

Active Olfaction



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Mellon Institute Conference Room

Mouse olfaction is well-suited to elucidating links between neural circuits and behavior, combining genetic tractability with an ethologically favorable sensory modality. Mice perform many innate olfactory responses, and they excel at difficult olfactory discrimination tasks. Further, olfaction is an active sense: the mouse's nose collects olfactory input in discrete samples, or sniffs, whose content is shaped by respiration and locomotion. Studying how sampling behavior influences olfactory coding will yield insights into naturalistic sensory processing. Using imaging, electrophysiology, and psychophysics in transgenic mice, I will pursue the following questions in active olfaction:

1. How does the olfactory system use temporal coding to guide behavior?
2. What sampling strategies and neural mechanisms does the olfactory system use to solve odor-tracking problems?
3. Does the olfactory system segregate function by diverse cell-types and functional areas, as in other sensory systems? And if so, is there a "where pathway" for olfaction?

Host: Alison Barth, Ph.D.