Down-regulation of the *IbEXP1* gene enhanced storage root development in sweetpotato

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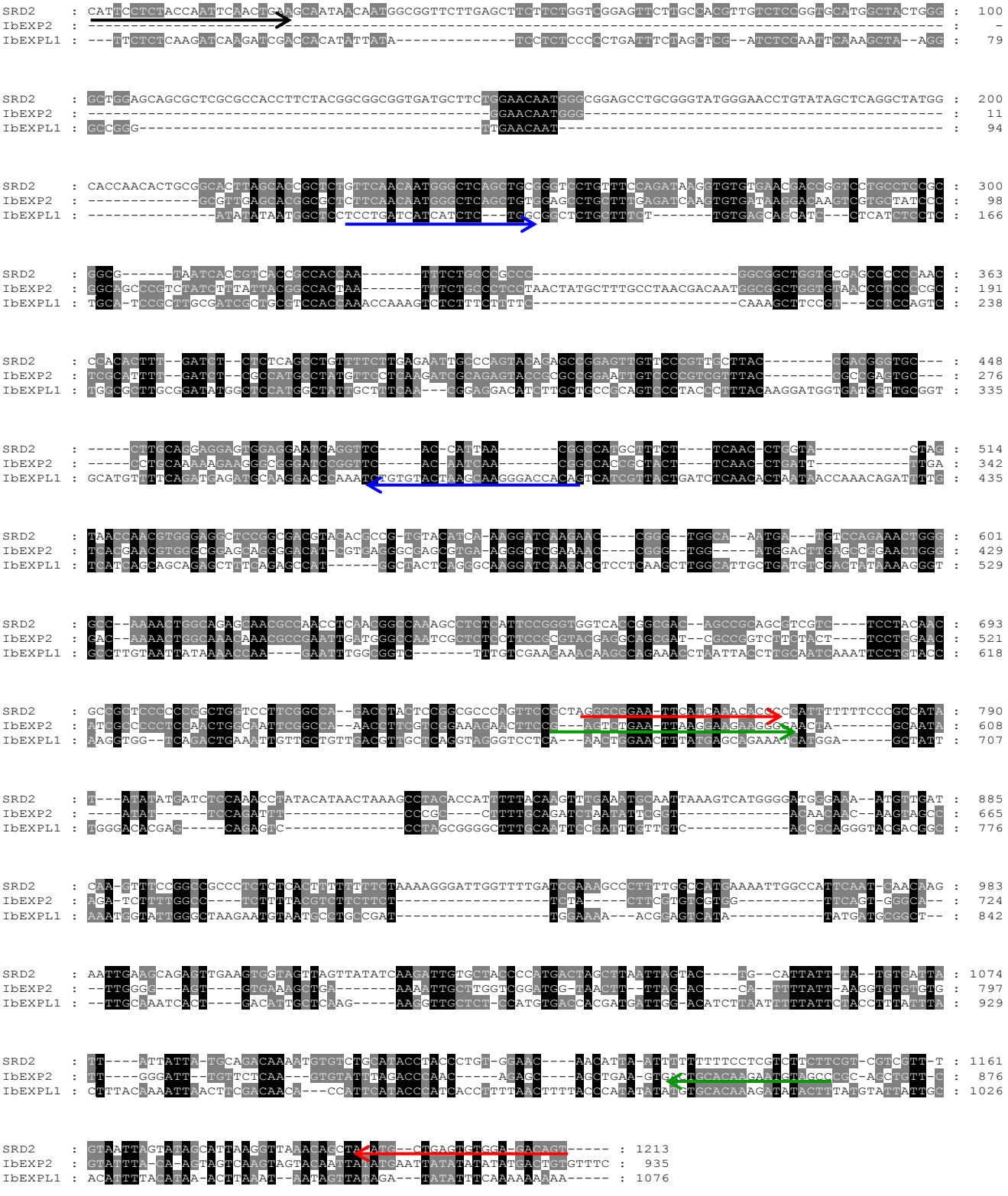

Figure S1. Nucleotide positions of *IbEXP1*-, *IbEXP2*-, and *IbEXPL1*-specific primers. Red, green, and blue arrows indicate the nucleotide positions of *IbEXP1*-, *IbEXP2*-, and *IbEXPL1*-specific primers, respectively, used in RT-PCR and qRT-PCR. The full-length *IbEXP1* cDNA was amplified using the forward primer indicated by black arrow and the reverse primer indicated by red arrow and used in construction of the binary vector containing *IbEXP1* cDNA in an antisense orientation.

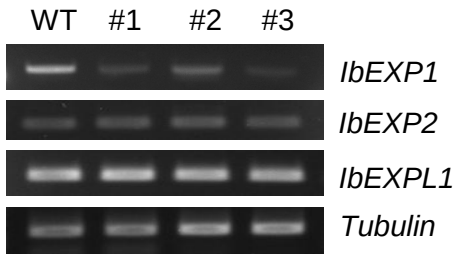

Figure S2. Transcript levels of *IbEXP2* and *IbEXPL1* in *IbEXP1*-antisense plants. Total RNA was isolated from fibrous root tissue of the sweetpotato plants cultured in vitro. Semi-quantitative RT-PCR analysis was conducted with *IbEXP1*-, *IbEXP2*-, or *IbEXPL1*-specific primers. Numbers #1-#3 represent *IbEXP1*-antisense sweetpotato lines #1-#3. Sweetpotato *β-tubulin* was used as an equal loading internal control.

