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Isolation of dehydration-responsive genes in a drought tolerant common bean cultivar and expression of a group 3 late embryogenesis abundant mRNA in tolerant and susceptible bean cultivars

Blanca E. Barrera-Figueroa[A], *Julián M. Peña-Castro*[A], *Jorge A. Acosta-Gallegos*[B], *Roberto Ruiz-Medrano*[A] *and Beatriz Xoconostle-Cázares*[A,C]

[A]Departamento de Biotecnología y Bioingeniería, Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Av. IPN 2508, 07360 San Pedro Zacatenco, México.
[B]Programa de Mejoramiento del Frijol, Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias. Campo Experimental Bajío. Km. 6.5 carretera Celaya – San Miguel de Allende, 38010 Celaya, Guanajuato, México.
[C]Corresponding author. Email: bxoconos@cinvestav.mx

Supplementary material

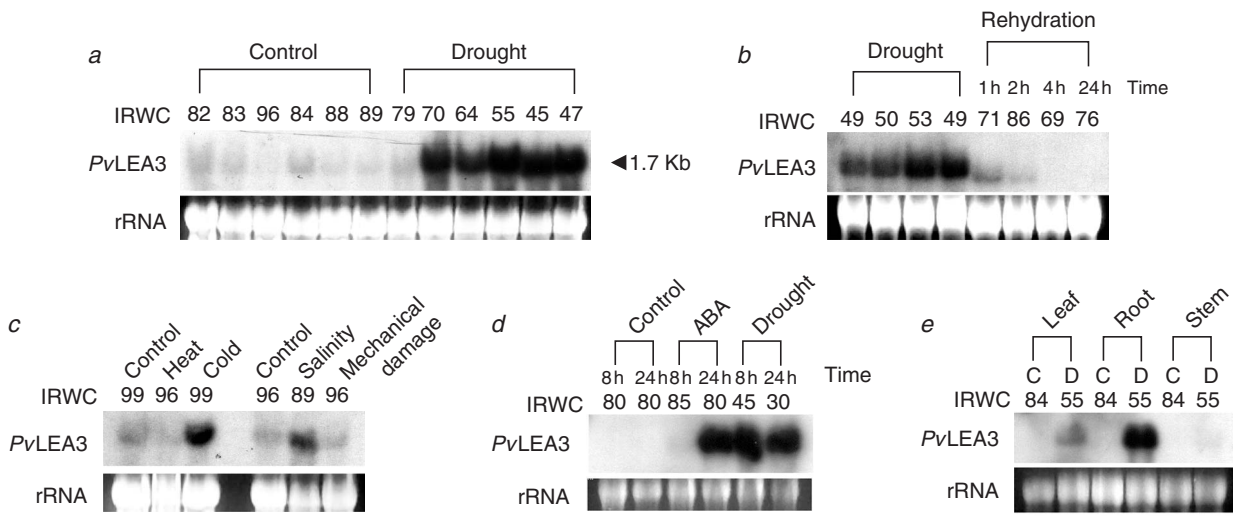

Fig. S1. Northern blot analysis showing the differential accumulation of *PvLEA3* transcript in Pinto Villa roots. *PvLEA3* was accumulated in roots by progressive drought stress (*a*) and quickly downregulated by rehydration (*b*). Cold (4°C for 2 h) and salt (250 mM NaCl for 2 h) stress, but not heat stress (42°C for 2 h) or mechanical damage induced the expression of *PvLEA3* in Pinto Villa roots (*c*). Induced expression of *PvLEA3* in roots by exogenous ABA treatment (100 µM ABA for 8 h and 24 h) (*d*). Accumulation of *PvLEA3* was not restricted to roots; it was also differentially accumulated in leaves and stem, but at lower levels (*e*). For each case, 20 µg of total RNA were loaded per lane, blotted onto nylon membranes and hybridised with a radiolabelled *PvLEA3* probe. Ethidium bromide staining of ribosomal RNA (rRNA) is shown to monitor equal loading of total RNA. lRWC, Leaf relative water content (%); C, Control; D, Drought.

