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Supplementary Material

OsCER1 regulates humidity-sensitive genic male sterility through very-long-chain (VLC) alkane metabolism of tryphine in rice

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Fig. S1. Seed set of different tillers of one *OsCER1* antisense-RNA transgenic plant. Scale bars, 10 cm.

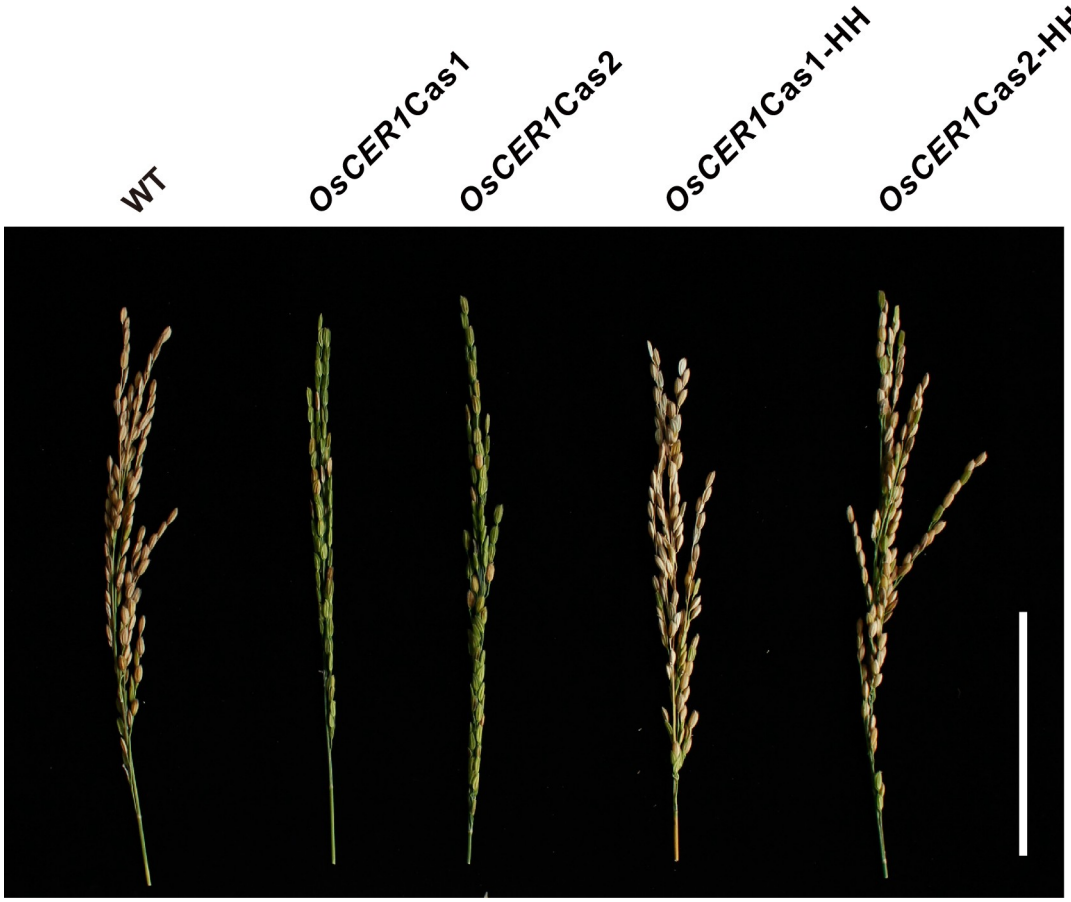

Fig. S2. Seed setting rates of different tillers of *OsCER1*Cas mutants pollinated under natural grow condition, and pollinated under high humidity (HH). Scale bars, 10 cm.

