Supplementary Material

# Supplementary Figures and Tables

## Supplementary Figures

   

(d)

(c)

(b)

(a)

**Supplementary Figure 1.** The gene *LBAI* (a), *LBNI* (b), *LBSPS* (c), *LBSS* (d) homology sequence of alignment



**Supplementary Figure 2.** The *LBAI*, *LBSS*, *LBSPS*, and *LBNI* protein spatial structure prediction.

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| **Supplementary Table 1** Analysis of protein characteristics of genes *LBAI*, *LBSS*, *LBSPS, LBNI* | | | | | | | | | | | | | | |
| **Gene** | **Sequence length(bp)** | **Protein length(aa)** | **Domains and position** | **Physicochemical properties** | | | | | |  | **Secondary structure** | | | **Subcellular location** |
| **Formula** | **Molecular weight (kDa)** | **Theoretical**  **pI** | **Instability index** | **Aliphatic index** | **Grand average of hydrophilicity(GRAVY)** | **Alpha helix (Hh)(%)** | **Random coil (%)(Cc)** | **extended strand (%)(Ee)** |
| *LBAI*  (MN718195) | 2802 | 639 | Glyco\_hydro\_32 (112-625) | C3187H4869N839O950S14 | 70.59 | 5.90 | 40.04 | 80.04 | -0.244 | 17.68 | 60.56 | 21.75 | Plasma membrane |
| *LBSS*  (MN718196) | 3288 | 805 | Sucrose\_synth  (8-553)  Glycos\_transf\_1  (557-741) | C4197H6543N1111O1195S26 | 92.52 | 6.00 | 32.62 | 93.01 | -0.250 | 46.34 | 38.63 | 15.03 | Mitochondrial matrix space |
| *LBSPS*  (MN718197) | 3612 | 1060 | Glycos\_transf\_1 (464-649)  S6PP (767-1022)  Sucrose\_synth  (161-439) | C5239H8372N1486O1604S43 | 119.22 | 6.19 | 45.80 | 85.92 | -0.460 | 40.28 | 44.91 | 14.81 | Nucleus |
| *LBNI*  (MN718198) | 3842 | 331 | Glyco\_hydro\_100 (93-286) | C1652H2554N440O485S28 | 37.24 | 5.22 | 56.40 | 80.76 | -0.029 | 46.83 | 46.53 | 6.65 | Cytoplasm |

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| --- | --- | --- | --- |
| **Supplementary Table 2** List of primer sequences | | | |
| Gene name | Primer name | Primer sequence（5’-3’）RACE | Use of primers |
| *LBNI* | F | TTGGAGAGGACACGCTCGAGATGTCTACACCCTCTATG | Target gene amplification |
| R | CCCTTGCTCACCATGAATTCAAATGAATTTGATCTTTTC |
| *LBSPS* | F | TTGGAGAGGACACGCTCGAGATGGCTGGTAATGAATGGA |
| R | CCCTTGCTCACCATGAATTCTGTGCCTAATCTAGACACT |
| *LBSS* | F | TTGGAGAGGACACGCTCGAGATGGCTGAACGTGTACTGA |
| R | CCCTTGCTCACCATGAATTCCTCAACAGCCAATGGGACA |
| *LBAI* | F | TTGGAGAGGACACGCTCGAGATGGCTACCCACCATTCCAG |
| R | CCCTTGCTCACCATGAATTCCAAATTTTCCAAGGGGAAG |
| Primer 4 |  | GGTAGCGGCTGAAGCACTG |
| PF |  | AGAAGACGTTCCAACCACG |
| *LBAI* | F | CTAGTCCCTGTGGCATTGTT | qRT-PCR |
| R | GTCAAGGAGGAAGAACAGTCAT |
| *LBSS* | F | GTAAGACCGAAAGCCTCGTAAA |
| R | AGATGAACCGTGTGAGGAATG |
| *LBSPS* | F | TGTTCCTCTGCTTGCATCTC |
| R | CGTAATCCGTGTCTCCAGTTT |
| *LBNI* | F | GTCTTCCTCAAGTGCAACCA |
| R | GGGAAGCAAGCTCGGAAATA |