

Histone variant H2A.Z is required for plant salt response by regulating gene transcription

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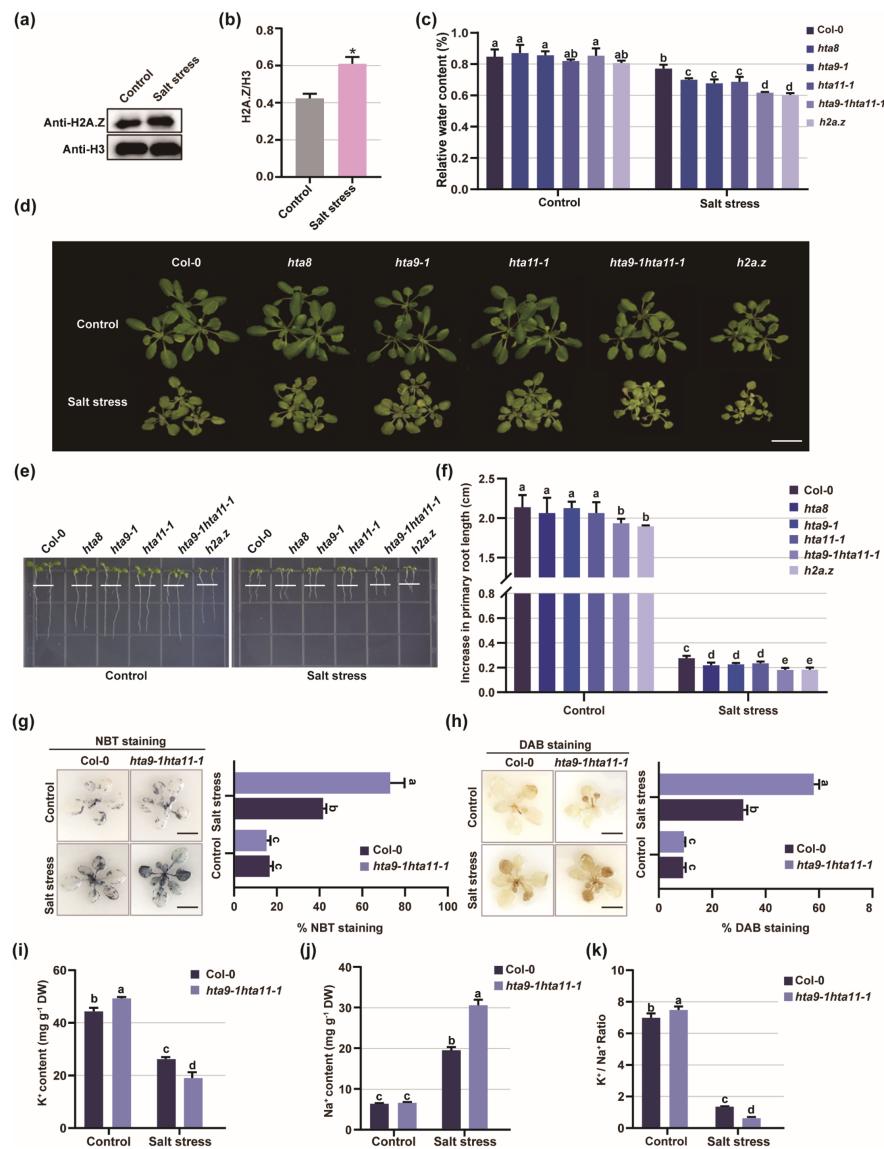
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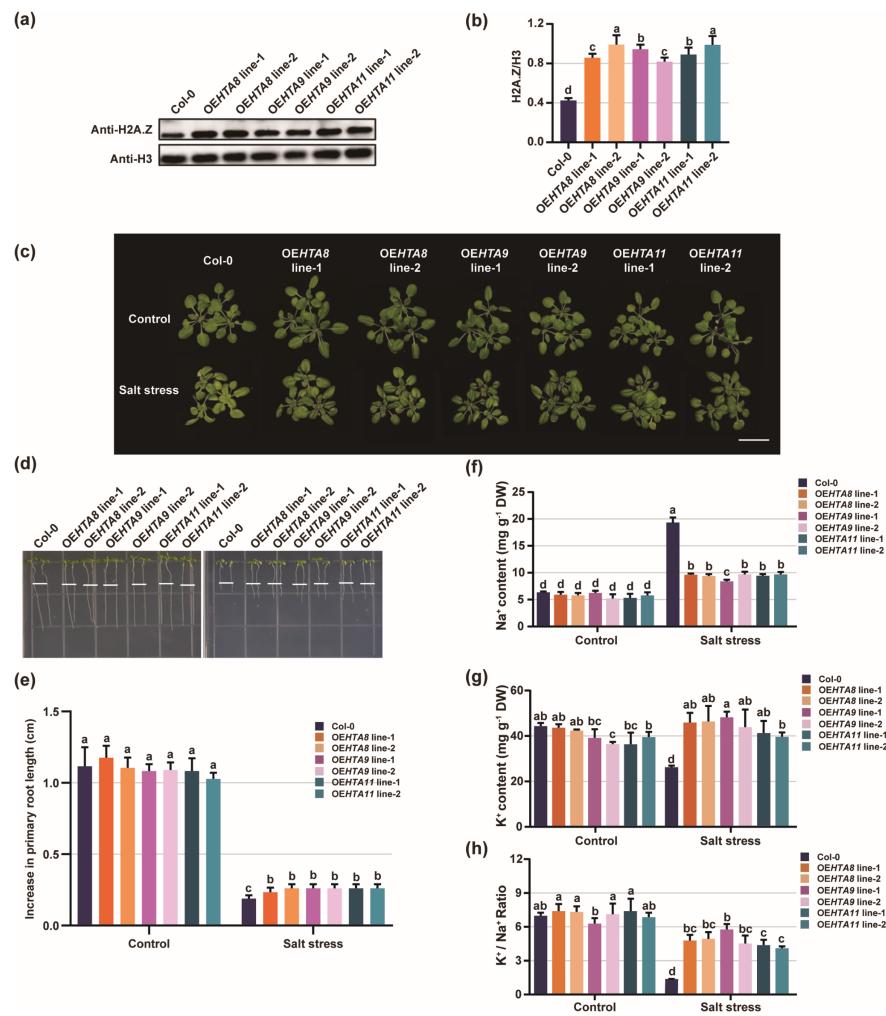
Abstract

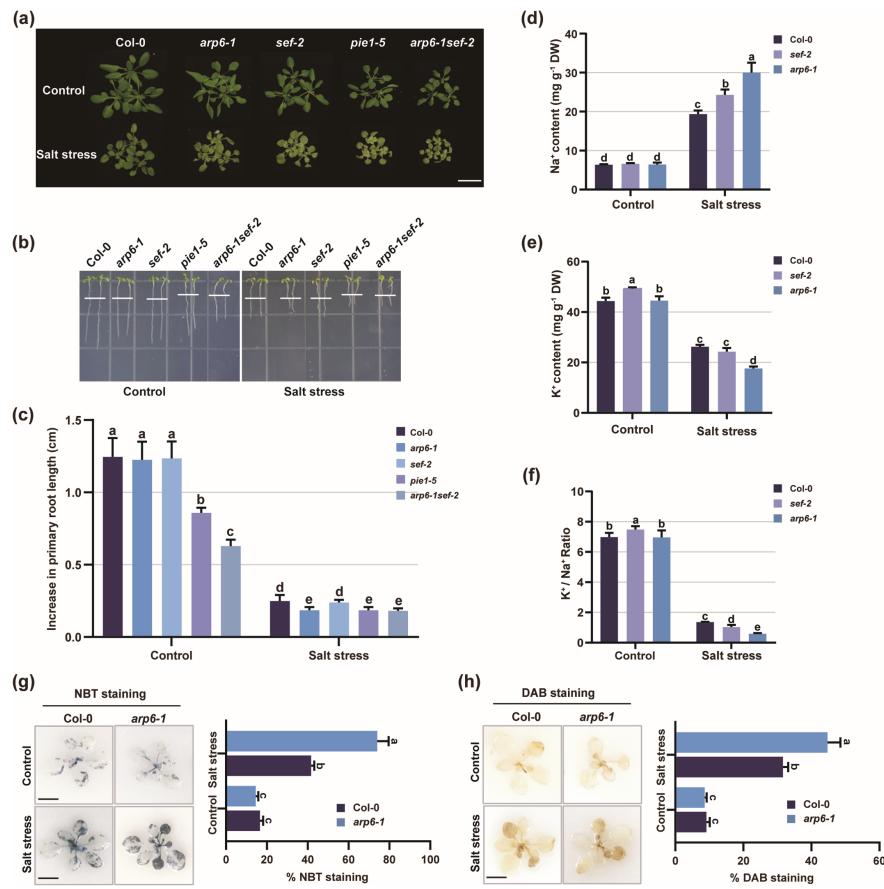
As a well-conserved histone variant, H2A.Z epigenetically regulates plant growth and development as well as the