

**Study Guide for the fifth unit (vestibular, touch, taste and smell).** Be able to answer the following questions and be familiar with the concepts involved in the answers. Review your homework and lab assignments and be familiar with the concepts included in them as well.

1. Describe the conditions under which an observer successfully adapts to a distorted visual input (inverting goggles or lateral shifting prisms, for example).
2. What do you experience when you attempt to move your paralyzed eyes to the **right**? Explain the phenomenon in terms of Erik von Holst’s “*Reafference Principle*” (*Das Reafferenzprinzip*). Be able to fill in the tables corresponding to various conditions of object movement and eye movement, two examples of which are shown below:



3. Explain how you would measure the two-point tactile threshold of the skin. How does it differ in different parts of the body? Describe the role that receptive fields sizes of touch neurons play in determining the two-point threshold.
4. Be able to identify the major components of the olfactory and the gustatory systems (not the projections to the brain): taste bud, papillae, olfactory epithelium, tongue, cribriform plate, olfactory bulb, glomerulus, turbinate bones, olfactory receptor, and olfactory nerve.
5. What is the distinction between taste and flavor? What role does the sense of smell play in the taste and the flavor of food?
6. Describe the difference between supertasters, tasters and non-tasters based on their sensitivity to the “bitter” substance PROP. What is the basis of these differences?
7. What is the definition of a pheromone? Discuss two pieces of evidence that humans are able to communicate with each other by means of chemical stimuli.
8. There are two outside reading papers about the effect of human tears on perception (Gelstein et al., 2011; Gračanin, van Assen, Omrčen, Koraj, & Vingerhoets, 2017). What do you think accounts for the different findings of these papers?
9. The visual system has 3 types of cones and 1 type of rod. Compare it with both the taste and the olfactory systems. How does the olfactory system manage to process information from so many different types of receptors?

## References

- Gelstein, S., Yeshurun, Y., Rozenkrantz, L., Shushan, S., Frumin, I., Roth, Y., & Sobel, N. (2011). Human Tears Contain a Chemosignal. *Science*, *331*(6014), 226-230.
- Gračanin, A., van Assen, M. A. L. M., Omrčen, V., Koraj, I., & Vingerhoets, A. J. J. M. (2017). Chemosignalling effects of human tears revisited: Does exposure to female tears decrease males' perception of female sexual attractiveness? *Cognition and Emotion*, *31*(1), 139-150. doi:10.1080/02699931.2016.1151402