

Questions for Roth et al. 2020

1. The authors claim that AMPA spine levels are randomly distributed in control mice and clustered in trained mice. What is the evidence that supports this claim? What is the functional significance? How would you have interpreted this data in the context of Hebbian plasticity?
2. The authors claim that the visual cortex shows upregulation of AMPA expression in response to the motor task. Describe the evidence that supports a causal relationship between motor learning and visual remodeling? Are feedforward or feedback connections responsible for this phenomenon, or something else?

Reading questions for Johnson et al., 2016

- Describe the control groups in Figs. 2 and 5. What was the importance of the “arena control” group? Do you agree with how the controls were done?
- In the context of Johnson *et al.* (2016), what do the words “explore” and “exploit” mean? (See 2nd paragraph of Introduction section.)
 - In your daily life, you perform behaviors based on cue-action-outcome associations, e.g. when you purchase food. Describe what an “explore” strategy would look like, and what an “exploit” strategy would look like, in the context of choosing food for dinner.
 - For animals foraging for food in the wild, what are the risks/benefits of explore vs exploit strategies?
- Did Johnson et al. provide evidence for a causal link between the structural remodeling of OFC → dmPFC axons and task learning?

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