Supplementary Material of GO-Bayes: Gene Ontology-based over-representation analysis using a Bayesian approach

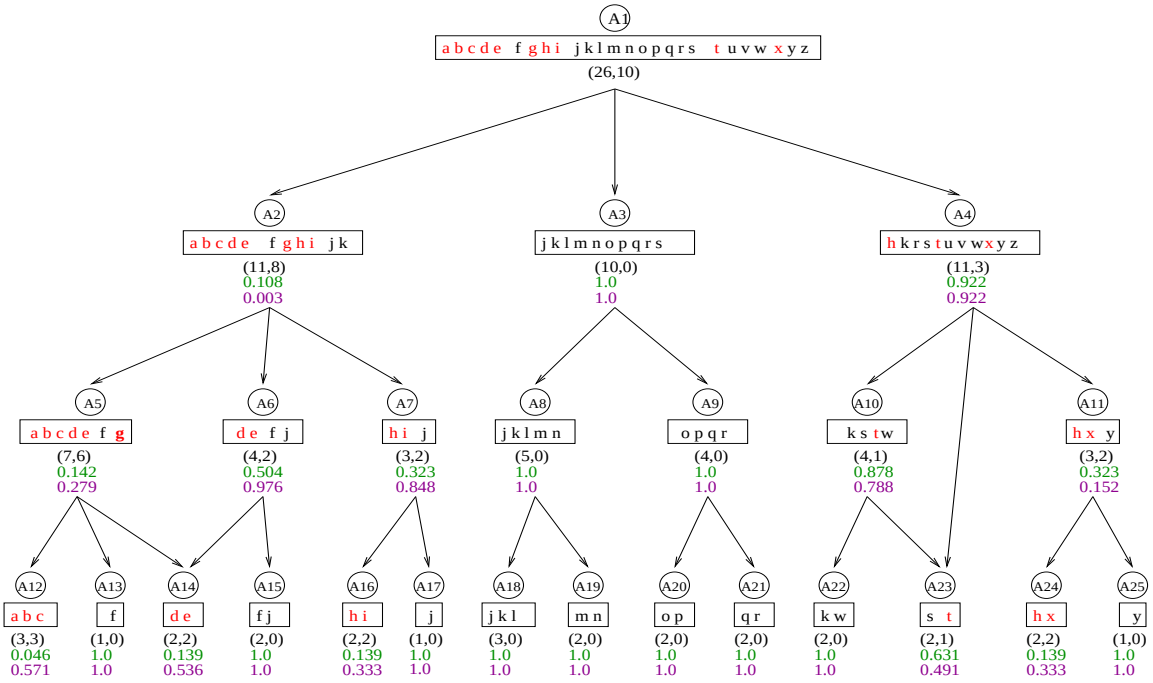

Figure 3: Comparison of the *elim* P-value (Alexa *et al.*, 2006) and the parent-child (union) P-value (Grossmann *et al.*, 2007) with the artificial DAG. For illustrative purpose, we set the P-value cut off at 0.05 for the *elim* method. Thus A_{12} is considered significantly over-represented and genes (a, b, c) are removed from its ancestor terms A_5 and A_2. The Bonferroni adjustment was not conducted because we are interested in the ranks of the terms. The *elim* P-values are listed in green and the parent-child P-values are listed in purple.

