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Supporting information

Table S1. List of primers to construct *D. geothermalis* mutant strains and recombinant plasmids for Dps protein expression.

Primer	Sequence (5'→3')	RE site
Construction for $\Delta dgeo_0281$ mutant strain		
0281_LF_ <i>KpnI</i>	5' AAGGTACCTTCCAGGGGTTCACTT 3'	<i>KpnI</i>
0281_LR_ <i>SalI</i>	5' AAGTCGACCGACTTTCTTCACGCT 3'	<i>SalI</i>
0281_RF_ <i>XbaI</i>	5' AATCTAGAGAATCAAGCTGCGTCCT 3'	<i>XbaI</i>
0281_RR_ <i>PstI</i>	5' AACTGCAGCATTGGAAGCGGCATT 3'	<i>PstI</i>
Construction of pCS19_ <i>dgeo_0257</i>		
pCS19_0257F	5' AACCATGGCCAAGCGCAGCAAGGTGTT 3'	<i>NcoI</i>
pCS19_0257R	5' AAAGATCTTTGGGACGCGAGGCGTTCCT 3'	<i>BglII</i>
pCS19_ <i>dgeo0257</i> _SDM_F*	5' AGAAATTAACCATGACCAAGCGCAGCAAG 3'	
pCS19_ <i>dgeo0257</i> _SDM_R*	5' CTTGCTGCGCTTGGTCATGGTTAATTTCT 3'	
Construction of pCS19_ <i>dgeo_0281</i>		
pCS19_0281F	5' AACCATGGCAAGAGCCACCAAATCGGCG 3'	<i>NcoI</i>
pCS19_0281R	5' AAGGATCCGTTTCATCCGGTCATCGTCCAAGATC 3'	<i>BamHI</i>
pCS19_ <i>dgeo0281</i> _SDM_F*	5' GAGAAATTAACCATGACAAGAGCCACCAAA 3'	
pCS19_ <i>dgeo0281</i> _SDM_R*	5' ATTTGGTGGCTCTTGTCATGGTTAATTTCTC 3'	

* Site-directed mutagenesis (SDM) for second amino acid residue was performed because when we applied *NcoI* for cloning, the first nucleotide of second amino acid was changed to 'G'. The bold indicates original nucleotide for substitution.

Figure legends

Figure S1. A. Protein profiles from total lysates included both Dgeo_0257 and Dgeo_0281 (DgDps1) by induced different concentrations of IPTG. B. Protein profiles from one step purification of Ni-affinity chromatography both Dgeo_0257 and Dgeo_0281 (DgDps1). Lanes: M. size markers; p, pass through; w, wash; e, elution; conc & nc, concentrated by Viva spin and non-concentrated, respectively; c, control by the purified Dgeo_0257 protein.

Figure S2. Gel filtration of Dgeo_0257 and Dgeo_0281 with/without iron ions. Calibration of gel filtration with size markers marked with arrows: 1, 440 kDa, ferritin; 2, 75 kDa, conalbumin; 3, 43 kDa, ovalbumin; 4, 29kDa, anhydrase from erythrocytes in inner box. Gel filtration profiles of Dgeo_0257 (A) and Dgeo_0281 (B) with protein only, add Fe (II) 1 mM, and add Fe (III) 1 mM conditions.

Figure S3. Various metals effect on EMSA of DgDps1 (Dgeo_0281) and DgDps3 (Dgeo_0257). A, lead; B, cobalt; C, copper; D, caesium; E, chromate.

Figure S4. A, Comparison of growth pattern among wild-type, $\Delta dgeo_0257$, and $\Delta dgeo_0281$ mutants on TGY medium. B, Comparison of growth pattern among complementary strains when chloramphenicol of 3 $\mu\text{g/mL}$ was present. C, Viability test by hydrogen peroxide treatment of 80, 100, and 120 mM among wild-type, $\Delta dgeo_0257$, $\Delta dgeo_0281$ mutants and their complementary strains ($\Delta dgeo_0257/\text{pRADgro_}dgeo_0257$, and $\Delta dgeo_0281/\text{pRADgro_}dgeo_0281$).

Figure S5. qRT-PCR analysis of *dgeo_0257* and *dgeo_0281* genes in complementary strains under 50 mM H_2O_2 stress conditions. ** $p < 0.01$.

