



Lung Science Conference Metabolic alterations in lung ageing and disease

05-08 March 2020 – Estoril, Portugal

Scientific programme as of 12.02.2020

*The conference is granted **13 European CME credits** by the European Accreditation Council for Continuing Medical Education (EACCME) and by the European Board for Accreditation in Pneumology (EBAP)*

Thursday 05 March 2020

Opening Session

Chair: Reinoud Gosens

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| 18:00-18:15 | Welcome and Introduction
Reinoud Gosens, ERS Conferences and Seminars Director |
| 18:15-18:45 | Opening Lecture
“The mitochondrion revisited: an overview of its role in lung inflammation and lung ageing” – Phil Hansbro (Sydney, Australia) |
| 18:45-19:00 | Discussion |
| 19:00-19:30 | Welcome “cheese and wine” cocktail |

Friday 06 March 2020

Session 1: Immunometabolism and inflammageing

Chairs: Sam Janes and Niki Ubags

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| 08:45-09:05 | Metabolic profiling of severe asthma: implications for phenotyping and treatment
Craig Wheelock (Stockholm, Sweden) |
| 09:05-09:20 | Discussion |
| 09:20-09:35 | OP01 – Long non-coding RNA ADPGK-AS1 controls anti-tumor immunity in macrophages through metabolic modulation
Annika Karger (Bad Nauheim, Germany) |
| 09:35-09:55 | Metabolic reprogramming of tumor associated macrophages and its impact on lung cancer progression
Rajkumar Savai (Bad Nauheim, Germany) |
| 09:55-10:10 | Discussion |
| 10:10-10:25 | OP02 – Single Cell RNA-seq Reveals Zinc Metabolism Defect of Alveolar Type II Cells with Aging in IPF
Carol Liang (Los Angeles, USA) |
| 10:25-10:50 | <i>Coffee break</i> |



Session 2: Mitochondrial dysfunction in lung ageing and disease

Chairs: Patrick Berger and Alen Faiz

- 10:50-11:05** **OP03 – Mitochondria-targeted H₂S suppresses and reverses cigarette smoke-induced inflammasome activity and lung injury in experimental COPD**
Matt Whiteman (Exeter, United Kingdom)
- 11:05-11:25** **Mitochondrial in airway smooth muscle as a driver of airway hyperresponsiveness in asthma**
Thomas Trian (Bordeaux, France)
- 11:25-11:40** Discussion
- 11:40-11:55** **OP04 – Mitochondrial metabolism regulates cellular proteostasis**
Thomas Meul (Munich, Germany)
- 11:55-14:00** Lunch for all delegates and mentorship lunch for bursary recipients and their mentors
- 14:00-14:20** **Mitochondrial iron in the susceptibility, pathogenesis and progression of COPD**
Suzanne Cloonan (Dublin, Ireland)
- 14:20-14:35** Discussion
- 14:35-14:50** **OP05 – Cigarette smoke exposure disrupts the molecular regulation of mitochondrial metabolism in human bronchial and alveolar epithelial cells**
Christy B.M. Tulen (Maastricht, Netherlands)
- 14:50-15:10** **Senotherapies for chronic lung disease**
Peter Barnes (London, United Kingdom)
- 15:10-15:25** Discussion
- 15:25-15:40** **OP06 – Air space distension precedes spontaneous fibrotic remodeling and impaired cholesterol metabolism in the absence of surfactant protein C**
Elena Lopez Rodriguez (Berlin, Germany)
- 15:40-16:00** *Coffee break*
- 16:00-18:00** **Poster Session 1**
- Group A - Chairs: Silke Meiners and Marco Buscetta
- PP101 – Extracellular vesicles produced by bronchial epithelial cells in response to oxidative stress contain micro-RNAs associated with senescence** – Justine Devulder, United Kingdom
- PP102 – Eosinophilic inflammation promotes CCL-6-dependent metastatic tumor growth** – Songmin Ying, China
- PP103 – Association of extracellular Hsp70 with the severity of chronic obstructive pulmonary disease** - Iva Hlapčić, Croatia