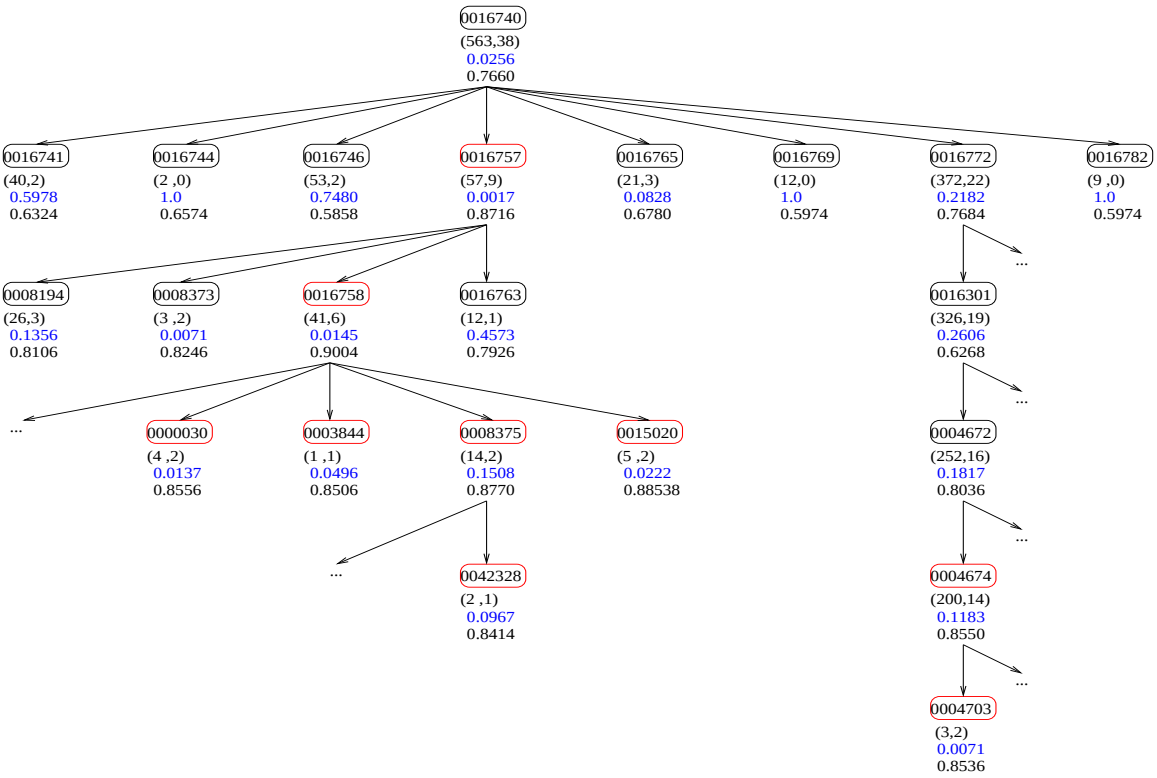

Figure 4: The regional DAG of GO:0016758. The rectangles in the DAG denote the GO terms in the neighborhood of GO:0016578. The rectangles in red denote the GO terms that are ranked top 20 by the GO-Bayes approach. In the DAG, (I_A, n_A) are listed under each rectangle. The hypergeometric P-values are listed in blue, the B-scores are listed in black underneath the P-values. The names of the GO terms are listed in Table 2.

