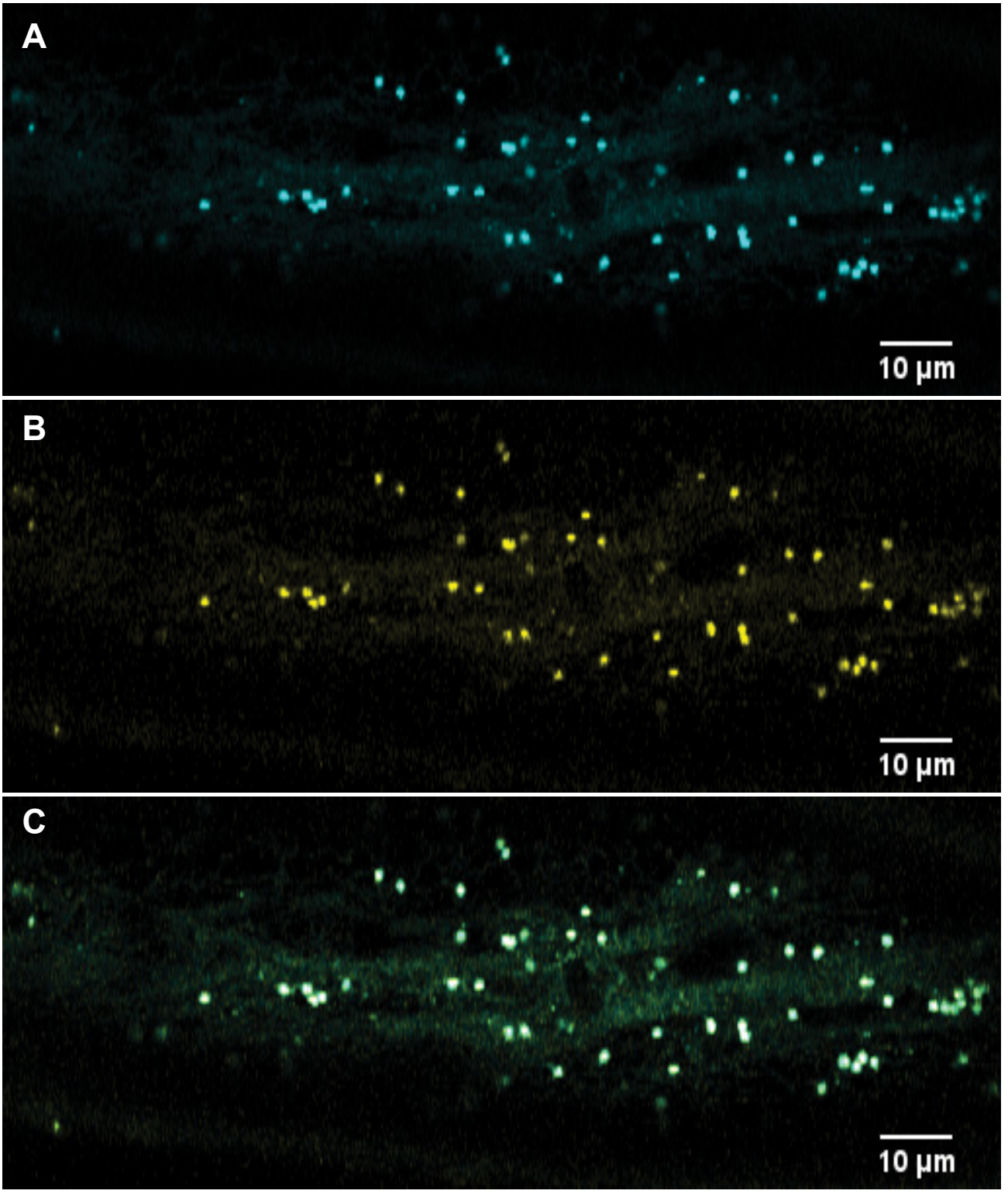
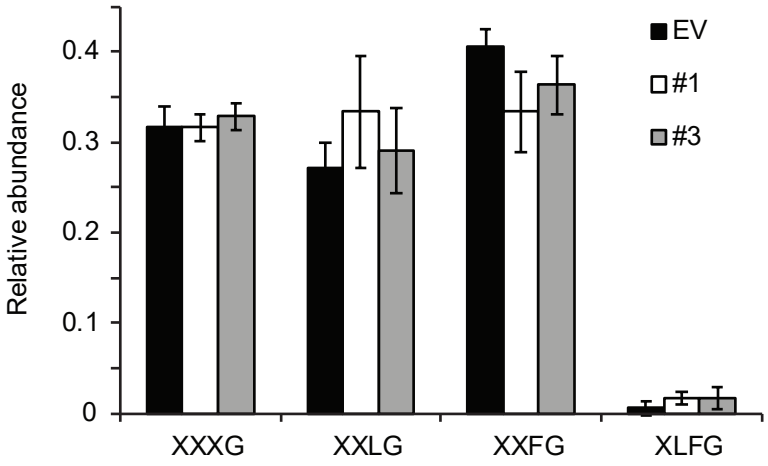
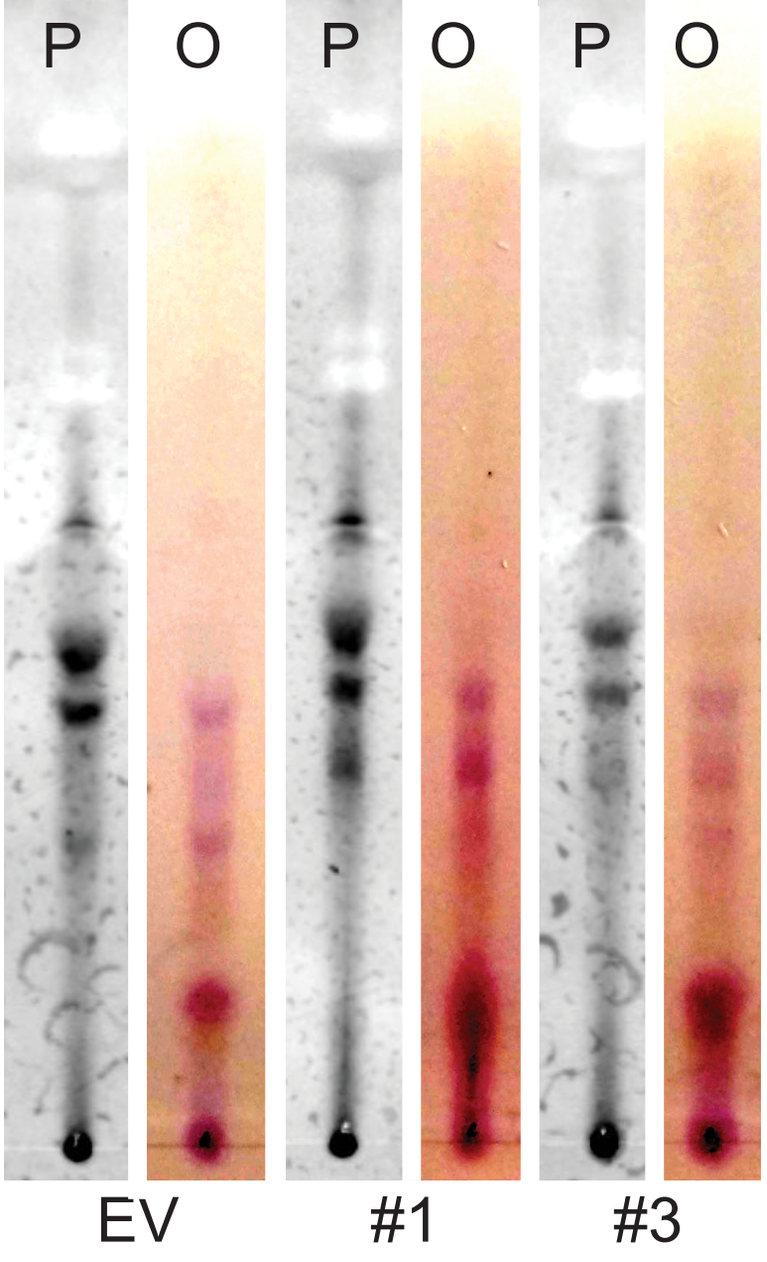


