

# Telling Stories Fast

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Detailed results of the experiments

Table 1: Experiment 1: metabolic pathways from *Saccharomyces cerevisiae*. Times are in seconds.

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories</b>	<b>Gobbolino (s)</b>	<b>Ciak (s)</b>
1	ALLANTOINDEG-PWY	3	2	2	0,073	0,0060
2	ARGDEG-YEAST-PWY	3	2	2	0,026	0,01
3	ARO-PWY	2	2	2	0,021	0,0070
4	BRANCHED-CHAIN-AA-SYN-PWY	10	5	308	901,296	0,138
5	COMPLETE-ARO-PWY	9	4	27	80,171	0,042
6	DENOVOPURINE3-PWY	4	4	2	0,034	0,0070
7	ERGOSTEROL-SYN-PWY	7	4	5	0,582	0,012
8	FASYN-ELONG2-PWY	5	5	7	0,053	0,011
9	FASYN-INITIAL2-PWY	6	4	4	0,111	0,01
10	FOLSYN-PWY	3	3	4	0,032	0,0090
11	GLUCFERMEN-PWY	4	3	2	0,037	0,011
12	GLUCONEO-PWY	6	3	6	0,097	0,013
13	GLUCOSE-MANNOSYL-CHITO-DOLICHOL	2	2	1	0,031	0,0060
14	GLYCOLYSIS	5	2	2	0,048	0,01
15	GLYOXYLATE-BYPASS	8	3	6	3,828	0,012
16	HEXPPSYN-PWY	3	3	4	0,034	0,0080
17	HISTSYN-PWY	6	4	7	0,112	0,014
18	ILEUSYN-PWY	3	2	2	0,033	0,0080
19	IPPSYN-PWY	4	3	6	0,059	0,011
20	LYSDEGII-PWY	2	2	1	0,026	0,0070
21	LYSINE-AMINOAD-PWY	7	2	2	0,46	0,0080
22	NADSYN-PWY	2	2	2	0,029	0,0070
23	NONOXIPENT-PWY	2	2	2	0,025	0,0060
24	P4-PWY	6	4	19	0,096	0,033
25	PANTOSYN2-PWY	3	3	6	0,027	0,0090
26	PENTOSE-P-PWY	3	3	4	0,027	0,0070
27	PLPSAL-PWY	4	4	1	0,026	0,0060
28	PRPP-PWY	9	7	48	85,429	0,024
29	PWY-2201	4	4	6	0,035	0,0090
30	PWY30-1109	5	3	7	0,037	0,012
31	PWY30-19	2	2	2	0,054	0,01
<i>continued on next page</i>						

Table 1: continuation

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories</b>	<b>Gobolino (s)</b>	<b>Ciak (s)</b>
32	PWY3O-1	8	7	50	4,71	0,045
33	PWY3O-20	4	3	5	0,03	0,0090
34	PWY3O-2220	5	4	14	0,041	0,018
35	PWY3O-242	5	3	4	0,039	0,0080
36	PWY3O-261	4	4	18	0,03	0,025
37	PWY3O-351	3	3	3	0,025	0,0060
38	PWY3O-402	5	3	3	0,041	0,0080
39	PWY3O-4107	2	2	2	0,026	0,0070
40	PWY3O-4158	4	4	2	0,032	0,0070
41	PWY3O-45	3	3	6	0,03	0,01
42	PWY3O-64	2	2	2	0,025	0,0070
43	PWY3O-697	3	3	4	0,029	0,0090
44	PWY3O-69	3	3	2	0,024	0,0070
45	PWY3O-7	2	2	2	0,026	0,0090
46	PWY3O-94	2	2	2	0,029	0,0090
47	PWY3O-954	3	3	6	0,056	0,01
48	PWY3O-981	3	2	2	0,029	0,0070
49	PYRIMID-RNTSYN-PWY	2	2	2	0,028	0,0070
50	SPHINGOLIPID-SYN-PWY	5	4	2	0,043	0,0070
51	TCA-EUK-PWY	2	2	2	0,028	0,01
52	THREOCAT2-PWY	9	8	32	93,705	0,047
53	TRIGLSYN-PWY	4	3	4	0,109	0,0090
54	TRPSYN-PWY	2	2	2	0,028	0,0060
55	TRYPTOPHAN-DEGRADATION-1	2	2	2	0,028	0,0070
56	YEAST-ARG-SYN-PWY	3	2	2	0,03	0,0070
57	YEAST-DE-NOVO-PYRMID-DNT	8	5	13	4,693	0,018
58	YEAST-FAO-PWY	3	3	2	0,026	0,0060
59	YEAST-GALACT-METAB-PWY	2	2	2	0,03	0,0080
60	YEAST-RIBOSYN-PWY	3	3	6	0,028	0,0080
61	YEAST-RNT-SALV	4	3	6	0,028	0,01
62	YEAST-SALV-PYRMID-DNTP	6	5	11	0,101	0,019

Table 2: Experiment 2: counting the number of stories found by the randomised version of GOBBOLINO and CIAK after 1 min of computation. Times are in minutes.