Figure S1

A

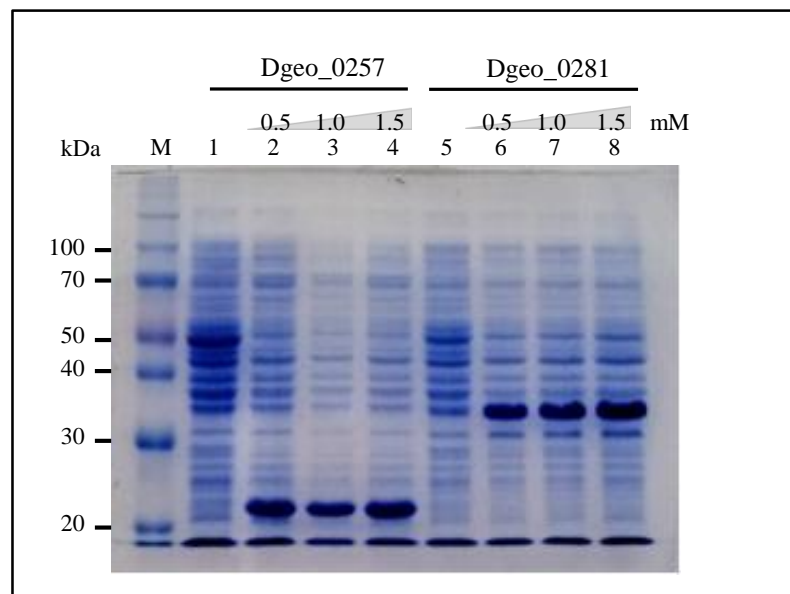


Figure S1

B

