

# European Respiratory Journal

Impact factor:  
5.545

## CHIEF EDITORS

**Anh Tuan Dinh-Xuan**  
Dept of Cardiorespiratory  
Medicine,  
Cochin Hospital,  
University Paris Descartes,  
27, rue du faubourg  
Saint-Jacques,  
75014 Paris,  
France  
Tel: 33 158412341  
Fax: 33 158412345  
E-mail: erj.chief-editors@cch.aphp.fr

**Vito Brusasco**  
Dept of Internal Medicine,  
Medical School,  
University of Genoa,  
viale Benedetto XV, 6,  
16132 Genoa,  
Italy  
Tel: 39 0103537690  
Fax: 39 0103537690  
E-mail: vito.brusasco@unige.it

## ASSISTANT TO THE CHIEF EDITORS

**Nhat-Nam Le-Dong**  
Tel: 33 611392146 Fax: 33 158412345  
E-mail: erj.chief-editors@cch.aphp.fr

## PUBLICATIONS OFFICE

Managing Editors: **Elin Reeves** and **Rachel White**  
442 Glossop Road, Sheffield,  
S10 2PX, UK  
Tel: +44 114 267 2860 Fax: +44 114 266 5064  
E-mail: elin.reeves@ersj.org.uk/rachel.white@ersj.org.uk

## ASSOCIATE EDITORS

**N. Ambrosino**  
Pisa, Italy

**I. Annesi-Maesano**  
Paris, France

**J.L. Black**  
Sydney, Australia

**A. Bush**  
London, UK

**P. Chanez**  
Marseille, France

**V. Cottin**  
Lyon, France

**O. Eickelberg**  
Munich, Germany

**L.M. Fabbri**  
Modena, Italy

**R. Farré**  
Barcelona, Spain

**U. Frey**  
Bern, Switzerland

**J. Gerritsen**  
Groningen, the Netherlands

**M.M. Hoepfer**  
Hanover, Germany

**M. Humbert**  
Clamart, France

**S. Kawut**  
Philadelphia, USA

**P. Lévy**  
Grenoble, France

## ADVISORS

**P.-Y. Brillet**  
Bobigny, France  
*Radiology*

**A. Kettaneh**  
Paris, France  
*Statistics*

**S. Suissa**  
Montreal, Canada  
*Methodology*

## INTERNATIONAL ADVISORY BOARD

**M.G. Belvisi**  
London, UK

**E. Berglund**  
Gothenburg, Sweden

**C. Brambilla**  
Grenoble, France

**P.M.A. Calverley**  
Liverpool, UK

**E. Canalis**  
Barcelona, Spain

**U. Costabel**  
Essen, Germany

**M. Decramer**  
Leuven, Belgium

**R. Djukanovic**  
Southampton, UK

**S. Ewig**  
Bochum, Germany

**G.J. Laurent**  
London, UK

**P.N. Le Souëf**  
Perth, Australia

**C.E. Mapp**  
Ferrara, Italy

**E. Michelakis**  
Edmonton, Canada

**B. Nemery**  
Leuven, Belgium

**P. Palange**  
Rome, Italy

**K.F. Rabe**  
Leiden, the Netherlands

**R. Rodriguez-Roisin**  
Barcelona, Spain

**A.M.W.J. Schols**  
Maastricht, the Netherlands

**N. Siafakas**  
Heraklion, Greece

**A.K. Simonds**  
London, UK

**P.J. Sterk**  
Amsterdam, the Netherlands

**N.S. Zhong**  
Guangzhou, China



# CONTENTS

Volume 35, Number 3 March 2010

## EDITORIAL: RESPIRATORY INTENSIVE CARE ASSEMBLY

- 463 Pulmonologists and intensivists: "two hearts are better than one"**  
S. Nava and P. Pelosi

## EDITORIALS

- 467 Neutrophils in chronic inflammatory airway diseases: can we target them and how?**  
Y. Gerez, R. Tirouvanziam and P. Chanez
- 470 Stress failure and high-altitude pulmonary oedema: mechanistic insights from physiology**  
S.R. Hopkins
- 473 Enterobacteriaceae and *Pseudomonas aeruginosa* in community-acquired pneumonia: the reality after a decade of uncertainty?**  
A. Torres and R. Menéndez
- 475 Management of tuberculosis in HIV infection: where T-cells matter**  
M. Sester, C. Giehl, U. Sester and A. Meyerhans
- 477 Stereology: a bridge to a better understanding of lung structure and function**  
V. Brusasco and A.T. Dinh-Xuan

