

Novelty Based Learning of Place Cells in Hippocampus: Computational Models

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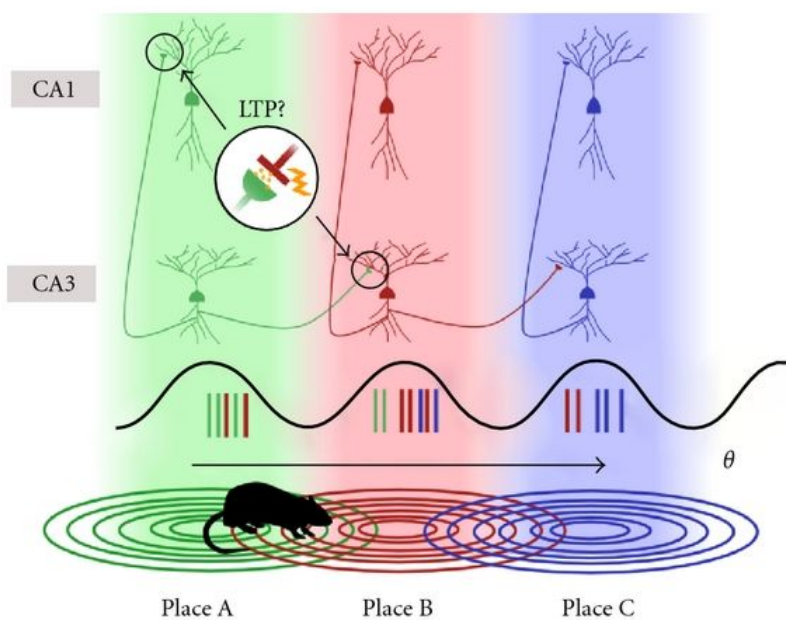
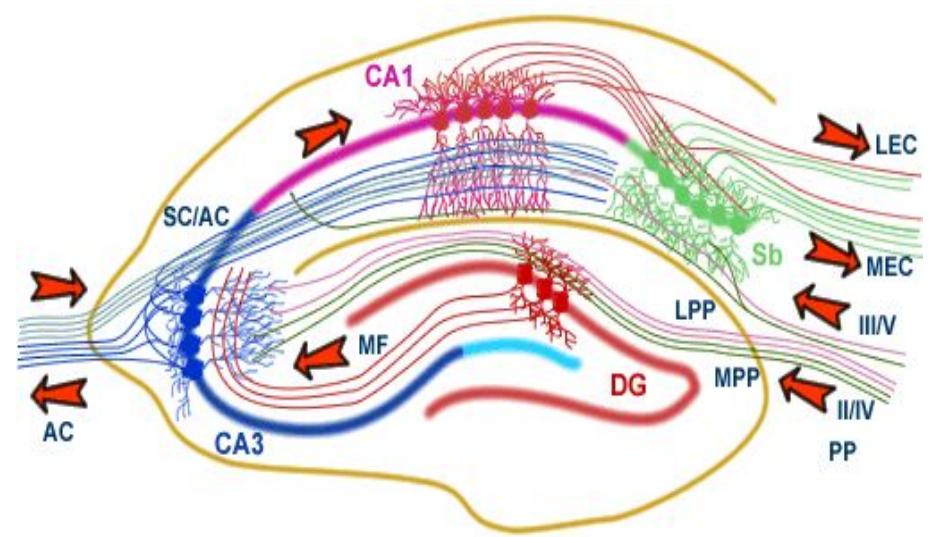
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Context: place cells

- Place cells are hippocampal neurons located in CA1 and CA3 area.
- Their role is coding specific positions in space. A place cell fire when the subject approach its specific field, not others. They are fundamental for spatial navigation



Problem: the formation of place cells

- We have a large amount of data about place cell function, but few data about their emergence: we can identify place cells only when formed
- Computer models are well-suited to investigate place cell formation and guide future experiments

Objectives

- Use computational models to understand the genesis of place cells
 - Kohonen networks: unsupervised learning for place cells selection
- Test mechanisms on realistic model based on NEURON
 - Detailed reconstruction of hippocampal CA1 area

