

SUPPLEMENTARY MATERIAL 1

Deep Dive prompts

Prompts for Molecular Neuroscience

Describe how and why resting membrane potential may or may not be altered as it relates to your research topic. You may explain using a picture or write out your explanation.

Are action potentials or threshold affected by your research topic? Explain why or why not. You may use writing or pictures to answer.

Draw a presynaptic terminal with relevant cellular machinery (proteins, cellular structures, membranes, etc). Highlight and explain where this presynaptic cellular machinery may be different as it relates to your topic.

You want to perform an experiment that tests how one of the neurotransmitters we discussed in class is important to your topic. Describe your experiment, making sure to include your hypothesis, experimental group(s), control group(s), methods, and a graph of your expected data if your hypothesis is correct.

Describe how a neuropeptide of your choosing relates to your topic of interest. Make sure to describe the relevant receptor, how it interacts with other neurotransmitters, and the effects on behavior. You may draw, use sentences, or sketch a concept map to illustrate your answer.

You hypothesize that synaptic plasticity plays a role in your topic of interest. Describe an experiment to test this hypothesis. Make sure to include your methods, control group(s), experimental group(s), and a graph of your expected data.

Prompts for Cognitive Neuroscience

Describe anatomical structures whose structure and/or function may be altered in your topic of interest. What methods are most appropriate for assessing these structural and/or functional differences? Describe how each of these methods work.

Describe how sensory processing is affected in your topic of interest. For two of the sensory systems discussed in class, describe the ascending pathway from sensory receptor to primary cortex. Are there any differences between healthy / neurotypical individuals and your topic of interest?

You are interested in testing how the neural networks underlying endogenous and exogenous attention are differentially affected in your topic of interest. Design an experiment that would simultaneously test this. Make sure to identify your methods (e.g., behavioral task, neuroimaging), experimental group(s), control group(s), and a graph of your predictions.

Do any executive functions change as a consequence of your topic of interest? Explain how your topic of interest may or may not be associated with different behavioral responses

compared to a 'control' condition, and any anatomical changes in your topic of interest that may be linked to changes in executive function.

You hypothesize that there are issues of communication related to your topic of interest, but you are uncertain as to whether it is related to comprehension of language or comprehension of emotion. Design an experiment that would test these two alternative hypotheses. Make sure to identify your methods (e.g., behavioral task, neuroimaging), experimental group(s), control group(s), and a graph of your predictions.

Think about how your topic of interest is represented in society (policy, media, daily life). What are some practical concerns that arise from some of the cognitive differences you have discussed throughout the semester? Write a short proposal on one intervention, policy, or advocacy messaging on behalf of your topic, using empirical research on neural processes to support your position.