## ERS/ESTS TASK FORCE

- 479 Guidelines of the European Respiratory Society and the European Society of Thoracic Surgeons for the management of malignant pleural mesothelioma**  
A. Scherpereel, P. Astoul, P. Baas, T. Berghmans, H. Clayson, P. de Vuyst, H. Dienemann, F. Galateau-Salle, C. Hennequin, G. Hillerdal, C. Le Péchoux, L. Mutti, J.-C. Pairon, R. Stahel, P. van Houtte, J. van Meerbeeck, D. Waller and W. Weder

## PERSPECTIVE

- 496 Idiopathic pulmonary fibrosis: a disease with similarities and links to cancer biology**  
C. Vancheri, M. Failla, N. Crimi and G. Raghu

## ORIGINAL ARTICLES

### Occupational and environmental lung disease

- 505 HMOX1 and GST variants modify attenuation of FEF<sub>25-75%</sub> decline due to PM<sub>10</sub> reduction**  
I. Curjuric, M. Imboden, C. Schindler, S.H. Downs, M. Hersberger, S.L.J. Liu, G. Matyas, E.W. Russi, J. Schwartz, G.A. Thun, D.S. Postma, T. Rochat, N.M. Probst-Hensch and the SAPALDIA team

### Asthma and allergy

#### CME article

- 515 Rapid reduction in hospitalisations after an intervention to manage severe asthma**  
C. Souza-Machado, A. Souza-Machado, R. Franco, E.V. Ponte, M.L. Barreto, L.C. Rodrigues, J. Bousquet and A.A. Cruz

## ORIGINAL ARTICLES (CONT.)

- 522 Differential gene expression and cytokine production from neutrophils in asthma phenotypes**  
K.J. Baines, J.L. Simpson, N.A. Bowden, R.J. Scott and P.G. Gibson

### COPD

- 532 Is treatment with ICS and LABA cost-effective for COPD? Multinational economic analysis of the TORCH study**  
A.H. Briggs, H.A. Glick, G. Lozano-Ortega, M. Spencer, P.M.A. Calverley, P.W. Jones and J. Vestbo on behalf of the TOwards a Revolution in COPD Health (TORCH) investigators
- 540 Systemic inflammatory markers in COPD: results from the Bergen COPD Cohort Study**  
T.M.L. Eagan, T. Ueland, P.D. Wagner, J.A. Hardie, T.E. Mollnes, J.K. Damás, P. Aukrust and P.S. Bakke
- 549 Atrophy and hypertrophy signalling in the diaphragm of patients with COPD**  
D. Testelmans, T. Crul, K. Maes, A. Agten, M. Crombach, M. Decramer and G. Gayan-Ramirez
- 557 Prevention of panic attacks and panic disorder in COPD**  
N. Livermore, L. Sharpe and D. McKenzie

### Clinical pharmacology

- 564 SCH527123, a novel CXCR2 antagonist, inhibits ozone-induced neutrophilia in healthy subjects**  
O. Holz, S. Khalilieh, A. Ludwig-Sengpiel, H. Watz, P. Stryczak, P. Soni, M. Tsai, J. Sadeh and H. Magnussen

### Pulmonary rehabilitation

- 571 Maintaining benefits following pulmonary rehabilitation: a randomised controlled trial**  
L.M. Spencer, J.A. Alison and Z.J. McKeough

### Cystic fibrosis

- 578 Long-term effects of a partially supervised conditioning programme in cystic fibrosis**  
H. Hebestreit, S. Kieser, S. Junge, M. Ballmann, A. Hebestreit, C. Schindler, T. Schenk, H-G. Posselt and S. Kriemler

### High-altitude pulmonary oedema

- 584 Stress failure plays a major role in the development of high-altitude pulmonary oedema in rats**  
C. Bai, J. She, A. Goolaerts, Y. Song, C. Shen, J. Shen and Q. Hong

