

Dear Faculty, IGERT Fellows, IGERT Associates and Students,

You are cordially invited to attend a Seminar presented by Erica Freeman.
Please plan to attend.

Erica Freeman

IGERT Fellows

Date: Friday, February 7, 2014

Location: Bourns A265

Time: 11:00am

Drosophila taste receptors reveal combinatorial and cross-modality functions

Abstract:

Drosophila melanogaster is a model organism to study taste because it has 1000 taste neurons, which recognize different environmental cues. It uses a highly diverse group of 68 gustatory receptors (Gr) to taste the chemical world and determine the palatability of potential food sources. Nine of the 68 receptors are putative sugar receptors, of which 3 have been directly linked to the detection of sweet compounds. Using a novel *in vivo* “Gr-decoder” system, we discover that each sweet Gr protein is a detector of sweet tastants and can detect unique subset of tastants. We also deorphanize DmGr43a and its *A. gambiae* ortholog, AgGr25. Both receptors have similar sweet detection profiles. Moreover, we discover that multiple sweet Grs are directly inhibited by specific bitter alkaloids, revealing their roles as dual sensors of both sweet and bitter tastants. Recordings from taste neurons in *Anopheles gambiae* suggest that these mechanisms are evolutionarily conserved. Our results reveal combinatorial mechanisms for sweet and bitter ligand recognition by sweet taste receptors.

Attached is a reference paper for her talk.

