

1 **SUPPORTING DATA:**

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3 **Table S1.** The accession numbers and primers used in this work.

Gene	No. ID	Primer Sequence (5' to 3')
<i>OsPT8-Oe</i>	AF536968	F:AATTGTTAACATGGCGCGGCAGGAGCAGC R:AATTCTCGAGCTACGCCGTCTGCGGCCG
<i>OsPT8</i>	AF536968	F:GCAGATGGTGACCCGGAACAGC R:CGAGGAACGTGCAGATGAACCC
<i>ARF1</i>	XM_016609214	F:CGGATCATCACATCATCAGC R:TGGGAAATAGTAAACTCTCT
<i>ARF2</i>	XM_016621326	F:CGGCAAATCACTTCGGTGGC R:ATAAACTCTTCCCCTTCAC
<i>NtPIN1</i>	KC347302.1	F:GGAGCTGCAGCACAACAAAGT R:ACCTTTCTTGTTATTAGTGC
<i>NtPIN2</i>	KP143726.1	F: TGCAATTATACCATTATATG R: AAACCAAGCAATGGAACGGC
<i>YUCCA6</i>	XM_019373868	F: GGGTCCAGTAATTGTAGGAGC R: TTTGAGTTGCCATAAAGAAGC
<i>YUCCA8</i>	XM_016592388	F:ATGTGTATGGGTAAATGGTCC R:CAGATTTTTCCAAGATTACAC
<i>NtL25</i>	L18908	F:CCGTCCAAAAAATCTGACCC R:TCTTCAAAGTCTTAGGTCGG

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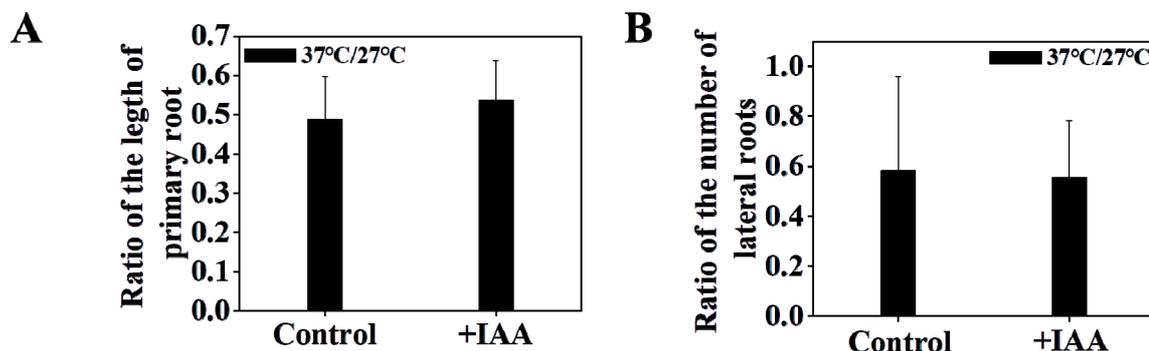
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10 **Figure S1.**



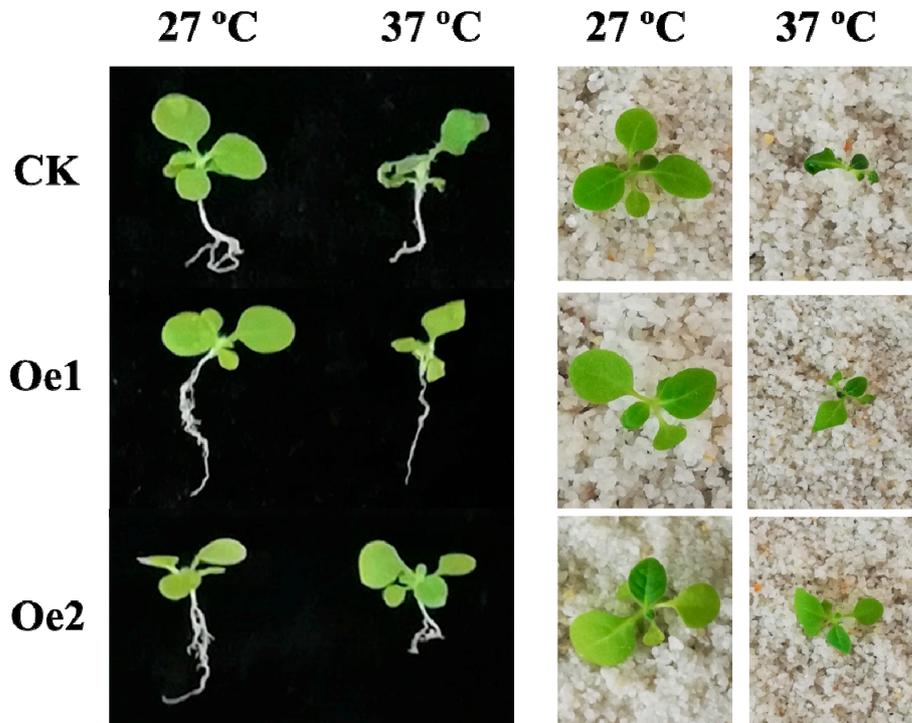
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13 **Figure S1.** Effects of exogenous IAA on the root architecture of tobacco under high temperature stress. (A) Ratio
14 of the length of primary root. (B) Ratio of the number of lateral roots. 7-days-old seedlings were treated at high
15 temperatures for one week, the effects of high temperature on tobacco seedlings were illustrated by photographs.

