ERS Research Seminar

Innovative 3D models for understanding mechanisms underlying lung diseases: powerful tools for translational research

7-8 April 2022
Lisbon, Portugal

Thursday, 07th April 2022

08.00 – 08.30 Arrival and registration
Coffee and networking

08.30 – 08.40 Welcome and opening – Janette Burgess, Ramon Farre

Opening Session – Keynote lecture
Chairs: Janette Burgess (Netherlands) and Ramon Farre (Spain)

08.40 – 09.20 What is the need and why is it the time for innovative models for understanding human lung diseases – Daniel Weiss (USA)

09.20 – 09.30 General discussion

Session I – Technological advances for developing translational lung models
Chairs: Anna Krasnodembskaya (UK) and Anne van der Does (Netherlands)

09.30 – 10.00 Developing a lung on a chip model – Arunima Sengupta (Switzerland)
10.00 – 10.30 Precision cut lung slices going beyond airway responses – Jane Bourke (Australia)
10.30 – 10.45 Abstract oral presentation 1: *Development of a lung-on-chip model to study immune cell extravasation in lung infection* – Lisette van Os (Switzerland)
10.45 – 11.15 General discussion

11.15 – 11.45 *Coffee break*

Session II – Harnessing the lung for developing translational 3D models
Chairs: Cian O'Leary (Ireland) and Sara Cuevas Ocana (UK)

11.45 – 12.15 Human lung ECM derived hydrogels – Janette Burgess (Netherlands)
12.15 – 12.45 3D printing the human lung using hydrogels – Darcy Wagner (Sweden)
12.45 – 13.00 Abstract oral presentation 2: *Modelling fibrotic lung biomechanics in vitro using native extracellular matrix-derived hydrogels without altering the composition* – Mehmet Nizamoglu (Netherlands)

13.00 – 13.30 General discussion

13.30 – 14.15 *Lunch break*

14.15 – 15.15 **POSTER SESSION**

Session III – The challenge of mechanical parameters in the 3D environment

Chairs: Ian Adcock (UK) and Rebecca Heise (USA)

15.15 – 15.45 3D imaging in biomaterials – Apeksha Shapeti (Belgium)
15.45 – 16.15 Advanced measurements of 3D cell/ECM mechanics – Nuria Gavara (Spain)
16.15 – 16.30 Abstract oral presentation 3: *3D image analysis of the alveolar shape in human lungs* – Alex Reimelt (Germany)
16.30 – 16.45 General discussion

16.45 – 17.15 *Coffee break*

17.15 – 18.45 3 Breakout groups to discuss current challenges and needs:

Group 1: The need for standardization of procedures/models
Group 2: What diseases/dysfunctions most require 3D models for translational research
Group 3: Discuss a potential doctoral network proposal related to advancing 3D models for understanding lung diseases

20.00 *Dinner*

Friday, 08th April 2022

08.30 – 09.30 Report back from break out groups and identification of goals for newly established networks

Chairs: Janette Burgess (Netherlands) and Ramon Farre (Spain)

Discussion of research seminar's outcomes
Preparation of outputs

09.30 – 10.00 *Coffee break*

Session IV – Harnessing 3D models of the lung for translational outcomes

Chairs: Reinoud Gosens (Netherlands) and Markus Weckmann (Germany)

10.00 – 10.30 Mechanopharmacology of the lung – Alastair Stewart (Australia)
10.30 – 11.00 3D organoids informing lung regeneration – Rob Hynds (UK)
11.00 – 11.30 Using tissue mimetic models to understand lung cancer – Dania Movia (Ireland)
11.30 – 11.45 Abstract oral presentation 4: *3D lung-organoid platform for the identification of pharmaceutical compounds targeting senescence and inflammation* – Christoph Beisswenger (Germany)
11.45 – 12.15 General discussion

12.15 – 13.15 Closing remarks – Janette Burgess, Ramon Farre

13.15 – 14.00 Lunch on departure