

Table S1. Analysis of amino acid sequence characteristics of *MaRab* gene family in *M. albus*.

| Gene name | Gene ID | Localization* | Protein length (aa) | Molecular weight | Theoretical pI | Grand average of hydropathicity (GRAVY) |
|-----------|-----------------|---------------------------|---------------------|------------------|----------------|---|
| MaRab1 | Malbus0100901.1 | Cytoplasmic | 223 | 24605 | 6.84 | -0.242 |
| MaRab2 | Malbus0101242.1 | Cytoplasmic | 223 | 24909.11 | 5.38 | -0.376 |
| MaRab3 | Malbus0102734.1 | Extracellular | 216 | 23899.97 | 6.61 | -0.368 |
| MaRab4 | Malbus0102808.1 | Cytoplasmic/Chloroplast | 205 | 22256.22 | 5.24 | -0.145 |
| MaRab5 | Malbus0103131.1 | Extracellular/Chloroplast | 211 | 23379.67 | 5.46 | -0.246 |
| MaRab6 | Malbus0103708.1 | Cytoplasmic/Mitochondrial | 221 | 24570.04 | 6.17 | -0.201 |
| MaRab7 | Malbus0105099.1 | Cytoplasmic/Nuclear | 211 | 23729.08 | 6.41 | -0.316 |
| MaRab8 | Malbus0203104.1 | Chloroplast | 200 | 21884.84 | 6.75 | -0.219 |
| MaRab9 | Malbus0203653.1 | Cytoplasmic/Nuclear | 219 | 24360.22 | 5.12 | -0.342 |
| MaRab10 | Malbus0301562.1 | Cytoplasmic/Chloroplast | 215 | 23954.84 | 4.85 | -0.319 |
| MaRab11 | Malbus0400281.1 | Cytoplasmic | 207 | 23249.31 | 5.4 | -0.379 |
| MaRab12 | Malbus0400908.1 | Cytoplasmic/Chloroplast | 218 | 24082.11 | 5.72 | -0.234 |
| MaRab13 | Malbus0401587.1 | Cytoplasmic | 217 | 24005.03 | 5.87 | -0.273 |
| MaRab14 | Malbus0403058.1 | Cytoplasmic/Mitochondrial | 210 | 22961.06 | 6.52 | -0.179 |
| MaRab15 | Malbus0404520.1 | Cytoplasmic | 217 | 24184.22 | 5.34 | -0.271 |
| MaRab16 | Malbus0500112.1 | Cytoplasmic/Golgi | 203 | 22477.33 | 5.11 | -0.292 |

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|---------|-----------------|---------------------------|-----|----------|------|--------|
| MaRab17 | Malbus0501082.1 | Cytoplasmic | 235 | 25872.39 | 5.17 | -0.206 |
| MaRab18 | Malbus0503821.1 | Golgi | 202 | 22430.32 | 5.53 | -0.331 |
| MaRab19 | Malbus0601485.1 | Chloroplast | 207 | 23034.29 | 7.67 | -0.166 |
| MaRab20 | Malbus0603614.1 | Cytoplasmic | 216 | 24511.98 | 5.24 | -0.325 |
| MaRab21 | Malbus0604274.1 | Cytoplasmic/Mitochondrial | 211 | 23254.35 | 6.9 | -0.263 |
| MaRab22 | Malbus0700190.1 | Cytoplasmic | 207 | 23281.36 | 5.61 | -0.386 |
| MaRab23 | Malbus0702319.1 | Cytoplasmic/Mitochondrial | 215 | 23698.69 | 6.22 | -0.279 |
| MaRab24 | Malbus0702537.1 | Cytoplasmic/Chloroplast | 206 | 23071.9 | 5 | -0.441 |
| MaRab25 | Malbus0703028.1 | Cytoplasmic | 217 | 24199.27 | 5.63 | -0.249 |
| MaRab26 | Malbus0704571.1 | Cytoplasmic/Chloroplast | 207 | 23191.46 | 6.39 | -0.248 |
| MaRab27 | Malbus0603614.1 | Cytoplasmic | 206 | 23236.44 | 6.16 | -0.358 |

* Subcellular localization after the slash is predicted as the second most likely location.