**GENOME-WIDE ASSOCIATION STUDY ON SALTINESS AND ASSOCIATION OF TOP-RANKING SNPS WITH BLOOD PRESSURE**

**D. Corella1,2,** R. Fernandez-Carrion1,2, R. Barragan-Arnal1,2, A. Rodrigues-Cruz2,

I. Gonzalez-Monje2, L. Quiles2, J.V. Sorli1,2, J.M. Ordovas3, O. Coltell4

1. CiberOBN, Madrid, Spain

2. University of Valencia, Valencia, Spain

3. Human Nutrition Research Center on Aging, Boston, MA, USA

4. Universitat Jaume I, Castellon, Spain

*Background*: The greater or lesser perception of different flavors has been associated with food consumption, obesity and cardiovascular risk, but results differ. Contributing to that is the fact that measuring taste perception through chemical laboratory tests is tedious. The preferred method is to use a genetic marker as a proxy of taste perception. However, the genes associated with taste perception, apart from bitterness, are not well known. Although some genes related with saltiness have been identified, the main genes involved in salt perception and its impact on blood pressure (BP) are mostly unknown.

*Objectives*: 1) To carry out a genome-wide association study (GWAs) on an elderly Mediterranean population to detect the main genes associated with saltiness perception; and 2) To study the association of top-ranking SNPs with BP in an independent sample.

*Methods*: 150 participants in the PREDIMED PLUS-Valencia study (elderly subjects with metabolic syndrome) were subjected to laboratory taste tests to identify their perception of bitterness, sweetness, sourness, umami and saltiness. Various concentrations were used and their perception noted on a rising scale. The highest concentration of NaCL (200mM) was used for the GWAs. Genotyping was undertaken with the Human OmniExpress Illumia array (700K). PLINK was used for association analyses. Top-ranked SNPs were genotyped in the PREDIMED-Valencia study (n=1094) and associations with BP were analyzed.

*Results and Conclusions*: Firstly, to check power and methodology, a GWAs for bitterness (Phenylthiocarbamide) was undertaken, as the genes associated with this are well-known. We confirmed that the top-ranking SNPs (P<10-8) were situated in the TAS2R38 gene, as expected. We then analyzed saltiness, top-ranking SNPs being rs12046966-FUBP1 (P=6.1x10-7), rs1800454-TAP2, rs2152555-GREM2 and rs12564791-NLRP3 (P=2.3x10-5). One of these newly reported genes, was significantly associated with BP (i.e. variant allele-carriers of the rs12046966-FUBP1 had significantly lower systolic BP in the PREDIMED-Valencia participants), suggesting a link.