Supplementary Material for:

DJ-1 is not a deglycase and makes a modest contribution to cellular defense against methylglyoxal damage in neurons

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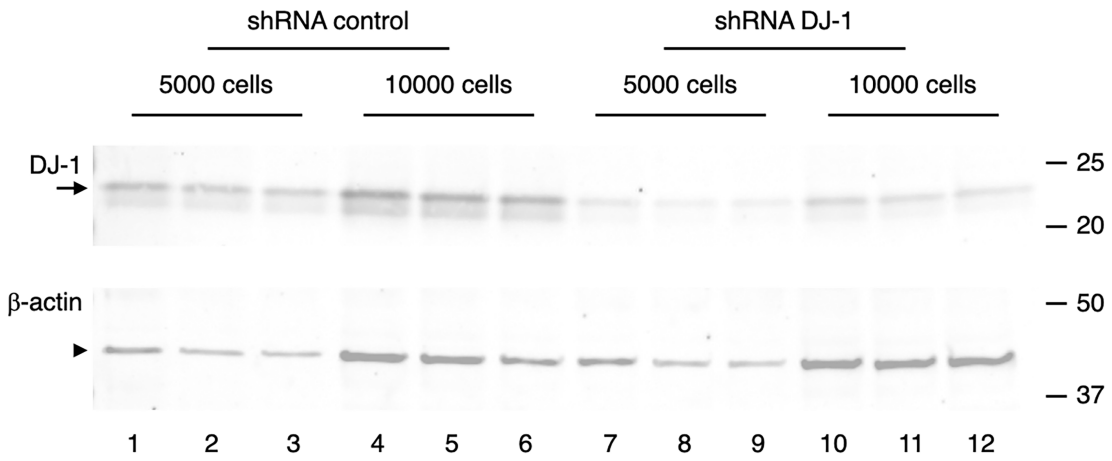
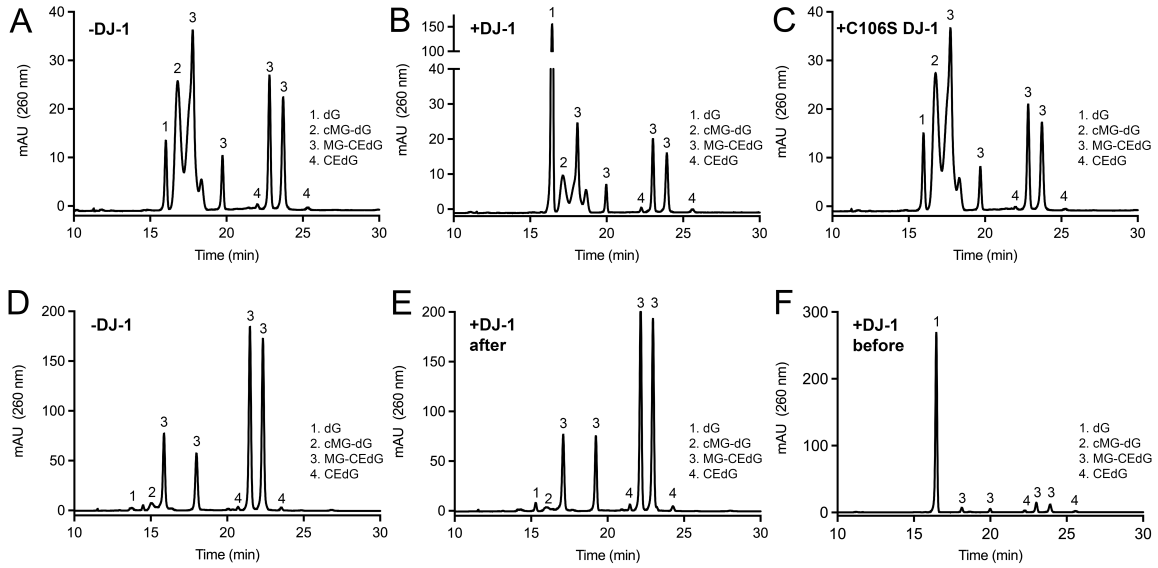
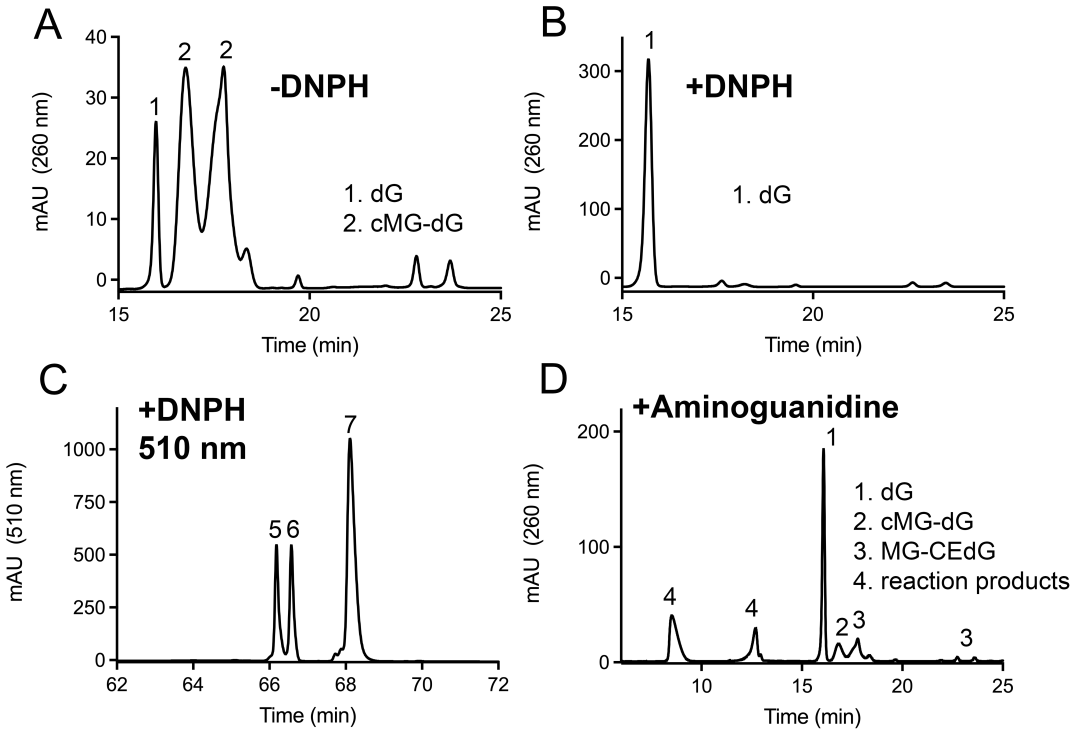


