**S1 Table. *S. cerevisiae* strains and their genotypes used in this study.**

|  |  |  |
| --- | --- | --- |
| **Genotype** | **Strain names** | **Reference** |
| NRRL YB-210 MATa spore with *HO::ScTAL1-CpxylA-SsXYL3-loxP-kanMX-loxP* | GLBRCY22-3 | [10] |
| GLBRCY22-3 MATa, evolved isolate on xylose aerobically | GLBRCY127 | [10] |
| GLBRCY127 MATa, evolved isolate on xylose anaerobically | GLBRCY128 | [10] |
| GLBRCY22-3 with *HO::ScTAL1-CpxylA-SsXYL3-loxP* | GLBRCY22-3MR (GLBRCY36) | [10] |
| GLBRCY127 with *HO::ScTAL1-CpxylA-SsXYL3-loxP* | GLBRCY127MR(GLBRCY132) | [10] |
| GLBRCY128 with *HO::ScTAL1-CpxylA-SsXYL3-loxP* | GLBRCY128MR(GLBRCY133) | [10] |
| GLBRCY127 MAT | GLBRCY156 | This study |
| GLBRCY22-3MR with *hog1::kanMX4* | GLBRCY310 | This study |
| GLBRCY22-3MR with *isu1loxP* | GLBRCY235 | This study |
| GLBRCY22-3MR with *isu1loxP,* *hog1::kanMX4* | GLBRCY263 | This study |
| GLBRCY22-3MR with *gre3::LoxP, ira2::LoxP* | GLBRCY212 | This study |
| GLBRCY22-3MR with *isu1loxP,* *hog1::kanMX4, gre3::LoxP, ira2::LoxP* | GLBRCY286 | This study |
| GLBRCY22-3MR with *gsh1::LoxP-hphMX-LoxP* | GLBRCY227 | This study |
| GLBRCY22-3MR with *hog1::kanMX4, gsh1::LoxP-hphMX-LoxP* | GLBRCY289 | This study |
| GLBRCY22-3MR with *isu1::LoxP, gsh1::LoxP-hphMX-LoxP* | GLBRCY228 | This study |
| GLBRCY22-3MR with *isu1::LoxP, hog1::kanMX4, gsh1::LoxP-hphMX-LoxP,* | GLBRCY292 | This study |
| GLBRCY22-3MR with *isu2::LoxP-bleMX-LoxP* | GLBRCY449 | This study |
| GLBRCY22-3MR with *hog1::kanMX4, isu2::LoxP-bleMX-LoxP* | GLBRCY453 | This study |
| GLBRCY127MR with *gre3::LoxP, ira2::LoxP* | GLBRCY182 | This study |
| GLBRCY127MR with *gre3::LoxP, ira2::LoxP, sap190::LoxP-kanMX-LoxP* | GLBRCY258 | This study |
| GLBRCY128MR with *gre3::LoxP, ira2::LoxP* | GLBRCY163 | This study |
| GLBRCY128MR with *gre3::LoxP, ira2::LoxP, sap190::LoxP-kanMX-LoxP* | GLBRCY259 | This study |
| GLBRCY127MR with *gre3::LoxP-kanMX-LoxP* | GLBRCY146 | [10] |
| GLBRCY127MR with *gre3::LoxP, ira1::LoxP-hphMX-LoxP* | GLBRCY204 | This study |
| GLBRCY36 with *isu1::loxP, hog1::kanMX4, gre3loxP* | GLBRCY312 | This study |
| GLBRCY36 with *isu1loxP, hog1::kanMX4, ira2::loxP-HygMX-loxP* | GLBRCY283 | This study |
| GLBRCY22-3MR with *isu1::LoxP, ira2::LoxP-hphMX-LoxP* | GLBRCY242 | This study |
| GLBRCY22-3MR with *hog1::kanMX4, gre3::LoxP, ira2::LoxP* | GLBRCY280 | This study |
| GLBRCY22-3MR with *isu1::LoxP, gre3::LoxP, ira2::LoxP* | GLBRCY243 | This study |
| BY4741 with *HO::ScTAL1-CpxylA-SsXYL3-loxP* | GLBRCY174 | This study |
| CEN.PK113-5D with *HO::ScTAL1-CpxylA-SsXYL3-loxP* | GLBRCY176 | This study |
| GLBRCY174 with *isu1loxP, hog1::kanMX4, gre3loxP, ira2loxP* | GLBRCY276 | This study |
| GLBRCY176 with *isu1loxP, hog1::kanMX, gre3loxP, ira2loxP* | GLBRCY278 | This study |