



Supplemental Fig. 1. Significant plot of changes in gene expression in response to elevated C_a .

Horizontal axis is \log_2 of the estimated fold change adjusted for systematic and random effects through normalization. Vertical axis is $-\log_{10}(P\text{-value})$ to represent magnitude of probability that each pairwise comparison for a gene is falsely detected (i.e., if $P=0.01$, corresponding value is 2). Horizontal reference line indicates Bonferroni adjusted probability setting $P=1.34e-6 = 0.01/7442$ for each pairwise comparison so that the experiment-wise error rate is controlled at $P=0.01$. Vertical reference lines represent two fold changes.

Supplemental table 1. List of altered maize transcripts in response to CO₂ enrichment

GenBankID	log2(fold change)	homologue1	species1
AI622511	-2.075		
AI737861	-2.0415		
AI978224	-2.0095	gag-pol polyprotein	Zea mays
AI665134	-1.9185		
AI770397	-1.8617	gag-pol	Zea mays
AI740164	-1.8329		
AI737747	-1.8301		
AI738395	-1.6969	unknown	Arabidopsis thaliana
AI712143	-1.6589		
AW055531	-1.6542		
AI881644	-1.5807	ESTs 99053(E4383),C99052(E4383)...	Oryza sativa
AW000453	-1.5648	similar to soluble NSF attachmen...	Vitis vinifera
AI670420	-1.5496		
AI491560	-1.5445	putative protein	Arabidopsis thaliana
AI881826	-1.505	ESTs AU032448(S10057),C22614(S10...	Oryza sativa
AI834697	-1.4752		
AI737355	-1.4647	putative prpol	Zea mays
AI782965	-1.4455	40S ribosomal protein S2 homolog	Arabidopsis thaliana
AI670440	-1.4276		
AI881620	-1.4196	Putative maize transposon MuDR m...	Oryza sativa
AI737746	-1.4048	glyceraldehyde-3-phosphate dehyd...	Zea mays
AI677077	-1.3972	cyclophilin	Zea mays
AI676947	-1.3799	histone H3	Medicago sativa
AW018260	-1.3768	superoxide dismutase precursor	Oryza sativa
AI740028	-1.3766		
AI947633	-1.3564	603025F08: Photosystem II	Oryza sativa
AW331243	-1.3546	707050B11: Rubisco smaller subunit	Zea mays
AI673987	-1.352	ESTs D15590(C0900),D48950(S15542...	Oryza sativa
AI737713	-1.3483	light-inducible protein ATLS1	Arabidopsis thaliana
AI714865	-1.3414	aluminum-induced protein-like	Arabidopsis thaliana
AI714439	-1.3397	ubiquitin-conjugating enzyme OsU...	Oryza sativa
AI621843	-1.3306		
AI676870	-1.3181	actin depolymerizing factor	Zea mays
AW017875	-1.3112		
AI667872	-1.3081	hypothetical protein	Oryza sativa
AI711917	-1.3056		
AI665119	-1.3046	protein kinase MK5	Mesembryanthemum crystal
AI770385	-1.3031	ubiquitin conjugating enzyme	Zea mays
AI665173	-1.3014	adenosylhomocysteinase	Medicago sativa
AI670442	-1.2979		
AI670160	-1.294	thioredoxin h	Hevea brasiliensis
AI833695	-1.2887	unknown	Arabidopsis thaliana
AI820397	-1.2869		
AI667871	-1.2864		
AI668193	-1.2864	vacuolar H ⁺ -pyrophosphatase	Prunus persica
AI745874	-1.2804		
AW000454	-1.279	putative 60S ribosomal protein L...	Oryza sativa
AW438072	-1.2697	7.07E+08: Rubisco smaller subunit	Zea mays
AI621808	-1.2678	defensin	Triticum aestivum

