



## EDITORIALS

---

- 1197** **Barriers to new drug development in respiratory disease**  
Peter J. Barnes, Sergio Bonini, Werner Seeger, Maria G. Belvisi, Brian Ward and Anthony Holmes
- 1208** **Combination therapy in idiopathic pulmonary fibrosis: the way ahead will be hard**  
Athol Wells
- 1211** **What is new about Rio?**  
Rogerio Souza and Steven M. Kawut
- 1214** **Lung cancer in never-smokers**  
David Planchard and Benjamin Besse
- 1218** **Where do we go from here? Clinical drug development in idiopathic pulmonary fibrosis**  
Harold R. Collard
- 1221** **Development of a syllabus for postgraduate respiratory physiotherapy education: the Respiratory Physiotherapy HERMES project**  
Thierry Troosters, Fabio Pitta, Beatrice Oberwaldner, Agnieszka Lewko, Deniz Inal-Ince, Kathleen Grant, Rik Gosselink, Chris Burtin, Margareta Emtner, Enrico Clini, Michelle Chatwin and Sharon Mitchell
- European Lung Corner**
- 1224** **A free lung health check for the European Parliament: healthy lungs for life**  
Marine Faure

## FROM THE MUSEUM

---

- 1226** **From the Museum: the Art of Thinking. Summary 5–8: Sensing in**  
Tom Kotsimbos

## ORIGINAL ARTICLES

---

- Epidemiology**
- Press release** **1228** **Indoor air quality, ventilation and respiratory health in elderly residents living in nursing homes in Europe**  
Malek Bentayeb, Dan Norback, Micha Bednarek, Alfred Bernard, Guihong Cai, Sonia Cerrai, Konstantinos Kostas Eleftheriou, Christina Gratzou, Gitte Juel Holst, François Lavaud, Jacek Nasilowski, Piersante Sestini, Giuseppe Sarno, Torben Sigsgaard, Gunilla Wieslander, Jan Zielinski, Giovanni Viegi and Isabella Annesi-Maesano on behalf of the GERIE Study
- COPD**
- 1239** **Global and regional trends in COPD mortality, 1990–2010**  
Peter G.J. Burney, Jaymini Patel, Roger Newson, Cosetta Minelli and Mohsen Naghavi
- 1248** **Obesity as a susceptibility factor to indoor particulate matter health effects in COPD**  
Meredith C. McCormack, Andrew J. Belli, Deepak A. Kaji, Elizabeth C. Matsui, Emily P. Brigham, Roger D. Peng, Cortlandt Sellers, D'Ann L. Williams, Gregory B. Diette, Patrick N. Breyse and Nadia N. Hansel
- 1258** **Imprinting of the COPD airway epithelium for dedifferentiation and mesenchymal transition**  
Sophie T. Gohy, Cloé Hupin, Chantal Fregimilicka, Bruno R. Detry, Caroline Bouzin, H eloise Gaide Chevronay, Maryl ene Lecocq, Birgit Weynand, Maha Z. Ladjemi, Christophe E. Pierreux, Philippe Birembaut, Myriam Polette and Charles Pilette
- Asthma**
- 1273** **Nebulised budesonide using a novel device in patients with oral steroid-dependent asthma**  
Claus Vogelmeier, Peter Kardos, Thomas Hofmann, Sebastian Canisius, Gerhard Scheuch, Bernhard Muellinger, Karlheinz Nocker, Guenter Menz and Klaus F. Rabe
- Lung function**
- 1283** **Use of forced vital capacity and forced expiratory volume in 1 second quality criteria for determining a valid test**  
John L. Hankinson, Bill Eschenbacher, Mary Townsend, Janet Stocks and Philip H. Quanjer

## ORIGINAL ARTICLES (CONTINUED)

---

### Pulmonary vascular diseases

- 1293 Riociguat for the treatment of chronic thromboembolic pulmonary hypertension: a long-term extension study (CHEST-2)**  
Gérald Simonneau, Andrea M. D'Armini, Hossein-Ardeschir Ghofrani, Friedrich Grimminger, Marius M. Hoeper, Pavel Jansa, Nick H. Kim, Chen Wang, Martin R. Wilkins, Arno Fritsch, Neil Davie, Pablo Colorado and Eckhard Mayer
- 1303 Riociguat for the treatment of pulmonary arterial hypertension: a long-term extension study (PATENT-2)**  
Lewis J. Rubin, Nazzareno Galie, Friedrich Grimminger, Ekkehard Grünig, Marc Humbert, Zhi-Cheng Jing, Anne Keogh, David Langleben, Arno Fritsch, Flavia Menezes, Neil Davie and Hossein-Ardeschir Ghofrani
- 1314 PATENT PLUS: a blinded, randomised and extension study of riociguat plus sildenafil in pulmonary arterial hypertension**  
Nazzareno Galie, Katharina Müller, Andrea-Viviana Scalise and Ekkehard Grünig
- 1323 Age-adjusted high-sensitivity troponin T cut-off value for risk stratification of pulmonary embolism**  
Anja Kaeberich, Valerie Seeber, David Jiménez, Maciej Kostrubiec, Claudia Dellas, Gerd Hasenfuß, Evangelos Giannitsis, Piotr Pruszczyk, Stavros Konstantinides and Mareike Lankeit