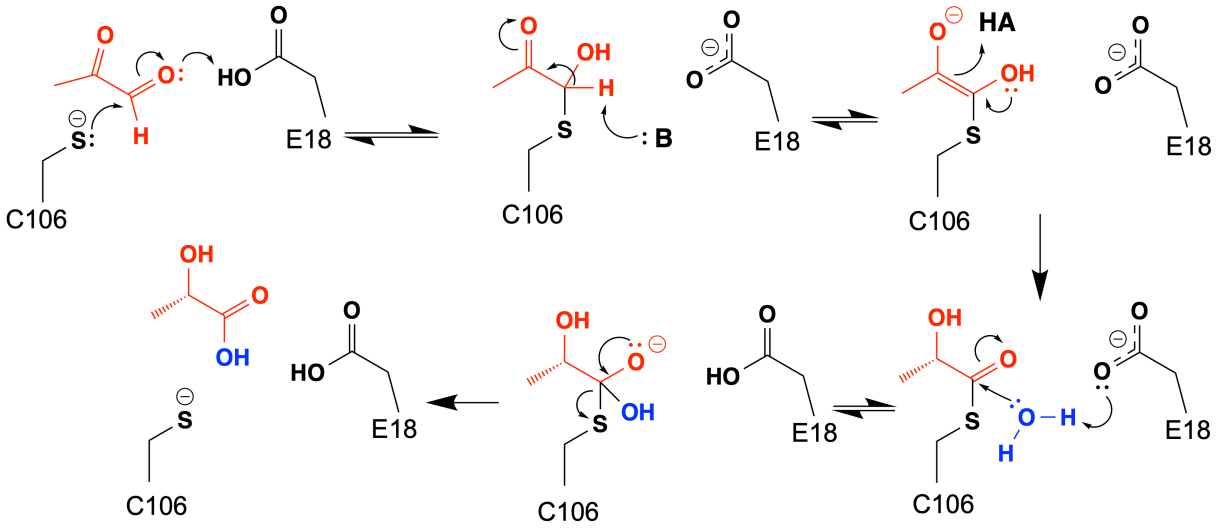
Supplementary Fig. S1. Efficiency of shRNA DJ-1 knockdown in M17 cells. Stable M17 cell lines transduced with control shRNA or DJ-1 shRNA were blotted for DJ-1 (upper panel, arrow) and β-actin (lower panel, arrowhead) and imaged on an LI-COR Odyssey imager. From left, lanes 1-6 show control shRNA cells seeded at 5,000 (lands 1-3) or 10,000 (lanes 4-6) cells per well and lanes 7-12 show DJ-1 shRNA cells seeded at 5,000 (lanes 7-9) or 10,000 cells per well (lanes 10-12). Markers on the right of the blot are in kilodaltons.



