

Avoiding poisons: A matter of bitter taste

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In most animals, taste has evolved to avoid all things bitter—a key to survival—to avoid eating something that could be poisonous via taste receptors, known as Tas2r, that quickly spring into action and elicit the bitter sensation.

Published recently in the online early edition of *Molecular Biology and Evolution*, authors Zhang, et. al., tested the hypothesis that herbivores—and their plant diets—have evolved to have greater number of Tas2r bitter taste receptor genes in their genomes than omnivores or carnivores. They identified Tas2r genes in more than 54 vertebrate species including mammals, birds, reptiles, amphibians, and fishes, and grouped them into functional and non-functional genes. They also constructed evolutionary trees and estimated the loss and birth of Tas2r genes. Finally, they correlated the Tas2r gene repertoire of the species with their diets.

Their analyses supported the hypothesis, showing vertebrates can also be classified as herbivores, carnivores, or omnivores based on their Tas2r genetic profile. The Tas2r gene number in a species also is correlated with the fraction of plants in its diet. They conclude that because [plant tissues](#) contain more toxic compounds than [animal tissues](#) do, dietary toxins are a major selective force shaping the diversity of the Tas2r genetic repertoire.

More information: [mbe.oxfordjournals.org/content ... lbev.mst219.abstract](http://mbe.oxfordjournals.org/content/29/11/2191.abstract)

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