



EUROPEAN RESPIRATORY *journal*

Impact factor:
5.895

CHIEF EDITOR

Marc Humbert

Université Paris-Sud, Service de Pneumologie, Hôpital Bicêtre, 78 Rue de Général Leclerc, 94270 Le Kremlin-Bicêtre, France.
E-mail: erj.chief-editors@ersnet.org

PUBLICATIONS OFFICE

Managing Editor: **Neil Bullen**, neil.bullen@ersj.org.uk
Head of Publications: **Elin Reeves**, elin.reeves@ersj.org.uk
442 Glossop Road, Sheffield, S10 2PX. Tel: +44 114 267 2860 | Fax: +44 114 266 5064

DEPUTY CHIEF EDITOR

Anh Tuan Dinh-Xuan, Université Paris-Descartes, France.

ASSOCIATE EDITORS

Nicolino Ambrosino, University Hospital of Pisa, Italy; **Gary P. Anderson**, University of Melbourne, Australia; **Isabella Annesi-Maesano**, Université Pierre et Marie Curie, France; **Robert Bals**, Universitätsklinikum des Saarlandes, Germany; **Elisabeth H.D. Bel**, University of Amsterdam, The Netherlands; **Benjamin Besse**, Institut Gustave-Roussy, France; **Louis-Philippe Boulet**, Université Laval, Canada; **Jean Bousquet**, INSERM, France; **Pascal Chanez**, Université de la Méditerranée, France; **Vincent Cottin**, University of Lyon, France; **Marion Delcroix**, UZ Leuven, Belgium; **Leonardo M. Fabbri**, Università degli Studi di Modena e Reggio Emilia, Italy; **Ramon Farré**, Universitat de Barcelona, Spain; **Mina Gaga**, Athens Chest Hospital 'Sotiria', Greece; **Dominik Hartl**, University of Tübingen, Germany; **Paul Hassoun**, Johns Hopkins University School of Medicine, USA; **Marius M. Hoepfer**, Hannover Medical School, Germany; **Steven Kawut**, University of Pennsylvania School of Medicine, USA; **Melanie Koenigshof**, Ludwig Maximilians University München, Germany; **Stavros Konstantinides**, Johannes Gutenberg University of Mainz, Germany; **Tom Kotsimbos**, Monash University, Australia; **Claudia Kuehni**, University of Bern, Switzerland; **Patrick Lévy**, Université Joseph Fourier, France; **Joseph P. Lynch**, University of California Los Angeles, USA; **Peter J.F.M. Merkus**, Radboud University Nijmegen Medical Centre, The Netherlands; **Giovanni Battista Migliori**, Fondazione S. Maugeri Care and Research Institute, Italy; **Martin R. Miller**, University of Birmingham, UK; **Joachim Müller-Quernheim**, Medizinische Klinik der Universität Freiburg, Germany; **Robert Naeije**, Erasme University Hospital, Belgium; **Paolo Palange**, Sapienza University of Rome, Italy; **Ganesh Raghu**, University of Washington Medical Center, USA; **Luca Richeldi**, University Hospital of Modena, Italy; **Marina Saetta**, Università degli Studi di Padova, Italy; **Jean-Paul Sculier**, Institut Jules Bordet, Belgium; **Thomas Similowski**, Université Pierre et Marie Curie, France; **Joan B. Soriano**, Recinte Hospital Joan March, Spain; **Giovanni Sotgiu**, University of Sassari, Italy; **Rogério Souza**, University of Sao Paulo Medical School, Brazil; **Sami Suissa**, McGill University, Canada; **Paul E. Van Schil**, University Hospital of Antwerp, Belgium; **Norbert Voelkel**, Virginia Commonwealth University, USA; **Anton Vonk Noordegraaf**, VU University Medical Center, The Netherlands; **Wisla Wedzicha**, University College London Medical School, UK; **Tobias Welte**, Hannover Medical School, Germany; **Mark A. Woodhead**, Manchester Royal Infirmary, UK.

