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Physiological measures and novel sputum biomarkers to distinguish subjects with mild to moderate COPD from asymptomatic current smokers, former smokers and never-smokers

Chronic obstructive pulmonary disease (COPD) is a respiratory disease characterized by progressive airflow limitation, with globally increasing prevalence. Although efforts to simplify COPD diagnosis to a single repeatable test using spirometry has proved critical in the day-to-day diagnosis and management of the disease, it is clear that COPD is a complex disease whose phenotypes may not be adequately captured by spirometry alone. Moreover, suitable biomarkers for the diagnosis, treatment and prognosis are still lacking. Therefore, we conducted a case-control study designed to identify a biomarker (panel) for the differentiation of subjects with mild and moderate COPD, asymptomatic current, former and never-smokers and to compare physiological measurements and quality of life (QoL) across the study groups (NCT01780298). Our data shows that there are a number of subjects that would be diagnosed as healthy using spirometry alone. However, these data also suggest that complementary tests such as CT chest imaging or lung sound analysis may prove helpful in identifying asymptomatic smokers at risk or with subclinical disease. Potential biomarkers identified by 'omics' analyses may support this stratification further. For example, sputum analysis detected cigarette smoking-related alterations in the transcriptome and proteome, which were further augmented in COPD smokers. Strikingly, proteomics data could distinguish COPD from asymptomatic smokers with a similar accuracy as the combination of three commonly used physiological parameters, FEV1, TLCO % and total COPD score.

Biography

Dr. Patrick Vanscheeuwijck is Director pre-clinical toxicology at Philip Morris International, Reduced Risk Products, and Switzerland, responsible for the in vitro and in vivo assessment of Reduced Risk Products (RRPs). The focus of his career at PMI has been on the development of approaches for the assessment of hazard associated with cigarette smoke and aerosols from RRP, inhalation toxicology and animal models of disease; with more than 30 peer-reviewed publications. He has a Ph.D. in biochemical pharmacology (University of Gent, Belgium), performed postdocs at the University of Arizona, U.S. and the University of Leuven, Belgium in molecular pharmacology and molecular biology.

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