### Sleep-related disorders

- 592 Shift in sleep apnoea type in heart failure patients in the CANPAP trial**  
C.M. Ryan, J.S. Floras, A.G. Logan, R.J. Kimoff, F. Series, D. Morrison, K.A. Ferguson, I. Belenkie, M. Pfeifer, J. Fleetham, P.J. Hanly, M. Smilovitch, M. Arzt and T.D. Bradley for the CANPAP Investigators

### Respiratory infections and tuberculosis

- 598 Community-acquired pneumonia through Enterobacteriaceae and *Pseudomonas aeruginosa*: diagnosis, incidence and predictors**  
H. von Baum, T. Welte, R. Marre, N. Suttrop and S. Ewig for the CAPNETZ study group
- 606 Newer fluoroquinolones for treating respiratory infection: do they mask tuberculosis?**  
K.C. Chang, C.C. Leung, W.W. Yew, T.Y. Lau, W.M. Leung, C.M. Tam, H.C. Lam, P.S. Tse, M.Y. Wong, S.N. Lee, K.I. Wat and Y.H. Ma
- 614 The impact of time on the systemic inflammatory response in pneumococcal pneumonia**  
E. Calbo, M. Alsina, M. Rodríguez-Carballeira, J. Lite and J. Garau

# European Respiratory Journal

## 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 Technical notes, 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, SIIIC 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 2010 are Volumes 35 and 36.

Subscription rates for institutions (Volumes 35 & 36, 2009): £660.00 online only, £720.00 print and online; US\$1,284.00 online only, US\$1,384.00 print and online in North America. Subscription rates include air priority 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. The online version is available to members via [www.ersnet.org](http://www.ersnet.org). Institutional subscribers can access online through HighWire at [www.erj.ersjournals.com](http://www.erj.ersjournals.com)

Members of the ERS receive the Journal as part of their membership.

## INSTRUCTIONS TO AUTHORS

Before submitting an article to the ERJ, please read and carefully follow the instructions to authors, which are available at [www.erj.ersjournals.com](http://www.erj.ersjournals.com)

If you do not have access to the internet please contact the editorial office.

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 central coordinator.

All ERJ business matters should be addressed to: *Kay Sharpe, European Respiratory Journals Publications Office, 442 Glossop Road, Sheffield, S10 2PX, UK. Fax: +44 (0) 114 266 5064. E-mail: [admin@ersj.org.uk](mailto:admin@ersj.org.uk)*

# European Respiratory Journal

## REVIEWERS

A full list of reviewers is available online at [www.erj.ersjournals.com](http://www.erj.ersjournals.com)

## EDITORIAL TEAM

Fiona Shepherd  
Fiona Marks  
Elin Reeves  
Alyson Adam  
Veronica Pock  
Rachel White  
Matt Broadhead  
Neil Bullen  
David Sadler  
Catherine Pumphrey  
Sarah McKee  
Claire Ryan  
Claire Turner  
Lee Dodd  
Matthew Heald

**Past Chief Editors:** J-C. Yernault<sup>†</sup>; E. Berglund, Gothenburg, Sweden; P. Vermeire<sup>†</sup>; U. Costabel, Essen, Germany; M. Decramer, Leuven, Belgium; P.J. Sterk and K.F. Rabe, Amsterdam and Leiden, the Netherlands.

## ENVIRONMENTAL STATEMENT

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

For all enquiries concerning advertising or marketing please e-mail [marketing@ersj.org.uk](mailto:marketing@ersj.org.uk)

All permission requests should be sent via the ERS website at [www.ersnet.org/permissions-form](http://www.ersnet.org/permissions-form)

Reprint and translation enquiries should be sent to [admin@ersj.org.uk](mailto:admin@ersj.org.uk)

Front cover picture: Gene expression profiles of resting peripheral blood neutrophils from participants with eosinophilic asthma versus those with non-eosinophilic asthma. The dendrogram at the top of the figure represents the relationship between participants with non-eosinophilic (blue branches) and eosinophilic asthma (red branches). The dendrogram on the left side represents the relationship between the expression levels of each gene across all the samples. This figure shows that asthma phenotypes can be characterised by distinct gene expression profiles. *Eur Respir J* 2010; 35: 522–531.