AI737702	-1.2676	DNAJ protein-like	Arabidopsis thaliana
AW055530	-1.2656		
AI586460	-1.2619		
AI770971	-1.2609	putative homeodomain-leucine zip...	Oryza sativa
AI770378	-1.2603		
AI665572	-1.2576		
AI737717	-1.2558		
AI673991	-1.2549	ubiquitin-like protein	Oryza sativa
AI739846	-1.2548	putative Clp protease	Oryza sativa
AI586441	-1.2446	unknown protein; 24499-21911	Arabidopsis thaliana
AI670615	-1.2371	unknown protein; 27691-27358	Arabidopsis thaliana
AI668423	-1.2369	lipid transfer protein, putative	Arabidopsis thaliana
AI676865	-1.2232	19kD alpha zein D1	Zea mays
AI770347	-1.2204		
AI670528	-1.2163		
AI820196	-1.2144		
AI668425	-1.2133	katanin p60 subunit A 1-like	Oryza sativa
AW042278	-1.211	cinnamoyl CoA reductase	Zea mays
AI712274	-1.2077		
AI670425	-1.2057		
AI739891	-1.1981	translation initiation factor 5A	Zea mays
AI714420	-1.1975	root cap-specific protein	Zea mays
AI676984	-1.1948	possible apospory-associated pro...	Pennisetum ciliare
AI600760	-1.1929	putative serine/ threonine kinase	Sorghum bicolor
AI770450	-1.1914	plasma membrane MIP protein	Zea mays
AI740060	-1.1895	OSJNBa0033H08.5	Oryza sativa
AI665066	-1.1872	preproMP27-MP32	Cucurbita cv. kurokawa a
AI674006	-1.1868	HMGd1	Zea mays
AI746068	-1.1787	EST AU082567(S21715) corresponds...	Oryza sativa
AI737762	-1.1691		
AI673994	-1.1667		
AI670234	-1.1645		
AI714376	-1.1613		
AI834658	-1.1605	chlorophyll a/b-binding apoprote...	Zea mays
AI676901	-1.1601	Putative 40S Ribosomal protein	Oryza sativa
AI770965	-1.1564	histone deacetylase HD2-p39	Zea mays
AI979529	-1.1477	Histon H3	Arabidopsis thaliana
AI737735	-1.1471	Unknown protein	Arabidopsis thaliana
AI677116	-1.1451		
AI759034	-1.1446	Contains similarity to gb AF1816...	N
AI737727	-1.1438	F26F24.7	Arabidopsis thaliana
AI770346	-1.142	putative retrotransposon protein	Zea mays
AI739987	-1.1387	21kd polypeptide	Oryza sativa
AI629947	-1.13		
AI668199	-1.1299		
AI649601	-1.129	putative protein kinase SPK-3	Oryza sativa
AI676872	-1.1283	unknown protein	Arabidopsis thaliana
AI668510	-1.1279	Similar to hypothetical protein	Oryza sativa
AI770365	-1.1248	xyloglucan endotransglycosylase	Hordeum vulgare subsp. v
AI676939	-1.1175	LRR protein	Lycopersicon esculentum
AI600810	-1.1165	486072A01: Photosystem I	
AI665258	-1.1153	EST C97982(C0324) corresponds to...	Oryza sativa
AI691313	-1.1135	putative protein	Arabidopsis thaliana

