



Virtual academy of lung physiology and structure

15-17 May 2023

Pre-recorded sessions

Session 1: Respiratory physiology: the basics

Respiratory mechanics: How the lung is supported and moved - A. Aliverti

How oxygen is transported - S. Bayat

How CO₂ is transported - S. Bayat

Pulmonary blood circulation – F. Lador

How breathing is controlled – J. L. Feldman

Exercise - P. Laveneziana

Mechanisms of hypoxemia - P. Palange

Session 2: Respiratory diseases from a physiologic perspective

Asthma - M. Bonini

COPD – T. Conlon

Pulmonary embolism - M. Delcroix

ARDS - F. Laghi

Obesity-hypoventilation syndrome - J. Pépin, S. Schiza

Neuromuscular diseases - C. Jolley

Interstitial lung diseases - T. Gille

Session 3: The expanding repertoire of resident epithelial cells – diversification of functions

Bronchial epithelium / conducting zone - C. Staab-Weijnitz, H. I. Heijink

Mechanisms of epithelial aging and senescence, key developmental pathways and their reactivation in disease - M. Lehmann, L. Donnelly

Lung fibroblast function and plasticity – S. Rolandsson Enes

Main components and functions of the extracellular matrix, ECM turnover - J. Burgess, C. Taggart

Endothelial cells - H. Bogaard, J. Schupp

Smooth muscle cells - R. Gosens

Session 4: Lung immunology

Development and education of the immune system – S. Knapp

Sensing and (not) responding to the inhaled environment - P. Hiemstra

Innate immunity and innate memory: not just short-term protection of our lungs – H. Heine

Beyond the classical Th1-Th2 paradigm – F. Polverino

The role of the immune response in tissue repair – B. N. Melgert

The response to bacterial and viral infections – A. Singanayagam

Chronic inflammation and the lung microbiome – N. Ubags

Session 5: Molecular regulation of pulmonary homeostasis and respiratory diseases

The many ways a cell can die - K. Bracke

Mitochondria; the powerhouses of our cells govern more than energy production - S. Cloonan

The involvement of dysregulated proteostasis in lung pathology and ageing - S. Meiners

Oxidative stress: the unavoidable consequence of breathing - N. Reynaert

Monday, 15 May 2023

Opening session: Lung development

Chair: P. Laveneziana, T. Gille

- 09:00–09:10 Introduction
09:10–09:30 Lung development – S. Bellusci
09:30–09:40 Q&A
09:40–10:00 How breathing is controlled – J. L Feldman
10:00–10:10 Q&A

Session 2: Respiratory physiology - The basics

Chair: P. Laveneziana, T. Gille

- 10:10–10:30 Pulmonary function tests – K. Sylvester
10:30–10:40 Q&A
10:40–11:00 Obstructive Lung Diseases - C. Jolley
11:00–11:10 Q&A

11:10–11:25 *Break*

- 11:25–11:45 Restrictive Lung Diseases - T. Gille
11:45–11:55 Q&A
11:55–12:15 Vascular Diseases - F. Lador
12:15–12:25 Q&A

12:25–12:35 *Break*

12:35–13:30 Case based discussion

13:30–14:30 *Lunch break*

Session 3: Respiratory diseases from a physiologic perspective

Chair: P. Laveneziana, T. Gille

- 14:30–14:50 Respiratory failure - F. Laghi
14:50–15:00 Q&A
15:00–15:20 Exercise limitation - P. Laveneziana
15:20–15:30 Q&A

15:30–15:45	<i>Break</i>
15:45–16:05	Environmental diseases - I. Annesi Maesano
16:05–16:15	Q&A
16:15–16:35	Sleep disordered breathing - S. Schiza
16:35–16:45	Q&A
16:45–17:00	<i>Break</i>
17:00–18:30	Case-based discussion

Tuesday, 16 May 2023

Session 1: Lung Tissue Structure and Cell Biology: The expanding repertoire of resident epithelial cells – diversification of functions

Chair: A. Goodwin

09:00–09:20	Bronchial epithelium / conducting zone - C. Staab-Weijnitz, H. Irene Heijink
09:20–09:30	Q&A
09:30–09:50	Alveolar epithelium / respiratory zone – A. Pardo-Saganta
09:50–10:00	Q&A
10:00–10:20	Mechanisms of epithelial aging and senescence, key developmental pathways and their reactivation in disease - M. Lehmann, L. Donnelly
10:20–10:30	Q&A
10:30–11:00	<i>Break</i>
11:00–12:30	Interactive discussion
12:30–13:30	<i>Lunch break</i>

Session 2: Mesenchymal cells and ECM as powerful modulators of the lung scaffold

Chair: M. Nizamoglu

13:30–13:50	Lung fibroblast function and plasticity - E. El Agha, S. Rolandsson Enes
13:50–14:00	Q&A
14:00–14:20	Main components and functions of the extracellular matrix, ECM turnover - J. Burgess
14:20–14:30	Q&A
14:30–14:45	<i>Break</i>
14:45–15:05	Smooth muscle cells - R. Gosens
15:05–15:15	Q&A
15:15–15:35	Endothelial cells - H. Bogaard, J. Schupp
15:35–15:45	Q&A
15:45–16:00	<i>Break</i>
16:00–17:30	Interactive discussion

Wednesday, 17 May 2023

Session 1: Lung immunology

Chair: L. Regard

09:00–09:20	Sensing and (not) responding to the inhaled environment - P. Hiemstra
09:20–09:30	Q&A
09:30–09:50	Innate immunity and innate memory: not just short-term protection of our lungs – H. Heine
09:50–10:00	Q&A
10:00–10:15	<i>Break</i>
10:15–10:35	Adaptive immunity – F. Polverino
10:35–10:45	Q&A

10:45–11:05 The interplay between acute infections and chronic inflammation and effects on the lung microbiome – N. Ubags

11:05–11:15 Q&A

11:15–11:30 *Break*

11:30–13:00 Interactive discussion

13:00–14:00 *Lunch break*

Session 2: Molecular regulation of pulmonary homeostasis and respiratory diseases

Chair: E. Lopez Rodriguez

14:00–14:20 Mitochondria – the powerhouses of our cells govern more than energy production - S. Cloonan

14:20–14:30 Q&A

14:30–14:50 The involvement of dysregulated proteostasis in lung pathology and ageing - S. Meiners

14:50–15:00 Q&A

15:00–15:15 *Break*

Closing lecture

Chair: R. Jurkowska

15:15–15:35 Lung function trajectories/exposome/aging – A. Agusti Garcia-Navarro

15:35–15:45 Q&A