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories Gob.</b>	<b>Gob. (s)</b>	<b>Stories Ciak</b>	<b>Ciak (s)</b>
1	ACYPI	121	38	17	1,011	26848	1,000
2	ACYPIBUCA	135	45	17	1,031	21248	1,000
3	AERS4332	105	35	47	1,019	5504	1,001
4	ARA	160	53	7	1,042	24608	1,001
5	BACAA57	238	36	2	1,119	40192	1,068

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Table 2: continuation

	Input	Vertices	Black	Stories Gob.	Gob. (s)	Stories Ciak	Ciak (s)
6	BACFZ295	99	31	59	1,012	6120	1,039
7	BACHK64	106	37	51	1,012	3034	1,001
8	BACSU7	133	36	19	1,002	1568	1,004
9	BAR10333	49	19	1261	1,001	261808	1,000
10	BARHE206	40	17	2359	1,001	49152	1,000
11	BARKC205	26	14	6058	1,000	53495	0,982
12	BARQU207	23	11	6116	1,000	43756	0,558
13	BAUCH280	43	16	1853	1,001	50206	1,000
14	BBGB680	42	18	2416	1,001	40076	1,000
15	BRABT106	130	39	20	1,037	10376	1,008
16	BRAJA100	148	45	10	1,028	1420	1,001
17	BRUME578	123	39	28	1,008	318528	1,001
18	BUCAI84	30	14	2965	1,001	47952	0,693
19	BUCAIREVISED	29	15	4020	1,000	13824	1,003
20	BUCAP86	23	10	521	1,000	785	0,012
21	BUCBP85	25	10	4025	1,000	59414	0,142
22	BURMA89	142	45	14	1,041	80448	1,001
23	CAMJE46	67	24	317	1,002	106876	1,000
24	CAMJR118	53	21	818	1,001	4063	1,000
25	CANBP282	30	14	7351	1,000	12884	1,012
26	CANFL281	33	13	3803	1,000	56595	1,000
27	CANGW378	11	10	1	1,000	1	0,000
28	CANRU286	6	6	1	1,000	1	0,000
29	CHLAMY	145	43	12	1,017	67328	1,001
30	CHLTR15	20	10	1251	1,000	2390	0,062
31	CORGB246	38	13	2148	1,000	12883	1,000
32	DESPS65	94	32	74	1,012	80064	1,002
33	DROME	107	31	43	1,010	6736	1,065
34	ECO5782	157	44	7	1,115	4160	1,073
35	ECOLI	150	42	9	1,003	5664	1,003
36	ECOLI149	136	39	15	1,036	2996	1,000
37	ECOSE461	158	47	7	1,088	12992	1,001
38	ERWCT87	161	41	7	1,075	6800	1,006
39	FRAAL54	100	37	53	1,001	157824	1,000
40	H_Sapiens_Recon1_GRP_genes	34	10	5704	1,000	30089	1,000
41	HAMD5584	50	20	944	1,000	18328	1,000
42	HELPHY117	46	17	1460	1,001	38212	1,000
43	HELSH381	54	20	937	1,002	131840	1,000
44	HODCD587	2	2	1	1,000	1	0,000
45	HUMAN	128	36	22	1,048	398848	1,000
46	imm904_ONEWAY	14	11	34	1,000	34	0,002
47	LACC3571	76	25	176	1,001	5400	1,000
48	LAWIP290	44	18	1396	1,000	20254	1,000
49	LEISH	38	15	2155	1,000	39573	1,000
50	LISIN395	35	16	3974	1,000	40732	1,000
51	METDI147	122	41	8	1,116	11152	1,015

