

Over-representation of gene ontology classes in the gene-rich regions based on Fisher exact tests.

| Gene ontology ID | Gene ontology term                      | p-value | Number of genes in GRRs <sup>(2)</sup> | Number of genes on the overall dataset | Number of genes not annotated in GRRs <sup>(2)</sup> | Number of genes not annotated in the overall dataset | Over/under-represented term |
|------------------|-----------------------------------------|---------|----------------------------------------|----------------------------------------|------------------------------------------------------|------------------------------------------------------|-----------------------------|
| GO:0048856       | anatomical structure development        | 0.007   | 15                                     | 68                                     | 124                                                  | 1298                                                 | over                        |
| GO:0016049       | cell growth                             | 0.008   | 8                                      | 25                                     | 131                                                  | 1341                                                 | over                        |
| GO:0090066       | regulation of anatomical structure size | 0.008   | 8                                      | 25                                     | 131                                                  | 1341                                                 | over                        |
| GO:0032535       | regulation of cellular component size   | 0.008   | 8                                      | 25                                     | 131                                                  | 1341                                                 | over                        |
| GO:0008361       | regulation of cell size                 | 0.008   | 8                                      | 25                                     | 131                                                  | 1341                                                 | over                        |
| GO:0009908       | flower development                      | 0.010   | 8                                      | 26                                     | 131                                                  | 1340                                                 | over                        |
| GO:0003006       | reproductive developmental process      | 0.012   | 8                                      | 27                                     | 131                                                  | 1339                                                 | over                        |
| GO:0048608       | reproductive structure development      | 0.012   | 8                                      | 27                                     | 131                                                  | 1339                                                 | over                        |
| GO:0005737       | cytoplasm                               | 0.013   | 77                                     | 617                                    | 62                                                   | 749                                                  | over                        |
| GO:0040007       | growth                                  | 0.019   | 9                                      | 36                                     | 130                                                  | 1330                                                 | over                        |
| GO:0022414       | reproductive process                    | 0.030   | 8                                      | 33                                     | 131                                                  | 1333                                                 | over                        |
| GO:0005975       | carbohydrate metabolic process          | 0.031   | 22                                     | 138                                    | 117                                                  | 1228                                                 | over                        |
| GO:0065008       | regulation of biological quality        | 0.031   | 9                                      | 40                                     | 130                                                  | 1326                                                 | over                        |
| GO:0005622       | intracellular                           | 0.035   | 94                                     | 811                                    | 45                                                   | 555                                                  | over                        |
| GO:0005773       | vacuole                                 | 0.035   | 11                                     | 55                                     | 128                                                  | 1311                                                 | over                        |
| GO:0044424       | intracellular part                      | 0.040   | 90                                     | 774                                    | 49                                                   | 592                                                  | over                        |
| GO:0032502       | developmental process                   | 0.048   | 21                                     | 137                                    | 118                                                  | 1229                                                 | over                        |
| GO:0009653       | anatomical structure morphogenesis      | 0.048   | 10                                     | 51                                     | 129                                                  | 1315                                                 | over                        |

<sup>(1)</sup> GRR: Gene-Rich Region