A Manuscript Microscope 'Sentence Audit' of:

Coupling between protrusion dynamics and polarized trafficking steers persistent cell migration

What is the Manuscript Microscope Sentence Audit?

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.

Why use a Sentence Audit to proofread your manuscript?

- Accelerated Proofreading: Examine long technical texts in a fraction of the usual time.
- Superior Proofreading: Detect subtle errors that are invisible to traditional methods.
- Focused Proofreading: Inspect each individual sentence component in isolation.
- Reliable Proofreading: Ensure every single word of your manuscript is correct.
- Easier Proofreading: Take the hardship out of crafting academic papers.

Bonus 1: Improved Productivity: Rapidly refine rough drafts to polished papers.
Bonus 2: Improved Authorship: Cultivate a clear, concise, consistent, writing style.
Bonus 3: Improved Reputation: Become known for rigorously precise publications.

Manuscript Source: https://www.biorxiv.org/content/10.1101/2021.03.20.436273v1

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Audit Date: 31/03/21 **Audit Identifier:** 56P3TYU9R8E8GHA **Code Version:** 3.6

Features of the Sentence Audit:

The Sentence Audit combines two complementary proofreading approaches:

1. Each sentence of your text is parsed and displayed in isolation for focused inspection.
2. Each individual sentence is further parsed into Minimal Sentence Components for a deeper review of the clarity, composition and consistency of the language you used.

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.

Contact Information:

To get a Manuscript Microscope Sentence Audit of any other research paper, simply forward any copy of the text to John.James@OxfordResearchServices.com.

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	13
Section: 2	Introduction	14
N/A	--- --- --- --- --- --- ---	0
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The Sentence Audit Of The Research Paper

Title **Coupling between protrusion dynamics and polarized trafficking steers persistent cell migration**

S1 [001] **Abstract**

S1 [002] Migrating cells present a variety of paths, from non-persistent random walks to highly directional trajectories.

Migrating cells present a variety ...
... of paths, ...
... from non-persistent random walks ...
... to highly directional trajectories.

S1 [003] While random movement can be easily explained by an intrinsic basal activity of the cell, persistent movement requires the cell to be stably polarized.

While random movement can be easily explained ...
... by an intrinsic basal activity ...
... of the cell, ...
... persistent movement requires the cell ...
... to be stably polarized.

S1 [004] It remains unclear how this is achieved from the regulation of underlying subcellular processes.

It remains unclear how this is achieved ...
... from the regulation ...
... of underlying subcellular processes.

S1 [005] In the context of mesenchymal migration, the ability of cells to migrate persistently over several hours require a mechanism stabilizing their protruding activity at their front.

In the context ...
... of mesenchymal migration, ...
... the ability ...
... of cells ...
... to migrate persistently ...
... over several hours require a mechanism stabilizing their protruding activity ...
... at their front.

S1 [006] Here, we address this mechanism using human RPE1 cell line as our model.

Here, ...
... we address this mechanism ...
... using human RPE1 cell line ...
... as our model.

S1 [007] We measure, manipulate, and quantitatively perturb cell protrusive activity of the cortex as well as intracellular organization of the endomembrane trafficking system using dynamic micropatterning, pharmacological and trafficking assays, optogenetics and live-cell imaging with tracking.

We measure, ...
... manipulate, ...
... and quantitatively perturb cell protrusive activity ...
... of the cortex ...
... as well ...
... as intracellular organization ...
... of the endomembrane trafficking system ...
... using dynamic micropatterning, ...
... pharmacological ...
... and trafficking assays, ...
... optogenetics ...
... and live-cell imaging ...
... with tracking.

S1 [008] First, we demonstrate that the Nucleus-Golgi axis aligns with the direction of migration and its alignment with the protrusive activity leads to efficient cell movement.

First, ...
... we demonstrate ...
... that the Nucleus-Golgi axis aligns ...
... with the direction ...
... of migration ...
... and its alignment ...
... with the protrusive activity leads ...
... to efficient cell movement.

