Emergence of lung's geometry, complex or not ?

Benjamin Mauroy*[1]

[1]Laboratoire J.A. Dieudonné – CNRS : UMR7351, Université Côte d'Azur – France

Abstract

Mammals' lung is an organ that transports ambient air to and from the fifty to one hundred square meters of air/blood interface, where exchanges of oxygen and carbon dioxide occur. This large interface is folded into the thoracic cage, and to reach it, the lung's geometry is shaped as dichotomous tree. Each branch of that tree is a tube where air is flowing, and each leaf of the tree feeds a portion of the air/blood interface. Lung's characteristics have been selected by evolution so that it is efficient to perform its function under the constraints of the universal laws of physics. During this talk, we will focus on lung's geometry and see how modelling and mathematical approaches can bring important insights on why and how lung's geometry could have been selected. While unveiling the probable mechanisms behind lung's geometry selection, we will discuss the status of the lung as a complex system or not.

*Speaker