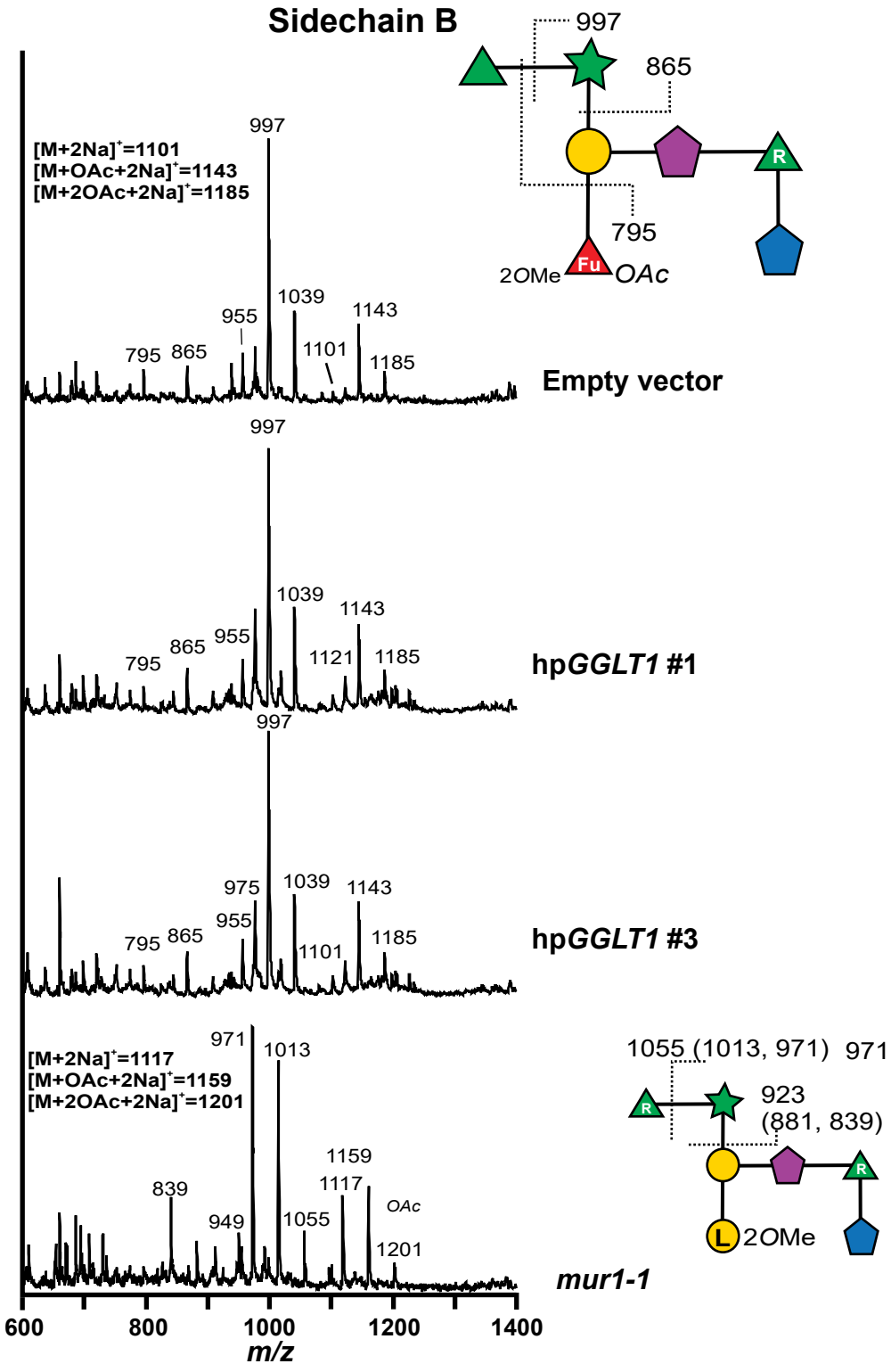
Supplemental Figure S1: Subcellular localization of GGLT1. A Golgi marker, α-mannosidase, fused to CFP (A) and GGLT1 fused to YFP (B) were expressed in onion epidermal cells. An overlay is shown in (C).