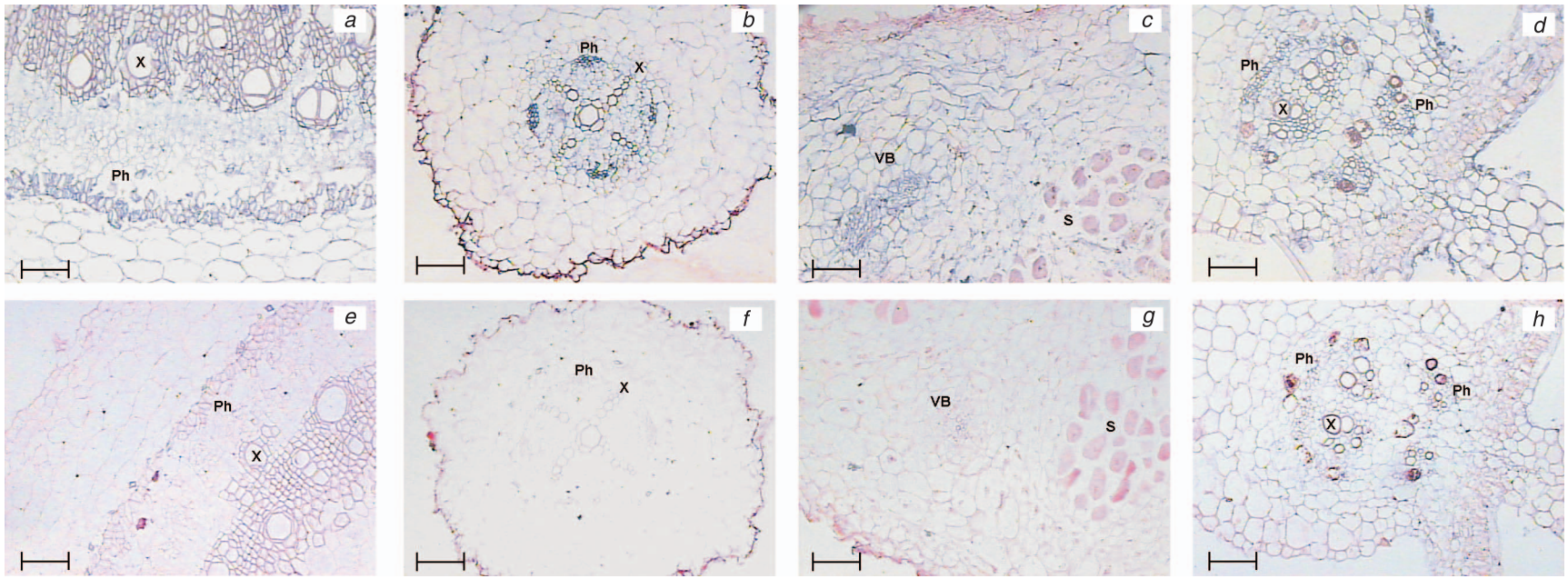

Fig. S2. *In situ* hybridisation assays of *PvLEA3* in Pinto Villa plants. Panel *a* shows indigo mRNA-associated signal of *PvLEA3* transcript in the phloem area of stem, particularly in both developing and functional phloem cells. In roots, the signal was limited to phloem with no significant RNA accumulation in immature cells (*b*). In Rhizobia-infected roots the signal was highly represented in the parenchyma of the middle and inner cortex and in vascular bundles localised in proximity to the symbiosome (*c*). Leaves of water-deprived plants displayed the signal in both developing and functional phloem cells; parenchyma cells present in the central vein were devoid of signal (*d*). Panels *a–d* show cross sections of early drought-stressed tissues hybridised with anti-sense probe (positive signal). Stem (*e*), root (*f*), nodule (*g*) and leaf (*h*) cross sections hybridised with sense probe (negative signal) are shown. X, Xylem; Ph, Phloem; VB, Vascular bundles; S, Symbiosome. Scale bars = 100 µm.