A Manuscript Microscope 'Sentence Audit' of:

Conditional Stomatal Closure in a Fern Shares Molecular Features with Flowering Plant Active Stomatal Responses

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.
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Manuscript Source: https://www.biorxiv.org/content/10.1101/2021.03.06.434194v1

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Audit Date: 29/03/21 **Audit Identifier:** 063NGYIP9IRC68A **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	15
Section: 2	Introduction	12
N/A	--- --- --- --- --- --- ---	0
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The Sentence Audit Of The Research Paper

Title # Conditional Stomatal Closure in a Fern Shares Molecular Features with Flowering Plant Active Stomatal Responses

S1 [001] Abstract

S1 [002] Stomata evolved as plants transitioned from water to land, enabling carbon dioxide uptake and water loss to be controlled.

Stomata evolved ...
... as plants transitioned ...
... from water ...
... to land, ...
... enabling carbon dioxide uptake ...
... and water loss ...
... to be controlled.

S1 [003] In flowering plants, the most recently divergent land plant lineage, stomatal pores actively close in response to drought.

In flowering plants, ...
... the most recently divergent land plant lineage, ...
... stomatal pores actively close ...
... in response ...
... to drought.

S1 [004] In this response, the phytohormone abscisic acid (ABA) triggers signalling cascades that lead to ion and water loss in the guard cells of the stomatal complex, causing a reduction in turgor and pore closure.

In this response, ...
... the phytohormone abscisic acid ...
... (ABA) ...
... triggers signalling cascades ...
... that lead ...
... to ion ...
... and water loss ...
... in the guard cells ...
... of the stomatal complex, ...
... causing a reduction ...
... in turgor ...
... and pore closure.

S1 [005] Whether this stimulus-response coupling pathway acts in other major land plant lineages is unclear, with some investigations reporting that stomatal closure involves ABA but others concluding that closure is passive.

Whether this stimulus-response coupling pathway acts ...
... in other major land plant lineages is unclear, ...
... with some investigations reporting ...

... that stomatal closure involves ABA ...

... but others concluding ...

... that closure is passive.

S1 [006] Here we show that in the model fern Ceratopteris richardii active stomatal closure is conditional on sensitisation by pre-exposure to either low humidity or exogenous ABA and is promoted by ABA.

Here we show ...

... that in the model fern Ceratopteris richardii active stomatal closure is conditional ...

... on sensitisation ...

... by pre-exposure ...

... to either low humidity ...

... or exogenous ABA ...

... and is promoted ...

... by ABA.

S1 [007] RNA-seq analysis and de novo transcriptome assembly reconstructed the protein coding complement of the C. richardii genome with coverage comparable to other plant models, enabling transcriptional signatures of stomatal sensitisation and closure to be identified.

RNA-seq analysis ...

... and de novo transcriptome assembly reconstructed the protein coding complement ...

... of the C. richardii genome ...

... with coverage comparable ...

... to other plant models, ...

... enabling transcriptional signatures ...

... of stomatal sensitisation ...

... and closure ...

... to be identified.

S1 [008] In both cases, changes in abundance of homologs of ABA, Ca2+ and ROS-related signalling components were observed, suggesting that the closure response pathway is conserved in ferns and flowering plants.

In both cases, ...

... changes ...

... in abundance ...

... of homologs ...

... of ABA, ...

... Ca2+ ...

... and ROS-related signalling components were observed, ...

... suggesting ...

... that the closure response pathway is conserved ...

... in ferns ...

... and flowering plants.

S1 [009] These signatures further suggested that sensitisation is achieved by lowering the threshold required for a subsequent closure-inducing signal to trigger a response.

These signatures further suggested ...

... that sensitisation is achieved ...

... by lowering the threshold required ...

... for a subsequent closure-inducing signal ...

... to trigger a response.

S1 [010] We conclude that the canonical signalling network for active stomatal closure functioned in at least a rudimentary form in the stomata of the last common ancestor of ferns and flowering plants.

We conclude ...
... that the canonical signalling network ...
... for active stomatal closure functioned ...
... in at least a rudimentary form ...
... in the stomata ...
... of the last common ancestor ...
... of ferns ...
... and flowering plants.

S1 [011] Significance Statement Stomata are valve-like pores that control the uptake of CO2 and the loss of water vapour in almost all land plants.

Significance Statement Stomata are valve-like pores ...
... that control the uptake ...
... of CO2 ...
... and the loss ...
... of water vapour ...
... in almost all land plants.

S1 [012] In flowering plants, stomatal opening and closure is actively regulated by a stimulus-response coupling network.

In flowering plants, ...
... stomatal opening ...
... and closure is actively regulated ...
... by a stimulus-response coupling network.

S1 [013] Whether active stomatal responses are present in other land plant lineages such as ferns has been hotly debated.

Whether active stomatal responses are present ...
... in other land plant lineages ...
... such as ferns has been hotly debated.

S1 [014] Here we show that stomatal responses in the fern Ceratopteris richardii are active but depend on their past growth environment, and demonstrate that fern stomatal closure and sensitisation are associated with the altered expression of genes whose homologs function in the canonical stomatal regulatory network of flowering plants.

Here we show ...
... that stomatal responses ...
... in the fern Ceratopteris richardii are active ...
... but depend ...
... on their past growth environment, ...
... and demonstrate ...
... that fern stomatal closure ...
... and sensitisation are associated ...
... with the altered expression ...

... of genes whose homologs function ...

... in the canonical stomatal regulatory network ...

... of flowering plants.

S1 [015] Genetic pathways for active stomatal regulation therefore most likely evolved before the divergence of ferns and flowering plants.

Genetic pathways ...

... for active stomatal regulation therefore most likely evolved ...

... before the divergence ...

... of ferns ...

... and flowering plants.

S2 [016] Introduction

S2 [017] Stomata are pores present on the surfaces of plant leaves that control the uptake of CO2 and the loss of water vapour.

Stomata are pores present ...

... on the surfaces ...

... of plant leaves ...

... that control the uptake ...

... of CO2 ...

... and the loss ...

... of water vapour.

S2 [018] The acquisition of stomata was a key land plant adaptation, which together with the development of a waxy cuticle and vascular system allowed early plants to colonise the terrestrial environment[1].

The acquisition ...

... of stomata was a key land plant adaptation, ...

... which together ...

... with the development ...

... of a waxy cuticle ...

... and vascular system allowed early plants ...

... to colonise the terrestrial environment[1].

S2 [019] The ability to control CO2 uptake is important in the context of photosynthesis, whereas the regulation of evapotranspiratory water loss impacts on water and mineral nutrient accumulation in the aerial parts of the plant, protects against short periods of reduced soil water availability and provides leaf cooling capacity.

The ability ...

... to control CO2 uptake is important ...

... in the context ...

... of photosynthesis, ...

... whereas the regulation ...

... of evapotranspiratory water loss impacts ...

... on water ...

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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