### Sleep

- 1332 Obstructive respiratory events and premature atrial contractions after cardioversion**  
Dominik Linz, Mathias Hohlfeld, Christian Ukena, Felix Mahfoud, Klaus Wirth, Hans-Ruprecht Neuberger and Michael Böhm

### Critical care

- 1341 Complicated grief after death of a relative in the intensive care unit**  
Nancy Kentish-Barnes, Marine Chaize, Valérie Seegers, Stéphane Legriel, Alain Cariou, Samir Jaber, Jean-Yves Lefrant, Bernard Floccard, Anne Renault, Isabelle Vinatier, Armelle Mathonnet, Danielle Reuter, Olivier Gujsset, Zoé Cohen-Solal, Christophe Cracco, Amélie Seguin, Jacques Durand-Gassel, Béatrice Eon, Marina Thirion, Jean-Philippe Rigaud, Bénédicte Philippon-Jouve, Laurent Argaud, Renaud Chouquer, Mélanie Adda, Céline Dedrie, Hugues Georges, Eddy Lebas, Nathalie Rolin, Pierre-Edouard Bollaert, Lucien Lecuyer, Gérard Viquesnel, Marc Léone, Ludivine Chalumeau-Lemoine, Maïté Garrouste, Benoit Schlemmer, Sylvie Chevret, Bruno Falissard and Élie Azoulay

### Respiratory infections

- 1353 Bacteraemia and antibiotic-resistant pathogens in community acquired pneumonia: risk and prognosis**  
Antoni Torres, Catia Cillóniz, Miquel Ferrer, Albert Gabarrús, Eva Polverino, Santiago Villegas, Francesc Marco, Josep Mensa, Rosario Menéndez and Michael Niederman

### Tuberculosis

- 1364 Incidence of occupational latent tuberculosis infection in South African healthcare workers**  
Shahieda Adams, Rodney Ehrlich, Roslynn Baatjies, Richard N. van Zyl-Smit, Qonita Said-Hartley, Rodney Dawson and Keertan Dheda

### Interstitial lung diseases


- 1374 Unified baseline and longitudinal mortality prediction in idiopathic pulmonary fibrosis**  
Brett Ley, Williamson Z. Bradford, Derek Weycker, Eric Vittinghoff, Roland M. du Bois and Harold R. Collard
- 1382 Safety and pharmacokinetics of nintedanib and pirfenidone in idiopathic pulmonary fibrosis**  
Takashi Ogura, Hiroyuki Taniguchi, Arata Azuma, Yoshikazu Inoue, Yasuhiro Kondoh, Yoshinori Hasegawa, Masashi Bando, Shinji Abe, Yoshiro Mochizuki, Kingo Chida, Matthias Klüglich, Tsuyoshi Fujimoto, Kotaro Okazaki, Yusuke Tadayasu, Wataru Sakamoto and Yukihiko Sugiyama
- 1393 Oral immunotherapy with type V collagen in idiopathic pulmonary fibrosis**  
David S. Wilkes, Terrence Chew, Kevin R. Flaherty, Sarah Frye, Kevin F. Gibson, Naftali Kaminski, Michael J. Klemsz, Wade Lange, Imre Noth and Katia Rothhaar

### Lung cancer

- 1403 BioCAST/IFCT-1002: epidemiological and molecular features of lung cancer in never-smokers**  
Sébastien Couraud, Pierre-Jean Souquet, Christophe Paris, Pascal Dô, Hélène Doubre, Eric Pichon, Adrien Dixmier, Isabelle Monnet, Bénédicte Etienne-Mastroianni, Michel Vincent, Jean Trédaniel, Marielle Perrichon, Pascal Foucher, Bruno Coudert, Denis Moro-Sibilot, Eric Dansin, Stéphanie Labonne, Pascale Missy, Franck Morin, Hélène Blanché and Gérard Zalcman, on behalf of The French Cooperative Intergroup IFCT
- 1415 No impact of passive smoke on the somatic profile of lung cancers in never-smokers**  
Sébastien Couraud, Didier Debievre, Lionel Moreau, Patrick Dumont, Jacques Margery, Elisabeth Quiox, Bernard Duvert, Laurent Cellier, Nathalie Baize, Bruno Taviot, Marie Coudurier, Jacques Cadranet, Pascale Missy, Franck Morin, Jean-François Mornex, Gérard Zalcman and Pierre-Jean Souquet on behalf of the BioCAST/IFCT-1002 study investigators

