

**Supplemental Table 6.** Enriched or depleted KEGG Categories or Subcategories in a given module relative to at least two of four remaining modules. Fisher's exact test was used to confirm significance of KEGG categories/subcategories in enriched transcripts relative to their proportion in the overall annotated dataset.

ModuleID	KEGG_Category	PVal	Ratio	PercentaginModule	PercentaginGenome	ModuleID	KEGG_Category	PVal	Ratio	PercentaginModule	PercentaginGenome
Xylose_Enriched	Metabolism of other amino acids and amines	0.049618502	2.29712101	0.0263157789	0.011455987	NAG_Depleted	Translation	2.48E-43	2.241033	0.220482714	0.098384412
Xylose_Enriched	Translation	0.004322146	1.55235235	0.152727273	0.098384412	NAG_Depleted	Transcription	5.67E-17	2.51269533	0.071102414	0.028297268
Xylose_Enriched	Energy metabolism	0.001112451	1.86874447	0.190090909	0.058376579	NAG_Depleted	Energy metabolism	0.00093487	1.36326108	0.079582518	0.058376579
GlucGent_Enriched	Translation	4.73E-39	2.10831028	0.207424867	0.098384412	Xylose_Depleted	Translation	3.67E-31	2.00845852	0.19760101	0.098384412
GlucGent_Enriched	Transcription	9.91E-21	2.62388135	0.074248674	0.028297268	Xylose_Depleted	Transcription	4.74E-16	2.43179415	0.068813131	0.028297268
GlucGent_Enriched	Energy metabolism	0.010154582	1.26179712	0.073659399	0.058376579	Xylose_Depleted	Energy metabolism	0.00283313	1.3193682	0.077020202	0.058376579
Xylan_Enriched	Translation	1.12E-21	1.93327457	0.190240482	0.098384412	GlucGent_Depleted	Cell motility and adherence	0.03874838	1.91328729	0.037617555	0.019661216
Xylan_Enriched	Transcription	2.43E-07	1.99052892	0.056326531	0.028297268	GlucGent_Depleted	Regulatory functions	0.00040184	2.28831978	0.068965517	0.030138059
Xylan_Enriched	Energy metabolism	0.000353709	1.44033162	0.084081633	0.058376579	Xylan_Depleted	Translation	1.19E-32	2.422258	0.238312429	0.098384412
Pectin_Enriched	Translation	5.34E-51	2.49965488	0.245927075	0.098384412	Xylan_Depleted	Transcription	6.91E-16	2.98186251	0.084378563	0.028297268
Pectin_Enriched	Transcription	4.75E-16	2.60451089	0.073700543	0.028297268	Pectin_Depleted	Transcription	0.00357354	2.39275159	0.067708333	0.028297268
Pectin_Enriched	Energy metabolism	0.005725169	1.32894939	0.077579519	0.058376579	Pectin_Depleted	Intracellular trafficking, assembly, and processing	0.04629487	1.4601039	0.135416667	0.092744541
ModuleID	KEGG_Subcategory	PVal	Ratio	PercentaginModule	PercentaginGenome	ModuleID	KEGG_Subcategory	PVal	Ratio	PercentaginModule	PercentaginGenome
NAG_Enriched	Ribosomal proteins: synthesis and modification	0.012865889	1.84336871	0.078947368	0.042827769	NAG_Depleted	Translation factors	6.91E-28	4.15816311	0.060013046	0.014432586
NAG_Enriched	Cell division	0.024403816	2.7368957	0.026315789	0.009615196	NAG_Depleted	Ribosomal proteins: synthesis and modification	1.61E-37	2.9243788	0.125244618	0.042827769
NAG_Enriched	Benzoate degradation	0.019706164	5.37526316	0.013157895	0.002447861	NAG_Depleted	Chaperone and folding catalysis	3.92E-06	1.76731342	0.051532942	0.029158915
NAG_Enriched	Phosphotransferase system (PTS)	0.023511989	5.01423802	0.013157895	0.002624107	NAG_Depleted	RNA polymerase	3.98E-29	4.94166792	0.052837573	0.010692255
NAG_Enriched	Phosphonate and phosphate metabolism	0.004287639	9.59868421	0.013157895	0.001370802	NAG_Depleted	Pyrimidine metabolism	0.03711138	1.43189942	0.024787997	0.01731127
Xylose_Enriched	Ribosomal proteins: synthesis and modification	3.63E-06	2.5472004	0.190909099	0.042827769	NAG_Depleted	Oxidative phosphorylation	7.07E-07	1.77226372	0.057403783	0.032390091
