Editor-in-Chief Tahir S Pillay (South Africa)

anir S Pillay (South Air

Editors

Iskander Chaudhry (Virtual Case Editor: UK) Runjan Chetty (Molecular Pathology; Canada) Dhiren Govender (Histopathology; South Africa) Stephen Jolles (Immunology; UK) Cheok Soon Lee (Histopathology; Australia) Tony Mazzulli (Microbiology; Canada) Mary Frances McMullin (Haematology; UK) Des Richardson (Experimental and Cell Biology; Australia) Sumit Sahni (Molecules in Pathogenesis; Australia)

Web Editor Dhiren Govender (South Africa)

Best Practice Editor Newton Wong (UK)

Statistical Editor Mario Cortina Borja (UK) Impact Factor: 2.894

Disclaimer: Journal of Clinical Pathology is owned and published by the Association of Clinical Pathologists and BMJ Publishing Group Ltd, a wholly owned subsidiary of the British Medical Association. The owners grant editorial freedom to the Editor of Journal of Clinical Pathology. Journal of Clinical Pathology follows guidelines on editorial independence produced by the World Association of Medical Editors and the code on good publication Ethics.

Journal of Clinical Pathology is intended for medical professionals and is provided without warranty, express or implied. Statements in the Journal are the responsibility of their authors and advertisers and not authors' institutions, the BMJ Publishing Group Ltd or the BMA unless otherwise specified or determined by law. Acceptance of advertising does not imply endorsement.

To the fullest extent permitted by law, the BMJ Publishing Group Ltd shall not be liable for any loss, injury or damage resulting from the use of *Journal of Clinical Pathology* or any information in it whether based on contract, tort or otherwise. Readers are advised to verify any information they choose to rely on.

Copyright: © 2018 by the BMJ Publishing Group Ltd & Association of Clinical Pathologists. All rights reserved; no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of *Journal of Clinical Pathology*.

Journal of Clinical Pathology is published by BMJ Publishing Group Ltd, typeset by Exeter Premedia Services Private Ltd, Chennai, India and printed in the UK on acid-free paper.

Journal of Clinical Pathology (ISSN No: 0021-9746) is published monthly by BMJ Publishing Group and distributed in the USA by Air Business Ltd. Periodicals postage paid at Jamaica NY 11431 POSTMASTER: send address changes to Journal of Clinical Pathology, Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA

Journal of Clinical Pathology

Journal of the Association of Clinical Pathologists *JCP* is a core publication for workers in all disciplines of pathology. Clinical pathology is its central theme but the *Journal* also publishes basic science papers with a clear clinical application.

International Advisory Board

F Al-Mulla (Kuwait), S Asa (Canada), S Badve (USA), B Bandarchi (Canada), A C Bateman (UK), C Cargo (UK), M Catherwood (Ireland), L Cheng (USA), K Cooper (USA), W Cooper (Australia), M Crook (UK), G Cserni (Hungary), B Delahunt (New Zealand), V Deshpande (USA), R Drut (Argentina), W Erber (Australia), A Folpe (USA), S Fox (Australia), R Gama (UK), D Ghazarian (Canada), A Giordano (USA), I Gosbell (Australia), F Hannan (UK), O Harada (Japan), C-C Huang (Taiwan), P Hui (USA), P Jansson (Australia), K Javaid (UK), D Kalinowski (Australia), Z Kovacevic (Australia), S-Y Leung (Hong Kong), G McCluggage (UK), O Mete (Canada), S Misbah (UK), T Mori (Japan), T Moriya (Japan), T Reynolds (UX), F Schmitt (Portugal), M Sekha (UK), B Simpson (UK), R Singh (USA), P H Tan (Singapore), P Twomey (UK), I S Young (UK), J Yuan (USA)

Association of Clinical Pathologists President General Administrator

R Eustace.

189 Dyke Road, Hove,

East Sussex BN3 1TL UK

T: +44 (0)1273 775 700

F: +44 (0)1273 773 303

E: info@pathologists.org.uk

http://www.pathologists.org.uk/

President W G Simpson

Vice President K Skordilis

Chairman of Council J L Burton

Honorary Secretary T M Reynolds

Honorary Treasurer P J Twomey



JCP Online Archive

The full back archive of *Journal of Clinical Pathology* is now available from 1969 at http://jcp.bmj.com/. Users have FREE access to all articles right back to Volume 1, Issue 1 and up to and including Volume 58, Issue 12.* The online archives were digitised with the help of the US National Library of Medicine.

Personal subscribers must sign in to access this content. Users not covered by an institutional or personal subscription will have to complete a one-time registration that grants access to all archive content, across all our titles.

*Articles that have been published after this issue require a subscription to access them.

Subscription Information

Journal of Clinical Pathology is published monthly (subscribers have access to all supplements)

Institutional Rates 2018

Print

£908

Online

Site licences are priced on FTE basis and allow access by the whole institution.

Print (includes online access at no additional cost) £346

Personal Rates 2018

Online only f174

ISSN: 0021 9746 (print) ISSN: 1472 4146 (online) Personal print or online only and institutional print subscriptions may be purchased online at http://jcp.bmj.com/ pages/subscribe/ (payment by Visa/ Mastercard only)

Residents of some EC countries must pay VAT; for details, call us or visit http://www. bmj.com/company/eu-vat-rates/

Contact Details

Editorial Office

Journal of Clinical Pathology, BMJ Journals, BMA House, Tavistock Square, London WC1H 9JR, UK E: info.jcp@bmj.com Twitter: @JClinPath_BMJ

Customer Support

For general queries and support with subscriptions: W: support.bmj.com T: +44 (0)20 7111 1105 E: support@bmj.com

Self-archiving and permissions

W: bmj.com/company/products-services/ rights-and-licensing/

E: bmj.permissions@bmj.com

Advertising

W: bmj.com/company/for-advertisers-andsponsor/

Display Advertising ROW

Sophie Fitzsimmons T: **+44 (0)20 3655 5612** E: **sfitzsimmons@bmj.com**

Online Advertising ROW

Marc Clifford T: **+44 (0)20 3655 5610** E: **mclifford@bmj.com**

Display & Online Advertising Americas

American Medical Communications (AMC) T: +1 973 214 4374 E: rgordon@americanmedicalcomm.com

Author Reprints BMJ Reprints Team E: admin.reprints@bmj.com

Commercial Reprints ROW Nadia Gurney-Randall M: +44 (0)7866 262 344 E: ngurneyrandall@bmj.com

Commercial Reprints Americas Ray Thibodeau T: +1 267 895 1758 M: +1 215 933 8484 E: ray.thibodeau@contentednet.com

Production Editor Emma Chan E: production.jcp@bmj.com

For all other JCP journal contacts http://jcp.bmj.com/pages/contact-us/

Guidelines for Authors and Reviewers

Full instructions are available online at http://jcp.bmj.com/pages/authors/. Articles must be submitted electronically via https:// mc.manuscriptcentral.com/jcp. Authors retain copyright but are required to grant *Journal of Clinical Pathology* an exclusive licence to publish http://authors.bmj.com/ submitting-your-paper/copyright-and-authors-rights/