AI812184	-1.11	D-type cyclin	Zea mays
AW000563	-1.1095	contains EST C20248(E11741)~simi...	Oryza sativa
AI676979	-1.1085	acyl carrier protein I precursor	Hordeum vulgare
AI770348	-1.1051	ESTs AU081247(C50004),AU068940(C...	Oryza sativa
AI770322	-1.105		
AI586578	-1.1028		
AW056320	-1.0959		
AI737052	-1.0944	cinnamoyl-CoA reductase	Saccharum officinarum
AI770444	-1.094	DWARF8	Zea mays subsp. mays
AI619146	-1.0938		
AI770390	-1.0844	En/Spm-like transposon protein	Arabidopsis thaliana
AI740005	-1.0834		
AI676864	-1.0818		
AI740044	-1.0775		
AI664996	-1.0703	ribosomal protein L35-like	Arabidopsis thaliana
AI665060	-1.0689	21kd polypeptide	Oryza sativa
AI745934	-1.0682	ribosomal protein L7A	Oryza sativa
AI691235	-1.0646		
AI665065	-1.0634	endo-xyloglucan transferase, put...	Arabidopsis thaliana
AI714403	-1.0628	unknown protein	Oryza sativa
AI622410	-1.0612	contains similarity to D-isomer ...	Arabidopsis thaliana
AI740168	-1.0601	RIBOSOMAL PROTEIN S30 homolog	Arabidopsis thaliana
AI629923	-1.0585	hypothetical protein	Oryza sativa
AI739968	-1.056	fructose bisphosphate aldolase	Zea mays
AI649549	-1.0545	603006B05: Photosystem II	Oryza sativa
AI881961	-1.0512	GADPH	Zea mays
AI665025	-1.0471	unknown protein; 28504-31237	Arabidopsis thaliana
AW065311	-1.0441	putative protein kinase	Arabidopsis thaliana
AI833358	-1.0397	unknown	Arabidopsis thaliana
AI770478	-1.039	hypothetical protein	Oryza sativa
AI622416	-1.0387	OSJNBa0033G16.8	Oryza sativa
AI670549	-1.0366		
AI737742	-1.0364	proline-rich-like protein	Asparagus officinalis
AI677447	-1.0327	unknown protein	Arabidopsis thaliana
AI812228	-1.0306	F15O4.7	Arabidopsis thaliana
AI491501	-1.0283		
AI833350	-1.0271	unknown	Arabidopsis thaliana
AI737875	-1.0256	AT4g01940/T7B11_20	Arabidopsis thaliana
AI783053	-1.0253		
AI714708	-1.0228		
AI603703	-1.0226	fructose-1, 6-bisphosphatase	Saccharum hybrid cultiva
AI881442	-1.0222	cytochrome P450 monooxygenase CY...	Zea mays subsp. mays
AI665509	-1.0212		
AI491443	-1.021		
AI676916	-1.0196		
AI438422	-1.019	chloroplast drought-induced stre...	Solanum tuberosum
AI665204	-1.0178	serine/threonine protein phospho...	Oryza sativa
AI978054	-1.0173	putative calcium-dependent prote...	Oryza sativa
MRP15: Multi-drug resistance protein EST 15	-1.0158		
AI691423	-1.0158	ubiquitin-conjugating enzyme OsU...	Oryza sativa
AI770897	-1.0138	putative UDP-glucose dehydrogenase	Sorghum bicolor

AI668331	-1.0132	ATGP1	Arabidopsis thaliana
AI967249	-1.0103	putative actin-depolymerizing fa...	Oryza sativa
AI668327	-1.0101		
AI782968	-1.0068	histone H2B	Triticum aestivum
AI586704	-1.0064		
AI783310	-1.0036	EST AU082567(S21715) corresponds...	Oryza sativa
AI979569	-1.0025	Putative transposase	Oryza sativa
AI461557	1.0006		
AI612503	1.0037	zwh13.1	Oryza sativa
AI622052	1.0084		
AI746158	1.0087		
AI600827	1.0124		
AI600651	1.0195		
AI670507	1.0213		
AI664929	1.026	Sgt1	Oryza sativa
AI979679	1.0302		
AI615191	1.0303	putative DNA-directed RNA polyme...	Oryza sativa
AI619220	1.0322		
MRP40: Multi-drug resistance protein 40 5' UTR	1.0353		
AW120209	1.036	Strong similarity to an unknown ...	N
AW055501	1.0364		
AI737341	1.0368	unknown protein	Arabidopsis thaliana
AI734415	1.0375		
AI665655	1.0403		
AI657264	1.0444	unknown protein	Arabidopsis thaliana
AI714926	1.0554	hypothetical protein	Oryza sativa
AI491256	1.0591		
AI795574	1.0661		
AI745891	1.0669	lipid transfer protein	Oryza sativa
AI615226	1.0675	alpha tubulin 1	Eleusine indica
AW042193	1.0685		
AW146727	1.0741	ubiquitin-conjugating enzyme E2	Oryza sativa
AI978191	1.0758		
AW065219	1.0778	t complex polypeptide 1	Avena sativa
AI649911	1.0787	T4O12.9	Arabidopsis thaliana
AI734494	1.0794		
AI783367	1.08	wound-inducible carboxypeptidase	Lycopersicon esculentum
AI600755	1.0904	hypothetical protein	Arabidopsis thaliana
AW037018	1.0941	guanine nucleotide-exchange-like...	Arabidopsis thaliana
AW090908	1.1028	early drought induced protein	Oryza sativa
AI668507	1.1043	putative villin	Arabidopsis thaliana
AI944235	1.1044	N-carbamyl-L-amino acid amidohyd...	Arabidopsis thaliana
AI612441	1.1073		
AW011661	1.1082	calcium dependent protein kinase	Solanum tuberosum
AI833665	1.1168	putative mutator transposase	Arabidopsis thaliana
CHR2-7: 614096C04---	1.1188		
CHR2-7			
AW054137	1.1197		
AW120144	1.1218	putative IAA1 protein	Oryza sativa

