

## **TITLE OF THE PROJECT: Heterogeneity and etiology of asthma, rhinitis and COPD**

**HEAD OF THE PROJECT:** Rachel Nadif, Inserm UMR 1168 - Aging and chronic diseases. Epidemiological and public health approaches

### **SUMMARY**

#### **Background**

The respiratory working group will develop projects on asthma, chronic obstructive pulmonary disease (COPD), and rhinitis. Asthma is a complex and heterogeneous multifactorial disorder that affects between 5 and 10% of the adult population and has important impact on the quality of life. Rhinitis is a common worldwide respiratory disease that affects between 20 and 50% of the population, and could be a risk factor for asthma. COPD was the third most common cause of death worldwide in 2010, and it is increasingly recognized that COPD is just one of the component of multimorbidity in patients with COPD. In spite of much research effort, the risk factors for asthma, rhinitis and COPD remain largely unknown, and the role of environmental factors is pointed out.

#### **Objectives**

The general objective is to better understand the etiology and the heterogeneity of asthma, COPD and rhinitis. We defined four specific projects 1) to investigate the associations between blood inflammatory patterns and asthma/asthma control according to age (project leader: Rachel Nadif, Inserm), 2) to evaluate associations between occupational exposures, especially to cleaning agents and irritants, and new-onset asthma (project leader: N. le Moual, Inserm), 3) to better understand how body composition affects respiratory diseases (project leader: R. Varraso, Inserm) and 4) to refine rhinitis definitions and phenotypes and to study associations between long term exposure to air pollution and rhinitis (project leader: B. Jacquemin, Inserm).

#### **Methods**

Projects will focus on environmental risk factors with a strong impact in public health such as occupational exposures and air pollution. Associations between occupational exposures and asthma control and various asthma phenotypes such as Immunoglobulin E (IgE)-dependent/non-IgE-dependent asthma and neutrophilic asthma will be studied. A specific standardized questionnaire on rhinitis has been designed and sent to the first follow-up. The evaluation of several exposure models for air pollution is currently in discussion. The associations between obesity and fat mass with asthma, and the associations between body composition and lung function decline, and the incidence of COPD will be investigated. Several biological phenotypes throughout the causal chain between environmental factors and diseases will be considered to better understand rhinitis etiology. Cross-sectional and longitudinal analyses will be performed to reach the objectives.

#### **Perspectives**

These projects are based on an interdisciplinary research based on complementary skills in biology, statistics, clinical, respiratory and environmental epidemiology within or out of the respiratory working group. Overall, the projects developed in the respiratory group will improve the characterization of the respiratory diseases, allowing a better understanding of their heterogeneity, etiology and biological mechanisms.

Note: this project is part of the research consortium 'CONSTANCESRespi – Surveillance, determinants, natural history and impact of chronic respiratory diseases and accelerated lung function decline in CONSTANCES - An Integrative project'