

Cell and Stem Cell Research

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Expression profiling in COPD – A new approach to resolving a complex pathophysiology

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Three features of COPD have possibly troubled physicians most: a) a complex pathology characterized by relentless bronchial inflammation, dissolution of gas exchanging tissue combined with focal scarring, and all this driven by environmental hazards, b) its individual heterogeneity, and finally, c) the sheer length of this process, frequently covering decades.

A prospective study combining the analysis of validated clinical measures of COPD with genome-wide transcription analysis of peripheral lung tissue has now allowed for the first integrated view of COPD pathology.

The data suggest an incremental pathology commencing with the biophysical and metabolic consequences of failing surface integrity. This initial step results in an unresolved vulnerability towards any airborne hazards causing chronic airway inflammation and by that, in a growing challenge to

organ repair. Owing to an individual's regenerative repair capacity upholding structure and function, this process may span decades. Only when the glycosaminoglycan matrix of the bronchial wall and the surrounding alveolar compartment will dissolve in combination with reduced primary repair, full-blown COPD will appear, and the prevailing secondary repair will then just permit a maintenance of structure at the prize of loss of function. This first holistic view must now be confirmed and further exploited in more detail. Nonetheless, we have come a step closer to an understanding of COPD pathology.

Speaker Biography

Rolf Ziesche MD is working as Associate Professor of Pulmonary and Internal Medicine at the Medical University of Vienna, Austria. He is also founder of the Pharmaceutical and Medical Research Start-up Transgenion in Vienna.

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