



INNOVATIONS TO FIGHT RESPIRATORY DISEASES

Prevention, research and treatments

December 3-4th 2024

Biocitech Paris-Romainville

Session **#Keynote lecture**

Maladies respiratoires = un réel enjeu de santé publique en 2024

Claire ANDREJAK, CHU Amiens-Picardie, Présidente SPLF (Société de Pneumologie de Langue Française)

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Session #1 - Research and Innovations

Prepared for the next virus pandemic: The APPEAL project

Olivier MONCORGÉ, IRIM - UMR9004 (Institut de Recherche en Infectiologie de Montpellier)

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Session #1 - Research and Innovations

Metabolic control of lung inflammation

Mustapha SI-TAHAR, INSERM, Université de Tours

Le métabolisme et l'immunité, historiquement des domaines de recherche cloisonnés, ont récemment convergé sous le concept d'immunométabolisme.

Dans le contexte de l'infection par le virus de la grippe, mon équipe a montré que la muqueuse pulmonaire subit une reprogrammation métabolique, conduisant à l'accumulation de métabolites spécifiques appelés metabokines. Nous avons révélé la double fonctionnalité de certaines metabokines, qui régulent les réponses des cellules immunitaires de l'hôte par la modulation des signaux inflammatoires et l'induction de modifications post-traductionnelles. Simultanément, ces composés perturbent directement ou indirectement la réplication du virus de la grippe. Ces découvertes offrent un potentiel majeur pour le développement de traitements innovants ciblant l'inflammation et les virus.

Metabolism and immunity, historically siloed research domains, have recently converged under the concept of immunometabolism.

In the context of influenza virus infection, we have shown that the lung mucosa undergoes metabolic reprogramming, leading to the accumulation of specific metabolites known as metabokines. We revealed the dual functionality of certain metabokines as they regulate host immune cell responses through the modulation of inflammatory signaling and the induction of post-translational modifications. Simultaneously, these compounds directly or indirectly disrupt influenza virus replication. These major findings offer significant potential for innovative treatments targeting inflammation and viruses.



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Session #1 - Research and Innovations

Lung microbiota: a new frontier in diagnosing and treating respiratory diseases

**Geneviève HÉRY-ARNAUD, INSERM U1078, CHU Brest, Faculté de Médecine,
Université de Brest**

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Session #2 - Experimental models

Applications of 3D tissue engineering of the human upper and lower respiratory system in basic and applied research

Jan MARKUS, MatTek

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Session #2 - Experimental models

Advances in In Vitro Modeling of Lung Diseases: Focus on Precision-Cut Lung Slices
(PCLS) Model

Hanan OSMAN-PONCHET, **PKDERM**

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Session #2 - Experimental models

Developing a digital twin of the human respiratory system

Andrea BENASSI, Chiesi

The current state of the art in the development of digital twins of patient respiratory system will be reviewed, with particular focus on the capability of the models to quantitatively predict therapeutic aerosol transport and deposition. Different modelling techniques will be discussed from high fidelity computational fluid dynamics simulations to simplified statistical deposition models. Current bottlenecks and limitations will be discussed for both the modelling/simulation aspects and the experiments/measurements needed to validate and challenge the models.



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A preclinical platform for the investigation of respiratory viral infections in the NHP model

Erwan CORCUFF, [Cynbiose](#)

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Session #3 - Innovative therapeutics and diagnostics approaches

The vascular NMDA receptor in PAH (Pulmonary Arterial Hypertension), an out-of-the-box academic scientific strategy towards therapeutic innovation

Sylvia COHEN-KAMINSKY, Directrice de recherche CNRS, Inserm UMR_S999,
Université Paris Saclay

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Session #3 - Innovative therapeutics and diagnostics approaches

Lessons Learned from Using the FilmArray Pneumonia Panel Plus in the Field

Thomas GUILLARD, Université de Reims Champagne-Ardenne, Inserm UMR-S 1250
P3Cell, CHU de Reims, Laboratoire de bactériologie-Virologie-Hygiène hospitalière,
Reims, France

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Session #3 - Innovative therapeutics and diagnostics approaches

Detection of resistant forms of *Mycobacterium tuberculosis* (NGS)

Nelly BADALATO, [GenoScreen](#)

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Session #4 - Prevention, inner air pollution and environmental aspects

Advanced immunocompetent in vitro primary human lung models for toxicity
evaluation of airborne fibers and nanomaterials

Samuel CONSTANT, [Epithelix](#)

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Session #4 - Prevention, inner air pollution and environmental aspects

Prevention of viral respiratory infections

Emmanuel PIEDNOIR, [Université Caen Normandie](#)

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Session #4 - Prevention, inner air pollution and environmental aspects

Early detection and quantification of human pathogens in the environment

Olivier COUROT, IAGE (Ingénierie et Analyse Génétique Environnementale)
Montpellier

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Session #4 - Prevention, inner air pollution and environmental aspects

Sanitary warnings to the population and medical care professionals in case of
atmospheric pollution episodes

Frédéric MAUNY, CHRU Besançon

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Strategy of ventilation and aeration of facilities in case of exceptional epidemic situation

Evelyne GÉHIN, [Université Paris-Est Créteil](#)

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Workplace respiratory risks management

Philippe DUQUENNE, [INRS](#)

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