APOLIPOPROTEIN E AND INFLAMMATORY CYTOKINES PROMOTER GENOTYPING IN A GROUP OF CENTENARIANS FROM THE "CaT: Centenari a Trieste" ONGOING STUDY

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Objectives. Centenarians, the fastest growing segment of the elderly population, are an exceptional model to study longevity and healthy aging. We decided to deepen the knowledge about the genetic basis of longevity taking advantage from the ongoing study "CaT: Centenari a Trieste". The CaT project started in 2014, targeting individuals of at least 100 years domiciled in Trieste, a city with a high prevalence of centenarians (7 / 10,000 inhabitants vs. 3 / 10,000 in the whole Italian territory).

Materials and Methods. The Cat protocol features collection of demographic and anamnestic data, neurological, neuropsychological and cardiological examination (with ECG and echocardiography) as well as oral examination. In addition, blood sampling, urine collection, oral mucosa brushing are planned, and post-mortem brain collection whenever possible. To characterize from the genetic point of view the CaT group, we started from 24 available DNAs (mean age; 101.6 +/- 1.3 years). We selected two polymorphisms of apolipoprotein E (APOE, rs429358 and rs7412), a risk factor for the onset of Alzheimer's disease, and one polymorphism/gene (in the promoter region) for three pro-inflammatory cytokines: IL1α (SNP rs1800587) IL1β (SNP rs16944) and TNFα (SNP rs1799724). These cytokines may contribute to low-grade chronic inflammation typical of old age

Results. For the statistical analysis, we compared the CaT group to a reference Italian population (Toscani in Italy, TSI). No difference was found between the polymorphisms of the selected cytokines, but when we compared APOE allelic distribution between CaT centenarians and TSI, we found a significant difference (Fisher's test, p=0.009). In fact, CaT allelic frequencies were: ε2=0.104, ε3=0.896, ε4=0.0; while for TSI we found: ε2=0.047, ε3=0.850, ε4=0.103.

Discussion and Conclusion. We have genotyped a small group of centenarians from North-Eastern Italy for some SNPs already known to be risk factors for cardiovascular and neurological diseases (APOE) or that may modulate expression of cytokines involved in inflammatory processes. The major finding is the lack of APOE-ε4 allele in CaT subjects. We expect that further correlation of genetic data with clinical and biochemical analysis may be relevant for profiling the determinants for longevity in this population.