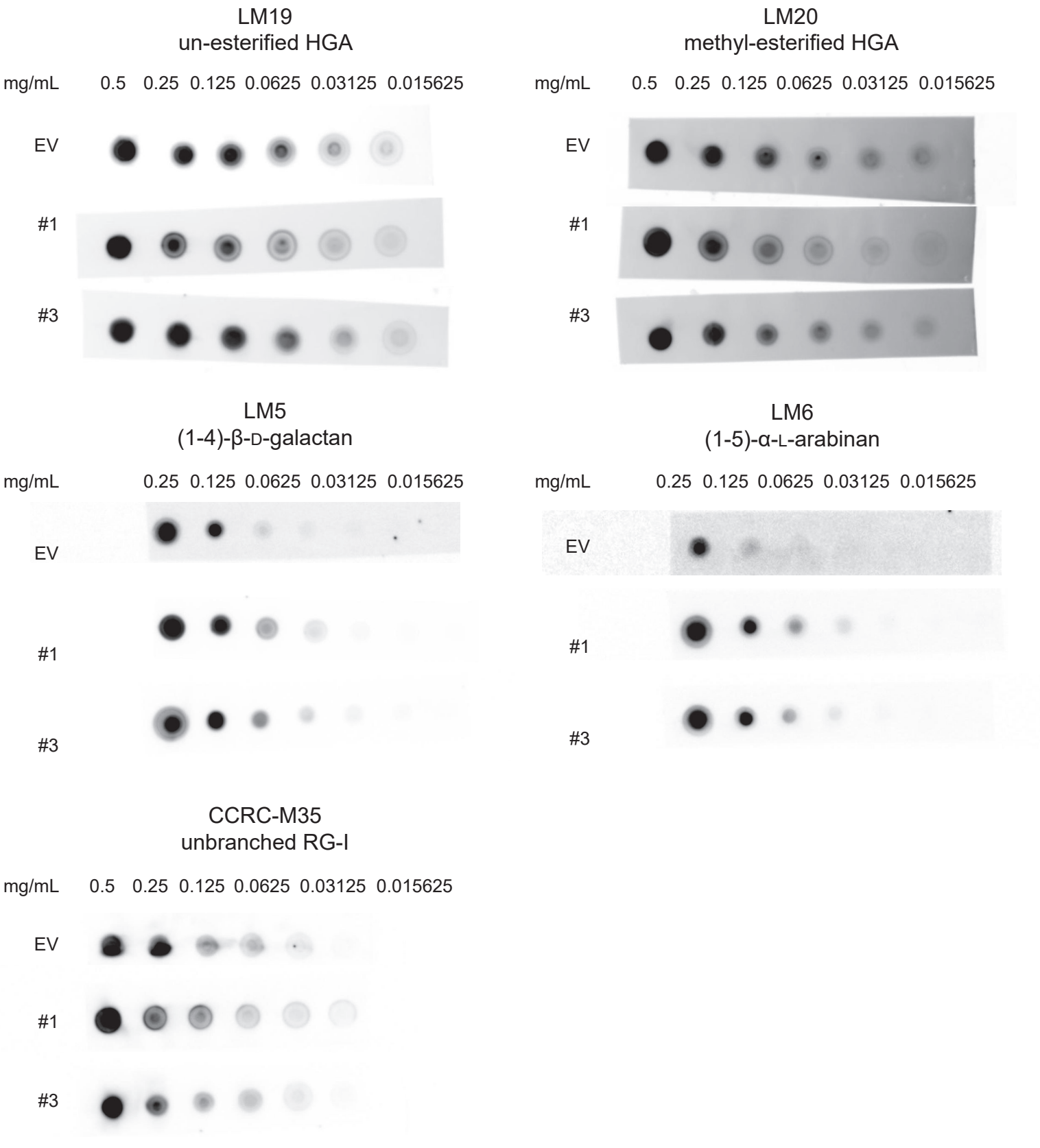
Supplemental Figure S2 : Xyloglucan composition is not affected in hp*GGLT1* lines. MALDI-TOF analysis of xyloglucan from the etiolated hypocotyls of EV (black bars), hp*GGLT1* #1 (white bars), and hp*GGLT* #3 (gray bars). Minor subunits (<5% relative abundance) are not shown. Standard xyloglucan nomenclature has been used to describe the oligosaccharides where X = backbone glucose substituted with a terminal xylose, L = substituted with β-D-galactose, F = substituted with fucose, and G = unsubtituted. Mean values represent acetylated and nonacetylated subunits of XXLG, XXFG, and XLFG combined. Data represent the mean of 4 biological replicates, error bars represent the standard deviation. No statistical significance (Student's *t*-test, $P < 0.05$) was observed between EV and hp*GGLT1*.