S1 [009] Then, using low doses of Nocodazole to disrupt internal cell organization, we show that long-lived polarity breaks down and migration becomes random.

Then, ...
... using low doses ...
... of Nocodazole ...
... to disrupt internal cell organization, ...
... we show ...
... that long-lived polarity breaks down ...
... and migration becomes random.

S1 [010] Next, we indicate that a flow of vesicles is directed towards the protrusive activity with a delay of 20 min. Eventually, by applying a sustained optogenetic activation, we prove that a localized Cdc42 gradient is able to orient the Nucleus-Golgi axis over a couple of hours.

Next, ...
... we indicate ...
... that a flow ...
... of vesicles is directed towards the protrusive activity ...
... with a delay ...
... of 20 min. Eventually, ...
... by applying a sustained optogenetic activation, ...
... we prove ...

... that a localized Cdc42 gradient is able ...

... to orient the Nucleus-Golgi axis ...

... over a couple ...

... of hours.

S1 [011] Taken together, our results suggest that the internal polarity axis, provided by the polarized trafficking of vesicles, is stabilizing the protrusive activity of the cell, while the protrusive activity biases this polarity axis.

Taken together, ...

... our results suggest ...

... that the internal polarity axis, ...

... provided ...

... by the polarized trafficking ...

... of vesicles, ...

... is stabilizing the protrusive activity ...

... of the cell, ...

... while the protrusive activity biases this polarity axis.

S1 [012] Using a novel minimal physical model, we show that this feedback is sufficient by itself to recapitulate the quantitative properties of cell migration in the timescale of hours.

Using a novel minimal physical model, ...

... we show ...

... that this feedback is sufficient ...

... by itself ...

... to recapitulate the quantitative properties ...

... of cell migration ...

... in the timescale ...

... of hours.

S1 [013] Our work highlights the importance of the coupling between high-level cellular functions in stabilizing the direction of migration over long timescales.

Our work highlights the importance ...

... of the coupling ...

... between high-level cellular functions ...

... in stabilizing the direction ...

... of migration ...

... over long timescales.

S2 [014] Introduction

S2 [015] Cell migration is involved in many processes such as development, invasion, wound healing, or immune response (Vicente-Manzanares and Horwitz, 2011).

Cell migration is involved ...

... in many processes ...

... such as development, ...

... invasion, ...

... wound healing, ...
... or immune response ...
... (Vicente-Manzanares ...
... and Horwitz, 2011).

S2 [016] There is an impressive variety of modalities by which cells migrate, including mesenchymal or amoeboid type of movement for which single cells or a group of cells (Shellard and Mayor, 2019) use different propulsive forces for displacement (Othmer, 2019).

There is an impressive variety ...
... of modalities ...
... by which cells migrate, ...
... including mesenchymal ...
... or amoeboid type ...
... of movement ...
... for which single cells ...
... or a group ...
... of cells ...
... (Shellard ...
... and Mayor, 2019) ...
... use different propulsive forces ...
... for displacement ...
... (Othmer, 2019).

S2 [017] Regardless of the propulsive force or single/collective mode of migration, cells polarize to move (Rappel and Edelstein-Keshet, 2017).

Regardless ...
... of the propulsive force ...
... or single/collective mode ...
... of migration, ...
... cells polarize ...
... to move ...
... (Rappel ...
... and Edelstein-Keshet, 2017).

S2 [018] This is characterized by an asymmetric shape and distribution of proteins, organelles and lipids, as well as differential activities at the two extreme sides of the cell (Vaidžiulyte et al., 2019).

This is characterized ...
... by an asymmetric shape ...
... and distribution ...
... of proteins, ...
... organelles ...
... and lipids, ...
... as well ...
... as differential activities ...
... at the two extreme sides ...
... of the cell ...
... (Vaidžiulyte et al., 2019).

End of Sample Audit

This is a truncated Manuscript Microscope Sample Audit.

To get the full audit of this text (or any other research paper),
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John.James@OxfordResearchServices.com
