New insights into how the brain works

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The brain is composed of many different types of neurons, and scientists are just beginning to uncover the functional significance of this vast cellular diversity. At Baylor College of Medicine, Drs. Benjamin Arenkiel, Gary Liu and their colleagues at Baylor, the Jan and Dan Duncan Neurological Research Institute at Texas Children's Hospital and Rice University studied the functional relationships between inhibitory interneurons, a type of nerve cell, and two excitatory cell types, called tufted cells and mitral cells, in the murine olfactory bulb.

Using cell-type specific genetic tools, optogenetic mapping, electrophysiological data, live 2-photon imaging and computational modeling, the researchers discovered that when they removed the ability of inhibitory interneurons to inhibit the activity of tufted cells and mitral cells, these excitatory neurons dramatically changed the way they responded to odors. Unexpectedly, the responses changed more drastically in tufted cells than in mitral cells. The study appears today in the journal *Nature Communications*.

These findings provide new insights into the complex functional consequences of the vast diversity of cell types in the brain and underscore the need to better understand these relationships in order to grasp how the brain processes sensory information.

More information: Gary Liu et al, Target specific functions of EPL interneurons in olfactory circuits, *Nature Communications* (2019). DOI: 10.1038/s41467-019-11354-y

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