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Les Doctorant(e)s sélectionné(e)s sont les suivant(e)s :

- ***Mme Yasmine Colombani***. Directeurs de thèse : Arnaud Bourdin et Olivier Cazorla (UMR PhyMedExp)
- ***Mme Emma Cenac-Morthe***. Directeurs de thèse : David Cornu et Julien Cambedouzou (UMR IEM)
- ***M. Martin Puig***. Directeurs de thèse : Nicolas Molinari et Eric Matzner (UMR IDESP)

Chronic Obstructive Pulmonary Disease (COPD) is the third cause of death worldwide. Air pollution, tobacco smoke and workplace exposure to pollutants are major risk factors for COPD and emphysema. COPD is often associated with cardiovascular disease. We previously showed that chronic exposure to environmentally relevant pollutants levels such as carbon monoxide alters the heart in absence of underlying cardiopathy and worsens ischemic heart disease. The interaction between COPD, cardiovascular disease and the direct/indirect impacts of environmental exposome is incompletely understood.

Goals of the project are to:

1/ Characterize the environmental exposome, with a particular focus on minerals and microplastics, in the lungs of COPD patients.

2/ Reproduce this inorganic exposome for airborne experimental exposure of animals with or without pulmonary emphysema, to determine the relative impacts of each component on pulmonary and cardiovascular functions.

3/ Develop spatiotemporal mathematical models dedicated to assess the potential cocktail effects, extrapolate time courses curves taking into account the fractal geometry of the airway tree. Expectable cardiorespiratory benefits of preventive policies will inform both healthcare resources and public health/environmental authorities.