PP104 – Histologic hallmarks of smoking in the Gaoting lung adenocarcinoma donors cohort - Anne-Sophie Lamort, Germany

PP105 – Diesel Exhaust Particles-induced Dysfunctional Responses in Lung Epithelial Progenitors is mediated by oxidative stress - Xinhui Wu, Netherlands

PP106 – Comprehensive characterization of the immune landscape within different molecular subtypes of small cell lung cancer (SCLC) - Angel Nuñez Buiza, Spain

PP107 – COPD-derived fibroblasts secrete higher levels of senescence associated secretory phenotype (SASP) proteins - Roy R. Woldhuis, Australia

PP108 – Regulation of lung autophagy by proteinase-activated receptor 2 activation - Kirsty Mccallum, United Kingdom

PP109 – Biomarkers of inflammation and auto-Abs in asthma with obesity - Anna Konishcheva, Russian Fed.

PP110 – Empyema Thoracis: A Comparative analysis of Tuberculous and Non Tuberculous etiology and their Outcomes - Prapulla Chandra Davuluri, India

[Group B - Chairs: Ahn Tuan Dinh-Xuan and Anna Freeman](#)

PP111 – Transfer of mitochondria between COPD airway smooth muscle cells - Julia Frankenberg Garcia, United Kingdom

PP112 – Rewiring polyunsaturated fatty acid metabolism renders the anti-tumor phenotype to tumor-associated macrophages in lung cancer - Siavash Mansouri, Germany

PP113 – Evaluation of lung miRNA expression and selected metabolic parameters in rat model of asthma - Wojciech Langwiński, Poland

PP114 – IGF1R deficiency attenuates acute lung injury by regulating epigenetics, cell senescence and mitochondrial homeostasis – Alfredo Urtubia, Spain

PP115 – Altered metabolic activity and redox balance are associated with a proliferative phenotype in COPD airway smooth muscle cells - Charalambos Michaeloudes, United Kingdom

PP116 – MicroRNA profiling in bronchial biopsies of asthma patients - Mirjam P. Roffel, Belgium

PP117 – Vitamin E metabolites prevent allergen sensitization in the mouse - Ida Cerqua, Italy

PP118 – Could the overweight influence bronchiectasis (B) exacerbations frequency (EF)? - Kseniia Suska, Ukraine

PP119 – The role of ZFP36L1 and ZFP36L2 in genome-wide post-transcriptional dysregulation of glucocorticoid non-responsive asthma – Jennifer Rynne, United Kingdom

[Group C - Chairs: Ayşe Arzu Yorgancıoğlu and Itsaso Garcia Arcos](#)

PP120 – Clinical potential of sputum hyaluronan measurement in the diagnosis and prognosis of patients with NSCLC - Vanessa De Sa, Brazil

PP121 – Identification of single senescent cells from precision cut lung slices ex vivo - Qianjiang Hu, Germany

PP122 – Asthmatic eosinophils promote migration of ASM and MRC-5 cells via increased expression of ECM proteins and contractility – Ieva Janulaityte, Lithuania



PP123 – Immunotherapy response prediction in non-small cell lung cancer based on molecular and immune features - Javier Ramos Paradas, Spain

PP124 – Transfer of mitochondria from mesenchymal stromal cells through extracellular vesicles improves alveolar epithelial-capillary barrier in ARDS - Johnatas Silva, United Kingdom

PP125 – 3D mapping of blood vessel networks and cells in COPD and non-COPD lung tissue samples using micro-computed tomography and immunofluorescence

- Matthew Lawson, United Kingdom

PP126 – Mitochondrial dysfunction in the aged lung and COPD: A role for mitochondrial calcium? - Salil Srivastava, USA

PP128 – The protein-profile of the lining fluid from small airways is changing with age - Anna-Carin Olin, Sweden

PP129 – Mitochondrial dysfunction induce immunoproteasome and MHC class I responses in lung aging - Xinyuan Wang, Germany

[Group D - Chairs: Patrick Berger and Delphine Guillotin](#)

