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The role of the microbiome in COPD

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Recent technical advances have enabled the assessment of entire microbiomes in tissues. This had led to the elucidation of their roles in health and disease. Until recently the lower respiratory tract was thought to be sterile but microbiome studies have shown this not to be the case and that there is a core lung microbiome. Alterations in the microbiome indicate and may be causal in disease. In dysbiosis commensals are displaced by pathogens that drive inflammation and inflammatory diseases including the in the respiratory tract. It is now established that there is infectious and inflammatory cross talk between the lung and gut and so changes in gut microbiomes may also be involved in respiratory disease potentially through the induction of systemic inflammation. The current state of the field in COPD will be assessed and new data from our lab on the role of changes in the gut microbiome in this disease will be presented.

Biography

Phil Hansbro holds a tenured Chair of Immunology & Microbiology at the University of Newcastle and a National Health and Medical Research Council (NHMRC) of Australia. He has established and leads a team that investigates the pathogenesis of infectious and respiratory diseases including asthma, COPD and recently lung cancer. He has extensive expertise in the development and utilization of mouse models that recapitulate the hallmark features of human disease and complimentary human studies using state of the art facilities. He has developed unique short-term mouse models of severe, steroid-resistant asthma, COPD and lung cancer. He has established expertise and techniques in assessing inflammation and pathophysiology in experimental infections, asthma, COPD and lung cancer. His group routinely performs analysis of inflammatory cell influx and cytokine/chemokine levels assess remodeling in terms of mucus secreting cell hyperplasia, collagen levels/deposition/fibrosis and epithelial thickening and emphysema. His group has expertise in assessing inflammatory processes including inflammasomes, microRNAs, microbiomes, epigenetic, oxidative stress, etc, in these systems.

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