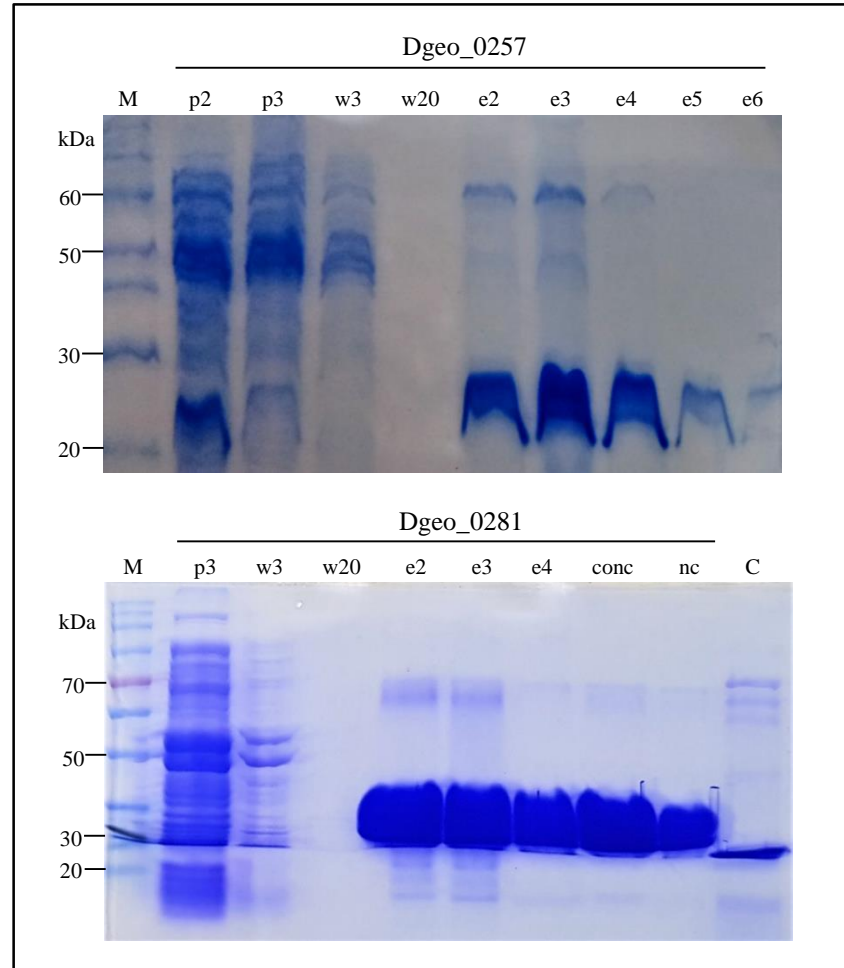


Figure S2

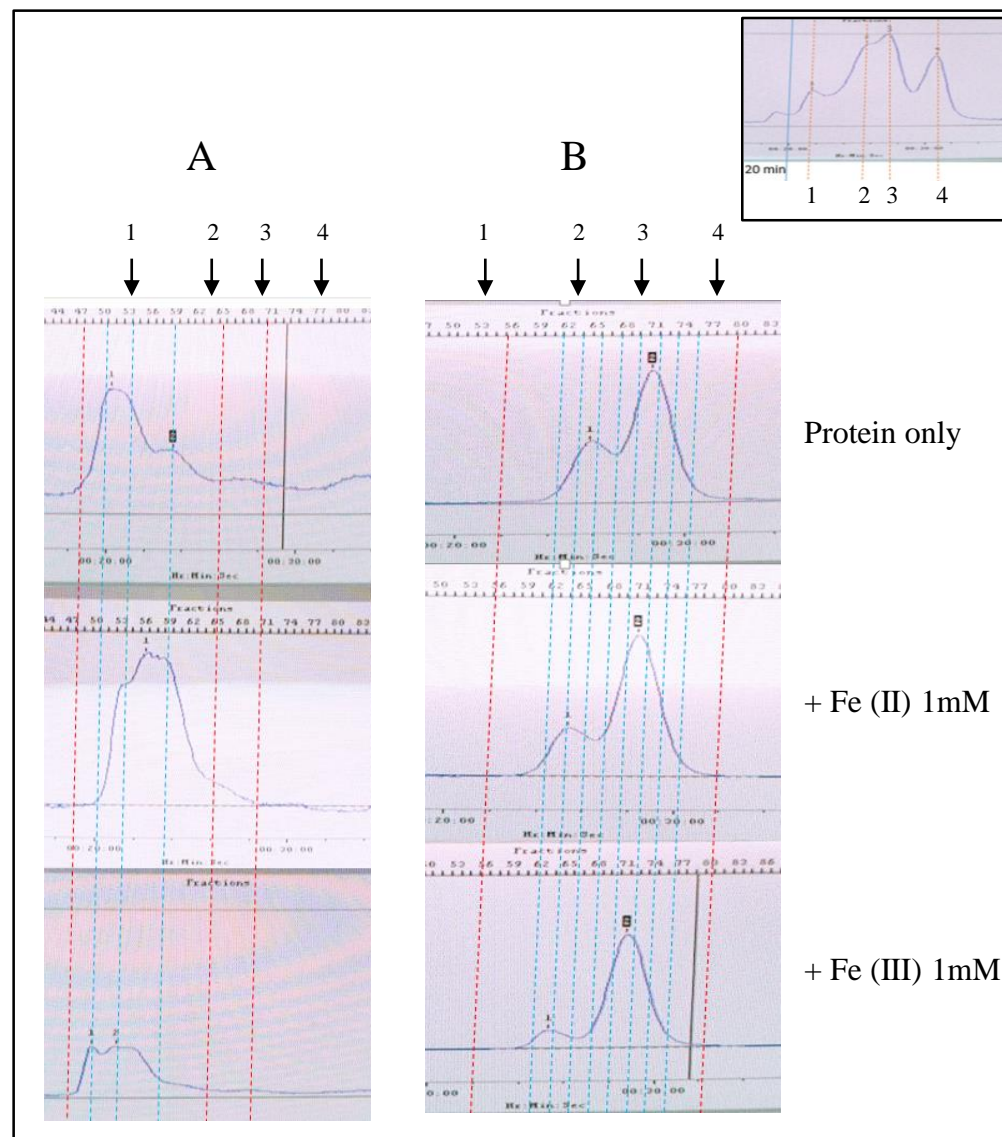