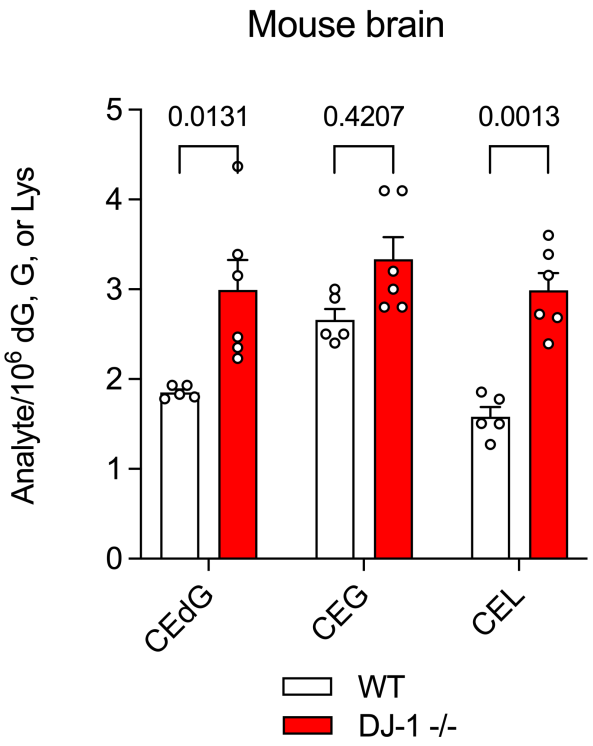
Supplemental Figure S2. **HPLC analysis of the effect of DJ-1 on dG glycation in vitro.** Raw HPLC elution profiles with peaks labeled by species are shown for all conditions in Fig 2A,B. In (E), "+DJ-1 after" is the result of adding DJ-1 after preincubation of MG and dG. In (F), "+DJ-1 before" is the result of adding DJ-1 at the same time and MG and dG.



Supplemental Figure S3. Aldehyde scavengers reduce glycation products similarly to DJ-1. (A) HPLC elution profile of dG glycation by MG in the absence of DNPH. (B) Addition of DNPH with MG results in predominantly unmodified dG, similar to the effect of DJ-1 in Fig. 2A,B and Supplemental Fig. S1F. (C) Incubation of DNPH with MG creates several hydrazones (peaks 5,6, and 7) that absorb at 510 nm as described in (Gilbert & Brandt 1975). (D) Aminoguanidine has similar effects to DNPH (B) and DJ-1 (Fig. 2A,B and Supplemental Fig. S2F) on preventing dG glycation.



Supplemental Figure S4. Proposed mechanism for DJ-1 glyoxalase activity. Electron flow is shown with curved arrows, with MG in red and water in blue. Direction of the reaction is shown with straight arrows, with some steps presumed reversible shown in double arrows. We note that the identities of the general base B and the general acid HA are not known but may represent a protonation/deprotonation cycle of Glu18, although this is speculative.



Supplemental Figure S5. DJ-1 slightly decreases cellular concentrations of irreversible glycation products in whole mouse brain. In all panels, isotope-dilution mass spectrometry was used to obtain relative concentrations of modified vs. unmodified dG, G, or Lys. Two-way ANOVA with multiple comparisons was used for statistical analysis using Šídák's test with p-values shown. Detailed two-way ANOVA values are show in Supplemental Table S9. Small but consistent elevations in glycated products were observed in whole brains from DJ-1$^{-/-}$ mice compared to WT controls. Each measurement is shown as a circle with standard error of the mean shown in error bars.

We performed post hoc power calculations using the R package pwr2 with the function pwr.2way. Alpha was set at 0.05 and values of Cohen's f were derived from sum of squares in the respective two-way ANOVA calculated in Prism (GraphPad Software).

