

Supplementary Information

Table S1. The sequences of PCR primers for qRT-PCR.

Accession Number	Primer Name	Sequences (5'→3')
HM014348	<i>HO-1-F</i>	AATACTGGGTTGGAGAGA
	<i>HO-1-R</i>	AGAAGTGGCAAATAAATG
DQ445627	<i>Mn-SOD1-F</i>	AGCCTATTAGCGAGGGTGG
	<i>Mn-SOD1-R</i>	CTCAAGAGCGAGCAAAGTA
U72212.1	<i>Mn-SOD2-F</i>	TCGCTCGCTCTTGAGTTTCC
	<i>Mn-SOD2-R</i>	TTTATTAGTCACGCAGGCACA
TAU69632	<i>Cu/Zn SOD1-F</i>	GTGACATGACTAATGGGTGC
	<i>Cu/Zn SOD1-R</i>	CATAGCTCAACAAGACGAAAG
U69536	<i>Cu/Zn SOD2-F</i>	CGTTGTAGGTCGCTGGTTTC
	<i>Cu/Zn SOD2-R</i>	CCCAAGTTCACGCTTCATAG
E16461	<i>CAT1-F</i>	CAAGCCCAACCCCAAGACCCA
	<i>CAT1-R</i>	ACGCCGATGTCGTCGAAGAGG
X94352	<i>CAT2-F</i>	ATGCCTGTGTTTTTTATCC
	<i>CAT2-R</i>	ACATCGTCAAATAGGAAGG
EF555121	<i>APX1-F</i>	ACTCGTGACCCTCTGAAAT
	<i>APX1-R</i>	CAGCGTAGTCCTTGAAGAAA
AY513262.1	<i>APX2-F</i>	CCACCTACTGCCACCCTATC
	<i>APX2-R</i>	CATTCGCTCCATGACTCAACT
AB181991	<i>actin-F</i>	CGGTTGTTGTGAGGGAGT
	<i>actin-R</i>	TCTGGTGATGGTGTGAGC

Figure S1. Time course of PCD in wheat aleurone layers determined by staining with FDA and FM 4-64. Wheat aleurone layers were pretreated with distilled water (Con) for 6 h, and then transferred to a medium containing 5 mM CaCl₂, 50 μM ABA or GA. Digital images of fluorescently labeled wheat aleurone cells are shown in (A). Live cells appear green and dead cells appear orange or red; Scale bar = 200 μm; Meanwhile, the viability of cells for different treatments was quantified at the indicated time from at least four aleurone layers (B). Data are means ± SD of at least four independent measurements from different experiments.

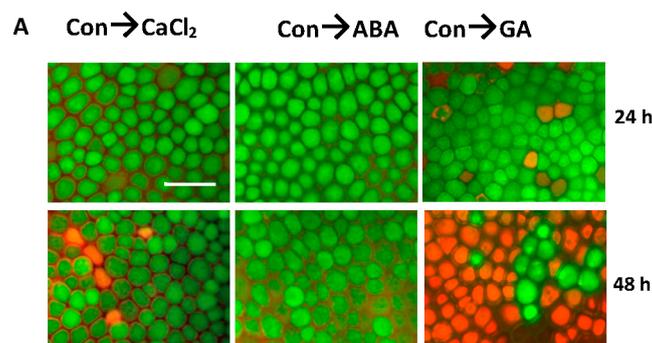


Figure S1. Cont.

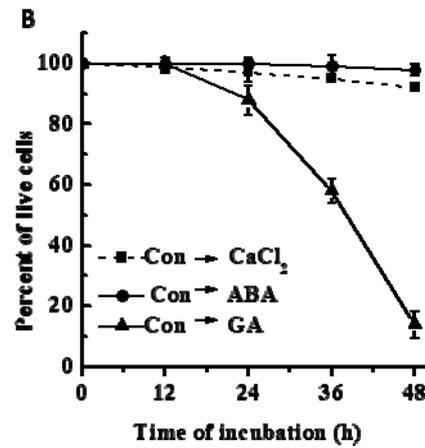


Figure S2. Effects of different concentration cobalt on GA-induce PCD. Wheat aleurone layers were pretreated with distilled water (Con), different concentrations of cobalt chloride (CoCl₂) or cobalt protoporphyrin IX (CoPP) for 6 h, and then transferred to a medium containing 5 mM CaCl₂ and 50 μM GA or ABA. After 48 h of incubation, digital images of fluorescently labeled wheat aleurone cells are shown in (A). Live cells appear green and dead cells appear orange or red; Scale bar = 200 μm; Meanwhile, the viability of cells for different treatments was quantified from at least four aleurone layers (B). Data are means ± SD of at least four independent measurements from different experiments. Within each set of experiment, bars denoted by the different letters are different significantly at $p < 0.05$, according to Duncan's multiple test.