Figure S3

A

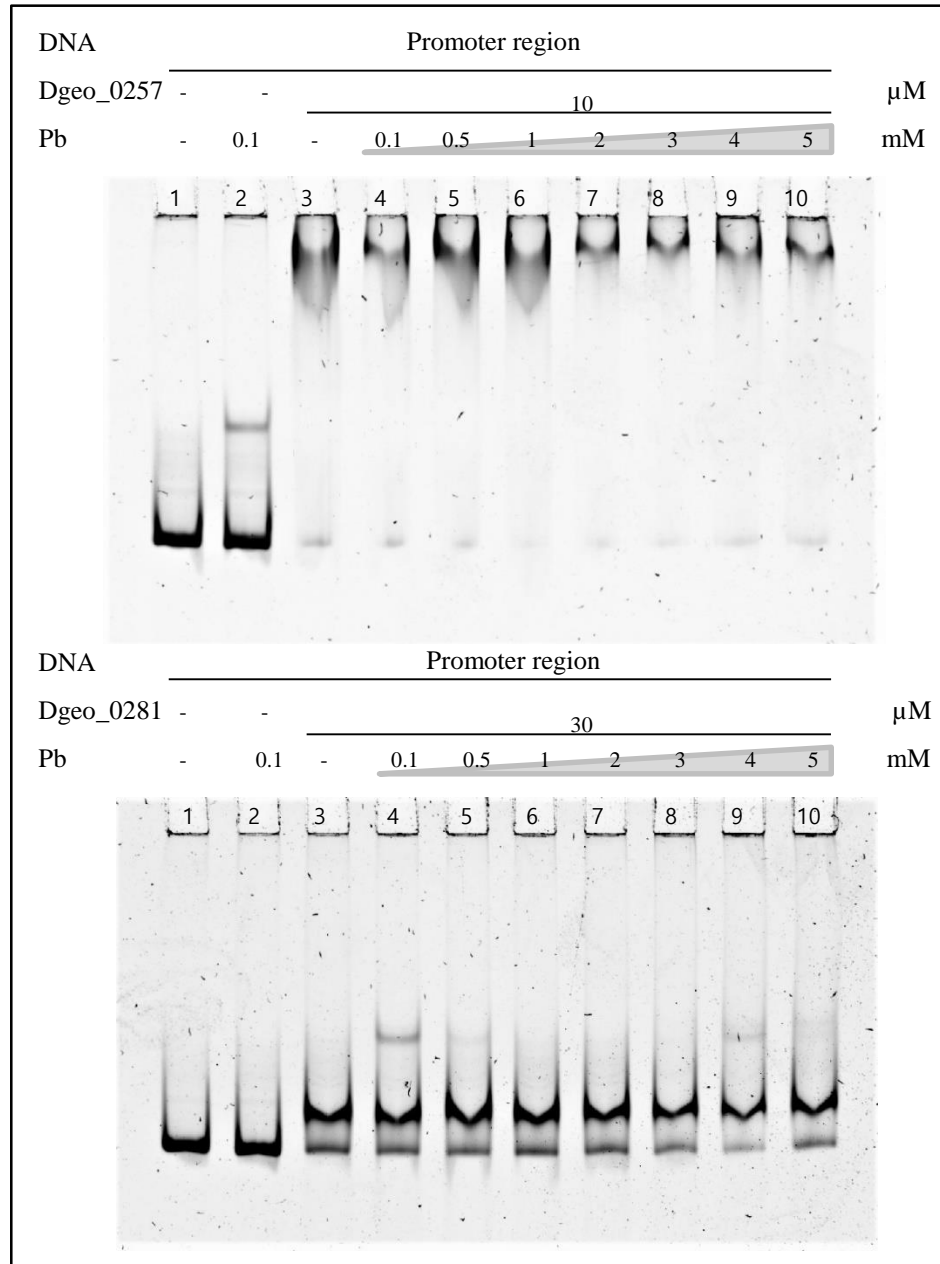


Figure S3 B

