In This Issue

Articles highlighted

Taste system alterations induced by the areca nut alkaloid arecoline

Page 25

Chewing areca nuts is addictive causing euphoria, sweating, and palpitation. Its major alkaloid, arecoline, is present in the saliva of areca nut chewers at concentrations sufficient to induce inflammation and oral cancer. Areca nut chewers suffer, besides other clinical symptoms, from taste deficits. Therefore, Peng et al compared the taste system of arecoline treated mice with control mice. They found that, whereas the treatment did not change the number and size of taste buds or taste cells, it did alter subcellular morphology and led to accumulation of autophagosomes in a class of taste cells. The authors also observed decreased immunohistochemical staining for the sweet receptor subunits which was paralleled by reduced sweet preference. Moreover, arecoline exposed mice ate less and displayed lower body weight than control mice.

Human chemosignals of aggression

Page 35

A number of individual body features appear to be encoded by chemosignals in humans including health status, gender assignment, kin recognition, and fertility as well as emotions such as sadness, disgust, fear and anxiety. Reception of the chemosensory messages can affect psychological processes in receivers such as social judgement, emotion recognition, decision making and attention. The extent to which aggressive behavior is communicated by chemosignals in humans and the behavioral options of the receivers have not been intensely investigated. Mutic et al now examined if the body odor of a stranger with the intention to harm signals aggression and if receivers smelling such odors experience emotional contagion, i.e., anger, or emotional reciprocity, i.e., anxiety. Their data indicate that chemosignals of aggression of donors induce an affective or cognitive modulation compatible with an anxiety reaction in the receivers.

Behavioral analysis of bitter taste perception in Drosophila larvae

Page 85

Like other animals, Drosophila larvae use their sense of taste to identify appropriate food sources and control feeding behavior. To this end bitter recognition is believed to guide avoidance of potentially harmful substances. Such compounds are detected by gustatory neurons (GRN) located in the taste sensilla of the larvae’s three major external and internal chemosensory organs which typically express several out of 68 gustatory receptor (Gr) genes. The larval Grs are expressed in a combinatorial fashion in the larval head and most of them appear to be involved in bitter responses. From a larger set of compounds Kim et al first demonstrate that larvae dose-dependently avoided 9 bitter substances mainly by gustatory cues. Next they showed by means of an extended set of fly lines that capsaicin became repellent in larvae by targeted expression of the vanniloid 1 receptor in specific subsets of GRNs suggesting that they are involved in mediating behavioral aversion. By targeted expression of tetanus toxin in order to attenuate signaling of specific GRNs they identified combinatorial patterns of GRNs mediating aversion of larvae to 5 selected prototypical bitter substances. These patterns involve cooperative interaction of many external and internal GRNs to sense bitter compounds and elicit aversion and requirement of different GRNs to sense and avoid different bitter compounds.

Wolfgang Meyerhof