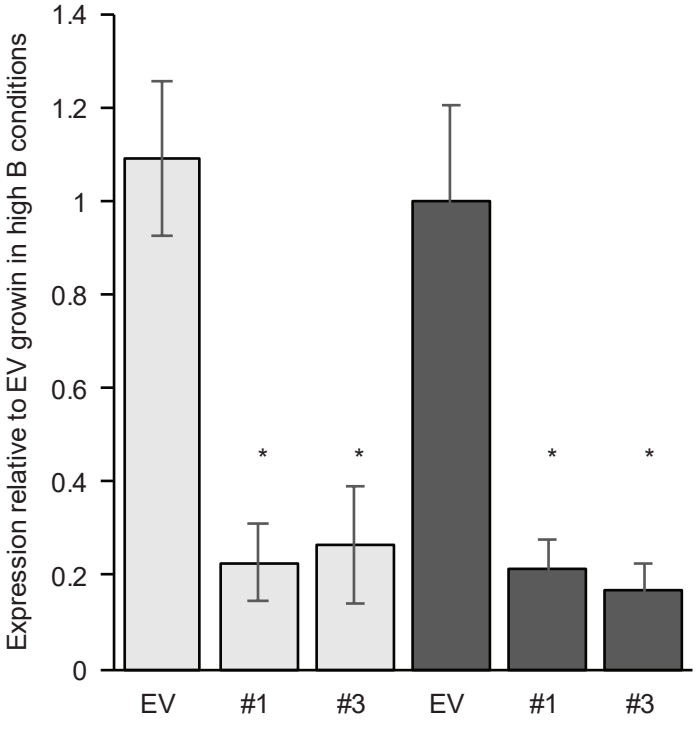
Supplemental Figure S3 : Thin layer chromatography of GIPCs extracted from the leaves of control (EV) and hp*GGLT1* (lines #1 and #3) plants. After development, plates were first stained with Orcinol solution (O) then with Primuline solution (P).



