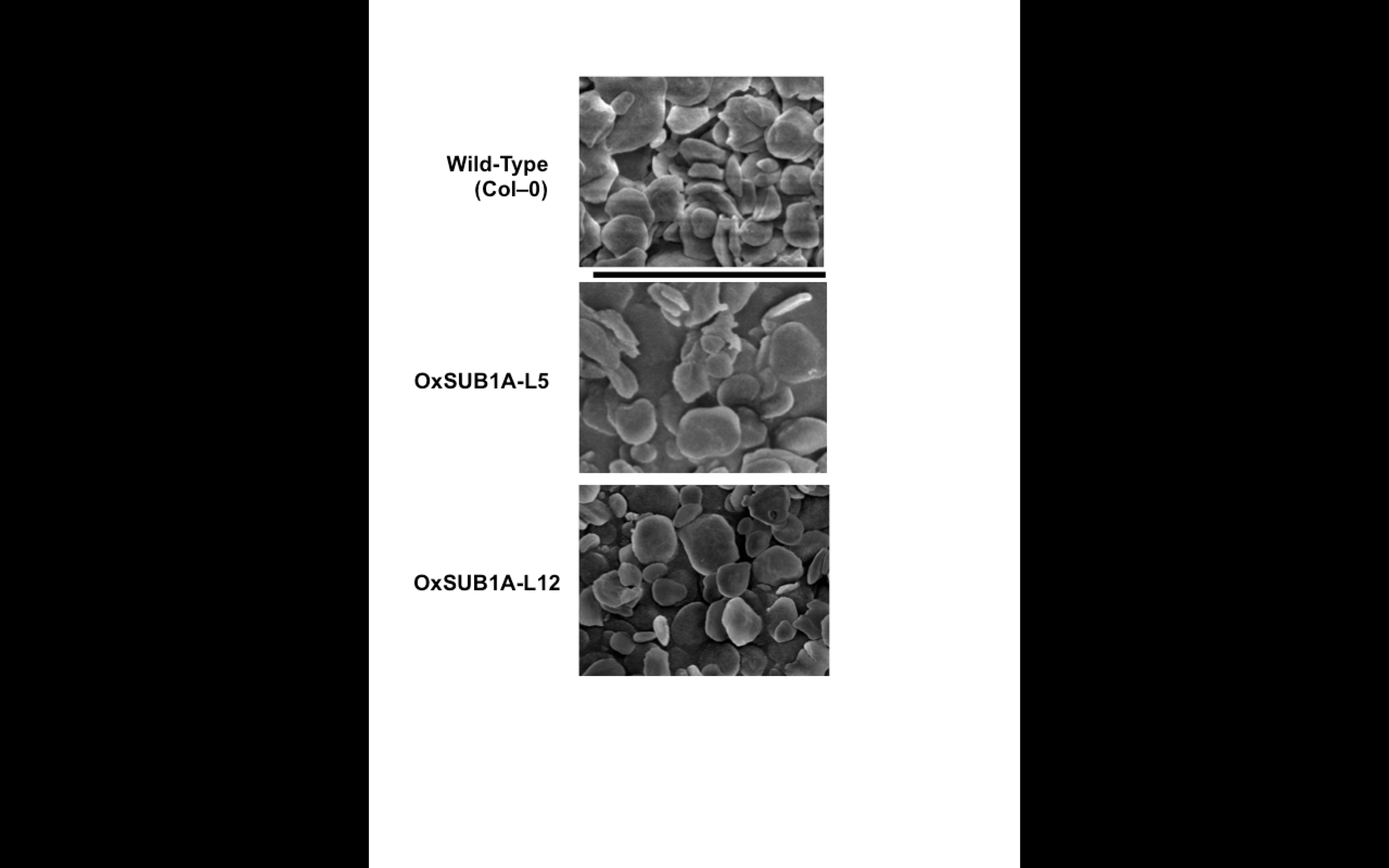
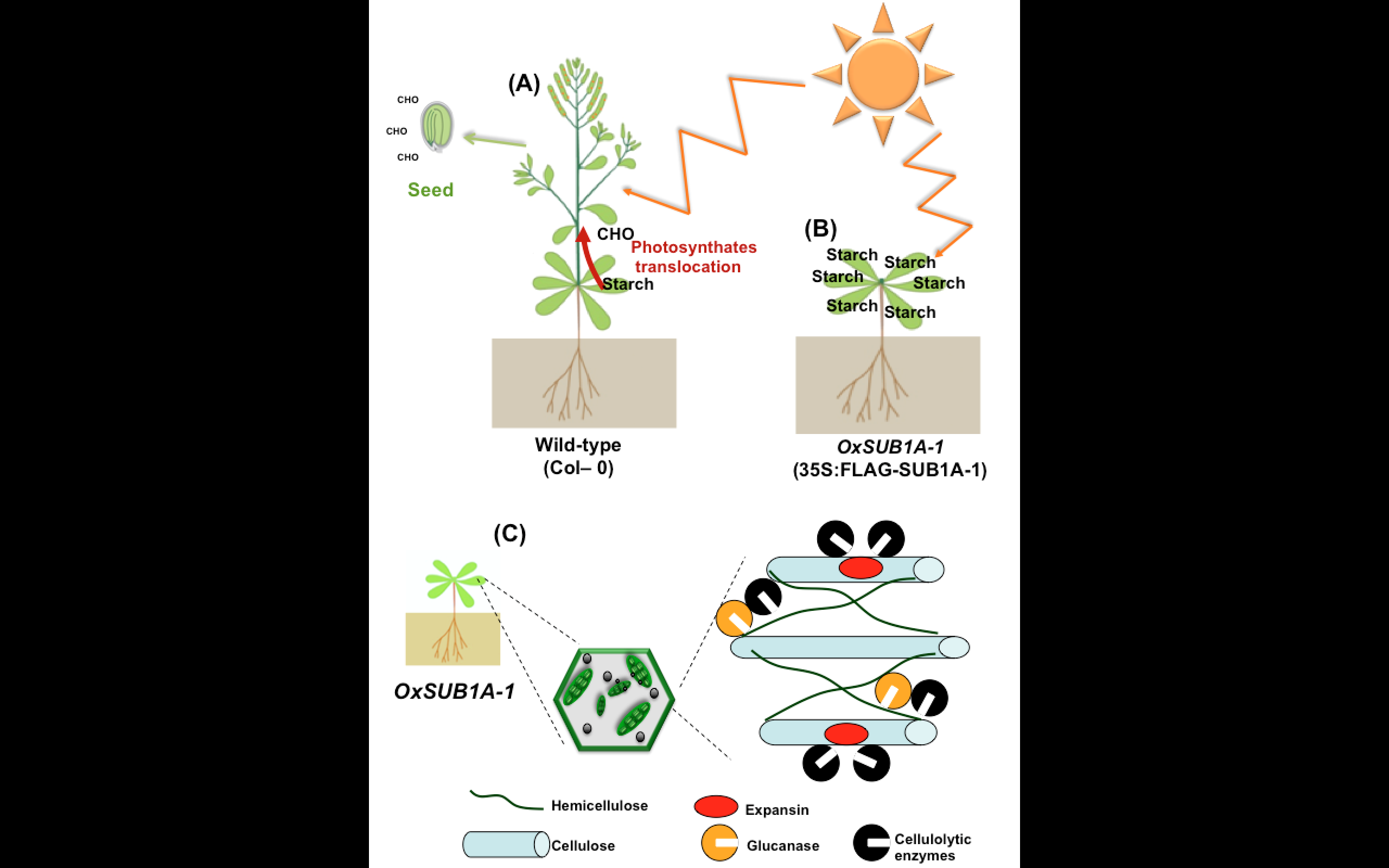