PP130 – Endoplasmic reticulum stress implication in fibroblast senescence in COPD - Eva Delbrel, United Kingdom

PP131 – Metabolomics of lung tissue and plasma reveal human disease-relevant differences between young and old mice in the bleomycin model - Sorif Uddin, Germany

PP132 – Cigarette smoking is associated with metabolic inflexibility and glucose intolerance in mice - Stanley Chan, Australia

PP133 – Evidence of nutritional abnormalities in Chronic Obstructive Pulmonary Disease - Fatmaalzahraa Abdalrazik, Egypt

PP134 – Implication of mitochondrial metabolism in smooth muscle remodeling in asthma - Pauline Esteves, France

PP135 – Streptococcus pneumoniae induces broad alterations in mitochondrial functions in human airway epithelial cells - Mahyar Aghapour, Germany

PP136 – Comparison of metabolic profile in endothelial cells of chronic thromboembolic pulmonary hypertension and pulmonary arterial hypertension - Cristina Rodríguez, Spain

PP138 – Endothelial dysfunction in asthma: enos, inos and ace polymorphisms - Margarida Cortez e Castro, Portugal

PP139 – Oxidative stress drives cellular senescence and iron uptake in airway epithelial cells - Jonathan R. Baker, United Kingdom

**Saturday 07 March 2020****Session 3: Cellular senescence**

Chairs: Peter Barnes and Justine Devulder

- 08:45-09:05** **Heme oxygenase-1 regulation of cell senescence in COPD**
Maylis Dagouassat (Paris, France)
- 09:05-09:20 Discussion
- 09:20-09:40** **Respiratory muscle senescence during chronic lung disease and ageing**
Joaquim Gea (Barcelona, Spain)
- 09:40-09:55 Discussion
- 09:55-10:10** **OP07 – Aging causes alveolar epithelial type II cell dysfunction in acute lung injury**
Christina Brandenberger (Hannover, Germany)
- 10:10-10:25** **OP08 – Versatile workflow for storage, characterization and cell-type resolved transcriptional and epigenetic profiling of human lung samples**
Renata Jurkowska (Heidelberg, Germany)
- 10:25-10:45** **An atlas of the aging lung mapped by single cell transcriptomics and deep tissue proteomics**
Herbert Schiller (Munich, Germany)
- 10:45-11:00 Discussion

GROUP PICTURE**11:15-13:45** **Poster Session 2 and Lunch***Lunch will be served from 12:15*Group E - Chairs: Phil Hansbro and Iva Hlapčić

PP201 – pSTAT5-SOCS1 signalling as a novel pathway in macrophage metabolic reprogramming by Mesenchymal Stromal Cells (MSCs) in ARDS - Yue Su, United Kingdom

PP202 – Fluticasone propionate inhibits rhinovirus-induced mucin production via multiple mechanisms in differentiated airway epithelial cells - Ying Wang, Netherlands

PP203 – The metabolic response of human macrophages to Mycobacterium tuberculosis infection – Claudio Bussi, United Kingdom

PP204 – GCN2 signalling is dysregulated in pulmonary fibrosis - Diana Santos Ribeiro, Belgium

PP205 – Investigating the effect of Z alpha-1 antitrypsin expression on mitochondrial injury - Arlene Glasgow, Ireland

PP206 – Epithelial-mesenchymal transition induced by cigarette smoke in lung epithelial cells is associated with metabolic reprogramming and senescence - Serena Di Vincenzo, Italy



PP207 – Transcriptome signatures of tobacco carcinogens hint the alteration of TAF6 as a specific feature in smokers lung cancer - Mario Pepe, Germany

PP208 – Prognostic significance of pre-operative body composition in early stage NSCLC patients - Marcin Skrzypski, United Kingdom

PP209 – Validation of a new strategy to maintain functional mitochondrial metabolism in conserved murine heart and lung tissues - Muriel Pichavant, France

PP210 – Direct effects of cigarette smoke in pulmonary arterial cells: Implications in arterial remodeling and vascular tone maintenance - María Jose Calzada, Spain