INTERNATIONAL ADVISORY BOARD

Peter J. Barnes, Imperial College London, UK; **Eric Berglund**, Gothenburg, Sweden; **Judith L. Black**, University of Sydney, Australia; **Eric D. Bateman**, University of Cape Town, South Africa; **Francesco Blasi**, Università di Milano, Italy; **Laurent Brochard**, Hôpitaux Universitaires de Genève, Switzerland; **Guy Brusselle**, Ghent University Hospital, Belgium; **Peter M.A. Calverley**, University Hospital Aintree, UK; **Ulrich Costabel**, Ruhrlandklinik, Germany; **Bruno Crestani**, Université Paris-Diderot, France; **Jeffrey M. Drazen**, Harvard University, USA; **Ratko Djukanovic**, University of Southampton, UK; **Stephen Durham**, Imperial College London, UK; **Oliver Eickelberg**, Helmholtz Zentrum München, Germany; **Jorrit Gerritsen**, University Medical Center Groningen, The Netherlands; **Loïc Guillevin**, Université Paris-Descartes, France; **Pieter Hiemstra**, Leiden University Medical Center, The Netherlands; **Nick Hill**, Tufts New England Medical Center, USA; **Stephen Holgate**, University of Southampton, UK; **Talmadge E. King Jr.**, University of California San Francisco, USA; **Bart Lambrecht**, University of Ghent, Belgium; **Jim Loyd**, Vanderbilt University, USA; **Fernando J. Martinez**, University of Michigan, USA; **Benoit Nemery**, Catholic University Leuven, Belgium; **Laurent Nicod**, Centre Hospitalier Universitaire Vaudois, Switzerland; **Paul O'Byrne**, McMaster University, Canada; **Michael I. Polkey**, Royal Brompton Hospital, UK; **Klaus F. Rabe**, Krankenhaus Großhansdorf, Germany; **Marlene Rabinovitch**, Stanford University, USA; **Lewis J. Rubin**, University of California San Diego, USA; **Werner Seeger**, University of Giessen, Germany; **Nikolaos M. Siafakas**, University of Crete, Greece; **Yves Sibille**, Université Catholique de Louvain, Belgium; **Anita K. Simonds**, Royal Brompton Hospital, UK; **Gérald Simonneau**, Université Paris-Sud, France; **Peter D. Sly**, University of Queensland, Australia; **Peter J. Sterk**, University of Amsterdam, The Netherlands.