interaction with environmental factors. However, the role of H2A.Z in response to salt stress remains unclear, and whether nucleosomal H2A.Z occupancy work on the gene responsiveness upon salinity is obscure. Here, we elucidate the involvement of H2A.Z in salt response by analyzing H2A.Z disorder plants with impaired or overloaded H2A.Z deposition. The salt tolerance is dramatically accompanied by H2A.Z deficiency and reacquired in H2A.Z OE lines. H2A.Z disorder changes the expression profiles of large-scale of salt responsive genes, announcing that H2A.Z is required for plant salt response. Genome-wide H2A.Z mapping shows that H2A.Z level is induced by salt condition across promoter, TSS and TES (-1 kb to +1kb), the peaks preferentially enrich at promoter regions near TSS. We further show that H2A.Z deposition within TSS provides a direct role on transcriptional control, which has both repressive and activating effects, while it is found generally H2A.Z enrichment negatively correlate with gene expression level response to salt stress. This study shed light on the H2A.Z function in salt tolerance, highlighting the complex regulatory mechanisms of H2A.Z on transcriptional activity for yielding appropriate responses to particularly environmental stress.

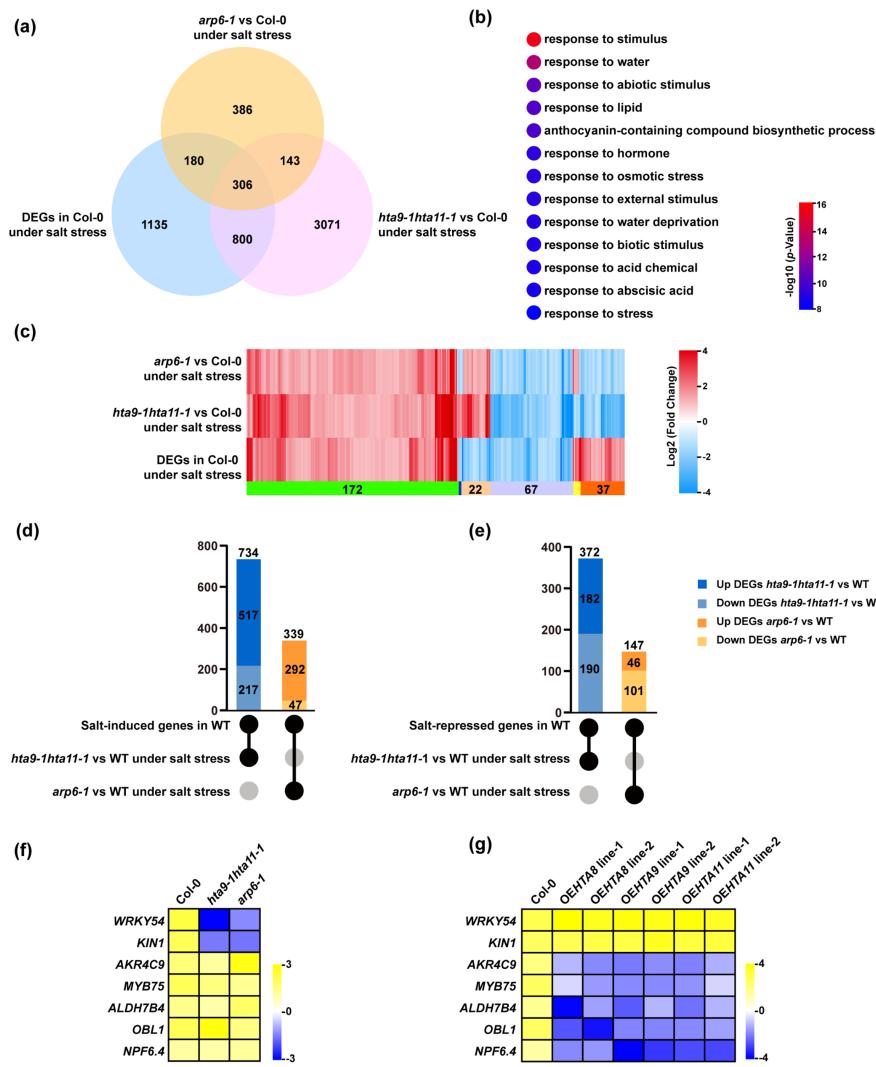
