Ms No. CONEUR-D-13-00111

Title: Role of emergent neural activity in visual map development

Below, we address the reviewer comments one-by-one.

Reviewer Remarks:

*Overall a very nice contribution that provides a thorough review of recent advances in activity dependent development of cortical circuits with an emphasis on spontaneous patterns of activity. I have one comment. Some of the author's sentences leave one with the impression that sensory experience is irrelevant for the development of circuits in visual cortex. For example, the first sentence in the abstract "The structural and functional development of visual circuits in reptiles, birds, and mammals happens largely independent of sensory experience." In my view, this statement ignores the fact that most of the synapses in visual cortex are formed after the onset of visual experience and when visual experience has significant impact on their formation. It is fair to say that fundamental features of cortical circuits are present at the time of eye opening or birth (ocular dominance, orientation, retinotopy) but to imply that visual cortex is mature at the onset of experience is to ignore a significant amount of literature that documents the immaturity of the visual responses of cortical neurons at the onset of vision and the role of experience in the proper maturation of inhibitory and excitatory connections that are critical for the function of visual cortex. I suspect the language was meant to emphasize the importance of the developmental events that arise before the onset of vision. These events are critically important, as are those that follow the onset of vision.*

**Response**

We thank the editor for his comments. Indeed the original language in the first sentence of the abstract was intended to highlight the importance of developmental events occuring before the start of vision. We have changed this sentence to "A considerable amount of visual circuit structural and functional development in reptiles, birds, and mammals happens independent of sensory experience."