[Group F - Chairs: Anna Krasnodembskaya and Charalambos Michaeloudes](#)

PP211 – Fluorescence-activated cell sorting of senescent fibroblasts - Catherine Wrench, United Kingdom

PP212 – Longitudinal single-cell transcriptomics of gamma herpesvirus infection in mouse lungs - Ilias Angelidis, Germany

PP213 – Transcriptomic and proteomic analyses reveal age-related extracellular matrix changes in the lung - Maunick Lefin Koloko Ngassie, Netherlands

PP214 – Impact on pulmonary, intestinal and metabolic compartments of chronic smoking exposure and unhealthy diet: a functional and multi-omic approach - Elodie Picard, France

PP215 – The lung DNA methylation profile of patients with COPD: relationship with smoking and airflow limitation severity - Sandra Casas Recasens, Spain

PP216 – Alveolar type 2 cell LDL receptor associated protein 1 regulates surfactant homeostasis and pulmonary function - Itsaso Garcia Arcos, USA

PP217 – Modulation of dysregulated lipid metabolism by stem cell secretome in lung fibrosis - Amiq Gazdhar, Switzerland

PP218 – IRF5 regulates airway macrophage metabolic responses to viral challenge - Gesa Albers, United Kingdom

PP219 – Unravelling the genetic landscape of early-onset emphysema by whole exome sequencing - Susana Seixas, Portugal

PP220 – Changes in water and urea transport in malignant pleural mesothelial cells - Evgeniy Solenov, Russian Fed.

[Group G - Chairs: Reinoud Gosens and Kseniia Suska](#)

PP221 – The respiratory microbiome and metabolome in chronic hypersensitivity pneumonitis - Rachele Invernizzi, United Kingdom

PP222 – Involvement of the kinase-dependent functions of RIPK1 in COPD - Hannelore Van Eeckhoutte, Belgium

PP223 – The effect of smoking on the distribution of adipose and skeletal muscle tissue in patients with COPD - Olha Boiko, Ukraine

PP224 – Glutathione-S-transferase P promotes Interleukin-1 β -induced inflammation and metabolic reprogramming in mice with allergic airways disease – Niki Reynaert, Netherlands

PP225 – Characterizing lung resident mesenchymal stem cells in idiopathic pulmonary fibrosis patients - Aina Martin, Spain



PP226 – Toll-like receptor signaling regulates the differentiation of 3D bronchospheres
- Felix Ritzmann, Germany

PP227 – Prolonged WNT/ β -catenin signaling induces cellular senescence in aging and pulmonary fibrosis - Mareike Lehmann, Germany

PP228 – Effect of cigarette smoke on mitochondrial metabolic response to Mycobacterium tuberculosis (Mtb) infection - Amit Agarwal, India

PP229 – The transcriptome of IPF fibrotic foci identifies the fatty acid metabolism as a critical pathway in fibrogenesis - Delphine Guillotin, United Kingdom

PP230 – MIF as a potential biomarker to monitor therapeutic response to glucocorticoid in patients with allergic asthma exacerbations - Hui-Yuan Zhu, China

[Group H - Chairs: Darcy Wagner and Yan Hui Giam](#)

PP231 – Study of the activation energy of thiourea transport in mesothelial cells using a calcein fluorescence quenching based method - Maria Kuzovleva, Russian Fed.

PP232 – Protein glycopatterns in bronchoalveolar lavage fluid as potential biomarkers for diagnosis of lung cancer - Lina Liu, China

PP233 – Immunological profiling of Chronic Obstructive Airways Disease and Idiopathic Pulmonary Fibrosis - Nuria Mendoza, Spain

PP234 – Single cell profiling reveals diversity of mouse and human lung mesenchymal cell types and their distinct activation states in fibrogenesis - Christoph H. Mayr, Germany

PP235 – Protein truncating mutations in ATP13A3 promote pulmonary arterial hypertension in mice - Ekaterina Legchenko, United Kingdom

PP236 – Diesel exhaust particles alter mitochondrial bioenergetics in human bronchial epithelial cells - Isabella Cattani-Cavaliere, Brazil