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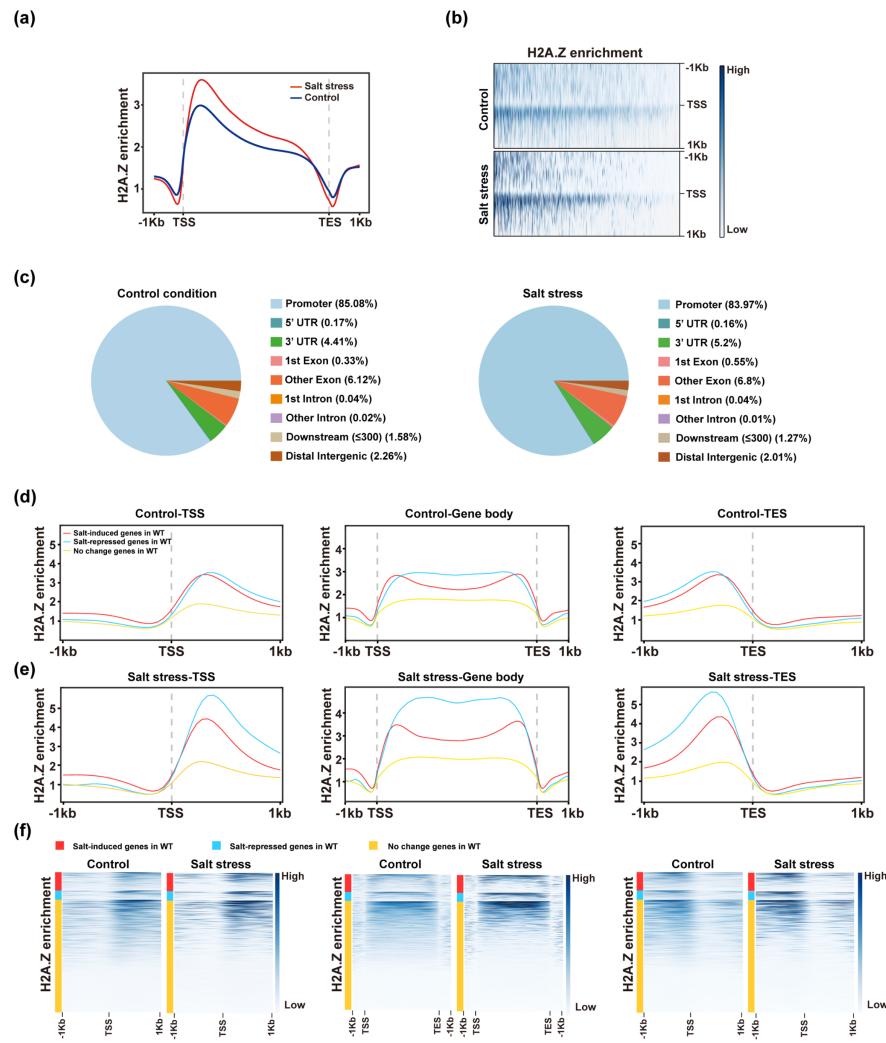
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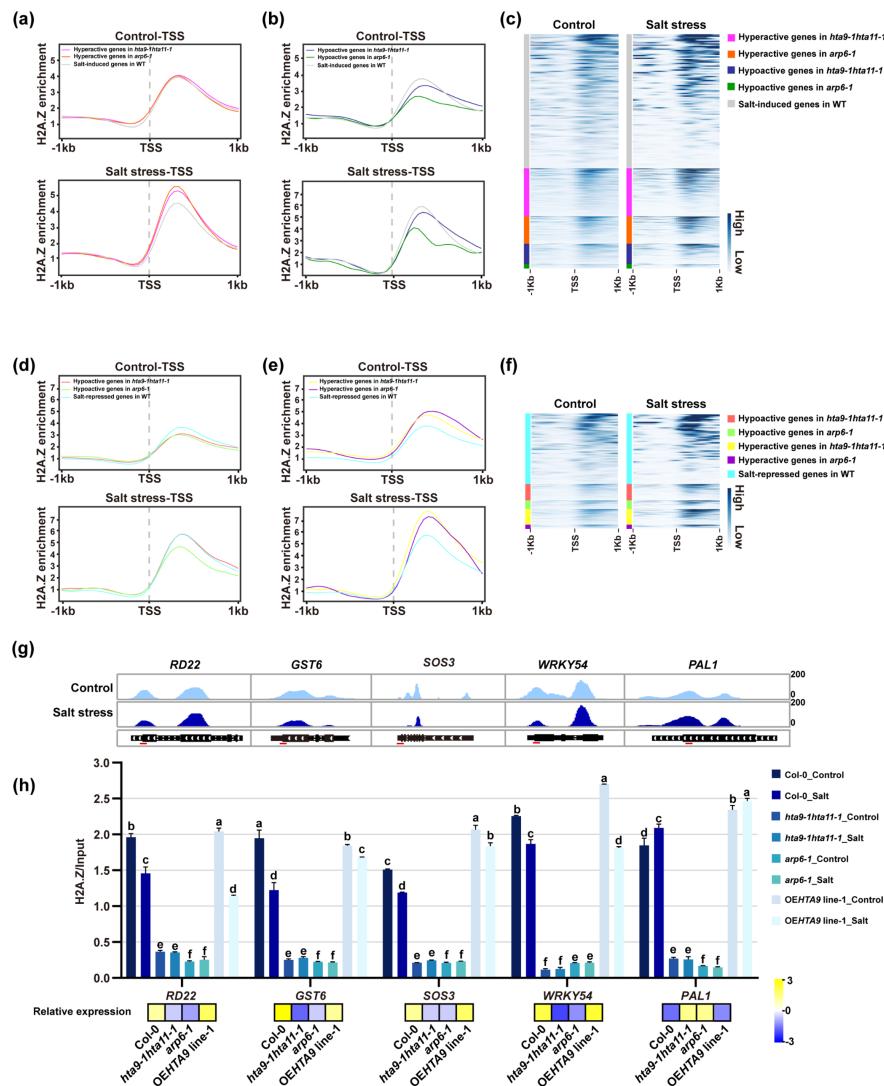


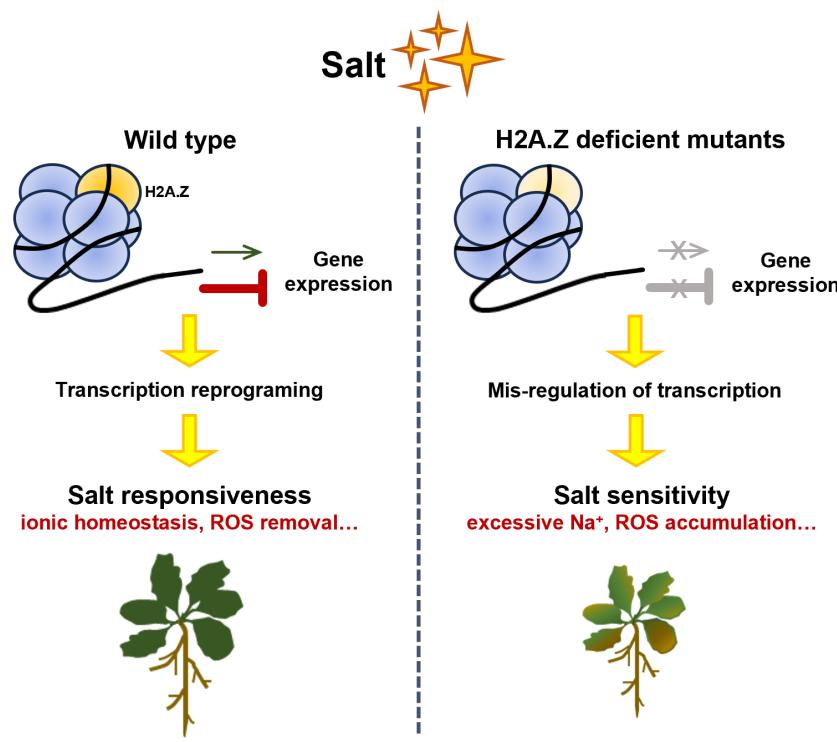












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Main Figures.pptx available at <https://authorea.com/users/700592/articles/687420-histone-variant-h2a-z-is-required-for-plant-salt-response-by-regulating-gene-transcription>