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Table 2: continuation

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories Gob.</b>	<b>Gob. (s)</b>	<b>Stories Ciak</b>	<b>Ciak (s)</b>
52	METEX155	114	40	11	1,052	1768	1,055
53	METEX218	113	40	11	1,058	19696	1,000
54	METPO312	89	37	30	1,036	157744	1,000
55	METRJ311	133	43	6	1,128	2616	1,000
56	METSP297	150	44	4	1,137	138880	1,003
57	MOUSE	170	47	3	1,547	61568	1,031
58	MYCGE69	8	5	35	1,000	35	0,001
59	MYCH2287	16	6	165	1,000	170	0,002
60	MYCH7288	15	6	15	1,000	15	0,001
61	MYCHJ289	15	6	312	1,000	340	0,002
62	MYCPA174	162	56	2	1,072	74304	1,014
63	MYCTU4	78	31	44	1,005	59120	1,000
64	NEIG1423	46	21	289	1,001	6513	1,099
65	ONYPE335	10	8	12	1,000	12	0,000
66	PBERGHEI	21	11	235	1,000	286	0,002
67	PCHABAUDI	12	8	30	1,000	30	0,000
68	PHOLUS	92	26	19	1,008	4690	1,000
69	PLANT	137	77	4	1,022	4614	1,346
70	PLASMO	38	18	976	1,001	62908	1,000
71	PSEAB608	129	47	5	1,061	108928	1,003
72	PSEEN58	124	41	5	1,030	4688	1,014
73	PSEFS611	155	49	2	1,068	8096	1,006
74	PSEHA27	105	33	11	1,035	2888	1,092
75	PSEPA26	114	40	7	1,027	976	1,001
76	PVIVAX	19	10	615	1,000	912	0,003
77	PYOELII	15	10	28	1,000	28	0,001
78	RALH1181	148	44	2	1,155	170	1,012
79	RALTA144	121	37	5	1,198	2608	1,009
80	RBC	44	18	377	1,001	86272	1,001
81	RHICF157	125	37	3	1,064	772	1,229
82	RHILE109	136	41	3	1,050	728	1,012
83	RHILO101	153	44	2	1,089	248	1,012
84	RHIME102	105	36	10	1,054	2724	1,000
85	RHIME324	117	37	6	1,005	20304	1,000
86	RHORT339	9	8	9	1,000	9	0,000
87	RICAH340	22	12	48	1,000	48	0,000
88	RICFE336	2	2	1	1,000	1	0,000
89	RICIO337	8	7	1	1,000	1	0,000
90	RICPR22	9	8	3	1,000	3	0,000
91	RICPR338	7	6	2	1,000	2	0,000
92	RICTY191	16	9	16	1,000	20	0,000
93	SALT128	151	41	2	1,073	2168	1,004
94	SHIFL233	133	39	4	1,282	14752	1,001
95	SODGM283	71	27	44	1,015	2884	1,084
96	STRA5213	56	20	118	1,003	8652	1,001
97	STRTD228	43	19	361	1,003	8144	1,000

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Table 2: continuation

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories Gob.</b>	<b>Gob. (s)</b>	<b>Stories Ciak</b>	<b>Ciak (s)</b>
98	SULMS583	20	12	1197	1,001	1956	0,017
99	THICR664	70	27	54	1,001	41216	1,000
100	VIBCH43	106	32	10	1,061	4248	1,004
101	ALL-CHORISMATE-PWY	24	8	3007	1,000	13507	1,000
102	BRANCHED-CHAIN-AA-SYN-PWY	10	5	304	1,000	308	0,003
103	PHOS-PWY	17	9	1584	1,000	3499	0,085
104	PHOSLIPSYN2-PWY	13	6	85	1,000	87	0,004
105	PWY-821	11	4	27	1,000	27	0,001
106	PWY3O-285	12	7	95	1,000	95	0,002
107	PWY3O-2	20	10	2824	1,001	15017	0,669
108	PWY3O-862	11	5	111	1,001	112	0,004
109	WIGBR88	33	13	784	1,001	6941	1,001
110	WOLPM285	22	14	9	1,001	9	0,000
111	WOLSU119	47	21	210	1,002	3796	1,001
112	WOLTR284	13	9	118	1,001	118	0,004
113	XYLFA44	65	28	54	1,002	2104	1,000
114	yeast-s288c-pathwayIntersection	10	8	220	1,000	222	0,005
115	yeast-s288c-wholeList	35	21	927	1,001	44948	1,000
116	YEAST	72	25	35	1,031	836	1,015
117	YERPE3	126	42	3	1,106	2216	1,034
118	YERYP364	126	42	4	1,122	60160	1,001

Table 3: Experiment 3: Comparison between CIAK with and without the pruning approach.

