

A chloride efflux transporter OsBIRG1 regulates grain size and salt tolerance in rice

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

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- 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.

[illegible]

Title **A chloride efflux transporter OsBIRG1 regulates grain size and salt tolerance in rice**

S1 [001] Summary

S1 [002] Grain size is determined by the number of cells and cell size of the grain.

Grain size is determined ...
... by the number ...
... of cells ...
... and cell size ...
... of the grain.

S1 [003] Regulation of grain size is crucial for improving crop yield.

Regulation ...
... of grain size is crucial ...
... for improving crop yield.

S1 [004] However, the genes and underlying molecular mechanisms controlling grain size remain elusive.

However, ...
... the genes ...
... and underlying molecular mechanisms controlling grain size remain elusive.

S1 [005] Here we report a member of Detoxification efflux carrier (DTX)/Multidrug and Toxic Compound Extrusion (MATE) family transporter, BIG RICE GRAIN 1 (BIRG1), negatively regulates the grain size in rice.

Here we report a member ...
... of Detoxification efflux carrier ...
... (DTX)/Multidrug ...
... and Toxic Compound Extrusion ...
... (MATE) ...
... family transporter, ...
... BIG RICE GRAIN 1 ...
... (BIRG1), ...
... negatively regulates the grain size ...
... in rice.

S1 [006] BIRG1 is highly expressed in reproductive organs and roots.

BIRG1 is highly expressed ...
... in reproductive organs ...
... and roots.

- S1 [007]** In birg1 grain, the size of the outer parenchyma layer cells of spikelet hulls is noticeably larger but the cell number is not altered compared with that in the wild-type (WT) grain.
- In birg1 grain, ...
... the size ...
... of the outer parenchyma layer cells ...
... of spikelet hulls is noticeably larger ...
... but the cell number is not altered compared ...
... with that in the wild-type ...
... (WT) ...
... grain.
- S1 [008]** When expressed in *Xenopus* oocytes, BIRG1 exhibits chloride efflux activity.
- When expressed ...
... in *Xenopus* oocytes, ...
... BIRG1 exhibits chloride efflux activity.
- S1 [009]** In line with the role of BIRG1 in mediating chloride efflux, the birg1 mutant shows reduced tolerance to salt stress under which the chloride level is toxic.
- In line ...
... with the role ...
... of BIRG1 ...
... in mediating chloride efflux, ...
... the birg1 mutant shows reduced tolerance ...
... to salt stress ...
... under ...
... which the chloride level is toxic.
- S1 [010]** Moreover, the birg1 grains contain higher level of chloride compared to WT grains when grown under normal paddy field.
- Moreover, ...
... the birg1 grains contain higher level ...
... of chloride compared ...
... to WT grains ...
... when grown ...
... under normal paddy field.
- S1 [011]** The birg1 roots accumulate more chloride than those of WT under saline condition.
- The birg1 roots accumulate more chloride ...
... than those ...
... of WT ...
... under saline condition.
- S1 [012]** Collectively, our findings suggest that BIRG1 functions as a chloride efflux transporter regulating grain size and salt tolerance via controlling chloride homeostasis in rice.
- Collectively, ...
... our findings suggest ...
... that BIRG1 functions ...
... as a chloride efflux transporter regulating grain size ...

... and salt tolerance ...
... via controlling chloride homeostasis ...
... in rice.

S2 [013] Introduction

S2 [014] Rice, as one of the most important crops in the world, provides the staple food for about half of the world's population (Li et al., 2018).

Rice, ...
... as one ...
... of the most important crops ...
... in the world, ...
... provides the staple food ...
... for about half ...
... of the world's population ...
... (Li et al., 2018).

S2 [015] Thus, investigation of the genetic basis and molecular mechanism for rice grain yield regulation is of great significance.

Thus, ...
... investigation ...
... of the genetic basis ...
... and molecular mechanism ...
... for rice grain yield regulation is ...
... of great significance.

S2 [016] Grain size is an important yield trait, which is determined by grain width, length and thickness (Zuo and Li, 2014).

Grain size is an important yield trait, ...
... which is determined ...
... by grain width, ...
... length ...
... and thickness ...
... (Zuo ...
... and Li, 2014).

S2 [017] In recent years, many quantitative trait loci (QTLs) and genes regulating grain size have been cloned and studied, providing insights into the molecular basis of the regulation of grain size (Cui et al., 2003; Huang et al., 2013; Ishimaru et al., 2013; Liu et al., 2015; Mao H, 2010; Shomura et al., 2008).

In recent years, ...
... many quantitative trait loci ...
... (QTLs) ...
... and genes regulating grain size have been cloned ...
... and studied, ...
... providing insights ...

... into the molecular basis ...
... of the regulation ...
... of grain size ...
... (Cui et al., 2003; ...
... Huang et al., 2013; ...
... Ishimaru et al., 2013; ...
... Liu et al., 2015; ...
... Mao H, 2010; ...
... Shomura et al., 2008).

S2 [018] However, additional genes that maintains ionic balance and controls this important trait remain to be identified.

However, ...
... additional genes ...
... that maintains ionic balance ...
... and controls this important trait remain ...
... to be identified.

S2 [019] Chloride (Cl-) is traditionally considered as a micronutrient (Broyer et al., 1954).

Chloride ...
... (Cl-) ...
... is traditionally considered ...
... as a micronutrient ...
... (Broyer et al., 1954).

S2 [020] It is involved in the stabilization of the photosystem II (PSII) and the regulation of enzyme activities such as the asparagine synthetase, amylases, and the tonoplast H⁺-ATPase (Metzler 1979; Rognes 1980; Churchill & Sze 1984; Kawakami et al., 2009).

It is involved ...
... in the stabilization ...
... of the photosystem II ...
... (PSII) ...
... and the regulation ...
... of enzyme activities ...
... such as the asparagine synthetase, ...
... amylases, ...
... and the tonoplast H⁺-ATPase ...
... (Metzler 1979; ...
... Rognes 1980; ...
... Churchill & Sze 1984; ...
... Kawakami et al., 2009).

S2 [021] As a mobile anion in plant, Cl⁻ also plays main roles in the stabilization of the electric potential of cell membranes and the regulation of pH gradients (White & Broadley 2001; Hänsch & Mendel 2009).

As a mobile anion ...
... in plant, ...
... Cl⁻ also plays main roles ...
... in the stabilization ...
... of the electric potential ...

End of Sample Audit

This is a truncated Manuscript Microscope Sample Audit.

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