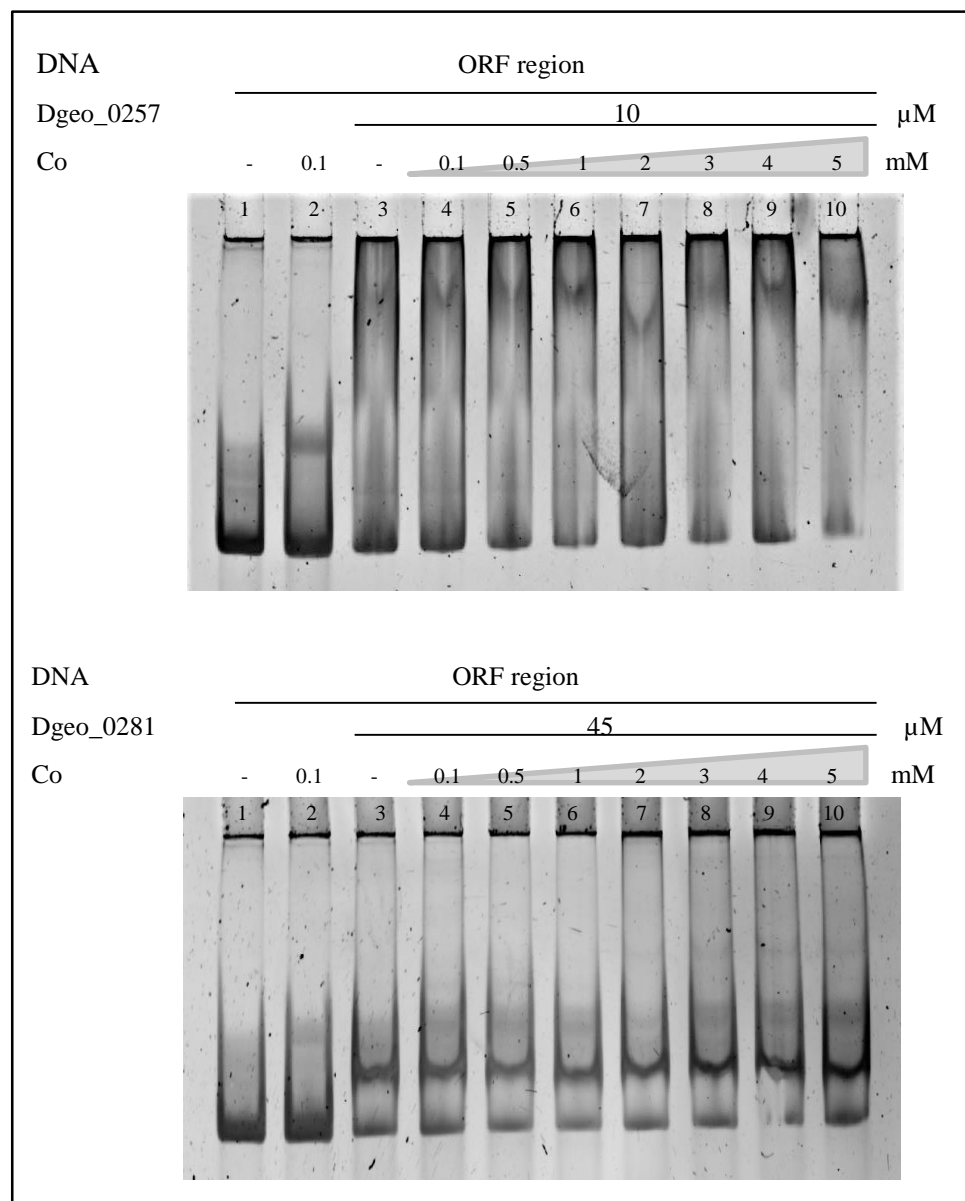


Figure S3 C

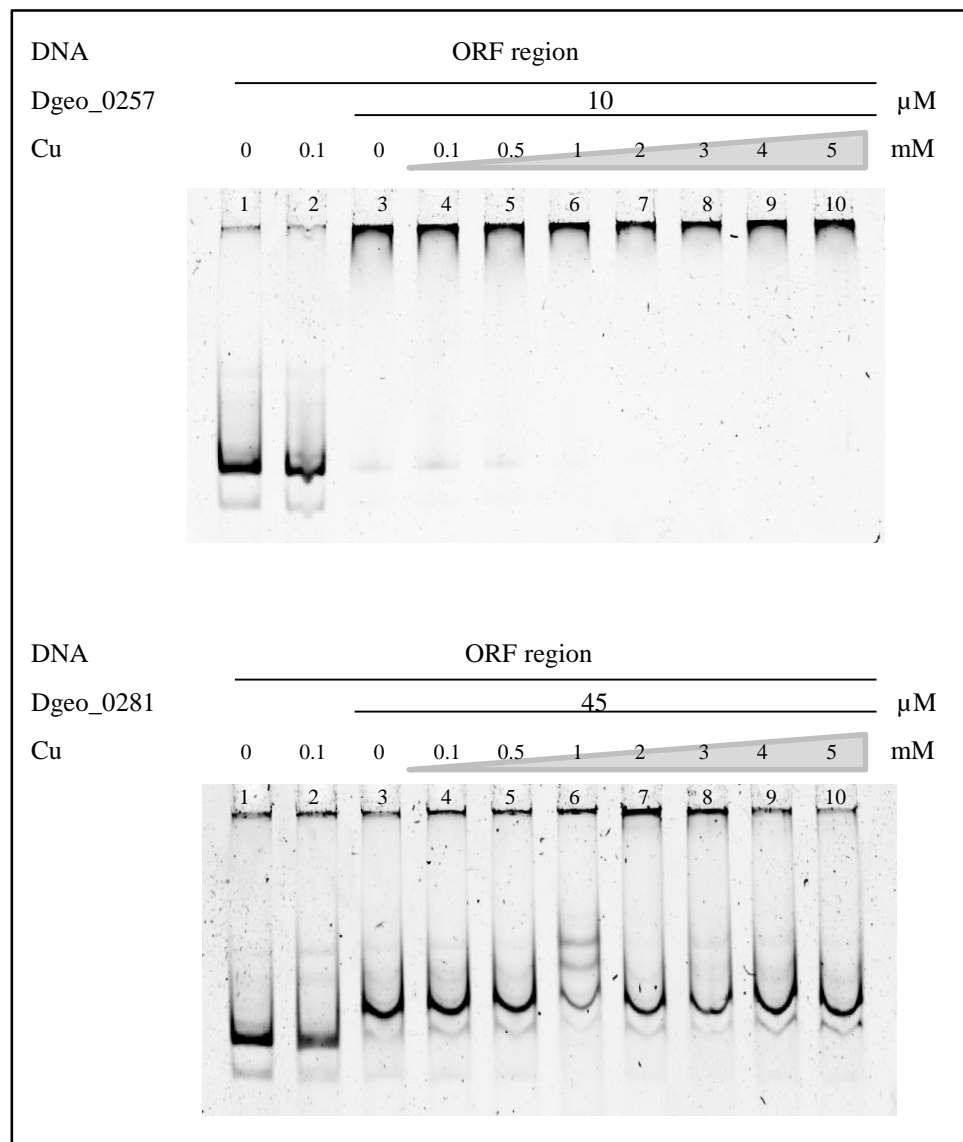