**Supplemental Figure 1**. Glucose yield of *OxSUB1A*-L5 and Col-0 determined in an Accellerase-only digestion assay over 36 hours. Glucose content was measured with glucose oxidase. 22-day-old plants. Values are means of two independent experimental replicates, each with n=3 plants. Error bars are ±S.E.

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**Supplemental Figure 2**. Scanning electron microscope images of starch granules isolated by centrifugation from rosette leaves of 21-day-old Col-0. Black bar is 10μm.



**Supplemental Figure 3. Proposed model for improved saccharification phenotype of *OxSUB1A-1 Arabidopsis*.** (A) *Arabidopsis* plants growing under normal conditions transit from juvenile to reproductive stage using the carbohydrates generated in photosynthesis as an energy resource for development of inflorescences and seeds. (B) *OxSUB1A* plants display flowering inhibition and starch conservation two characteristics of the rice LOQS response. The constitutive expression of these phenotypes under normal growth conditions leads to an improvement in amylolytic saccharification. (C) *SUB1A-1* induces a set of cell wall associated proteins including expansin (*AtEXP2*) and glucan-1,3,-glucanase (*BGL2*) that act to weaken cell wall microfibrils and ease of access of external cellulolytic enzymes used for digestion of cellulose in biofuel production as compared to Col-0. CHO: soluble carbohydrates.

**Supplemental Table S1.** Polyphasic fluorescence rise (OJIP kinetics) of Col-0 and *Arabidopsis* 23-day-old plants ectopically expressing rice *SUB1A-1* and *SUB1C-1* genes. Values are means of two independent experimental replicates, each with n=5 plants. Error bars are ±S.D.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Genotype** | **Fv/Fm** | **Fm** | **Fo** | **Fv/Fo** |
| Col-0 | 0.7921 ±0.0032 | 800.3 ±13.7 | 165.7 ±2.2 | 3.8315 ±0.07 |
| *OxSUB1A*-L5 | 0.8067 ±0.0026 | 771.8 ±19.7 | 148.8 ±4.0 | 4.1941 ±0.07 |
| *OxSUB1A*-L12 | 0.7865 ±0.0044 | 825.6 ±20.4 | 175.3 ±2.7 | 3.7087 ±0.08 |
| *OxSUB1C*-L6 | 0.7976 ±0.0023 | 894.8 ±24.2 | 180.6 ±3.9 | 3.9530 ±0.05 |
| *OxSUB1C*-L10 | 0.7840 ±0.0046 | 772.4 ±25.2 | 167.8 ±6.4 | 3.7232 ±0.09 |