



# ERS

# 18<sup>th</sup> ERS LUNG SCIENCE CONFERENCE

## ***Lung Science Conference Metabolic alterations in lung ageing and disease***

**05-08 March 2020 – Estoril, Portugal**

*Scientific programme as of 21.02.2020*

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

### **Friday 06 March 2020**

#### **Session 1: Immunometabolism and inflammageing**

Chairs: Sam Janes and Niki Ubags

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



## Session 2: Mitochondrial dysfunction in lung ageing and disease

Chairs: Niki Reynaert and Alen Faiz

- 10:50-11:05**      **OP03 – Mitochondria-targeted H<sub>2</sub>S 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

**PP103 – Association of extracellular Hsp70 with the severity of chronic obstructive pulmonary disease** - Iva Hlapčić, Croatia

**PP104 – Histologic hallmarks of smoking in the Gauting 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: Irene Heijink 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

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



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## **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