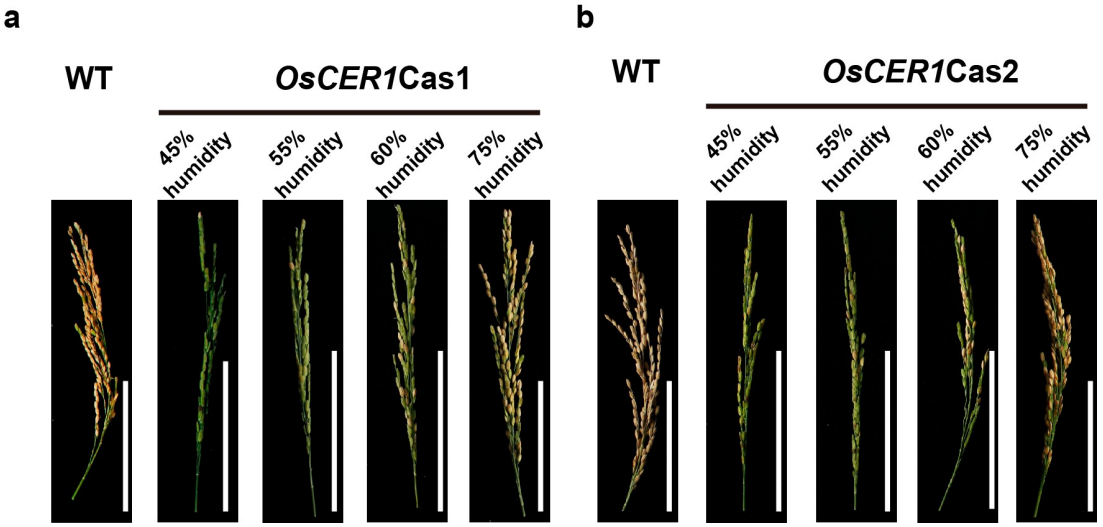

Fig. S3. Seed setting rates of *OsCER1*Cas mutants grown at different humidity levels. (a) Seed setting rates of *OsCER1*Cas1 mutants grown at different humidity levels. (b) Seed setting rates of *OsCER1*Cas2 mutants grown at different humidity levels. Scale bars, 10 cm.

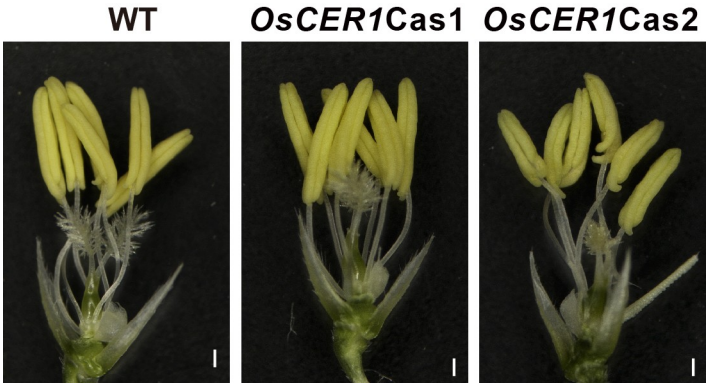

Fig. S4. Dissected spikelet of WT and *OsCER1*Cas mutants to show pistil and stamen. Scale bars, 0.5 mm.

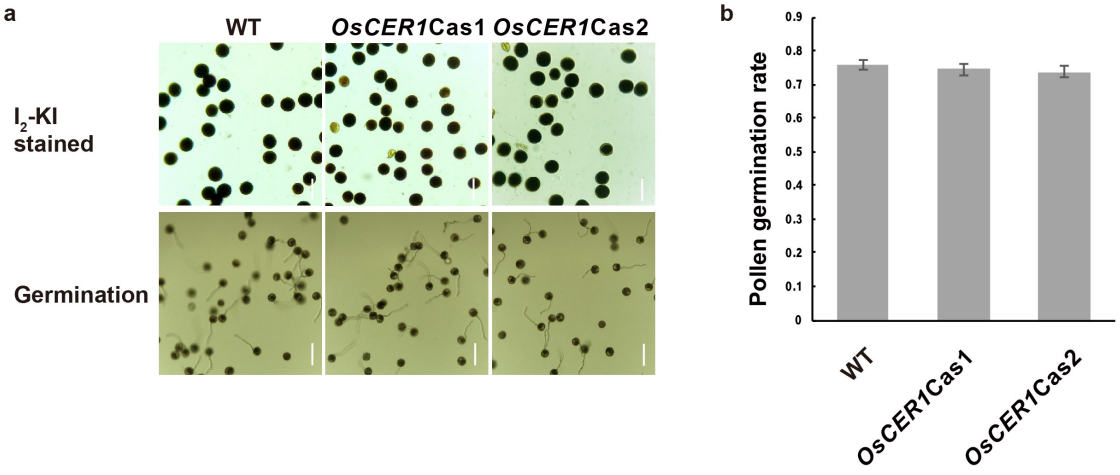

Fig. S5. Pollen vitality of WT and *OsCER1*Cas mutants. (a) Pollen grains stained with

I_2-KI and *in vitro* germination of WT and *OsCER1*Cas mutants. (b) *In vitro* germination rates of WT and *OsCER1*Cas mutants. Scale bars, 100 μm (a). Error bars indicate SD (n = 5).