EDITORIAL BOARD MEMBERS

Fekri Abroug, CHU F. Bourguiba, Tunisia; **Ibrahim Abubakar**, Health Protection Agency, UK; **Ian Adcock**, Imperial College London, UK; **Yochai Adir**, University of Haifa, Israel; **Eric Austin**, Vanderbilt University, USA; **Claus Bachert**, University of Ghent, Belgium; **Joan Barbera**, University of Barcelona, Spain; **Neil C. Barnes**, London Chest Hospital, UK; **Richard Beasley**, Medical Research Institute of New Zealand, New Zealand; **Raymond L. Benza**, Allegheny General Hospital, USA; **Harm Jan Bogaard**, VU University Medical Center, The Netherlands; **Pierre-Yves Brillet**, Université Paris-Nord, France; **Pierre-Régis Burgel**, Université Paris-Descartes, France; **Carlos Camargo**, Massachusetts General Hospital, USA; **Jorge Caneva**, Fundacion Favaloro, Argentina; **Giuseppe Cardillo**, Azienda Ospedaliera San Camillo Forlanini, Italy; **Thomas Casale**, Creighton University School of Medicine, USA; **Dan Chambers**, University of Queensland, Australia; **Daniela Maria Cirillo**, San Raffaele Scientific Institute, Italy; **Hal Collard**, University of California San Francisco, USA; **Alvaro Cruz**, Faculdade de Medicina da Bahia, Brazil; **Sven-Erik Dahlén**, Karolinska Institute, Sweden; **Paul De Leyn**, UZ Leuven, Belgium; **François de Man**, VU University Medical Center, The Netherlands; **Laurence Dewachter**, Free University of Brussels, Belgium; **Roland Diel**, Hannover Medical School, Germany; **Gavin C. Donaldson**, University College London, UK; **Peter Dorfmueller**, Université Paris-Sud, France; **Sy Duong Quy**, University of Dalat, Vietnam; **Elie Fadel**, Université Paris-Sud, France; **Harrison W. Farber**, Boston University, USA; **Sean Gaine**, University of Dublin, Ireland; **Nazzareno Galie**, University of Bologna, Italy; **Ardeshir Ghofrani**, University of Giessen, Germany; **Adam Giangreco**, University College London, UK; **Mardi Gombert-Maitland**, University of Chicago, USA; **Marie Jose Goumans**, Leiden Medical Center, The Netherlands; **Bogdan Grigoriu**, University of Medicine and Pharmacy Iasi, Romania; **Christophe Guignabert**, Université Paris-Sud, France; **François Haddad**, Stanford University, USA; **Hamida Hammad**, University of Ghent, Belgium; **Agnès Hamzaoui**, Hôpital Abderrahman Mami, Tunisia; **Sergio Harari**, Ospedale San Giuseppe, Italy; **Craig Hersh**, Harvard University, USA; **Carlos Jardim**, University of Sao Paulo, Brazil; **Zhi Cheng Jing**, Shanghai Pulmonary Hospital, Tongji University, China; **Adrien Kettaneh**, Université Pierre et Marie Curie, France; **Martin Kolb**, McMaster University, Canada; **Irene Lang**, University of Vienna, Austria; **Mareike Lankeit**, Georg-August University of Goettingen, Germany; **Philipp Latzin**, University of Bern, Switzerland; **Pierantonio Laveneziana**, Université Pierre et Marie Curie, France; **Wei Shen Lim**, Nottingham City Hospital, UK; **Jane Lucas**, University of Southampton, UK; **Antoine Magnan**, Université de Nantes, France; **Toby Maher**, Imperial College London, UK; **Marcus Mall**, University of Heidelberg, Germany; **Tom Marrie**, Dalhousie University, Canada; **Pierre Massion**, Vanderbilt University, USA; **Steve Mathai**, Johns Hopkins University School of Medicine, USA; **Thais Mauad**, Universidade de São Paulo, Brazil; **Vallerie McLaughlin**, University of Michigan, USA; **Rosario Menéndez Villanueva**, University Hospital La Fe, Spain; **David Montani**, Université Paris-Sud, France; **Luc Mouthon**, Université Paris-Descartes, France; **Matt Naughton**, Monash University, Australia; **J. Alberto Nader**, Queen's University, Canada; **Mark R. Nicolls**, Stanford University, USA; **Dermot O'Callaghan**, University College Dublin, Ireland; **Neil Pearce**, London School of Hygiene and Tropical Medicine, UK; **Frédéric Perros**, Université Paris-Sud, France; **Charles Pilette**, Cliniques Universitaires St-Luc, Belgium; **Vsevolod Y. Polotsky**, Johns Hopkins University School of Medicine, USA; **Ioana Preston**, Tufts Medical Center, USA; **Steeve Provencher**, Université Laval, Canada; **Tomas Pulido**, La Salle University, Mexico; **Helen K. Reddel**, Woolcock Institute of Medical Research, Australia; **Bruce K. Rubin**, Virginia Commonwealth University School of Medicine, USA; **Dermot Ryan**, University of Edinburgh, UK; **Bernd Schmeck**, Marburg University, Germany; **Terry Seemungal**, University of West Indies, Trinidad and Tobago; **Ashok Shah**, University of Delhi, India; **Torben Sigsgaard**, University of Aarhus, Denmark; **Olivier Sitbon**, Université Paris-Sud, France; **Donald D. Sin**, St. Paul's Hospital, Canada; **Stephen J. Till**, King's College, UK; **Adam Torbicki**, ECZ-Otwork, Poland; **Dominique Vaieyre**, Université Paris-Nord, France; **Mariëke J. Van der Werf**, European Centre for Disease Prevention and Control, Sweden; **Grant Waterer**, University of Western Australia, Australia; **Kenneth Whyte**, University of Auckland, New Zealand; **John Wilson**, Monash University, Australia; **Paul Wolters**, University of California San Francisco, USA; **Pan-Chyr Yang**, National Taiwan University College of Medicine, Taiwan; **Spiros Zakyntinos**, Evangelismos Hospital, Greece; **Jean-Pierre Zellweger**, Swiss Lung Association, Switzerland.

