Lung Science Conference
Metabolic alterations in lung ageing and disease

05-08 March 2020 – Estoril, Portugal

Scientific programme as of 04.03.2020

*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

18:00-18:15 **Welcome and Introduction**
Reinoud Gosens, ERS Conferences and Seminars Director

18:15-18:45 **Opening Lecture**
"Metabolic reprogramming in innate immunity and inflammation" – Luke O'Neill (Dublin, Ireland)

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

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 *Coffee break*

Session 2: Mitochondrial dysfunction in lung ageing and disease

Chairs: Niki Reynaert 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

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

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

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

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? - David Rowlands, USA

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

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

Dinner for all delegates from 19:00

Saturday 07 March 2020

Session 3: Cellular senescence

Chairs: Peter Barnes and Justine Devulder

08:45-09:05	**A diabetic microenvironment accelerates vascular senescence** Reinhold Medina (Belfast, United Kingdom)
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

PP224 – Glutathione-S-transferase P promotes Interleukin-1ß-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/ß-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-Cavalieri, 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 ILDmodels: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

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 Niki Ubags

15:00-15:10 **Introduction**

15:10-15:30 **How to write a convincing research grant**
Reinoud Gosens (Groningen, Netherlands)

15:30-15:50 **Obtaining a grant to organize an ERS Research Seminar**
Niki Ubags (Epalinges, Switzerland)

15:50-16:10 **Your first personal research grant within the ERS fellowship programme**
Louise Donnelly (London, United Kingdom)

16:10-16:30 **Funding possibilities from the European Union (EU)/European Research Council (ERC)**
Nadia El Mjyad (Brussels, Belgium)

16:30-17:00 **Panel discussion with all speakers and networking event**

17:00 *Coffee Break*

19:25-19:55 **Evening Pre-dinner talk**
Chair: Reinoud Gosens

"The mitochondrion revisited: an overview of its role in lung inflammation and lung ageing" – Phil Hansbro (Sydney, Australia)

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