AI947427	1.1226	hypothetical protein	Oryza sativa subsp. indi
AI670526	1.1242		
AW120336	1.1272	OSJNBa0067K08.14	Oryza sativa
AI615215	1.129	BAX inhibitor 1	Hordeum vulgare subsp. v
AW155726	1.1305	putative CER3	Oryza sativa
AI977967	1.1313	anthranilate phosphoribosyltrans...	Arabidopsis thaliana
AI629848	1.1354	protochlorophyllide reductase	Triticum aestivum
AI834539	1.1356		
AI746266	1.1404		
AI615200	1.1424	putative mRNA export protein	Oryza sativa
AI657295	1.1433	putative DNA binding protein	Arabidopsis thaliana
AW146707	1.1444	low affinity sulphate transporter	Stylosanthes hamata
AI586406	1.1455		
AI649629	1.1469	putative protein	Arabidopsis thaliana
AI783357	1.1524		
AI619145	1.1656		
AI619079	1.1669	thioredoxin-like protein; 49720-...	Arabidopsis thaliana
AW017716	1.1839	putative GTP-binding protein	Oryza sativa
AW053252	1.1849	grpE like protein	Arabidopsis thaliana
AI738206	1.1886	putative disease resistance prot...	Oryza sativa
AW000326	1.1928	gene_id:K9P8.4~pir T04010~stron...	N
AI665622	1.1941		
AI861507	1.1962	unknown protein	Oryza sativa
AI833709	1.2038	Hypothetical protein	Oryza sativa
AI665529	1.2043	putative carboxypeptidase	Arabidopsis thaliana
AI783316	1.2044	expressed protein	Arabidopsis thaliana
AI622101	1.2044	putative endomembrane protein EM...	Arabidopsis thaliana
AW163852	1.2064	NADP-specific isocitrate dehydro...	Oryza sativa
AI745867	1.2064		
AI586416	1.2094	ferredoxin	Zea mays
AI665560	1.21	CYP90D	Arabidopsis thaliana
AW120156	1.2109	F15H18.8	Arabidopsis thaliana
AI770413	1.2109	heat shock protein 82	Oryza sativa
AI861651	1.2184		
AI739843	1.2194		
AI746142	1.2224	cysteine protease	Zea mays
AI861439	1.2246		
AW000036	1.2274	putative ubiquinone/menaquinone ...	Arabidopsis thaliana
AI629850	1.2276		
AW011634	1.2314		
AI978050	1.2317	contains EST AU163916(E11395)~si...	Oryza sativa
AI861403	1.2323	contains ESTs C26804(C50110),C96...	Oryza sativa
AI586380	1.2388		
AI586730	1.2391		
AI657368	1.243	ESTs C99033(E4350),C99032(E4350)...	Oryza sativa
AW090919	1.2506	AT5g46340/MPL12_14	Arabidopsis thaliana
AI615198	1.2527	ribosomal protein S1	Spinacia oleracea
AI714437	1.2532		
AI600347	1.2555		
AI770361	1.2586	putative protein	Arabidopsis thaliana
AI665561	1.2605	60S ribosomal protein L7	Arabidopsis thaliana
AI881767	1.2622		
AI783300	1.2624		