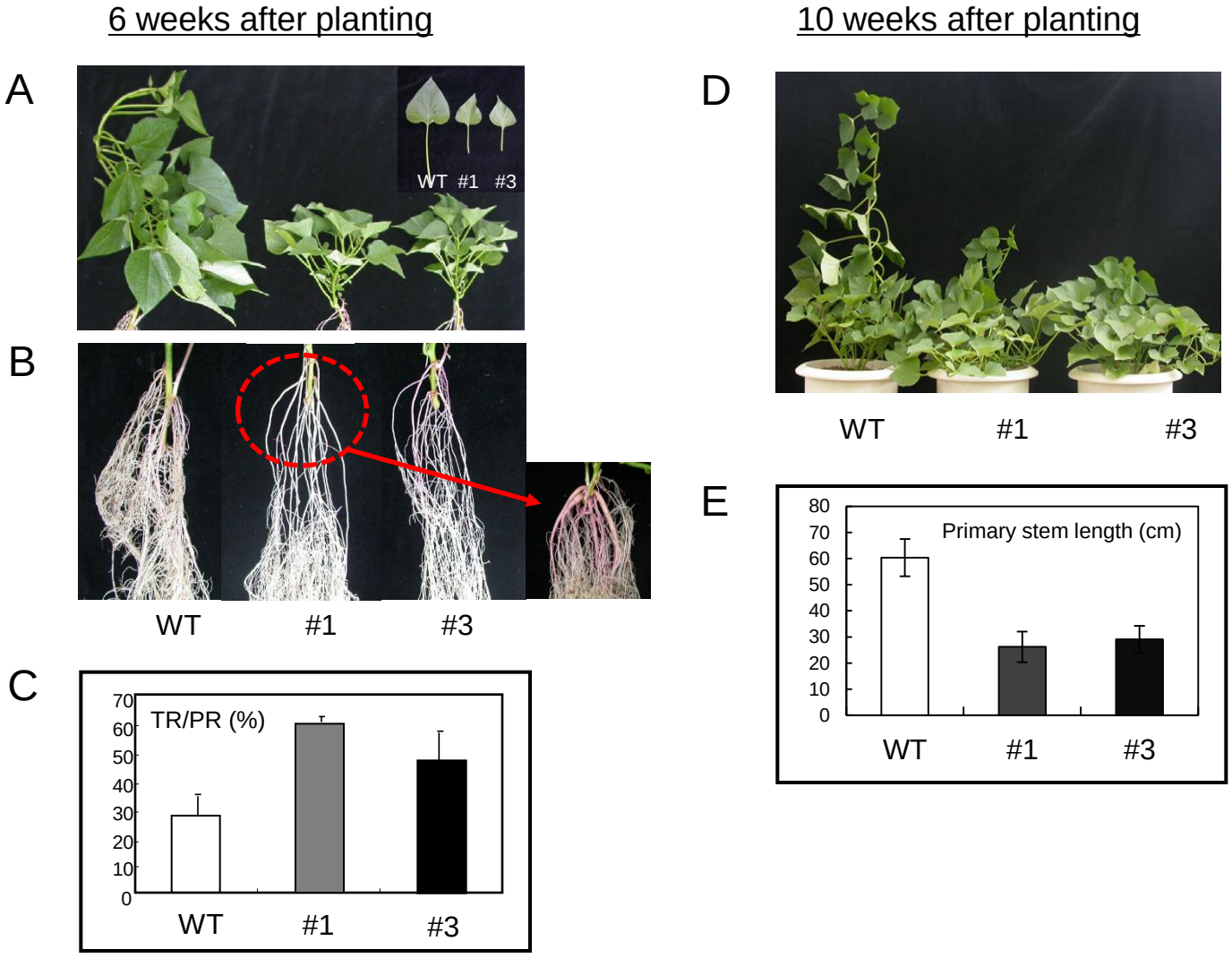

Figure S3. Growth of *IbEXP1*-antisense sweetpotato plants. (A) Shoot growth of *IbEXP1*-antisense plants at 6 weeks after planting. (B) Root growth of *IbEXP1*-antisense plants at 6 weeks after planting. Red arrow indicates young storage roots observed at 8 weeks after planting that developed from the thick roots in the red dotted circle. (C) Thick root development in *IbEXP1*-antisense plants at 6 weeks after planting. TR, thick root; PR, primary root. (D) Shoot growth of *IbEXP1*-antisense plants at 10 weeks after planting. (E) Growth of primary stem in *IbEXP1*-antisense plants at 10 weeks after planting. (C and E) Data were collected from the sweetpotato plants at 6 or 10 weeks after planting and are the means ± SD from three separate measurements of three individual plants. (A-E) Numbers #1 and #3 represent *IbEXP1*-antisense sweetpotato lines #1 and #3, respectively. Sweetpotato plants were grown in large cylindrical pots [25 (top diameter) x 23 (bottom diameter) x 23 (height) cm] containing commercial horticultural potting soil (Baroker; Seoul Bio, Chungcheongbuk-do, Korea) in the greenhouse at 25–30°C under a long-day photoperiod (16/8 h, light/dark). No additional fertilizer was added. WT, wild-type.

WT #1 #2 #3

Figure S4. Phenotypic alteration in *IbEXP1*-antisense sweetpotato plants grown in soil. Sweetpotato plants were grown in large [27 x 27 x 24 (height) cm] pots containing commercial horticultural potting soil (Baroker; Seoul Bio, Chungcheongbuk-do, Korea) in the greenhouse at 25–30˚C under a long-day photoperiod (16/8 h, light/dark) and harvested at 5 months after planting. No additional fertilizer was added. Numbers #1-#3 represent *IbEXP1*-antisense sweetpotato lines #1-#3, respectively. WT, wild-type.