Past Chief Editors: **J-C. Yernault**[†], Brussels, Belgium; **E. Berglund**, Gothenburg, Sweden; **P. Vermeire**[†], Antwerp, Belgium; **U. Costabel**, Essen, Germany; **M. Decramer**, Leuven, Belgium; **P.J. Sterk** and **K.F. Rabe**, Amsterdam, The Netherlands and Kiel, Germany; **A.T. Dinh-Xuan** and **V. Brusasco**, Paris, France and Genova, Italy.

PUBLICATIONS OFFICE STAFF

Fiona Marks
Alyson Adam
David Sadler

Catherine Pumphrey
Rachel White
Claire Turner

Jonathan Hansen
Matthew Broadhead
Lee Dodd

Sarah Hill
Gill Archer
Kay Sharpe

AIMS & SCOPE

The *European Respiratory Journal (ERJ)*, the official Journal of the European Respiratory Society, publishes, in the English language, clinical and experimental work dealing with all aspects of respiratory medicine. In addition to original material, the *ERJ* prints Editorials and Reviews, as well as Letters and Correspondence. This Journal is abstracted/indexed in: Ad Referendum, ADONIS, Biological Abstracts/BIOSIS, Chemical Abstracts, Current Contents: Life Sciences, Current Contents: Clinical Medicine, Elsevier BIOBASE/Current Awareness in Biological Sciences, EMBASE/Excerpta Medica, Index Medicus/MEDLINE, Medical Documentation Service, Research Alert, Science Citation Index, SciSearch, SIIC Data Base and CABI Global Health.

SUBSCRIPTIONS

ERJ is published monthly by the European Respiratory Society (ERS). Twelve issues are published annually in two volumes of six issues each. The volumes for 2013 are Volumes 41 and 42.

Subscription rates for institutions (Volumes 41 & 42, 2013): £686.00 online only, £834.00 print and online; US\$1,303.00 online only, US\$1,585.00 print and online in North America. Subscription rates include air economy postage. Subscriptions are payable in advance.

Subscribers within the European Union must provide their VAT (Value Added Tax) number or add VAT to the subscription rate at the rate prevailing in their own country. Subscriptions are managed on behalf of the ERS by: Maney Publishing, Suite 1C, Joseph's Well, Hanover Walk, Leeds LS3 1AB, UK (fax: +44 (0)113 386 8178; E-mail: subscriptions@maney.co.uk) or: Maney Publishing North America, 875 Massachusetts Avenue, 7th Floor, Cambridge, MA 02139, USA (tel: (toll-free) +1 (0)866 297 5154; fax: +1 (0)617 354 6875; E-mail: maney@maneyusa.com). All orders, payments, and claims for missing issues should be sent to Maney Publishing or to any subscription agent.

ONLINE ACCESS

All subscribers have online access to the full text of each issue as part of their subscription via www.erj.ersjournals.com. Members of the ERS receive the *ERJ* as part of their membership.

INSTRUCTIONS TO AUTHORS/GENERAL ENQUIRIES

Before submitting an article to the *ERJ*, please read and carefully follow the instructions to authors, which are available at www.erj.ersjournals.com

All manuscripts must be submitted electronically using the online submission system at <http://mc.manuscriptcentral.com/erj>

If you experience problems, please contact the **Submission Helpline direct on +44 (0) 114 2672864** or contact **Gill Archer** (gill.archer@ersj.org.uk) the manuscript submissions coordinator.

All *ERJ* business matters should be addressed to: Elin Reeves, European Respiratory Society Publications Office, 442 Glossop Road, Sheffield, S10 2PX, UK.

Fax: +44 (0) 114 266 5064 | E-mail: elin.reeves@ersj.org.uk

All permission requests should be sent to permissions@ersj.org.uk

Reprint and translation enquiries should be sent to admin@ersj.org.uk

For all enquiries concerning advertising please e-mail steve.sealy@ersnet.org

ENVIRONMENTAL STATEMENT

The publisher ensures that the text paper and cover board used have met acceptable environmental accreditation standards.

PRESS RELEASES

ERJ press releases can be found online at www.ersjournals.com/site/misc/presspack.xhtml

Articles with press releases are indicated as such on these contents pages.