AI621731	1.2642		
AI438484	1.2657		
AI861337	1.2726		
AI665586	1.2745	putative CuZn-superoxide dismutase	Populus tremula x populu
AI665090	1.2748	19 kDa zein protein	Zea mays
AI600356	1.2778	putative protein	Arabidopsis thaliana
AI861502	1.2779	putative TBP-associated 58 kDa s...	Arabidopsis thaliana
MRP47: Multi-drug resistance protein EST 47	1.2882		
AI795390	1.2893	80S ribosomal protein L31	Perilla frutescens
AI861461	1.2916	putative protein	Arabidopsis thaliana
AI600615	1.2922		
AI491389	1.2959	AT5g14200/MUA22_20	Arabidopsis thaliana
AW053141	1.3003	putative uricase	Oryza sativa
AI600618	1.3033		
AI619239	1.3041		
AW052992	1.305		
AW053120	1.3064		
AW000362	1.3151	molybdopterin synthase	Arabidopsis thaliana
AI657231	1.3167	putative calcium-dependent prote...	Oryza sativa
AI586449	1.3184		
AW042274	1.3197	endo-1,4-beta-glucanase Cel1	Hordeum vulgare subsp. v
AI979644	1.3207	putative 60s Ribosomal protein L25	Oryza sativa
AI491598	1.3215		
AI734503	1.3303	putative ubiquitin-specific prot...	Arabidopsis thaliana
AW000025	1.3335	unknown protein	Oryza sativa
AI881704	1.3346		
AW146651	1.3414		
AW055442	1.3425	contains EST AU069790(E3307)~sim...	Oryza sativa
AW000339	1.3478		
AI861482	1.3482	putative protein	Oryza sativa
AW146713	1.3527	Putative lipase-like protein	Oryza sativa
AI820300	1.3597		
AI943930	1.3626	putative serine/threonine protei...	Oryza sativa
AI770564	1.3652	oj991113_30.8	Oryza sativa
AI734437	1.3715		
AI621482	1.3719		
AI665712	1.3795	brittle-1 protein	Zea mays
AI600758	1.3834	ribosomal protein S29-like	Arabidopsis thaliana
AI665664	1.4022	nuclear encoded precursor to chl...	Pisum sativum
AI586659	1.403	unknown protein	Arabidopsis thaliana
AI783361	1.4037	putative retinoblastoma binding ...	Oryza sativa
AI677416	1.405	putative 60s Ribosomal protein L25	Oryza sativa
AI999990	1.409	ORFa	Zea mays
AI711640	1.409	ripening regulated protein DDTFR8	Lycopersicon esculentum
AI670545	1.4105		
AI783298	1.424		
AW053260	1.4253	Unknown protein	Arabidopsis thaliana
AI881624	1.4291	60S ribosomal protein L34	Nicotiana tabacum
AI586804	1.4318	ESTs AU029348(E30206),C74035(E30...	Oryza sativa
AI665595	1.4366	putative multispinning membrane ...	Arabidopsis thaliana
AI795386	1.4412		