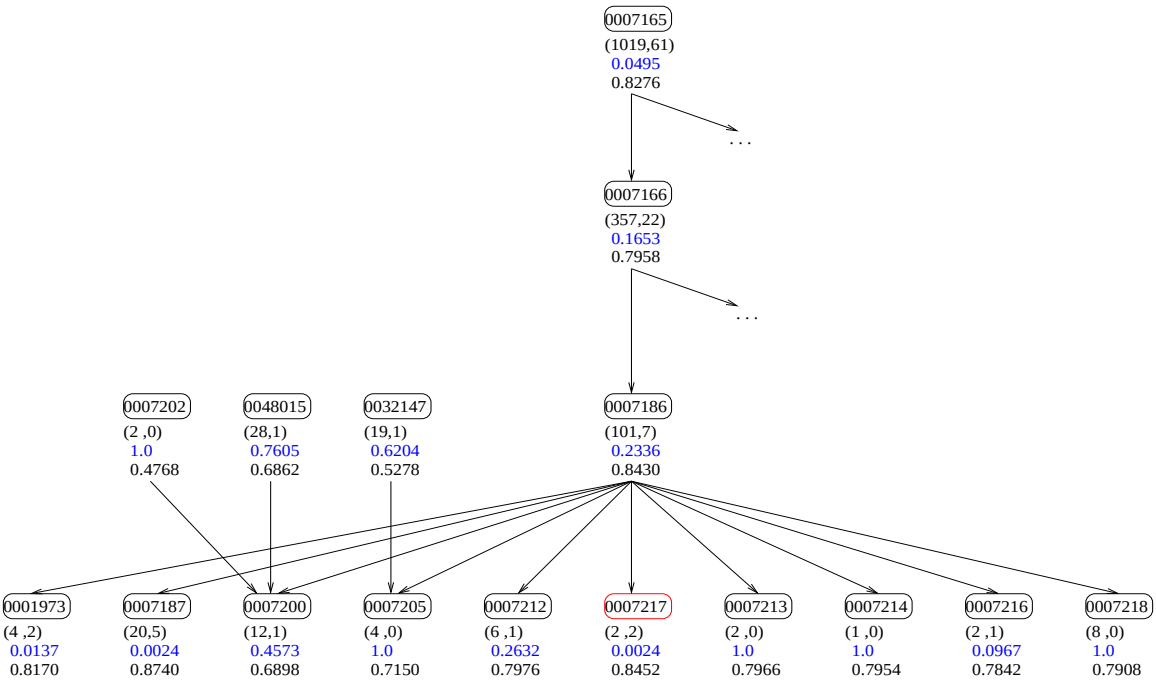

Figure 5: The regional DAG of GO:0007217. The rectangles in the DAG denote the GO terms in the neighborhood of GO:0007217, and (I_A, n_A) are listed under each rectangle. The hypergeometric P-values are listed in blue, the B-scores are listed in black underneath the P-values. The names of the GO terms are listed in Table 2.