Xylose_Enriched	Chaperone and folding catalysis	0.000831665	2.3694609	0.069090909	0.029158915	NAG_Depleted	Citrate cycle (TCA cycle)	0.0020732	1.60532541	0.031311155	0.019504553
Xylose_Enriched	Pentose and glucuronate interconversions	0.01169392	3.77420547	0.018181818	0.00481739	NAG_Depleted	Carbohydrates, organic alcohols, and acids	8.64E-05	1.70005753	0.041748206	0.024556937
Xylose_Enriched	Carbohydrates, organic alcohols, and acids	0.000567951	2.51734087	0.061818182	0.024556937	NAG_Depleted	Glycolysis / Gluconeogenesis	1.91E-05	2.06186053	0.029354207	0.014236757
Xylose_Enriched	Benzoate degradation	0.031804516	4.6558182	0.010909091	0.002447861	NAG_Depleted	Alanine, aspartate and glutamate metabolism	0.00062709	1.85058346	0.024135682	0.013042201
Xylose_Enriched	Sulfur metabolism	0.026530316	3.62323725	0.014545455	0.004014491	NAG_Depleted	Nitrogen metabolism	0.01908593	1.735783	0.01369863	0.007891902
Xylose_Enriched	Electron transport	0.027657076	3.00470727	0.018181818	0.006051111	NAG_Depleted	Sporulation and germination	0.00334316	3.88622527	0.00456621	0.001174973
Xylose_Enriched	One carbon pool by folate	0.049006924	5.80284091	0.007272727	0.001253305	Xylose_Depleted	Translation factors	1.45E-24	3.84931404	0.055555556	0.014432586
GlucGent_Enriched	Translation factors	5.99E-26	3.83797251	0.055931868	0.014432586	Xylose_Depleted	Ribosomal proteins: synthesis and modification	4.07E-27	2.95014855	0.109217172	0.042827769
GlucGent_Enriched	Ribosomal proteins: synthesis and modification	9.15E-36	2.76559619	0.18444313	0.042827769	Xylose_Depleted	Chaperone and folding catalysis	3.20E-05	1.66710973	0.048611111	0.029158915
GlucGent_Enriched	Chaperone and folding catalysis	4.18E-06	1.7177728	0.050088391	0.029158915	Xylose_Depleted	RNA polymerase	1.58E-22	4.25116555	0.054545454	0.010692255
GlucGent_Enriched	RNA polymerase	1.93E-31	4.90499826	0.052445492	0.010692255	Xylose_Depleted	Pyrimidine metabolism	0.02470083	1.45873326	0.025252525	0.01731127
GlucGent_Enriched	Pyrimidine metabolism	0.008223088	1.53179886	0.026517384	0.01731127	Xylose_Depleted	Oxidative phosphorylation	1.61E-05	1.6567294	0.053661616	0.032390091
GlucGent_Enriched	Oxidative phosphorylation	3.23E-06	1.6919555	0.054802593	0.032390091	Xylose_Depleted	Carbohydrates, organic alcohols, and acids	0.00402441	1.491072	0.036616162	0.024556937
GlucGent_Enriched	Citrate cycle (TCA cycle)	6.19E-05	1.782519	0.034767236	0.019504553	Xylose_Depleted	Glycolysis / Gluconeogenesis	1.62E-05	2.03981875	0.029040404	0.014236757
GlucGent_Enriched	Carbohydrates, organic alcohols, and acids	0.017050829	1.39178436	0.034177961	0.024556937	Xylose_Depleted	Alanine, aspartate and glutamate metabolism	0.003634	1.69418945	0.02209596	0.013042201
GlucGent_Enriched	Glycolysis / Gluconeogenesis	4.69E-06	2.06955555	0.02946376	0.014236757	Xylose_Depleted	Nitrogen metabolism	0.03028792	1.67989604	0.013257576	0.007891902
GlucGent_Enriched	Alanine, aspartate and glutamate metabolism	0.001155353	1.76210536	0.022981732	0.013042201	Xylose_Depleted	Sporulation and germination	0.00022072	4.83570076	0.005681818	0.001174973
GlucGent_Enriched	Sporulation and germination	1.61E-05	5.1674524	0.006482027	0.001174973	GlucGent_Depleted	Amino acids, peptides and amines	0.01504968	1.9601433	0.047021944	0.023989034
GlucGent_Enriched	Invasion response	0.020779427	4.15052933	0.002357101	0.000567904	GlucGent_Depleted	Terpenoid backbone biosynthesis	0.01564237	3.04911181	0.018808777	0.006168609
Xylan_Enriched	Amino acids, peptides and amines	0.002512013	1.59937026	0.038367347	0.023989034	GlucGent_Depleted	Surface structures and assembly platforms	0.04845745	2.14664481	0.021943574	0.010222266