© 2013 ERS. Authorisation to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted for libraries and other users registered with the Copyright Clearance Center (CCC). Please go to www.copyright.com or phone USA (978) 750 8400. UK customers should go to www.cla.co.uk. All other rights, including microfilm, electronic and/or copying reserved.

European Respiratory Journal, 0903-1936, is published monthly by the European Respiratory Society, 442 Glossop Road, Sheffield, S10 2PX, UK. Airfreight and mailing in the USA by agent named Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Periodicals postage paid at Jamaica NY 11434. US Postmaster: send address changes to European Respiratory Journal, Air Business Ltd, c/o Worldnet Shipping Inc., 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA. Subscription records are maintained at European Respiratory Society, 442 Glossop Road, Sheffield, S10 2PX, UK. Air Business Ltd is acting as our mailing agent.

Typesetting by H. Charlesworth & Co. Ltd.

Printed in UK by Page Bros (Norwich) Ltd.

"The advertiser shall be liable for the content of any of its advertisements published according to its instructions. The advertiser shall indemnify and hold harmless the European Respiratory Society against and from any and all claims, damages, liabilities, costs and expenses whatsoever, including reasonable counsel fees, arising from the content of any of its advertisements."



This journal is a member of and subscribes to the principles of the Committee on Publication Ethics



EDITORIALS

- 253** **Obesity and asthma: location, location, location**
Stephanie A. Shore
- 255** **Anti-interleukin-13 antibody therapy for asthma: one step closer**
Jonathan Corren
- 257** **Hypoglossal neurostimulation for obstructive sleep apnoea**
Ferran Barbé and Juan F. Masa
- 259** **Neuregulin-1 as a potentially novel biomarker in acute respiratory distress syndrome**
William Checkley

PERSPECTIVE

- 262** **A progression-free end-point for idiopathic pulmonary fibrosis trials: lessons from cancer**
Carlo Vancheri and Roland M. du Bois

EUROPEAN COPD AUDIT

- 270** **European COPD Audit: design, organisation of work and methodology**
Jose Luis López-Campos, Sylvia Hartl, Francisco Pozo-Rodriguez and C. Michael Roberts, on behalf of the European COPD Audit team

ORIGINAL ARTICLES

Clinical practice

- 277** **Objective measurement of cough in otherwise healthy volunteers with acute cough**
Kanchan Sunger, William Powley, Angela Kelsall, Helen Sumner, Robert Murdoch and Jaclyn A. Smith

Environmental lung disease

- 285** **Impact of climate change on ozone-related mortality and morbidity in Europe**
Hans Orru, Camilla Andersson, Kristie L. Ebi, Joakim Langner, Christofer Åström and Bertil Forsberg

COPD

- 295** **Cerebral cortex oxygen delivery and exercise limitation in patients with COPD**
Ioannis Vogiatzis, Zafeiris Louvaris, Helmut Habazettl, Vasileios Andrianopoulos, Harrieth Wagner, Charis Roussos, Peter D. Wagner and Spyros Zakyntinos
- 302** **Radiological and clinical outcomes of using Chartis™ to plan endobronchial valve treatment**
Felix J.F. Herth, Ralf Eberhardt, Daniela Gompelmann, Joachim H. Ficker, Manfred Wagner, Lars Ek, Bernd Schmidt and Dirk-Jan Stebos
- 309** **Vitamin D and skeletal muscle strength and endurance in COPD**
Abigail S. Jackson, Dinesh Shrikrishna, Julia L. Kelly, Nicholas Hart, John Moxham, Michael I. Polkey, Paul Kemp and Nicholas S. Hopkinson

Asthma

- 317** **Use of continuous positive airway pressure reduces airway reactivity in adults with asthma**
Michael Busk, Nancy Busk, Paula Puntteney, Janet Hutchins, Zhangsheng Yu, Susan J. Gunst and Robert S. Tepper
- 323** **General and abdominal obesity and incident asthma in adults: the HUNT study**
Ben Brumpton, Arnulf Langhammer, Pål Romundstad, Yue Chen and Xiao-Mei Mai



- 330** **A phase II placebo-controlled study of tralokinumab in moderate-to-severe asthma**
Edward Piper, Christopher Brightling, Robert Niven, Chad Oh, Raffaella Faggioni, Kwai Poon, Dewei She, Chris Kell, Richard D. May, Gregory P. Geba and Nestor A. Molino

Cystic fibrosis

- 339** **A new double-tracer gas single-breath washout to assess early cystic fibrosis lung disease**
Florian Singer, Georgette Stern, Cindy Thamrin, Chiara Abbas, Carmen Casaulta, Urs Frey and Philipp Latzin

ORIGINAL ARTICLES (CONT.)

