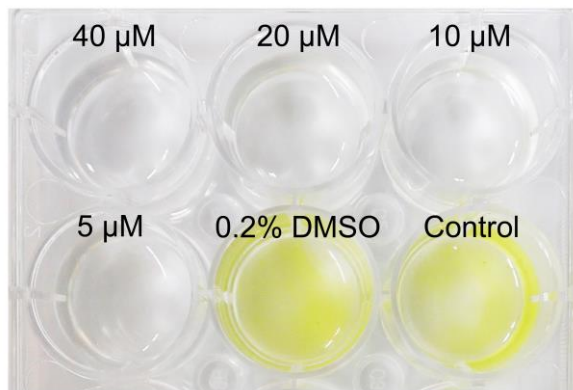




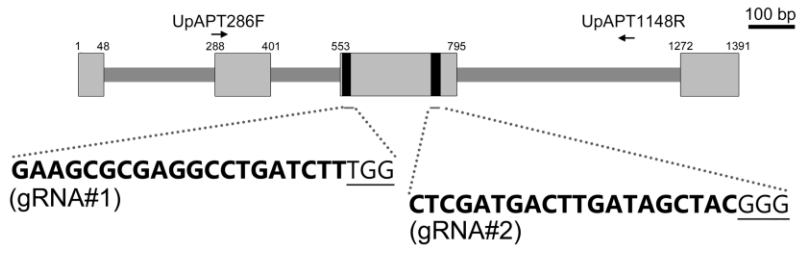
|                        |   |
|------------------------|---|
| Title                  | Genome editing using a DNA-free clustered regularly interspaced short palindromic repeats-Cas9 system in green seaweed <i>Ulva prolifera</i>  |
| Author(s)              | Ichihara, Kensuke; Yamazaki, Tomokazu; Kawano, Shigeyuki  |
| Citation               | Phycological research, 70(1), 50-56<br><a href="https://doi.org/10.1111/pre.12472">https://doi.org/10.1111/pre.12472</a>  |
| Issue Date             | 2021-11-03  |
| Doc URL                | <a href="http://hdl.handle.net/2115/87604">http://hdl.handle.net/2115/87604</a>   |
| Rights                 | This is the peer reviewed version of the following article: Ichihara, K., Yamazaki, T. and Kawano, S. (2021), Genome editing using a DNA-free clustered regularly interspaced short palindromic repeats-Cas9 system in green seaweed <i>Ulva prolifera</i> . Phycological Res., which has been published in final form at <a href="https://doi.org/10.1111/pre.12472">https://doi.org/10.1111/pre.12472</a> . This article may be used for non-commercial purposes in accordance with Wiley Terms and Conditions for Use of Self-Archived Versions. |
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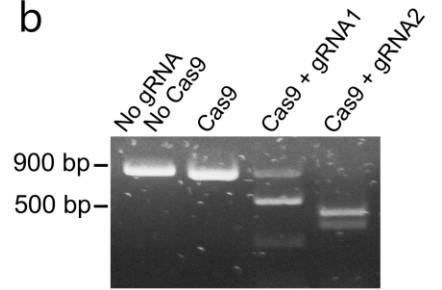
[Instructions for use](#)



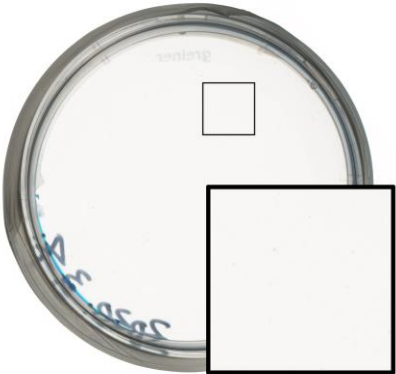
a



b



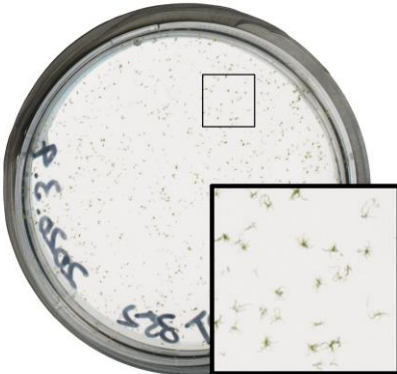
WT



Cas9 + gRNA#1



Cas9 + gRNA#2



**a**

| gRNA#1   | S | I        |
|--|---|----------|
| WT: CTTCGAAGCGCGAGGCCTGATCTTTGGGGCGC                   |   |          |
| M1: CTTCGAAGCGCGAGGCCTGA <sup>g</sup> CTTTGGGGCGC      | 1 | 0 (n=2)  |
| M2: CTTCGAAGCGCGAGGCCTGA <sup>c</sup> CTTTGGGGCGC      | 1 | 0 (n=1)  |
| M3: CTTCGAAGCGCGAGGCCTG <sup>--</sup> CTTTGGGGCGC      | 0 | -2 (n=3) |
| M4: CTTCGAAGCGCGAGGCCTGA <sup>--</sup> TTTGGGGCGC      | 0 | -2 (n=1) |
| M5: CTTCGAAGCGCGAGGCCTGA <sup>-----</sup> GGGGCGC      | 0 | -5 (n=1) |
| M6: CTTCGAAGCGCGAGGCCTGA <sup>t</sup> CTTTGGGGCGC      | 0 | +1 (n=2) |
| M7: CTTCGAAGCGCGAGGCCTGAT <sup>g</sup> CTTTGGGGCGC     | 0 | +1 (n=1) |
| M8: CTTCGAAGCGCGAGGCCTGAT <sup>gaggc</sup> CTTTGGGGCGC | 0 | +5 (n=1) |

| gRNA#2  | S | I        |
|---|---|----------|
| WT: GCTGCTCGATGACTTGATAGCTACGGGTGGC                   |   |          |
| M1: GCTGCTCGATGACTTGATAG <sup>-</sup> TACGGGTGGC      | 0 | -1 (n=3) |
| M2: GCTGCTCGATGACTTGATAG <sup>---</sup> GGGTGGC       | 0 | -3 (n=4) |
| M3: GCTGCTCGATGACTTGATA <sup>----</sup> CGGGTGGC      | 0 | -4 (n=7) |
| M4: GCTGCTCGATGACTTGATAG <sup>-----</sup> GGGTGGC     | 0 | -4 (n=1) |
| M5: GCTGCTCGATGACTTGA <sup>-----</sup> CGGGTGGC       | 0 | -6 (n=1) |
| M6: GCTGCTCGATGACTTGATAG <sup>c</sup> TACGGGTGGC      | 0 | +1 (n=6) |
| M7: GCTGCTCGATGACTTGATAG <sup>t</sup> TACGGGTGGC      | 0 | +1 (n=1) |
| M8: GCTGCTCGATGACTTGATA <sup>cttga</sup> TACGGGTGGC   | 2 | +3 (n=1) |
| M9: GCTGCTCGATGACTTGATAG <sup>acaaga</sup> TACGGGTGGC | 0 | +6 (n=1) |

**b**