Table S1. Power Analysis for Data in Figures 5, 6, and S5

Figure (sample)	# groups Factor A	# groups, Factor B	n per group A	n per group B	f, factor A	f, factor B	Power
5A (M17)	3	2	3-6	3-6	1.41	0.65	1,0.965
5B (iPSC)	3	2	3-6	3-6	0.609	0.275	0.887, 0.359
5C (neurons)	3	2	3-4	3-4	0.893	0.474	0.96,0.6
6A (CEdG)	2	2	4	4	0.828	0.695	0.929,0.899
6B (CEG)	2	2	4	4	20.18	28.0	1,1
6C (CEL)	2	2	4	4	0.868	0.966	0.95,0.994
S5 (mouse brain)	3	2	5-6	5-6	0.673	1.17	0.941,0.999

We performed sample size stimulation using the R package pwr2 with the function ss.2way. Alpha was set at 0.05, beta as 0.2 (hence power = 0.8) and values of Cohen's f were derived from sum of squares in the respective two-way ANOVA calculated in Prism (GraphPad Software).

Table S2. Sample Size Simulation for Data in Figures 5, 6, and S5

Figure (sample)	# groups Factor A	# groups, Factor B	f, factor A	f, factor B	Total N for power = 0.8	Actual N
5A (M17)	3	2	1.41	0.65	48	40
5B (iPSC)	3	2	0.609	0.275	108	39
5C (neurons)	3	2	0.893	0.474	42	24
6A (CEdG)	2	2	0.828	0.695	20	16
6B (CEG)	2	2	20.18	28.0	8	16
6C (CEL)	2	2	0.868	0.966	16	16
S5 (mouse brain)	3	2	0.673	1.17	30	33

Table S3. Two-way ANOVA details for Figure 5A (CEdG, CEG, CEL in M17 cells)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	15							
Alpha	0.05							
Tukey's multiple comparisons test	Predicted (LS) mean diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
CEdG:WT vs. CEdG:-DJ-1	-0.9075	-2.601 to 0.7864	No	ns	0.5934			
CEdG:WT vs. CEG:WT	0.4275	-1.266 to 2.121	No	ns	0.9721			
CEdG:WT vs. CEG:-DJ-1	-0.3200	-2.014 to 1.374	No	ns	0.9923			
CEdG:WT vs. CEL:WT	-2.492	-4.567 to -0.4179	Yes	*	0.0110			
CEdG:WT vs. CEL:-DJ-1	-5.118	-7.193 to -3.044	Yes	****	<0.0001			
CEdG:-DJ-1 vs. CEG:WT	1.335	-0.3589 to 3.029	No	ns	0.1923			
CEdG:-DJ-1 vs. CEG:-DJ-1	0.5875	-1.106 to 2.281	No	ns	0.8985			
CEdG:-DJ-1 vs. CEL:WT	-1.585	-3.660 to 0.4896	No	ns	0.2196			
CEdG:-DJ-1 vs. CEL:-DJ-1	-4.211	-6.285 to -2.136	Yes	****	<0.0001			
CEG:WT vs. CEG:-DJ-1	-0.7475	-2.441 to 0.9464	No	ns	0.7655			
CEG:WT vs. CEL:WT	-2.920	-4.995 to -0.8454	Yes	**	0.0020			
CEG:WT vs. CEL:-DJ-1	-5.546	-7.620 to -3.471	Yes	****	<0.0001			
CEG:-DJ-1 vs. CEL:WT	-2.172	-4.247 to -0.09786	Yes	*	0.0357			
CEG:-DJ-1 vs. CEL:-DJ-1	-4.798	-6.873 to -2.724	Yes	****	<0.0001			
CEL:WT vs. CEL:-DJ-1	-2.626	-5.021 to -0.2301	Yes	*	0.0249			
Test details	Predicted (LS) mean 1	Predicted (LS) mean 2	Predicted (LS) mean diff.	SE of diff.	N1	N2	q	DF
CEdG:WT vs. CEdG:-DJ-1	1.993	2.900	-0.9075	0.5612	8	8	2.287	34.00
CEdG:WT vs. CEG:WT	1.993	1.565	0.4275	0.5612	8	8	1.077	34.00
CEdG:WT vs. CEG:-DJ-1	1.993	2.313	-0.3200	0.5612	8	8	0.8064	34.00
CEdG:WT vs. CEL:WT	1.993	4.485	-2.492	0.6874	8	4	5.128	34.00
CEdG:WT vs. CEL:-DJ-1	1.993	7.111	-5.118	0.6874	8	4	10.53	34.00
CEdG:-DJ-1 vs. CEG:WT	2.900	1.565	1.335	0.5612	8	8	3.364	34.00
CEdG:-DJ-1 vs. CEG:-DJ-1	2.900	2.313	0.5875	0.5612	8	8	1.480	34.00
CEdG:-DJ-1 vs. CEL:WT	2.900	4.485	-1.585	0.6874	8	4	3.261	34.00
CEdG:-DJ-1 vs. CEL:-DJ-1	2.900	7.111	-4.211	0.6874	8	4	8.663	34.00
CEG:WT vs. CEG:-DJ-1	1.565	2.313	-0.7475	0.5612	8	8	1.884	34.00
CEG:WT vs. CEL:WT	1.565	4.485	-2.920	0.6874	8	4	6.008	34.00
CEG:WT vs. CEL:-DJ-1	1.565	7.111	-5.546	0.6874	8	4	11.41	34.00
CEG:-DJ-1 vs. CEL:WT	2.313	4.485	-2.172	0.6874	8	4	4.470	34.00
CEG:-DJ-1 vs. CEL:-DJ-1	2.313	7.111	-4.798	0.6874	8	4	9.872	34.00
CEL:WT vs. CEL:-DJ-1	4.485	7.111	-2.626	0.7937	4	4	4.678	34.00

