

1. What was the main hypothesis proposed by Gheusi et al. 2000?
 - a. NCAM-knockout mice will show a reduction in the recruitment of new interneurons in the olfactory bulb and altered olfactory behavioral responses
 - b. NCAM-knockout mice will show a defect in the rostral migration of subventricular zone precursors, leading to a reduction in the size of the olfactory bulb
 - c. NCAM-knockout mice will show improved odor discrimination due to decreased inhibition from new interneurons within the olfactory bulb
 - d. NCAM-knockout mice will show decreased olfactory memory due to a deficit in the recruitment of newborn neurons from the subgranular zone of the dentate gyrus
 - e. NCAM-knockout mice will be unable to discriminate between paprika and cinnamon because they are lacking the olfactory receptor necessary for the detection of paprika
2. Why were 5-bromo-2'-deoxyuridine (BrdUrd) injections administered to the mice?
 - a. It knocks out neural cell adhesion molecules (NCAM) in mice
 - b. It reduces the size of the granule cell layer (GCL) by 35%
 - c. It's a drug known to decrease odor discrimination by inhibiting LTP
 - d. It incorporates into DNA so it labels the nuclei of dividing cells (newborn neurons)
 - e. It's a marker for GABAergic neurons
3. What was different between the histological appearance of normal and mutant olfactory bulbs?
 - a. Both B & C
 - b. The width of the granule cell layer (GCL)
 - c. The striated organization of granule cells in the GCL
 - d. The mean diameter of glomeruli in the glomerular layer (GL)
 - e. All of the above
4. In which of the following behaviors did the mutant mice show the *most significant* deficit compared to normal mice?
 - a. Odor habituation
 - b. Odor detection
 - c. Odor sensitivity
 - d. Odor recognition (short-term memory)
 - e. Odor discrimination
5. What did the authors propose is the role of newborn interneurons in the olfactory bulb in adulthood?
 - a. Through reciprocal inhibition, they facilitate the synchronization of cell subpopulations of the olfactory bulb that is crucial for olfactory discrimination
 - b. These GABAergic interneurons start off excitatory and mature into inhibitory cells
 - c. These neurons are added to the olfactory bulb as animals encounter new odors in their environment
 - d. The rate of their proliferation is tied to reproductive cycles and plays a role in mating behavior
 - e. They are responsible for the long-term storage of odor memories in the olfactory bulb