AW155737	1.4419	putative protein disulfide isome...	Arabidopsis thaliana
AI795508	1.444	contains similarity to ribonucle...	Arabidopsis thaliana
AI691210	1.4454	OSJNBa0086B14.13	Oryza sativa
AI622008	1.4461		
AI947307	1.4476		
AI712077	1.4493	basal layer antifungal peptide	Zea mays
AW042203	1.4598		
AW056335	1.4638		
AI795568	1.4753	unknown protein	Arabidopsis thaliana
AI759108	1.4753		
AI619092	1.4774	putative amino acid or GABA perm...	Oryza sativa
AW055445	1.4918		
AI820139	1.4998	putative protein	Oryza sativa
AI600640	1.5014		
AW000259	1.5062	embryonic flower 2	Arabidopsis thaliana
AI668135	1.5089	putative proteinase inhibitor	Hordeum vulgare subsp. v
AW090910	1.5211	contains ESTs AU057066(S21116),A...	Oryza sativa
AI673869	1.5254		
AI491266	1.534	unknown protein; 52184-57536	Arabidopsis thaliana
AW053226	1.536	Similar to protein arginine N-me...	Oryza sativa
AI665580	1.5397	Unknown protein	Oryza sativa
AI491311	1.5423		
AI670650	1.5479	S-adenosylmethionine decarboxylase	Zea mays
AI657296	1.5482	TOM20	Solanum tuberosum
AI978020	1.5499	P-type ATPase	Hordeum vulgare
AI629503	1.554	diphosphonucleotide phosphatase 1	Lupinus luteus
AI668131	1.5582	putative branched-chain amino ac...	Oryza sativa
AI600776	1.5706		
AI670228	1.5714		
AW036818	1.5789		
AW042537	1.5909		
AI770795	1.5973	putative serine proteinase	Oryza sativa
AI979612	1.5996		
AI920457	1.6038		
AI615231	1.6153	putative arginine-rich protein	Oryza sativa
AI657476	1.6273	putative myosin heavy chain	Oryza sativa
AW000408	1.6285		
AI770422	1.6294		
AI861327	1.6487		
AI438481	1.6505		
AI391814	1.6514		
AI854940	1.6514	AT3g07170/T1B9_17	Arabidopsis thaliana
AW067555	1.6529	hypothetical protein	Oryza sativa
MRP33: Multi-drug resistance protein EST 33	1.6542		
AI600377	1.6544		
AI665629	1.6621	protein serine/threonine kinase-...	Arabidopsis thaliana
AW165589	1.6716	618049A09: MNBB DNA binding protein	Zea mays
AW000678	1.6722	unknown	Arabidopsis thaliana
AI665324	1.674	ZmGR2b	Zea mays
AI944254	1.6773	fructose-6-phosphate 2-kinase /f...	Spinacia oleracea
AW120176	1.6789	leucine-rich repeat transmembran...	Zea mays

AI746229	1.6954	unknown protein	Arabidopsis thaliana
AW037023	1.7029		
AI619173	1.7089		
AI657367	1.7127	auxin-induced protein, putative;...	Arabidopsis thaliana
AW036957	1.7157		
AI461505	1.724		
AI491280	1.7399		
AW000050	1.7509		
AW090966	1.7585		
AI999855	1.7718	putative transposon protein	Oryza sativa
AW065534	1.7728	RNA Polymerase II subunit 14.5 k...	Arabidopsis thaliana
AI973334	1.7862	aminoalcoholphosphotransferase	Brassica rapa
AI438488	1.8145		
AI619132	1.8279		
AI711980	1.8412		
AI973320	1.8632	putative RNA polymerase II compl...	Sorghum bicolor
AW120184	1.8669		
AI714922	1.8773		
AI670662	1.8787		
AI461506	1.8877		
AW065222	1.8959	putative leucine zipper protein	Oryza sativa
AI673913	1.8995		
AI665388	1.9021	605010F02: Elongation factor TU	Oryza sativa
AI664858	1.9427		
AI622201	2.0396	putative polyprotein	Zea mays
AI629754	2.1251		
AI734448	2.1818	putative mitochondrial carrier p...	Arabidopsis thaliana
AI861472	2.1863		
AI491227	2.2157	ESTs D40069(S1808),D40089(S1834)...	Oryza sativa
AI677614	2.2569		
AI670412	2.2932		
