**

This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of U.S. Copyright law) subject to payment to C.C.C. of the per-copy fee of \$25.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 2040-1744/2011 \$25.00.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only. Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions.

For all other use, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

### **ADVERTISING**

Advertising queries for all parts of the world except the USA, Canada and Mexico to: ad\_sales@cambridge.org
Address enquiries in the USA, Mexico and Canada only to: journals\_advertising@cup.org

# OTHER BUSINESS CORRESPONDENCE

All other business correspondence should be sent to Dan Edwards, Commissioning Editor: dedwards@cambridge.org

# INSTRUCTIONS FOR CONTRIBUTORS

Full Instructions for Contributors are available for download from journals.cambridge.org/doh

### INTERNET ACCESS

This journal is included in the Cambridge Journals Online service which can be found at journals.cambridge.org. For further information on other Press titles access cambridge.org

### DISCLAIMER

The views expressed in this journal represent those of the authors only. In no way can they be construed to necessarily reflect the views of either the Editors, the Publishers, or the Society.

© Cambridge University Press and the International Society for Developmental Origins of Health and Disease 2011

Printed in the United Kingdom by Latimer Trend, Plymouth

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

# **JOURNALS**

# Go Mobile

CJO Mobile (CJOm) is a streamlined Cambridge Journals Online (CJO) for smartphones and other small mobile devices



- Use CJOm to access all journal content including FirstView articles which are published online ahead of print
- Access quickly and easily thanks to simplified design and low resolution images
- Register for content alerts or save searches and articles – they will be available on both CJO and CJOm
- Your device will be detected and automatically directed to CJOm via: journals.cambridge.org



# **C**AMBRIDGE

# **JOURNALS**

# Primary Health Care Research & Development

# **Editors-in-Chief**

Sally Kendall, University of Hertfordshire, UK Rosamund Bryar, City University, UK

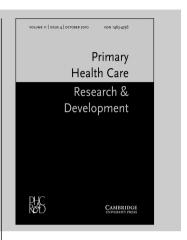
Primary Health Care Research & Development is the first journal aimed specifically at both researchers and practitioners in primary health care, bridging the gap between the two areas. It provides a forum for the publication of international, interdisciplinary research and development in primary health care. The journal is essential reading for all involved in primary care: nurse practitioners, GPs and Health Service managers; professional and local groups in community health; researchers and academics; purchasers of primary health care services; allied health practitioners in secondary services and health-related consumer groups.

# **Price information**

is available at: http://journals.cambridge.org/phc

# Free email alerts

Keep up-to-date with new material – sign up at http://journals.cambridge.org/alerts



# Primary Health Care Research & Development

is available online at: http://journals.cambridge.org/phc

# To subscribe contact Customer Services

# in Cambridge:

Phone +44 (0)1223 326070 Fax +44 (0)1223 325150 Email journals@cambridge.org

## in New York:

Phone +1 (845) 353 7500 Fax +1 (845) 353 4141 Email subscriptions\_newyork@cambridge.org

For free online content visit: http://journals.cambridge.org/phc

