A Manuscript Microscope 'Sentence Audit' of:

Hippocampal sharp wave-ripples and the associated sequence replay emerge from structured synaptic interactions in a network model of area CA3

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The Manuscript Microscope Sentence Audit is a research paper introspection system that parses the text of your manuscript into minimal sentence components for faster, more accurate, enhanced proofreading.

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Features of the Sentence Audit:

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The Minimal Sentence Components shown are the smallest coherent elements of each sentence of your text as derived from it's conjunctions, prepositions and selected punctuation symbols (i.e. commas, semicolons, round and square brackets).

The combined approaches ensure easier, faster, more effective proofreading.

Comments and Caveats:

• The sentence parsing is achieved using a prototype natural language processing pipeline written in Python and may include occasional errors in sentence segmentation.

• Depending on the source of the input text, the Sentence Audit may contain occasional html artefacts that are parsed as sentences (E.g. "Download figure. Open in new tab").

• Always consult the original research paper as the true reference source for the text.

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All queries, feedback or suggestions are also very welcome.

Research Paper Sections:

The sections of the research paper input text parsed in this audit.

Section No.	Headings	Sentences
Section: 1	Abstract	8
Section: 2	1 Introduction	18
N/A	--- --- --- --- --- --- ---	0
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The Sentence Audit Of The Research Paper

Title

Hippocampal sharp wave-ripples and the associated sequence replay emerge from structured synaptic interactions in a network model of area CA3

S1 [001] Abstract

S1 [002] Hippocampal place cells are activated sequentially as an animal explores its environment.

Hippocampal place cells are activated sequentially ...
... as an animal explores its environment.

S1 [003] These activity sequences are internally recreated (“replayed”), either in the same or reversed order, during bursts of activity (sharp wave-ripples; SWRs) that occur in sleep and awake rest.

These activity sequences are internally recreated ...
... (“replayed”), ...
... either ...
... in the same ...
... or reversed order, ...
... during bursts ...
... of activity ...
... (sharp wave-ripples; ...
... SWRs) ...
... that occur ...
... in sleep ...
... and awake rest.

S1 [004] SWR-associated replay is thought to be critical for the creation and maintenance of long-term memory.

SWR-associated replay is thought ...
... to be critical ...
... for the creation ...
... and maintenance ...
... of long-term memory.

S1 [005] In order to identify the cellular and network mechanisms of SWRs and replay, we constructed and simulated a data-driven model of area CA3 of the hippocampus.

In order ...
... to identify the cellular ...
... and network mechanisms ...
... of SWRs ...
... and replay, ...
... we constructed ...
... and simulated a data-driven model ...
... of area CA3 of the hippocampus.

S1 [006] Our results show that the chain-like structure of recurrent excitatory interactions established during learning not only determines the content of replay, but is essential for the generation of the SWRs as well.

Our results show ...
... that the chain-like structure ...
... of recurrent excitatory interactions established ...
... during learning not ...
... only determines the content ...
... of replay, ...
... but is essential ...
... for the generation ...
... of the SWRs ...
... as well.

S1 [007] We find that bidirectional replay requires the interplay of the experimentally confirmed, temporally symmetric plasticity rule, and cellular adaptation.

We find ...
... that bidirectional replay requires the interplay ...
... of the experimentally confirmed, ...
... temporally symmetric plasticity rule, ...
... and cellular adaptation.

S1 [008] Our model provides a unifying framework for diverse phenomena involving hippocampal plasticity, representations, and dynamics, and suggests that the structured neural codes induced by learning may have greater influence over cortical network states than previously appreciated.

Our model provides a unifying framework ...
... for diverse phenomena ...
... involving hippocampal plasticity, ...
... representations, ...
... and dynamics, ...
... and suggests ...
... that the structured neural codes induced ...
... by learning ...
... may have greater influence ...
... over cortical network states ...
... than previously appreciated.

S2 [009] 1 Introduction

S2 [010] The hippocampal region plays a pivotal role in spatial and episodic memory (O'Keefe and Nadel, 1978; Morris et al., 1982).