Figure S3 D

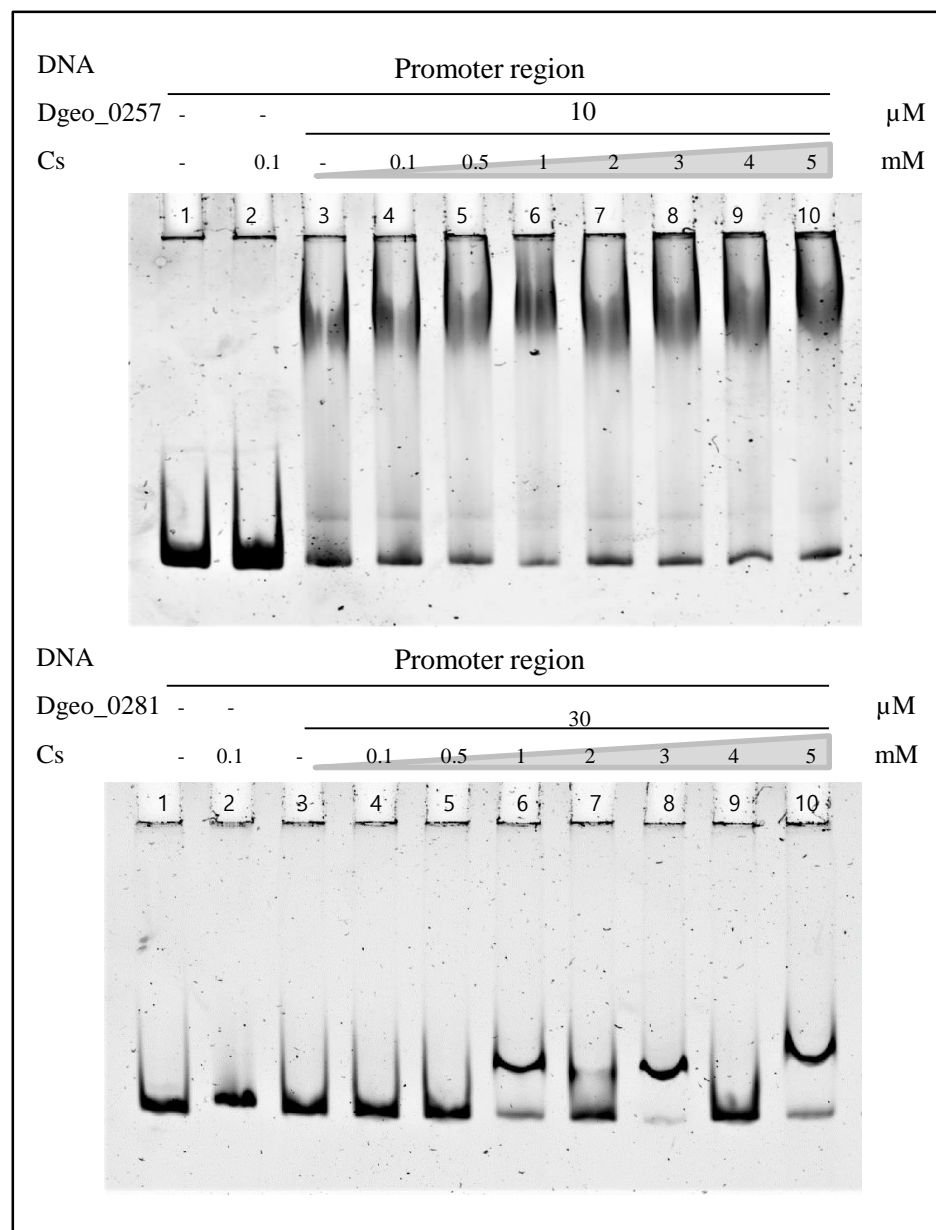


Figure S3 E