## ORIGINAL ARTICLES (CONT.)

- 619 Relationship of immunodiagnostic assays for tuberculosis and numbers of circulating CD4+ T-cells in HIV infection**  
L. Leidl, H. Mayanja-Kizza, G. Sotgiu, J. Baseke, M. Ernst, C. Hirsch, D. Goletti, Z. Toossi and C. Lange

### Noninvasive ventilation

- 627 Effect of manufacturer-inserted mask leaks on ventilator performance**  
B. Louis, K. Leroux, D. Isabey, B. Fauroux and F. Lofaso

### Cell and animal studies

- 637 Statins inhibit matrix metalloproteinase release from human lung fibroblasts**  
K. Kamio, X.D. Liu, H. Sugiura, S. Togo, S. Kawasaki, X. Wang, Y. Ahn, C. Hogaboam and S.I. Rennard

- 647  $\beta_2$ -Agonists block tussive responses in guinea pigs via an atypical cAMP-dependent pathway**  
V.C. Freund-Michel, M.A. Birrell, M.A. Gienbycz, D.J. Hele, S. Haj-Yahia and M.G. Belvisi

- 655 Comparative gene expression profiling of post-natal and post-pneumectomy lung growth**  
J-C. Wolff, J. Wilhelm, L. Fink, W. Seeger and R. Voswinckel

- 667 Pulmonary changes induced by *trans,trans*-2,4-decadienal, a component of cooking oil fumes**  
C-K. Wang, L.W. Chang, H. Chang, C-H. Yang, M-H. Tsai, H-T. Tsai and P. Lin

## REVIEWS

- 676 Therapeutic implications of the pathophysiology of COPD**  
P.T. Macklem

- 681 Rituximab-induced lung disease: a systematic literature review**  
H. Lioté, F. Lioté, B. Séroussi, C. Mayaud and J. Cadranet

## LETTERS

- 688 Increased T-regulatory cells in lungs and draining lymph nodes in a murine model of COPD**  
T. Demoor, K.R. Bracke, G.F. Joos and G.G. Brusselle

- 689 Diagnostic accuracy of digital chest radiography for pulmonary tuberculosis in a UK urban population**  
I. Abubakar, A. Story, M. Lipman, G. Bothamley, R. van Hest, N. Andrews, J.M. Watson and A. Hayward

- 692 Importance of identifying *Mycobacterium bovis* as a causative agent of human tuberculosis**  
C. Allix-Béguec, M. Fauville-Dufaux, K. Stoffels, D. Ommeslag, K. Walravens, C. Saegerman and P. Supply

- 695 Chronic interstitial pneumonitis in end-stage sarcoidosis**  
H. Shigemitsu, J.M. Oblad, O.P. Sharma and M.N. Koss

- 698 The sinusitis-infertility syndrome: Young's saint, old devil**  
P.C. Goeminne and L.J. Dupont

## CORRESPONDENCE

- 699 Submitting a manuscript**  
P. Quanjer, A.T. Dinh-Xuan and V. Brusasco, ERJ Chief Editors on behalf of the ERJ Editorial Board

## CORRESPONDENCE (CONT.)

- 700 Pulmonary hypertension and lung diseases: a suggestion for revision of the clinical classification**  
I. Tsangaris, S. Orfanos and D. Bouros
- 701 Predicting persistence of wheezing: one algorithm does not fit all**  
P.M. Matricardi, S. Illi, T. Keil, P. Wagner, U. Wahn and S. Lau
- 704 Clinical relevance of autonomic nervous system disturbances in pulmonary arterial hypertension**  
B. Raffestin and M. Leroy; R. Naeije and P. van de Borne; R. Wensel
- 707 List of reviewers 2009**
- 714 BOOK REVIEW**

### **g,h,j,l,n,p MEETING CALENDAR**

**CME Credit Application Form can be found at the back of this issue**

## European Respiratory Journal

© 2010 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](http://www.copyright.com) or phone USA (978) 750 8400. UK customers should go to [www.cla.co.uk](http://www.cla.co.uk). All other rights, including microfilm, electronic and/or copying reserved.

European Respiratory Journal USPS#023-615 is published monthly for \$268.00 periodicals postage paid at Folcroft, PA. POSTMASTER: Please send address changes to La Poste, P.O. Box 202, Folcroft, PA, 19032. Typesetting by H. Charlesworth & Co. Ltd. Printed in UK by Latimer Trend & Co. 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."

---

*ERJ online at [www.ersnet.org](http://www.ersnet.org) or  
[www.erj.ersjournals.com](http://www.erj.ersjournals.com)*



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