16 Shown are mean \pm SD from five biological replicates (n = 5). Level of significance: $P < 0.05$ *, $P < 0.01$ **

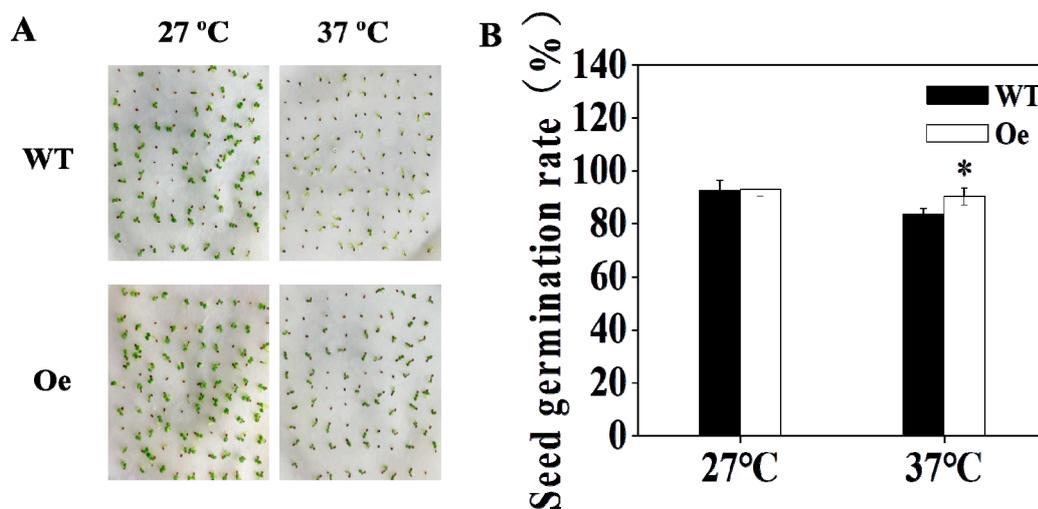
17 **Figure S2.**



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19 **Figure S2.** Phenotypic characteristics of tobacco under high temperature stress. 7-days-old seedlings were
20 treated at high temperatures for one week, the effects of high temperature on tobacco seedlings were illustrated
21 by photographs.

22 **Figure S3.**

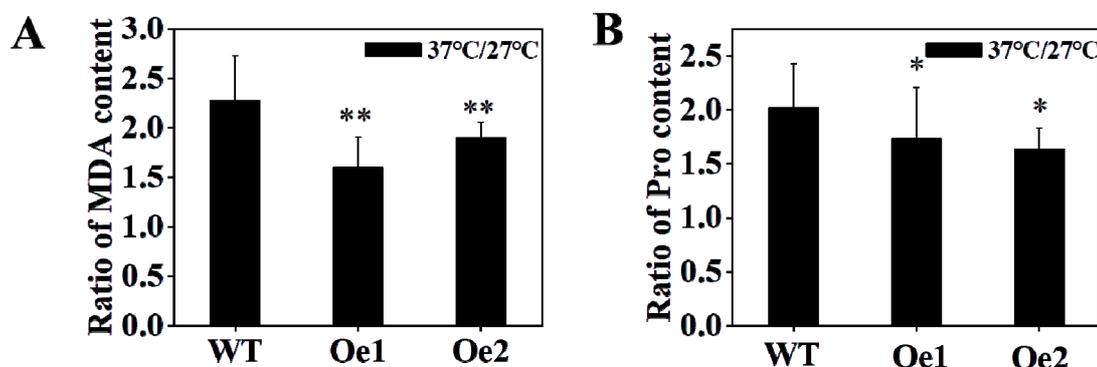


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24 **Figure S3.** Seed germination rate under high temperature conditions. The seeds were treated for one week, each
25 200 tobacco seeds of WT and *OsPT8*-Oe transgenic plants were used and the germination rate was recorded.
26 Shown are mean \pm SD from five biological replicates (n = 5). Level of significance: P < 0.05 *, P < 0.01 **