PP237 – Longitudinal effect of smoking cessation on transcriptomics and epigenetics in the airways of COPD patients and asymptomatic controls - Alen Faiz, Australia

PP238 – Development of translational ILD models: How drug-induced side effects trigger alterations in the lung tissue upon systemical long-term exposure? - Irma Mahmutovic Persson, Sweden

PP239 – Early postnatal metabolism in the lung of premature infants characterized by amino acid depletion - Alida Kindt-Dunjko, Netherlands

PP240 – Interval Exercise Training Improves Asthma Symptoms Through Modulation of T2 Inflammation - Anna Freeman, United Kingdom



13:45-15:00 **Young Investigator Session – The William MacNee Award**

Chairs: Suzanne Cloonan and Silke Meiners

13:45-14:00 **YI01 – Caspase-1 activation by cigarette smoke occurs via TLR4/TRIF/caspase-8 axis leading to metabolic alterations in human macrophages**
Marco Buscetta (Palermo, Italy)

14:00-14:15 **YI02 – The role of the COPD susceptibility gene FAM13A in barrier function and pro-inflammatory responses of human airway epithelial cells**
Qing Chen (Groningen, Netherlands)

14:15-14:30 **YI03 – Validation of AMP-activated protein kinase as a therapeutic target in bronchiectasis**
Yan Hui Giam (Dundee, United Kingdom)

14:30-14:45 **YI04 – Itaconate drives the resolution of pulmonary fibrosis**
Patricia Ogger (London, United Kingdom)

14:45-15:00 **YI05 – MiR-320d as a regulator of airway inflammation in COPD**
Mirjam P. Roffel (Groningen, Netherlands)

15:00-17:00 **Early-Career delegates session – Strategically and successfully funding of your future**

Chairs: Louise Donnelly and Sabine Bartel

15:00-15:20 **How to write a convincing research grant**
Reinoud Gosens (Groningen, Netherlands)

15:20-15:40 **Obtaining a grant to organize an ERS Research Seminar**
Rachel Chambers (London, United Kingdom)

15:40-16:00 **Your first personal research grant within the ERS fellowship programme**
Louise Donnelly (London, United Kingdom)

16:00-16:20 **Funding possibilities from the European Union (EU)/European Research Council (ERC)**
Nadia El Mjyad (Brussels, Belgium)

16:20-17:00 **Panel discussion with all speakers and networking event**

17:00 *Coffee Break*

19:25-19:55 **Evening Pre-dinner talk**

Chair: Phil Hansbro

“Metabolic reprogramming in innate immunity and inflammation” – Luke O’Neill (Dublin, Ireland)

From 20:00 Gala Dinner and Award Ceremony



Sunday 08 March 2020

Session 4: The ageing lung under stress

Chairs: Catherine Greene and Elena Lopez Rodriguez

08:45-09:05 **Linking proteostasis to immune activation in the ageing lung**

Silke Meiners (Munich, Germany)

09:05-09:20 Discussion

09:20-09:40 **Protein oxidation as a driver of disease and gateway to novel therapies for lung fibrosis**

Martina Korfei (Giessen, Germany)

09:40-09:55 Discussion

09:55-10:05 *Coffee break*

Session 5: Therapeutics targeting metabolic alterations in disease

Chairs: Jonathan Grigg and Serena Di Vincenzo

10:05-10:25 **Metabolic reprogramming by mesenchymal stem cells as a strategy for lung repair**

Anna Krasnodembskaya (Belfast, United Kingdom)

10:25-10:40 Discussion

10:40-11:00 **Nutritional modulation to correct metabolic alterations in chronic lung disease**

Annemie Schols (Maastricht, Netherlands)

11:00-11:15 Discussion

11:15-11:35 **The promise of mTOR signaling as a therapeutic target for IPF**

Rachel Chambers (London, United Kingdom)

11:35-11:50 Discussion

11:50-12:10 Conclusion by Reinoud Gosens, ERS Conferences and Seminars Director