Noninvasive ventilation

- 346** **Pulse transit time as a measure of respiratory effort under noninvasive ventilation**
Olivier Contal, Claudio Carnevale, Jean-Christian Borel, AbdelKébir Sabil, Renaud Tamisier, Patrick Lévy, Jean-Paul Janssens and Jean-Louis Pépin

Pulmonary vascular disease

- CME article 354** **Changes in PESI scores predict mortality in intermediate-risk patients with acute pulmonary embolism**
Lisa Moores, Celia Zamarro, Vincente Gómez, Drahomir Aujesky, Leticia García, Rosa Nieto, Roger Yusen and David Jiménez on behalf of the Instituto Ramón y Cajal de Investigación Sanitaria Pulmonary Embolism Study Group

Sleep-related disorders

- 360** **Targeted hypoglossal neurostimulation for obstructive sleep apnoea: a 1-year pilot study**
Gimbada B. Mwenge, Philippe Rombaux, Myriam Dury, Benoît Lengelé and Daniel Rodenstein
- 368** **Atypical patterns in portable monitoring for sleep apnoea: features of nocturnal epilepsy?**
Liberio Parrino, Giulia Milioli, Andrea Grassi, Fernando De Paolis, Silvia Riccardi, Elena Colizzi, Marcello Bosi and Mario Giovanni Terzano
- 376** **Impact of obstructive sleep apnea on diastolic function**
Rolf Wachter, Lars Lüthje, Daniela Klemmstein, Claus Lüers, Raoul Stahrenberg, Frank Edelmann, Volker Holzendorf, Gerd Hasenfuß, Stefan Andreas and Burkert Pieske

Pulmonary infections

- 384** **TLR9- and Src-dependent expression of Krueppel-like factor 4 controls interleukin-10 expression in pneumonia**
Janine Zahlten, Robert Steinicke, Wilhelm Bertrams, Andreas C. Hocke, Stefanie Scharf, Bernd Schmeck, Martin Witzernath, Sven Hammerschmidt, Norbert Suttrop and Stefan Hippenstiel
- 392** **Effects of cigarette smoke condensate on pneumococcal biofilm formation and pneumolysin**
N. Daphney Mutepe, Riana Cockeran, Helen C. Steel, Annette J. Theron, Tim J. Mitchell, Charles Feldman and Ronald Anderson

Acute lung injury

- 396** **Bronchoalveolar lavage neuregulin-1 is elevated in acute lung injury and correlates with inflammation**
James H. Finigan, Rangnath Mishra, Vihás T. Vasu, Lori J. Silveira, David E. Nethery, Theodore J. Standiford, Ellen L. Burnham, Marc Moss and Jeffrey A. Kern

Eosinophilic pneumonia

- 402** **Clinical characteristics and corticosteroid treatment of acute eosinophilic pneumonia**
Chin Kook Rhee, Kyung Hoon Min, Nam Yeol Yim, Ji Eun Lee, Na Rae Lee, Man Pyo Chung and Kyeongman Jeon

Lung cancer

- 410** **Circulating DBP level and prognosis in operated lung cancer: an exploration of pathophysiology**
Alice M. Turner, Laura McGowan, Alan Millen, Pala Rajesh, Craig Webster, Gerald Langman, Gavin Rock, Isao Tachibana, Michael G. Tomlinson, Fedor Berditchevski and Babu Naidu
- 417** **Frequent EGFR mutations in nonsmall cell lung cancer presenting with miliary intrapulmonary carcinomatosis**
Shang-Gin Wu, Fu-Chang Hu, Yih-Leong Chang, Yung-Chie Lee, Chong-Jen Yu, Yeun-Chung Chang, Jenn-Yu Wu, Jin-Yuan Shih and Pan-Chyr Yang