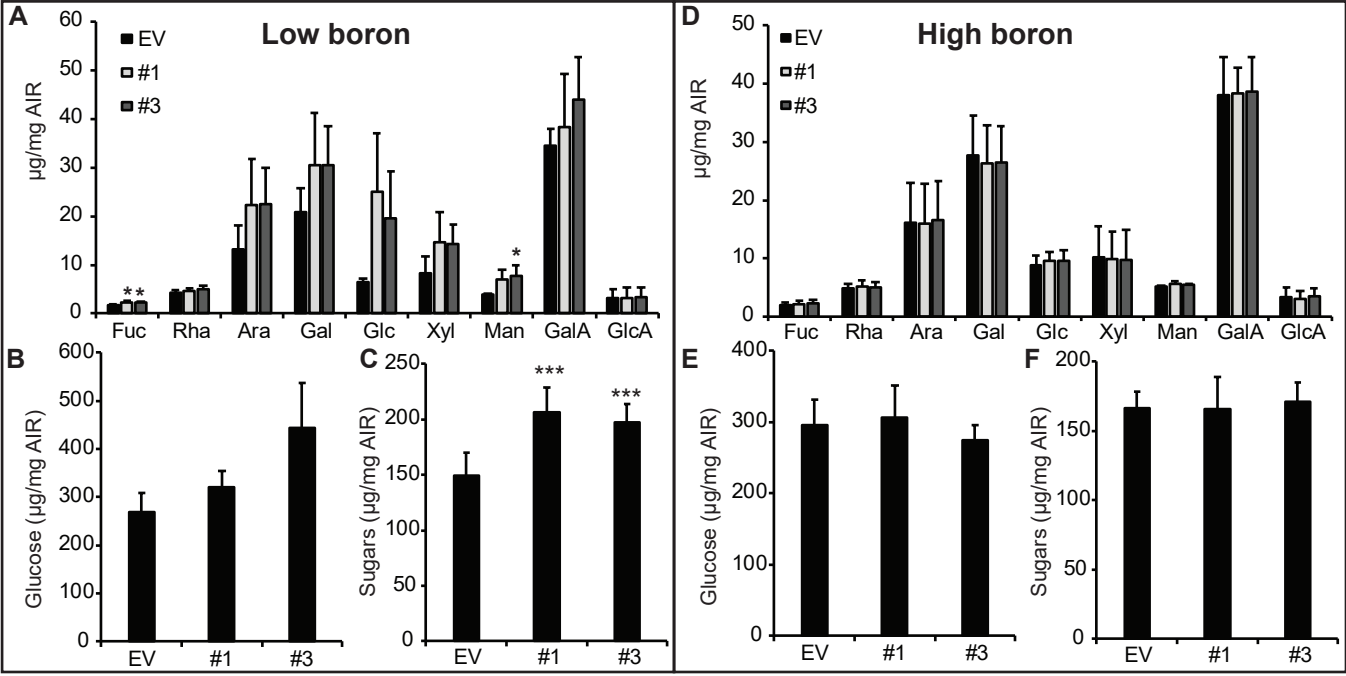
Supplemental Figure S4: MALDI analysis of RG-II side-chain B. The positive ion MALDI-TOF mass spectrum of side-chain B generated by selective acid hydrolysis of RG-II. No discernible differences were detected in side-chain B generated from the empty vector and hp*GGLT1* RG-II. The oligosaccharide structures are represented using a modified SNFG nomenclature. See Figure 1 for details.



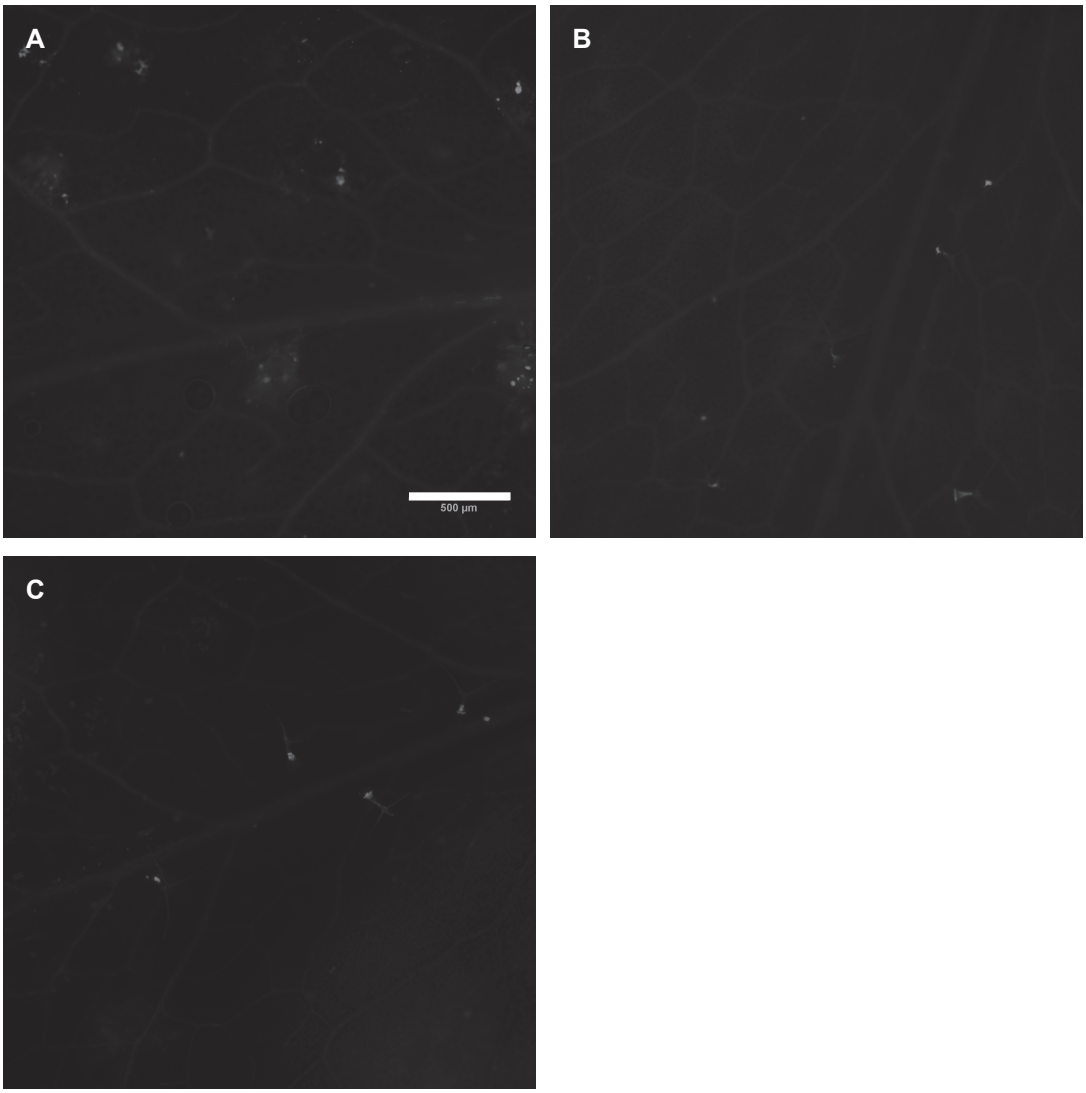
Supplemental Figure S5: Immuno-dot blot of oxalate fraction shows unchanged bulk pectin. The oxalate extracted fraction was resuspended in water, serially diluted and an immuno dot-blot performed.



Supplemental Figure S6: GGLT1 silencing is not dependent on B concentration. Expression was determined on plants grown hydroponically in low B (light grey) or high B (dark grey). Data represent the mean of 3 technical replicates using 2 reference genes, error bars represent the standard deviation. Asterisks indicate significantly different from EV (Student's *t*-test, * $P < 0.05$).



Supplementary Figure S7: Cell wall composition is altered in boron deficient conditions. (A, D) Monosaccharide composition after TFA hydrolysis, (B, E) Glucose from crystalline cellulose (Saeman hydrolysis) and (C, F) sugar released from 72h saccharification treatment with cellulase cocktail of hp*GGLT1* lines compared to control plants carrying the empty vector (EV) in low concentration or high concentration of boron. The data in (A, D) represents the mean of 4 plants ± SD; (B, E) and (C, F) represents the mean of 6-12 plants ± SEM. Asterisks indicate a significant difference from EV (Student's *t*-test, * P < 0.05, ** P < 0.01, *** P < 0.001).



Supplemental Figure S8: Aniline blue staining for callose deposition in hpGGLT1 leaves. Leaves were destained in ethanol, and then stained with aniline blue. Leaves were observed using a confocal microscope at the same magnification. Scale bar = 500 µm. Visible aniline blue staining indicates damaged trichomes on the leaf surface. (A) EV control (B) line #4 and (C) line #1. Representative images are shown. 3 leaves were inspected for each line.