Table S4: Two-way ANOVA details for Figure 5B (CEdG, CEG, CEL in iPSC cells)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	15							
Alpha	0.05							
Tukey's multiple comparisons test	Predicted (LS) mean diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
CEdG:WT vs. CEdG:-DJ-1	-1.043	-3.746 to 1.659	No	ns	0.8489			
CEdG:WT vs. CEG:WT	0.1918	-2.511 to 2.895	No	ns	>0.9999			
CEdG:WT vs. CEG:-DJ-1	-3.196	-5.898 to -0.4930	Yes	*	0.0129			
CEdG:WT vs. CEL:WT	0.2488	-3.061 to 3.559	No	ns	>0.9999			
CEdG:WT vs. CEL:-DJ-1	-1.833	-5.493 to 1.826	No	ns	0.6576			
CEdG:-DJ-1 vs. CEG:WT	1.235	-1.468 to 3.938	No	ns	0.7373			
CEdG:-DJ-1 vs. CEG:-DJ-1	-2.152	-4.855 to 0.5504	No	ns	0.1829			
CEdG:-DJ-1 vs. CEL:WT	1.292	-2.018 to 4.602	No	ns	0.8429			
CEdG:-DJ-1 vs. CEL:-DJ-1	-0.7898	-4.449 to 2.870	No	ns	0.9858			
CEG:WT vs. CEG:-DJ-1	-3.388	-6.090 to -0.6848	Yes	**	0.0074			
CEG:WT vs. CEL:WT	0.05700	-3.253 to 3.367	No	ns	>0.9999			
CEG:WT vs. CEL:-DJ-1	-2.025	-5.684 to 1.634	No	ns	0.5583			
CEG:-DJ-1 vs. CEL:WT	3.445	0.1344 to 6.755	Yes	*	0.0375			
CEG:-DJ-1 vs. CEL:-DJ-1	1.363	-2.297 to 5.022	No	ns	0.8672			
CEL:WT vs. CEL:-DJ-1	-2.082	-6.210 to 2.046	No	ns	0.6513			
Test details	Predicted (LS) mean 1	Predicted (LS) mean 2	Predicted (LS) mean diff.	SE of diff.	N1	N2	q	DF
CEdG:WT vs. CEdG:-DJ-1	2.917	3.960	-1.043	0.8939	8	8	1.651	33.00
CEdG:WT vs. CEG:WT	2.917	2.725	0.1918	0.8939	8	8	0.3035	33.00
CEdG:WT vs. CEG:-DJ-1	2.917	6.113	-3.196	0.8939	8	8	5.056	33.00
CEdG:WT vs. CEL:WT	2.917	2.668	0.2488	1.095	8	4	0.3214	33.00
CEdG:WT vs. CEL:-DJ-1	2.917	4.750	-1.833	1.210	8	3	2.142	33.00
CEdG:-DJ-1 vs. CEG:WT	3.960	2.725	1.235	0.8939	8	8	1.954	33.00
CEdG:-DJ-1 vs. CEG:-DJ-1	3.960	6.113	-2.152	0.8939	8	8	3.405	33.00
CEdG:-DJ-1 vs. CEL:WT	3.960	2.668	1.292	1.095	8	4	1.669	33.00
CEdG:-DJ-1 vs. CEL:-DJ-1	3.960	4.750	-0.7898	1.210	8	3	0.9229	33.00
CEG:WT vs. CEG:-DJ-1	2.725	6.113	-3.388	0.8939	8	8	5.359	33.00
CEG:WT vs. CEL:WT	2.725	2.668	0.05700	1.095	8	4	0.07363	33.00
CEG:WT vs. CEL:-DJ-1	2.725	4.750	-2.025	1.210	8	3	2.366	33.00
CEG:-DJ-1 vs. CEL:WT	6.113	2.668	3.445	1.095	8	4	4.450	33.00
CEG:-DJ-1 vs. CEL:-DJ-1	6.113	4.750	1.363	1.210	8	3	1.592	33.00
CEL:WT vs. CEL:-DJ-1	2.668	4.750	-2.082	1.365	4	3	2.156	33.00

