



Becoming what you smell: adaptive sensing and efficient coding in the olfactory system

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I will argue that the circuit architecture of the early olfactory system provides an adaptive, efficient mechanism for compressing the vast space of odor mixtures into the responses of a small number of sensors. In this view, the olfactory sensory repertoire first leverages the power of disordered combinatorial sensing to compress a high dimensional olfactory space into a low dimensional receptor response space while preserving similarity relations between odors. It then adapts the resulting representation to efficiently encode and optimize information transfer from the changing environment of volatile molecules.