**Characterization of rhinitis in adults in the EGEA study**

**Introduction** The standardization of rhinitis definition is crucial but still missing for adults. The aim was to identify distinct adult rhinitis phenotypes using an unsupervised approach.

**Methods** The analyses were performed on 1057 adults of the longitudinal Epidemiological Study on the Genetics and Environment of Asthma (EGEA). All self-reported symptoms related to rhinitis were considered to characterize the phenotypes: nose symptoms (S+), hay fever, sinusitis, conjunctivitis, reactions to different stimuli (dust, animals, hay/flowers, cold air...), etc. Allergic sensitization was defined by at least one positive response to Skin Prick Tests to 12 allergens (SPT+).

Mixture model was used to cluster participants, both in those without (As-, n=616) and with (As+, n=441) asthma.

**Results** In As-, 3 clusters were identified: no rhinitis (NO, 49%) mainly characterized by the absence of S+, non-allergic rhinitis (NAR, 25%) mainly characterized by S+, sinusitis, SPT-, and mixed rhinitis (MR, 26%) mainly characterized by S+, high SPT+, sinusitis and conjunctivitis.

In As+, 4 clusters were identified (in all: SPT+ > 64%): no rhinitis (NO, 20%) mainly characterized by the absence of S+, cluster 2 (30%) showing a high rate of S+ and the lowest rate of SPT+, clusters 3A (27%) mainly characterized by S+ and SPT+ and 3B (23%) characterized by S+ and the higher rate of SPT+.

**Conclusion** Different phenotypes of rhinitis for both As+ and As- were identified using a cluster-based statistical model. Theses phenotypes are usually mentioned by experts but were never statistically tested. Taking into account all rhinitis related variables seems to be very useful in the differentiation of the phenotypes of rhinitis.