Xylan_Enriched	Translation factors	7.63E-18	3.76487469	0.053061224	0.014432586	GlucGent_Depleted	Cell division	0.03707139	2.28217635	0.021943574	0.009615196
Xylan_Enriched	Ribosomal proteins: synthesis and modification	1.39E-19	2.45882814	0.105306122	0.042827769	GlucGent_Depleted	Protein interactions	0.00917695	2.79612873	0.02507837	0.008968961
Xylan_Enriched	Chaperone and folding catalysis	3.64E-05	1.76373405	0.051428571	0.029158915	GlucGent_Depleted	Peptidoglycan metabolism	0.01011004	2.41081882	0.03147962	0.013003035
Xylan_Enriched	RNA polymerase	4.86E-14	3.74102564	0.04	0.010692255	Xylan_Depleted	Translation factors	7.23E-18	4.26628648	0.061573546	0.014432586
Xylan_Enriched	Oxidative phosphorylation	3.19E-06	1.81461392	0.05877551	0.032390091	Xylan_Depleted	Ribosomal proteins: synthesis and modification	1.08E-31	3.38126089	0.144811859	0.042827769
Xylan_Enriched	Citrate cycle (TCA cycle)	0.028666492	1.46485944	0.028571429	0.019504553	Xylan_Depleted	Chaperone and folding catalysis	0.00236254	1.64239773	0.047890536	0.029158915
Xylan_Enriched	Carbohydrates, organic alcohols, and acids	0.000780752	1.66210982	0.040816327	0.024556937	Xylan_Depleted	RNA polymerase	1.50E-22	5.65206268	0.060433295	0.010692255
Xylan_Enriched	Glycolysis / Gluconeogenesis	0.005198951	1.72018078	0.024489796	0.014236757	Xylan_Depleted	Oxidative phosphorylation	0.01600135	1.47855515	0.047890536	0.032390091
Xylan_Enriched	Alanine, aspartate and glutamate metabolism	0.003284254	1.81514372	0.023673469	0.013042201	Xylan_Depleted	Citrate cycle (TCA cycle)	0.0368599	1.51997958	0.029646522	0.019504553
Xylan_Enriched	Sporulation and germination	0.00018892	5.55809524	0.006530612	0.001174973	Xylan_Depleted	Carbohydrates, organic alcohols, and acids	0.04771146	1.43942122	0.035347777	0.024556937
Xylan_Enriched	Ascorbate and aldarate metabolism	0.033050503	2.93561368	0.004081633	0.001390385	Xylan_Depleted	Glycolysis / Gluconeogenesis	2.17E-05	2.40276107	0.034207526	0.014236757
Pectin_Enriched	Translation factors	2.21E-33	4.94527854	0.071373157	0.014432586	Xylan_Depleted	Alanine, aspartate and glutamate metabolism	0.00025046	2.27312261	0.029646522	0.013042201
Pectin_Enriched	Ribosomal proteins: synthesis and modification	5.15E-41	3.2424603	0.138867339	0.042827769	Xylan_Depleted	Nitrogen metabolism	0.00629426	2.16725471	0.017103763	0.007891902
Pectin_Enriched	Chaperone and folding catalysis	1.31E-05	1.7258613	0.051978278	0.029158915	Pectin_Depleted	Transcription factors	0.04149475	2.21372746	0.036458333	0.016469206
Pectin_Enriched	RNA polymerase	1.42E-25	5.00641523	0.053529868	0.010692255	Pectin_Depleted	Chaperone and folding catalysis	0.00058981	2.6792835	0.078125	0.029158915
Pectin_Enriched	Oxidative phosphorylation	1.73E-05	1.72451672	0.05857254	0.032390091	Pectin_Depleted	RNA polymerase	0.01828991	2.92267628	0.03125	0.010692255
Pectin_Enriched	Carbohydrates, organic alcohols, and acids	0.022998388	1.42162613	0.034910784	0.024556937	Pectin_Depleted	Pentose and glucuronate interconversions	0.00265758	5.40576304	0.026041667	0.00481739
Pectin_Enriched	Glycolysis / Gluconeogenesis	8.83E-07	2.34317359	0.033359193	0.014236757	Pectin_Depleted	Protein interactions	0.00837373	3.48423854	0.03125	0.008968961
Pectin_Enriched	Alanine, aspartate and glutamate metabolism	0.00047532	1.96295403	0.025601241	0.013042201	Pectin_Depleted	Carbohydrates, organic alcohols, and acids	0.02965815	2.12092138	0.052083333	0.024556937
Pectin_Enriched	Nitrogen metabolism	0.01104977	1.86775098	0.014740109	0.007891902	Pectin_Depleted	Carbon fixation in prokaryotes	0.01890367	4.01454403	0.020833333	0.005189464
						Pectin_Depleted	Sporulation and germination	4.82E-06	22.1636285	0.026041667	0.001174973