Table S5: Two-way ANOVA details for Figure 5C (CEdG, CEG, CEL in mouse primary neurons)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	15							
Alpha	0.05							
Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
CEdG:WT vs. CEdG:-DJ-1	-1.625	-7.840 to 4.590	No	ns	0.9577			
CEdG:WT vs. CEG:WT	-2.475	-8.690 to 3.740	No	ns	0.7991			
CEdG:WT vs. CEG:-DJ-1	-5.925	-12.14 to 0.2897	No	ns	0.0668			
CEdG:WT vs. CEL:WT	1.824	-4.391 to 8.038	No	ns	0.9327			
CEdG:WT vs. CEL:-DJ-1	0.09000	-6.125 to 6.305	No	ns	>0.9999			
CEdG:-DJ-1 vs. CEG:WT	-0.8500	-7.065 to 5.365	No	ns	0.9977			
CEdG:-DJ-1 vs. CEG:-DJ-1	-4.300	-10.51 to 1.915	No	ns	0.2854			
CEdG:-DJ-1 vs. CEL:WT	3.449	-2.766 to 9.663	No	ns	0.5111			
CEdG:-DJ-1 vs. CEL:-DJ-1	1.715	-4.500 to 7.930	No	ns	0.9473			
CEG:WT vs. CEG:-DJ-1	-3.450	-9.665 to 2.765	No	ns	0.5107			
CEG:WT vs. CEL:WT	4.299	-1.916 to 10.51	No	ns	0.2857			
CEG:WT vs. CEL:-DJ-1	2.565	-3.650 to 8.780	No	ns	0.7751			
CEG:-DJ-1 vs. CEL:WT	7.749	1.534 to 13.96	Yes	**	0.0100			
CEG:-DJ-1 vs. CEL:-DJ-1	6.015	-0.1997 to 12.23	No	ns	0.0611			
CEL:WT vs. CEL:-DJ-1	-1.734	-7.948 to 4.481	No	ns	0.9449			
Test details	Mean 1	Mean 2	Mean Diff.	SE of diff.	N1	N2	q	DF
CEdG:WT vs. CEdG:-DJ-1	3.500	5.125	-1.625	1.956	4	4	1.175	18.00
CEdG:WT vs. CEG:WT	3.500	5.975	-2.475	1.956	4	4	1.790	18.00
CEdG:WT vs. CEG:-DJ-1	3.500	9.425	-5.925	1.956	4	4	4.285	18.00
CEdG:WT vs. CEL:WT	3.500	1.676	1.824	1.956	4	4	1.319	18.00
CEdG:WT vs. CEL:-DJ-1	3.500	3.410	0.09000	1.956	4	4	0.06509	18.00
CEdG:-DJ-1 vs. CEG:WT	5.125	5.975	-0.8500	1.956	4	4	0.6147	18.00
CEdG:-DJ-1 vs. CEG:-DJ-1	5.125	9.425	-4.300	1.956	4	4	3.110	18.00
CEdG:-DJ-1 vs. CEL:WT	5.125	1.676	3.449	1.956	4	4	2.494	18.00
CEdG:-DJ-1 vs. CEL:-DJ-1	5.125	3.410	1.715	1.956	4	4	1.240	18.00
CEG:WT vs. CEG:-DJ-1	5.975	9.425	-3.450	1.956	4	4	2.495	18.00
CEG:WT vs. CEL:WT	5.975	1.676	4.299	1.956	4	4	3.109	18.00
CEG:WT vs. CEL:-DJ-1	5.975	3.410	2.565	1.956	4	4	1.855	18.00
CEG:-DJ-1 vs. CEL:WT	9.425	1.676	7.749	1.956	4	4	5.604	18.00
CEG:-DJ-1 vs. CEL:-DJ-1	9.425	3.410	6.015	1.956	4	4	4.350	18.00
CEL:WT vs. CEL:-DJ-1	1.676	3.410	-1.734	1.956	4	4	1.254	18.00