## REVIEW

---

- 1426**     **The role of tyrosine kinases in the pathogenesis of idiopathic pulmonary fibrosis**  
Friedrich Grimminger, Andreas Günther and Carlo Vancheri
-  **1434**     **Mode of action of nintedanib in the treatment of idiopathic pulmonary fibrosis**  
Lutz Wollin, Eva Wex, Alexander Pautsch, Gisela Schnapp, Katrin E. Hostettler, Susanne Stowasser and Martin Kolb

## STATE OF THE ART

---

- 1446**     **Management of bronchiectasis in adults**  
James D. Chalmers, Stefano Aliberti and Francesco Blasi

## BACK TO BASICS

---

- 1463**     **Influenza virus-induced lung injury: pathogenesis and implications for treatment**  
Susanne Herold, Christin Becker, Karen M. Ridge and G.R. Scott Budinger

## AGORA

---

### Research letters

- 1479**     **The global epidemiology of chronic cough in adults: a systematic review and meta-analysis**  
Woo-Jung Song, Yoon-Seok Chang, Shoaib Faruqi, Ju-Young Kim, Min-Gyu Kang, Sujeong Kim, Eun-Jung Jo, Min-Hye Kim, Jana Plevkova, Heung-Woo Park, Sang-Heon Cho and Alyn H. Morice
- 1482**     **Increased serum levels of LL37, HMGB1 and S100A9 during exacerbation in COPD patients**  
Simon D. Pouwels, Martijn C. Nawijn, Erik Bathoorn, Annelies Riezebos-Brilman, Antoon J.M. van Oosterhout, Huib A.M. Kerstjens and Irene H. Heijink
- 1485**     **Increased expression of granzymes A and B in fatal asthma**  
Raquel Annoni, Luiz Fernando F. Silva, Yvonne Nussbaumer-Ochsner, Annemarie van Schadewijk, Thais Mauad, Pieter S. Hiemstra and Klaus F. Rabe
- 1489**     **Defining the appropriate waiting time between multiple-breath nitrogen washout measurements**  
Elizabeth R. Salamon, Kevin R. Gain and Graham L. Hall
- 1491**     **Dual gas techniques for peripheral airway function: diffusing the issues**  
Sylvia Verbanck and Manuel Paiva
- 1495**     **Inspiratory muscle function, dynamic hyperinflation and exertional dyspnoea in pulmonary arterial hypertension**  
Pierantonio Laveneziana, Marc Humbert, Laurent Godinas, Barbara Joureau, Roxane Malrin, Christian Straus, Xavier Jaïs, Olivier Sitbon, Gérald Simonneau, Thomas Similowski and Gilles Garcia
-  **1498**     **Long-term mortality assessment of multidrug-resistant tuberculosis patients treated with delamanid**  
Charles D. Wells, Rajesh Gupta, Norbert Hittel and Lawrence J. Geiter
- 1501**     **Is 1-year follow-up adequate for adult tuberculosis contacts?**  
Jia-Yih Feng, San-Chi Chen, Ming-Che Lee, Wen-Chien Fan, Wei-Juin Su, Yu-Wen Hu, Chiu-Mei Yeh, Tzeng-Ji Chen and Chia-Jen Liu
- 1504**     **Suboptimal specificity of Xpert MTB/RIF among treatment-experienced patients**  
John Z. Metcalfe, Salome Makumbirofa, Beauty Makamure, Reggie Mutetwa, Renée A. Peñaloza, Charles Sandy, Wilbert Bara, Stanley Mungofa, Philip C. Hopewell and Peter Mason

### Correspondence

- 1507**     **Cough hypersensitivity syndrome: clinical measurement is the key to progress**  
Richard D. Turner and Graham H. Bothamley; Alyn H. Morice, Eva Millqvist, Maria G. Belvisi, Kristina Bieksiene, Surinder S. Biring, Kian Fan Chung, Roberto W. Dal Negro, Peter Diczpinigaitis, Ahmad Kantar, Lorcan P. McGarvey, Adalberto Pacheco, Raimundas Sakalauskas and Jaclyn A. Smith
- 1510**     **Screening for latent tuberculosis before tumour necrosis factor antagonist therapy**  
Richard J. Hewitt, Aran Singanayagam, Saranya Sridhar, Melissa Wickremasinghe and Onn Min Kon; Michael R. Loebinger and Anton Pozniak
- 1514**     **Are C-reactive protein levels associated with bacteria in COPD exacerbations?**  
Marc Miravittles and Carl Llor; Tristan W. Clark

- 1517**     **ERRATUM**