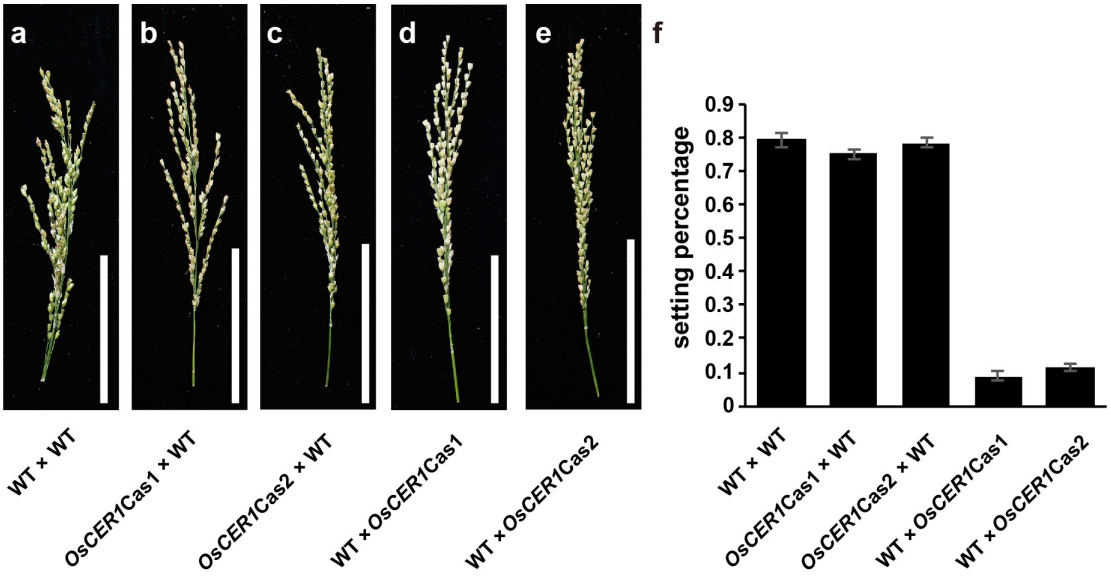

Fig. S6. Reciprocal crosses analysis. (a-e) Seed set of reciprocal crosses made between the *OsCER1*Cas mutants and WT. (f) Seed set rates of reciprocal crosses made between the *OsCER1*Cas mutants and WT. Scale bars, 10 cm.

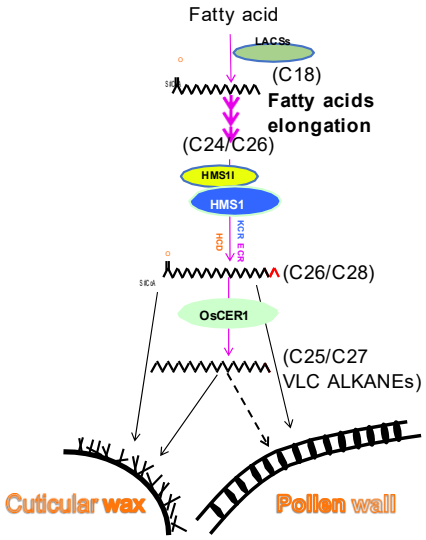

Fig. S7. Proposed Biochemical Model in Which HMS1, HMS1I and OsCER1 for VLCFA and VLC Alkane Synthesis.

Table S1. Primers used in this study

Primer ID	Primer sequence
*OsCER1*CAS1 F	GTTGAAGCTGGGGTACCAGTATC
*OsCER1*CAS1 R	AAACGATACTGGTACCCCAGCTT
*OsCER1*CAS2 F	GGCACCGCTCGAGGATCCTGGTC
*OsCER1*CAS2 R	AAACGACCAGGATCCTCGAGCGG
*OsCER1*p1 F	GGCATTTTGAGTTGGTGCCAGAG
*OsCER1*p 1 R	AAACCTCTGGCACCAACTCAAAA
*OsCER1*p 2 F	GCCGATGACCAGATCCTGTTCAA
*OsCER1*p 2 R	AAACTTGAACAGGATCTGGTCAT
htp F	AACATCCGCAGCTTCAACCT
htp R	GAAGTTTGGTGTGATGATCTC