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28 **Figure S4.**



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30 **Figure S4.** Effect of high temperature stress on antioxidant capacity of tobacco. (A) Ratio of MDA content under
31 high temperature conditions. (B) Ratio of Pro content under high temperature conditions. The seedlings were
32 treated at high temperatures for 3 weeks, shown are mean \pm SD from five biological replicates (n = 5). Level of
33 significance: P < 0.05 *, P < 0.01 **.

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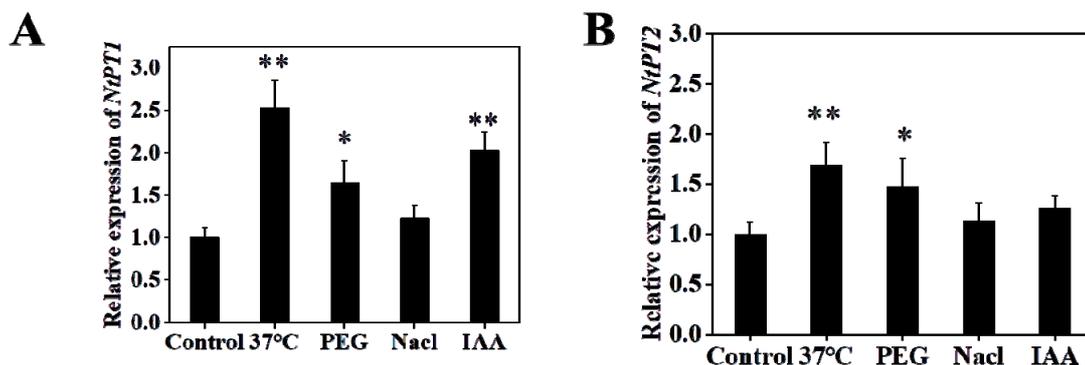
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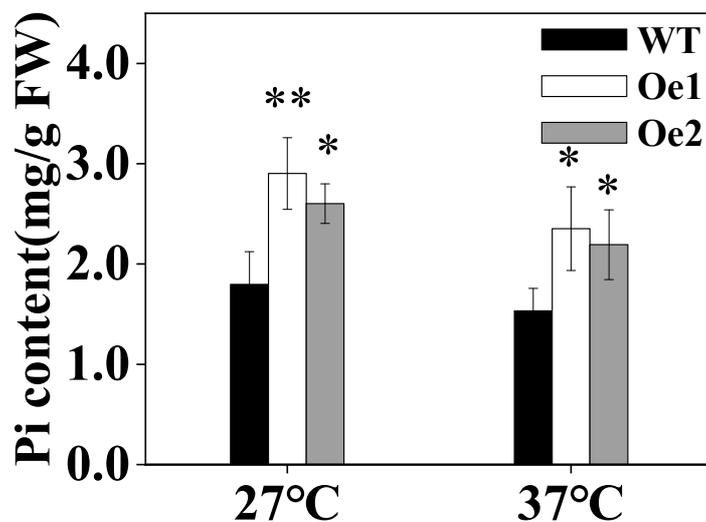
39 **Figure S5.**



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41 **Figure S5.** The expression levels of *NtPTs* under abiotic stress conditions. (A) Expression of *NtPT1*; (B)
42 Expression of *NtPT2*. *L25* was used as an internal control. Control, under no stress. 14-days-old seedlings were
43 treated at high temperatures for 3 weeks. Shown are mean \pm SD from five biological replicates ($n = 5$). Level of
44 significance: $P < 0.05$ *, $P < 0.01$ **.

45 **Figure S6.**



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47 **Figure S6.** The Pi content under high temperature stress conditions. 14-days-old seedlings were treated at high
48 temperatures for 3 weeks. Shown are mean \pm SD from five biological replicates ($n = 5$). Level of significance: $P <$
49 0.05 *, $P < 0.01$ **

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