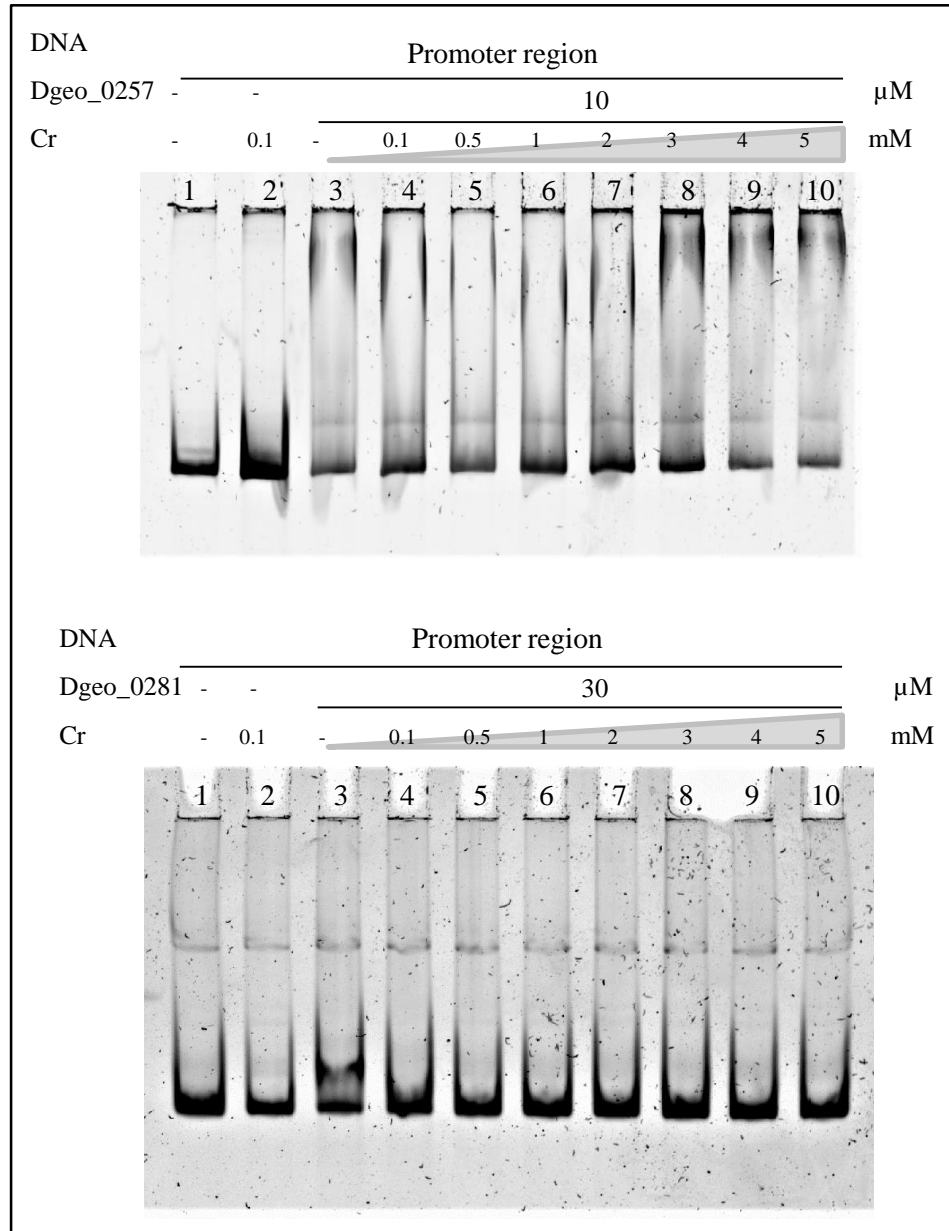


Figure S4

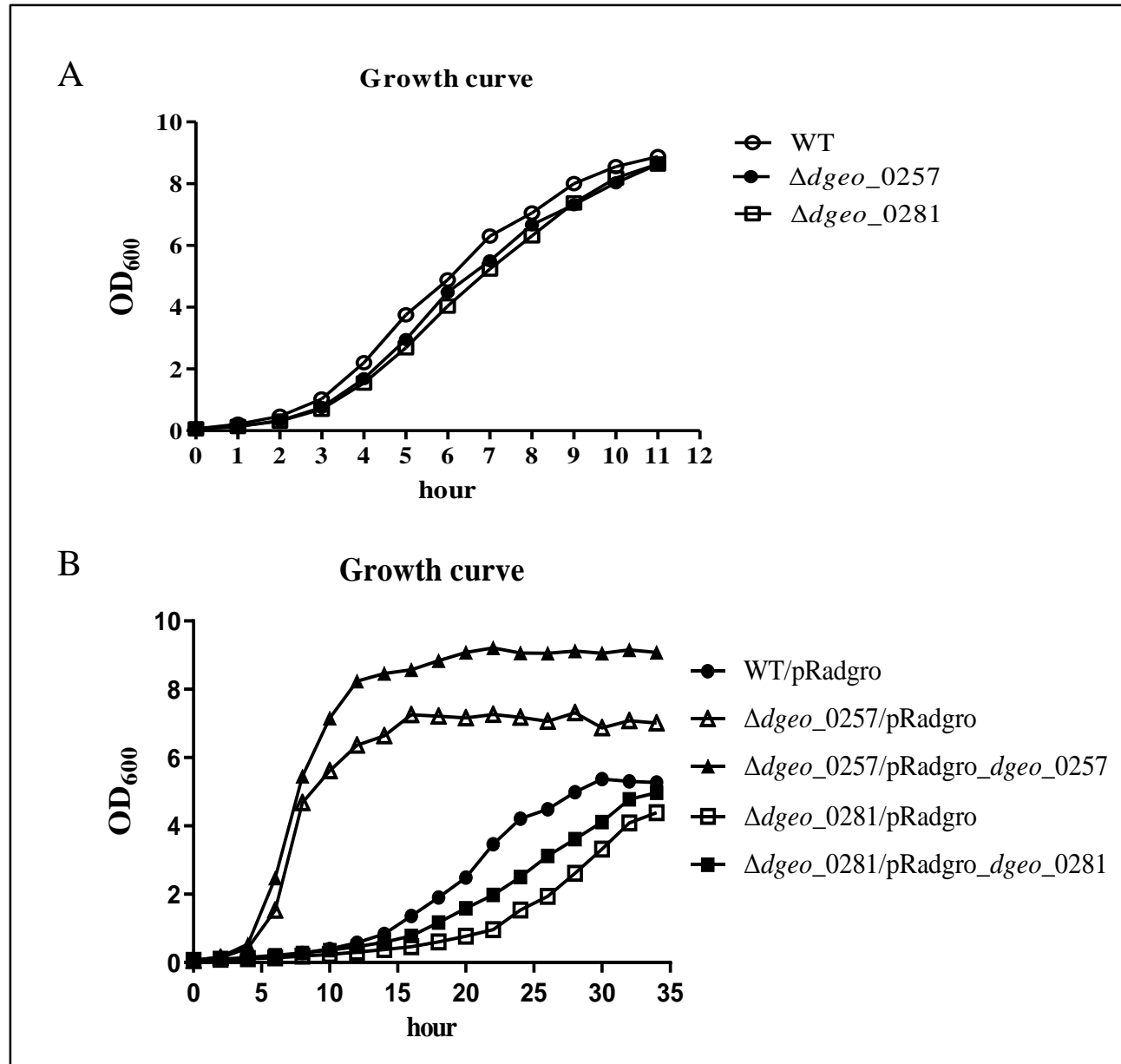