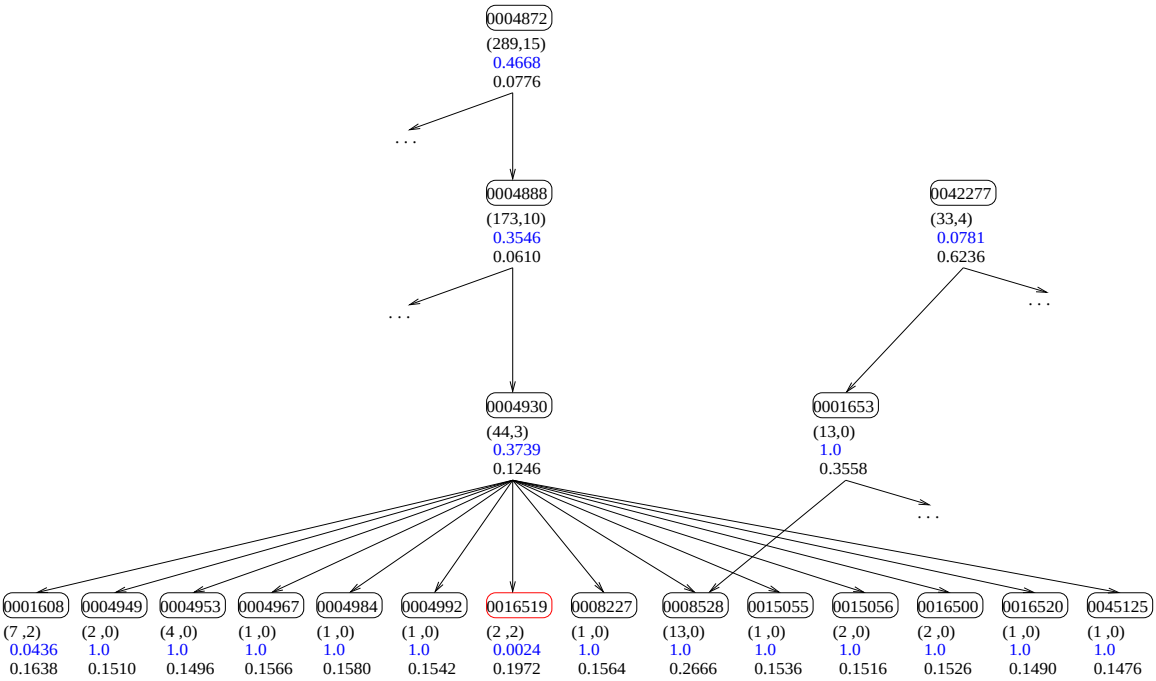

Figure 6: The regional DAG of GO:0016519. The rectangles in the DAG denote the GO terms in the neighborhood of GO:0016519, and (I_A, n_A) are listed under each rectangle. The hypergeometric P-values are listed in blue, the B-scores are listed in black underneath the P-values. The names of the GO terms are listed in Table 2.

Table 2: The names of GO terms in Figure 1-3.

GO ID	GO name
GO:0000030	mannosyltransferase activity
GO:0001608	nucleotide receptor activity, G-protein coupled
GO:0001653	peptide receptor activity
GO:0001973	adenosine receptor signaling pathway
GO:0003844	1,4-alpha-glucan branching enzyme activity
GO:0004872	receptor activity
GO:0004888	transmembrane receptor activity
GO:0004930	G-protein coupled receptor activity
GO:0004949	cannabinoid receptor activity
GO:0004953	icosanoid receptor activity
GO:0004967	glucagon receptor activity
GO:0004984	olfactory receptor activity
GO:0004992	platelet activating factor receptor activity
GO:0007165	signal transduction
GO:0007166	cell surface receptor linked signal transduction
GO:0007186	G-protein coupled receptor protein signaling pathway
GO:0007187	G-protein signaling, coupled to cyclic nucleotide second messenger
GO:0007200	G-protein signaling, coupled to IP3 second messenger (phospholipase C activating)
GO:0007202	activation of phospholipase C activity
GO:0007205	activation of protein kinase C activity
GO:0007212	dopamine receptor signaling pathway
GO:0007213	acetylcholine receptor signaling, muscarinic pathway
GO:0007214	gamma-aminobutyric acid signaling pathway
GO:0007216	metabotropic glutamate receptor signaling pathway
GO:0007217	tachykinin signaling pathway
GO:0007218	neuropeptide signaling pathway
GO:0008194	UDP-glycosyltransferase activity
GO:0008227	amine receptor activity
GO:0008373	sialyltransferase activity
GO:0008375	acetylglucosaminyltransferase activity
GO:0008528	peptide receptor activity, G-protein coupled
GO:0015020	glucuronosyltransferase activity
GO:0015055	secretin receptor activity
GO:0015056	corticotrophin-releasing factor receptor activity
GO:0016500	protein-hormone receptor activity
GO:0016519	gastric inhibitory peptide receptor activity
GO:0016520	growth hormone-releasing hormone receptor activity
GO:0016740	transferase activity
GO:0016741	transferase activity, transferring one-carbon groups
GO:0016744	transferase activity, transferring aldehyde or ketonic groups
GO:0016746	transferase activity, transferring acyl groups
GO:0016757	transferase activity, transferring glycosyl groups
GO:0016758	transferase activity, transferring hexosyl groups
GO:0016763	transferase activity, transferring pentosyl groups
GO:0016765	transferase activity, transferring alkyl or aryl (other than methyl) groups
GO:0016769	transferase activity, transferring nitrogenous groups
GO:0016772	transferase activity, transferring phosphorus-containing groups
GO:0016782	transferase activity, transferring sulfur-containing groups
GO:0032147	activation of protein kinase activity
GO:0042277	peptide binding
GO:0042328	heparan sulfate N-acetylglucosaminyltransferase activity
GO:0045125	bioactive lipid receptor activity
GO:0048015	phosphoinositide-mediated signaling