Table S6: Two-way ANOVA details for Figure 6A (CEdG in M17 cells, BSO vs. vehicle)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	6							
Alpha	0.05							
Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	-0.2073	-0.8115 to 0.3970	No	ns	0.7423			
Vehicle:Control shRNA vs. BSO:Control shRNA	-0.1583	-0.7625 to 0.4460	No	ns	0.8631			
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	-0.9148	-1.519 to -0.3105	Yes	**	0.0035			
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	0.04900	-0.5553 to 0.6533	No	ns	0.9948			
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	-0.7075	-1.312 to -0.1032	Yes	*	0.0206			
BSO:Control shRNA vs. BSO:DJ-1 shRNA	-0.7565	-1.361 to -0.1522	Yes	*	0.0135			
Test details	Mean 1	Mean 2	Mean Diff.	SE of diff.	N1	N2	q	DF
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	0.9353	1.143	-0.2073	0.2035	4	4	1.440	12.00
Vehicle:Control shRNA vs. BSO:Control shRNA	0.9353	1.094	-0.1583	0.2035	4	4	1.100	12.00
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	0.9353	1.850	-0.9148	0.2035	4	4	6.356	12.00
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	1.143	1.094	0.04900	0.2035	4	4	0.3405	12.00
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	1.143	1.850	-0.7075	0.2035	4	4	4.916	12.00
BSO:Control shRNA vs. BSO:DJ-1 shRNA	1.094	1.850	-0.7565	0.2035	4	4	5.257	12.00

Table S7: Two-way ANOVA details for Figure 6B (CEG in M17 cells, BSO vs. vehicle)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	6							
Alpha	0.05							
Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	-0.2500	-2.977 to 2.477	No	ns	0.9926			
Vehicle:Control shRNA vs. BSO:Control shRNA	-0.5500	-3.277 to 2.177	No	ns	0.9305			
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	-3.425	-6.152 to -0.6984	Yes	*	0.0132			
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	-0.3000	-3.027 to 2.427	No	ns	0.9874			
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	-3.175	-5.902 to -0.4484	Yes	*	0.0213			
BSO:Control shRNA vs. BSO:DJ-1 shRNA	-2.875	-5.602 to -0.1484	Yes	*	0.0378			
Test details	Mean 1	Mean 2	Mean Diff.	SE of diff.	N1	N2	q	DF
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	3.375	3.625	-0.2500	0.9184	4	4	0.3850	12.00
Vehicle:Control shRNA vs. BSO:Control shRNA	3.375	3.925	-0.5500	0.9184	4	4	0.8469	12.00
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	3.375	6.800	-3.425	0.9184	4	4	5.274	12.00
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	3.625	3.925	-0.3000	0.9184	4	4	0.4620	12.00
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	3.625	6.800	-3.175	0.9184	4	4	4.889	12.00
BSO:Control shRNA vs. BSO:DJ-1 shRNA	3.925	6.800	-2.875	0.9184	4	4	4.427	12.00

Table S8: Two-way ANOVA details for Figure 6C (CEL in M17 cells, BSO vs. vehicle)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	6							
Alpha	0.05							
Tukey's multiple comparisons test	Mean Diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	-0.6150	-1.291 to 0.06127	No	ns	0.0792			
Vehicle:Control shRNA vs. BSO:Control shRNA	-8.880	-9.556 to -8.204	Yes	****	<0.0001			
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	-14.17	-14.85 to -13.50	Yes	****	<0.0001			
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	-8.265	-8.941 to -7.589	Yes	****	<0.0001			
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	-13.56	-14.23 to -12.88	Yes	****	<0.0001			
BSO:Control shRNA vs. BSO:DJ-1 shRNA	-5.293	-5.969 to -4.616	Yes	****	<0.0001			
Test details	Mean 1	Mean 2	Mean Diff.	SE of diff.	N1	N2	q	DF
Vehicle:Control shRNA vs. Vehicle:DJ-1 shRNA	2.435	3.050	-0.6150	0.2278	4	4	3.818	12.00
Vehicle:Control shRNA vs. BSO:Control shRNA	2.435	11.32	-8.880	0.2278	4	4	55.13	12.00
Vehicle:Control shRNA vs. BSO:DJ-1 shRNA	2.435	16.61	-14.17	0.2278	4	4	87.99	12.00
Vehicle:DJ-1 shRNA vs. BSO:Control shRNA	3.050	11.32	-8.265	0.2278	4	4	51.31	12.00
Vehicle:DJ-1 shRNA vs. BSO:DJ-1 shRNA	3.050	16.61	-13.56	0.2278	4	4	84.17	12.00
BSO:Control shRNA vs. BSO:DJ-1 shRNA	11.32	16.61	-5.293	0.2278	4	4	32.86	12.00

Table S9: Two-way ANOVA details for Figure S5 (whole mouse brain)