Figure S4

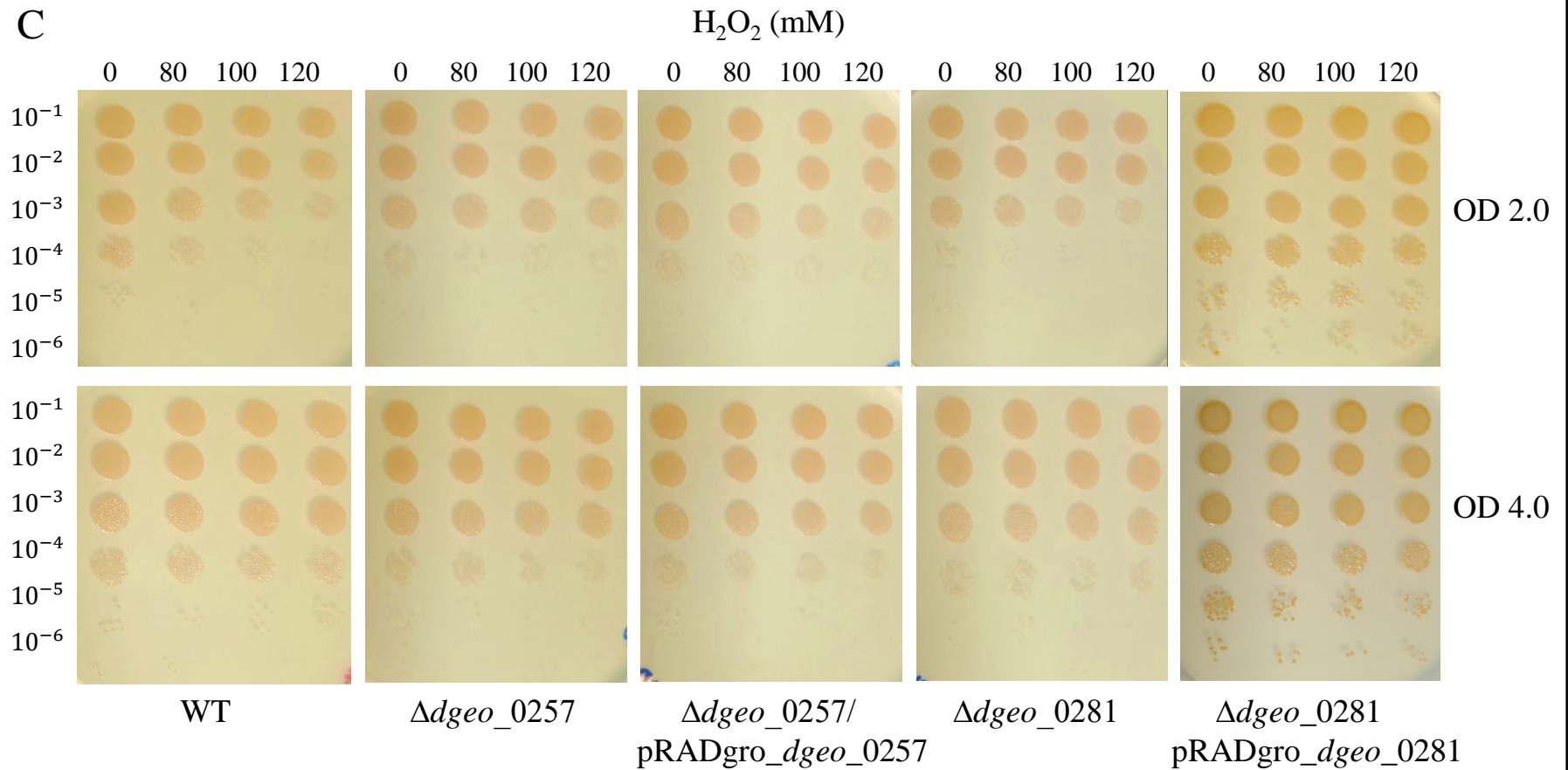


Figure S5