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories</b>	<b>Ciak-no (s)</b>	<b>Ciak-pruned (s)</b>
1	ALLANTOINDEG-PWY	3	2	2	0,025	0,0090
2	ARGDEG-YEAST-PWY	3	2	2	0,024	0,0070
3	ARO-PWY	2	2	2	0,024	0,0070
4	BRANCHED-CHAIN-AA-SYN-PWY	10	5	308	0,379	0,143
5	COMPLETE-ARO-PWY	9	4	27	0,080	0,047
6	DENOVOPURINE3-PWY	4	4	2	0,028	0,0050
7	ERGOSTEROL-SYN-PWY	7	4	5	0,048	0,013
8	FASYN-ELONG2-PWY	5	5	7	0,041	0,011
9	FASYN-INITIAL2-PWY	6	4	4	0,025	0,012
10	FOLSYN-PWY	3	3	4	0,023	0,0070
11	GLUCFERMEN-PWY	4	3	2	0,023	0,0080
12	GLUCONEO-PWY	6	3	6	0,029	0,014
13	GLUCOSE-MANNOSYL-CHITO-DOLICHOL	2	2	1	0,025	0,0050
14	GLYCOLYSIS	5	2	2	0,021	0,0060
15	GLYOXYLATE-BYPASS	8	3	6	0,027	0,013
16	HEXPPSYN-PWY	3	3	4	0,034	0,0070
17	HISTSYN-PWY	6	4	7	0,041	0,015

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Table 3: continuation

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories</b>	<b>Ciak-no (s)</b>	<b>Ciak-pruned (s)</b>
18	ILEUSYN-PWY	3	2	2	0,023	0,0060
19	IPPSYN-PWY	4	3	6	0,024	0,0090
20	LYSDEGIL-PWY	2	2	1	0,024	0,0060
21	LYSINE-AMINOAD-PWY	7	2	2	0,023	0,01
22	NADSYN-PWY	2	2	2	0,024	0,0080
23	NONOXIPENT-PWY	2	2	2	0,026	0,0060
24	P4-PWY	6	4	19	0,051	0,035
25	PANTOSYN2-PWY	3	3	6	0,030	0,0090
26	PENTOSE-P-PWY	3	3	4	0,023	0,0070
27	PLPSAL-PWY	4	4	1	0,023	0,0050
28	PRPP-PWY	9	7	48	7,168	0,026
29	PWY-2201	4	4	6	0,030	0,011
30	PWY3O-1109	5	3	7	0,026	0,012
31	PWY3O-19	2	2	2	0,022	0,0070
32	PWY3O-1	8	7	50	0,147	0,041
33	PWY3O-20	4	3	5	0,029	0,0090
34	PWY3O-2220	5	4	14	0,036	0,015
35	PWY3O-242	5	3	4	0,022	0,0090
36	PWY3O-261	4	4	18	0,054	0,025
37	PWY3O-351	3	3	3	0,028	0,0090
38	PWY3O-402	5	3	3	0,023	0,0070
39	PWY3O-4107	2	2	2	0,027	0,0050
40	PWY3O-4158	4	4	2	0,029	0,0060
41	PWY3O-45	3	3	6	0,028	0,0080
42	PWY3O-64	2	2	2	0,027	0,0060
43	PWY3O-697	3	3	4	0,024	0,0080
44	PWY3O-69	3	3	2	0,028	0,0060
45	PWY3O-7	2	2	2	0,021	0,0060
46	PWY3O-94	2	2	2	0,026	0,0080
47	PWY3O-954	3	3	6	0,028	0,0080
48	PWY3O-981	3	2	2	0,021	0,0070
49	PYRIMID-RNTSYN-PWY	2	2	2	0,023	0,0050
50	SPHINGOLIPID-SYN-PWY	5	4	2	0,027	0,0080
51	TCA-EUK-PWY	2	2	2	0,032	0,0060
52	THREOCAT2-PWY	9	8	32	2,199	0,05
53	TRIGLSYN-PWY	4	3	4	0,024	0,0090
54	TRPSYN-PWY	2	2	2	0,024	0,0080
55	TRYPTOPHAN-DEGRADATION-1	2	2	2	0,025	0,0060
56	YEAST-ARG-SYN-PWY	3	2	2	0,025	0,0060
57	YEAST-DE-NOVO-PYRIMID-DNT	8	5	13	0,048	0,02
58	YEAST-FAO-PWY	3	3	2	0,028	0,0070
59	YEAST-GALACT-METAB-PWY	2	2	2	0,023	0,0050
60	YEAST-RIBOSYN-PWY	3	3	6	0,032	0,011

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Table 3: continuation

	<b>Input</b>	<b>Vertices</b>	<b>Black</b>	<b>Stories</b>	<b>Ciak-no (s)</b>	<b>Ciak-pruned (s)</b>
61	YEAST-RNT-SALV	4	3	6	0,027	0,011
62	YEAST-SALV-PYRMID-DNTP	6	5	11	0,060	0,019