OBESITY

Copy number variants in *AMY1* connected with obesity via carbohydrate metabolism

Low levels of copy number variants (CNVs) at the *AMY1* gene, which encodes salivary amylase, are associated with decreased levels of amylase in the saliva and an increased risk of obesity, according to a recent paper in *Nature Genetics*.

Previous work has demonstrated the link between genetic variations and obesity, which led Philippe Froguel, Mario Falchi and colleagues to investigate

whether CNVs were associated with obesity. “Our guess was that CNVs may have a much stronger effect than frequent single nucleotide polymorphisms,” explains Froguel.

First, the researchers developed a statistical method to identify gene dosage effects attributable to CNVs in families. They then focused on the CNVs that encompassed a gene and one of its regulatory elements, as these were thought to be the most physiologically relevant. A range of CNVs were tested for their association with obesity in 149 Swedish families containing siblings who were discordant for obesity.

Initial analyses revealed that, among the CNVs showing gene dosage effects, only copy number at the *AMY1* gene also showed an association with obesity. This finding was then replicated in an additional 6,200 participants. The presence of a low *AMY1* copy number was associated with lower levels of amylase;

participants with a low *AMY1* copy number were significantly more likely to have obesity than those who had a high *AMY1* copy number. The authors note that this could be the first study to find a genetic link between carbohydrate metabolism and obesity.

The investigators are now planning to investigate the mechanisms underlying the association they found, which could involve the gut microbiota. They also want to explore the question of whether CNVs in *AMY1* are involved in the risk of type 2 diabetes mellitus and the metabolic syndrome. In addition, they plan to test whether the digestion of carbohydrates could be improved in an effort to prevent the development of obesity.

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Original article Falchi, M. *et al.* Low copy number of the salivary amylase gene predisposes to obesity. *Nat. Genet.* doi:10.1038/ng.2939

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