

Taste genes predict tooth decay

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Dental caries is a highly prevalent disease that is disproportionately distributed in the population. Caries occurrence and progression is known to be influenced by a complex interplay of both environmental and genetic factors, with numerous contributing factors having been identified including bacterial flora, dietary habits, fluoride exposure, oral hygiene, salivary flow, salivary composition, and tooth structure. Previous reports have characterized the influence of the genetic variation on taste preferences and dietary habits.

In an article published in the [Journal of Dental Research](#) titled "[Taste Genes](#) Associated with [Dental Caries](#)" lead researcher Steven Wendell and researchers Melissa Brown, Margaret Cooper, Rebecca DeSensi, Mary Marazita, Xiaojing Wang and Robert Weyant, all from the University of Pittsburgh; and Richard Crout and Daniel McNeil from West Virginia University, hypothesized that [genetic variation](#) in taste pathway genes (TAS2R38, TAS1R2, GNAT3) may be associated with dental caries risk and/or protection.

In this study, families were recruited by the Center for Oral Health Research in Appalachia (COHRA) for collection of biological samples, demographic data and clinical assessment of oral health including caries scores. Multiple single nucleotide polymorphism (SNP) assays for each gene were performed and analyzed using transmission disequilibrium test (TDT) analysis (FBAT software) for three dentition groups: primary, mixed, and permanent. Statistically significant associations were seen in TAS2R38 and TAS1R2 for caries risk and/or protection.

"This work is significant in that it identifies key genes that may explain the susceptibilities of some patients to [tooth decay](#)," said JDR Editor-in-Chief William Giannobile. "Although an early study, this breakthrough on taste pathways and genes demonstrates how patient preferences that are genetically predetermined may put patients at risk for disease."

The complete research study is published in the *Journal of Dental Research*, and is available online at <http://jdr.sagepub.com/content/early/2010/09/02/0022034510381502.abstract>.

An accompanying editorial titled "Defining the Contribution of Genetics in the Etiology of Dental Caries" has been published. J. Tim Wright, The University of North Carolina, Chapel Hill, states "given that the majority of oral health care costs are directed at treating the ravages of dental caries, this line of research would seem appropriate."

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