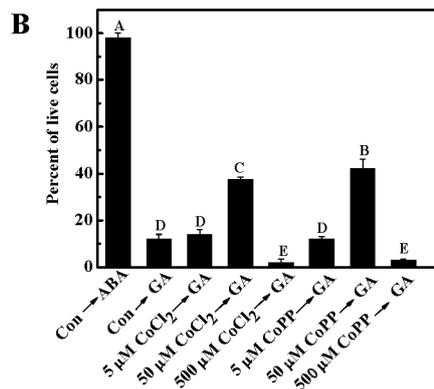
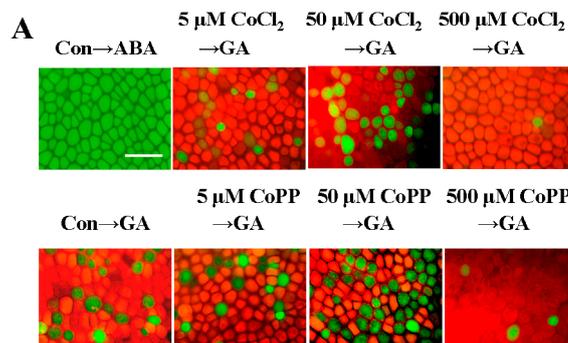


Figure S3. Effects of different concentration cobalt on PCD. Wheat aleurone layers were incubated in a medium containing 5 mM CaCl₂ and 50 μM ABA, 50 μM GA, different concentrations of CoCl₂ or CoPP, respectively. After 48 h of the incubation, digital images of fluorescently labeled wheat aleurone cells are shown in (A). Live cells appear green and dead cells appear orange or red; Scale bar = 200 μm; Meanwhile, the viability of cells for different treatments was quantified from at least four aleurone layers (B). Data are means ± SD of at least four independent measurements from different experiments. Bars denoted by the different letters are different significantly at $p < 0.05$, according to Duncan's multiple test.

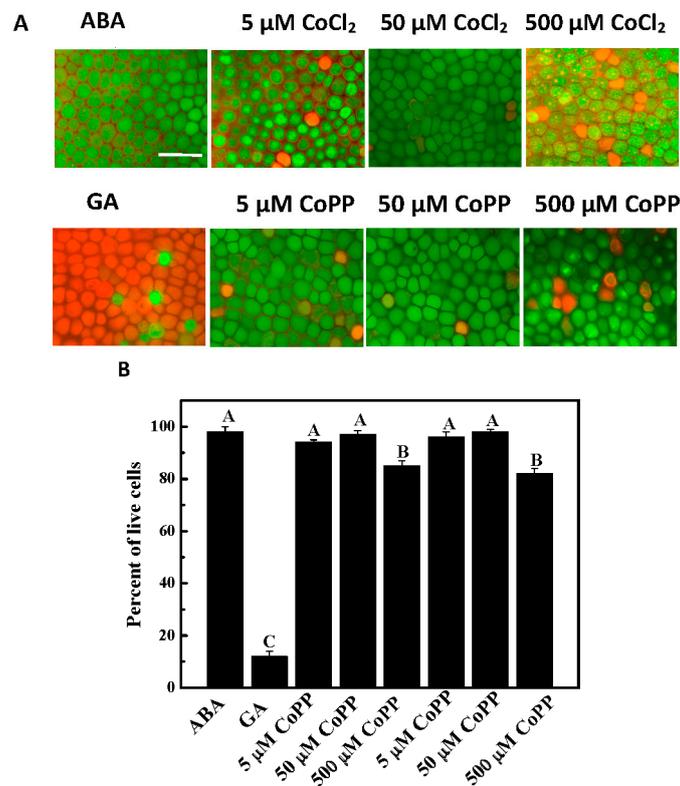


Figure S4. Production of H₂O₂ in wheat aleurone layers. Wheat aleurone layers were pretreated with distilled water (Con), 1% CO aqueous solution, or 10 μM bilirubin (BR) for 6 h, and then transferred to a medium containing 5 mM CaCl₂ and 50 μM ABA or GA. After 24 h of incubation, samples were incubated with DAB (1 mg/mL) for 1 h. Scale bar = 50 μm.