Lung cell biology

- 425** **PPAR ligands decrease human airway smooth muscle cell migration and extracellular matrix synthesis**
Jancy Stephen, Chris Delvecchio, Naomi Spitale, Amanda Giesler, Katherine Radford, Pat Bilan, P. Gerard Cox, John P. Capone and Parameswaran Nair

Mechanisms of lung disease

- 433** **Recovery of neutrophil apoptosis by ectoine: a new strategy against lung inflammation**
Ulrich Sydlik, Henrike Peuschel, Adnana Paunel-Görgülü, Stefanie Keymel, Ursula Krämer, Alexander Weissenberg, Matthias Kroker, Samira Seghrouchni, Christian Heiss, Joachim Windolf, Andreas Bilstein, Malte Kelm, Jean Krutmann and Klaus Unfried

REVIEW

- 443** **Rhinovirus infections in infancy and early childhood**
Elisabeth Kieninger, Oliver Fuchs, Philipp Latzin, Urs Frey and Nicolas Regamey

SERIES

- SERIES "PHYSIOLOGY IN RESPIRATORY MEDICINE"**
Edited by R. Naeije, D. Chemla, A. Vonk Noordegraaf and A.T. Dinh-Xuan
Number 2 in this Series
- 453 The TL_{NO}/TL_{CO} ratio in pulmonary function test interpretation**
J. Michael B. Hughes and Ivo van der Lee
- SERIES "CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION"**
Edited by J. Pepke-Zaba, M.M. Hoeper and M. Humbert
Number 2 in this Series
- 462 Risk factors and basic mechanisms of chronic thromboembolic pulmonary hypertension: a current understanding**
Irene M. Lang, Raffaele Pesavento, Diana Bonderman and Jason X-J. Yuan

LETTERS

- 469 Increased glutaredoxin-1 and decreased protein S-glutathionylation in sputum of asthmatics**
Ine Kuipers, Renaud Louis, Maité Manise, Mieke A. Dentener, Charles G. Irvin, Yvonne M.W. Janssen-Heininger, Christopher E. Brightling, Emiel F.M. Wouters and Niki L. Reynaert
- 472 A 61-year-old female with chronic cough and purulent sputum**
Luca Bilucaglia, Stefano Aliberti, Egidio Franco Viganò, Annalisa Pantosti, Monica Monaco, Alessandra Ciervo, Fabiola Mancini, Paola Faverio and Alberto Pesci
- 474 Influenza vaccine-induced interstitial lung disease**
Satoshi Watanabe, Yuko Waseda, Hazuki Takato, Kanako Inuzuka, Nobuyuki Katayama, Kazuo Kasahara and Masaki Fujimura
- 477 Bronchial endoscopic ultrasound elastography: preliminary feasibility data**
Valery Trosini-Désert, Florence Jeny, Laurent Taillade, Stephane Vignot, Hedi Zribi, Frédérique Capron and Thomas Similowski
- 479 Fludarabine in paediatric steroid-refractory inflammatory lung injury after stem cell transplantation**
Martine F. Raphael, Bart L. Rottier and Jaap Jan Boelens
- 483 Isolation of cells from the lower airways in infants with wheeze by sputum induction**
Erol A. Gaillard, Jonathan Grigg, Ananth Tellabati, Teresa McNally, Amy Whittaker and Caroline S. Beardsmore

CORRESPONDENCE

- 486 Early discharge and outpatient treatment of patients admitted for acute pulmonary embolism**
Sérgio Nuno Craveiro Barra, Luís Paiva and Rui Providência; Lisa K. Moores, Celia Zamarro, Vicente Gómez, Drahomir Aujesky, Leticia García, Rosa Nieto, Roger Yusen and David Jiménez on behalf of the Instituto Ramón y Cajal de Investigación Sanitaria Pulmonary Embolism Study Group
- 488 Re-think first-line tuberculosis treatment**
Jakko van Ingen and Richard M. Anthony
- 489 Adjusting diffusing capacity of the lung for carbon monoxide for haemoglobin level**
Ming-Ju Tsai, Chih-Jen Yang, Jhi-Jhu Hwang and Ming-Shyan Huang
- f,j,l,n,p MEETING CALENDAR**

[CME Credit Application Form can be found at the back of this issue](#)