Compare cell means regardless of rows and columns								
Number of families	1							
Number of comparisons per family	15							
Alpha	0.05							
Šídák's multiple comparisons test	Predicted (LS) mean diff.	95.00% CI of diff.	Below threshold?	Summary	Adjusted P Value			
CEdG:WT vs. CEdG:DJ-1 KO	-1.139	-2.117 to -0.1615	Yes	*	0.0131			
CEdG:WT vs. CEG:WT	-0.8060	-1.827 to 0.2153	No	ns	0.2318			
CEdG:WT vs. CEG:DJ-1 KO	-1.479	-2.457 to -0.5015	Yes	***	0.0007			
CEdG:WT vs. CEL:WT	0.2712	-0.7502 to 1.292	No	ns	0.9995			
CEdG:WT vs. CEL:DJ-1 KO	-1.137	-2.115 to -0.1596	Yes	*	0.0133			
CEdG:DJ-1 KO vs. CEG:WT	0.3333	-0.6445 to 1.311	No	ns	0.9933			
CEdG:DJ-1 KO vs. CEG:DJ-1 KO	-0.3400	-1.272 to 0.5923	No	ns	0.9872			
CEdG:DJ-1 KO vs. CEL:WT	1.410	0.4326 to 2.388	Yes	**	0.0012			
CEdG:DJ-1 KO vs. CEL:DJ-1 KO	0.001874	-0.9305 to 0.9342	No	ns	>0.9999			
CEG:WT vs. CEG:DJ-1 KO	-0.6733	-1.651 to 0.3045	No	ns	0.4207			
CEG:WT vs. CEL:WT	1.077	0.05582 to 2.098	Yes	*	0.0324			
CEG:WT vs. CEL:DJ-1 KO	-0.3315	-1.309 to 0.6464	No	ns	0.9936			
CEG:DJ-1 KO vs. CEL:WT	1.750	0.7726 to 2.728	Yes	****	<0.0001			
CEG:DJ-1 KO vs. CEL:DJ-1 KO	0.3419	-0.5905 to 1.274	No	ns	0.9865			
CEL:WT vs. CEL:DJ-1 KO	-1.409	-2.386 to -0.4308	Yes	**	0.0013			
Test details	Predicted (LS) mean 1	Predicted (LS) mean 2	Predicted (LS) mean diff.	SE of diff.	N1	N2	t	DF
CEdG:WT vs. CEdG:DJ-1 KO	1.854	2.993	-1.139	0.3046	5	6	3.740	27.00
CEdG:WT vs. CEG:WT	1.854	2.660	-0.8060	0.3182	5	5	2.533	27.00
CEdG:WT vs. CEG:DJ-1 KO	1.854	3.333	-1.479	0.3046	5	6	4.856	27.00
CEdG:WT vs. CEL:WT	1.854	1.583	0.2712	0.3182	5	5	0.8522	27.00
CEdG:WT vs. CEL:DJ-1 KO	1.854	2.991	-1.137	0.3046	5	6	3.734	27.00
CEdG:DJ-1 KO vs. CEG:WT	2.993	2.660	0.3333	0.3046	6	5	1.094	27.00
CEdG:DJ-1 KO vs. CEG:DJ-1 KO	2.993	3.333	-0.3400	0.2905	6	6	1.171	27.00
CEdG:DJ-1 KO vs. CEL:WT	2.993	1.583	1.410	0.3046	6	5	4.630	27.00
CEdG:DJ-1 KO vs. CEL:DJ-1 KO	2.993	2.991	0.001874	0.2905	6	6	0.006452	27.00
CEG:WT vs. CEG:DJ-1 KO	2.660	3.333	-0.6733	0.3046	5	6	2.210	27.00
CEG:WT vs. CEL:WT	2.660	1.583	1.077	0.3182	5	5	3.385	27.00
CEG:WT vs. CEL:DJ-1 KO	2.660	2.991	-0.3315	0.3046	5	6	1.088	27.00
CEG:DJ-1 KO vs. CEL:WT	3.333	1.583	1.750	0.3046	6	5	5.746	27.00
CEG:DJ-1 KO vs. CEL:DJ-1 KO	3.333	2.991	0.3419	0.2905	6	6	1.177	27.00
CEL:WT vs. CEL:DJ-1 KO	1.583	2.991	-1.409	0.3046	5	6	4.624	27.00

Supplemental References

Gilbert, R. P. and Brandt, R. B. (1975) Spectrometric Determination of Methylglyoxal with 2,4-dinitrophenylhydrazine. *Analytical Chemistry* **47,** 2418-2422.