The hippocampal region plays a pivotal role ...
... in spatial ...
... and episodic memory ...

... (O’Keefe ...

... and Nadel, 1978; ...

... Morris et al., 1982).

S2 [011] The different stages of memory processing (Marr, 1971; Buzsáki, 1989) are associated with distinct brain states, and are characterized by distinct oscillatory patterns of the hippocampal local field potential (LFP) (Buzsáki et al., 1983; Colgin, 2016).

The different stages ...

... of memory processing ...

... (Marr, 1971; ...

... Buzsáki, 1989) ...

... are associated ...

... with distinct brain states, ...

... and are characterized ...

... by distinct oscillatory patterns ...

... of the hippocampal local field potential ...

... (LFP) ...

... (Buzsáki et al., 1983; ...

... Colgin, 2016).

S2 [012] When rodents explore their environment, place cells of the hippocampus are activated in a sequence that corresponds to the order in which the animal visits their preferred spatial locations (place fields) (O’Keefe and Dostrovsky, 1971).

When rodents explore their environment, ...

... place cells ...

... of the hippocampus are activated ...

... in a sequence ...

... that corresponds ...

... to the order ...

... in which the animal visits their preferred spatial locations ...

... (place fields) ...

... (O’Keefe ...

... and Dostrovsky, 1971).

S2 [013] The same sequences of firing activity can also be identified, on a faster time scale, during individual cycles of the 4-10 Hz theta oscillation that dominates the hippocampal LFP in this state (O’Keefe and Recce, 1993; Dragoi and Buzsáki, 2006; Foster and Wilson, 2007).

The same sequences ...

... of firing activity can also be identified, ...

... on a faster time scale, ...

... during individual cycles ...

... of the 4-10 Hz theta oscillation ...

... that dominates the hippocampal LFP ...

... in this state ...

... (O’Keefe ...

... and Recce, 1993; ...

... Dragoi ...

... and Buzsáki, 2006; ...

... Foster ...

... and Wilson, 2007).

S2 [014] These compressed sequences are thought to be optimal for learning via activity-dependent synaptic plasticity (Jensen and Lisman, 2005; Foster and Wilson, 2007).

These compressed sequences are thought ...
... to be optimal ...
... for learning ...
... via activity-dependent synaptic plasticity ...
... (Jensen ...
... and Lisman, 2005; ...
... Foster ...
... and Wilson, 2007).

S2 [015] Other behavioral states such as slow-wave sleep and quiet wakefulness are characterized by the repetitive but irregular occurrence of bursts of activity in the hippocampus, marked by the appearance of sharp waves (Buzsáki et al., 1983; Wilson and McNaughton, 1994) and associated high-frequency (ripple) oscillations (O'Keefe and Nadel, 1978; Buzsáki et al., 1992) in the LFP.

Other behavioral states ...
... such as slow-wave sleep ...
... and quiet wakefulness are characterized ...
... by the repetitive ...
... but irregular occurrence ...
... of bursts ...
... of activity ...
... in the hippocampus, ...
... marked ...
... by the appearance ...
... of sharp waves ...
... (Buzsáki et al., 1983; ...
... Wilson ...
... and McNaughton, 1994) ...
... and associated high-frequency ...
... (ripple) ...
... oscillations ...
... (O'Keefe ...
... and Nadel, 1978; ...
... Buzsáki et al., 1992) ...
... in the LFP.

S2 [016] Disruption of SWRs was shown to impair long-term memory (Girardeau et al., 2009; Ego-Stengel and Wilson, 2010; Jadhav et al., 2012; Oliva et al., 2020).

Disruption ...
... of SWRs was shown ...
... to impair long-term memory ...
... (Girardeau et al., 2009; ...
... Ego-Stengel ...
... and Wilson, 2010; ...
... Jadhav et al., 2012; ...
... Oliva et al., 2020).

End of Sample Audit

This is a truncated Manuscript Microscope Sample Audit.

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