







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Three-dimensional genome restructuring across timescales of activity-induced neuronal gene expression

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Supplemental Tables

Table S1. Summary of new 5C datasets provided in this study

Condition	Rep	Cell Type	Primer Set*	5C Sequencing Run	Total Mapped Reads (Paired End 1)	Total Mapped Reads (Paired End 2)
Bic (DIV16)	1	Cortical Neuron	Activity	1	15629758	13994700
Bic (DIV16)	2	Cortical Neuron	Activity	1	17872216	16068115
Bic (DIV16)	3	Cortical Neuron	Activity	2	13358656	13182759
Bic (DIV16)	4	Cortical Neuron	Activity	2	12761525	12560359
Bic (DIV16)	1	Cortical Neuron	Synaptic	1	21489169	19378693
Bic (DIV16)	2	Cortical Neuron	Synaptic	1	14655973	13225858
Bic (DIV16)	3	Cortical Neuron	Synaptic	2	11258574	11108043
Bic (DIV16)	4	Cortical Neuron	Synaptic	2	10640297	10455808
TTX (DIV16)	1	Cortical Neuron	Activity	1	19957660	18061209
TTX (DIV16)	2	Cortical Neuron	Activity	1	19462095	17617327
TTX (DIV16)	3	Cortical Neuron	Activity	2	11475372	11280130
TTX (DIV16)	4	Cortical Neuron	Activity	2	11576011	11376399
TTX (DIV16)	1	Cortical Neuron	Synaptic	1	17730187	16044486
TTX (DIV16)	2	Cortical Neuron	Synaptic	1	22476694	20350478
TTX (DIV16)	3	Cortical Neuron	Synaptic	2	12489964	12229149
TTX (DIV16)	4	Cortical Neuron	Synaptic	2	12474307	12266865
Untreat (DIV16)	1	Cortical Neuron	Activity	1	20574076	18647762
Untreat (DIV16)	2	Cortical Neuron	Activity	1	19880857	17961279
Untreat (DIV16)	3	Cortical Neuron	Activity	2	10041836	9843702
Untreat (DIV16)	4	Cortical Neuron	Activity	2	10897728	10658216
Untreat (DIV16)	1	Cortical Neuron	Synaptic	1	24964591	22576821
Untreat (DIV16)	2	Cortical Neuron	Synaptic	1	17861704	16068258
Untreat (DIV16)	3	Cortical Neuron	Synaptic	2	11232157	11041243
Untreat (DIV16)	4	Cortical Neuron	Synaptic	2	10945734	10777809

*5C Primer Sets:

Activity = BDNF, FOS, ARC

Synaptic = NRXN1, SYT1, NLGN3

Table S2 – Summary of new RNA-seq datasets provided in this study

Condition	Rep Name	Sequenced Reads	Mapped Reads (RefSeq Transcriptome)
DIV5	DIV5_2-2-17_Rep1	66596616	42931843
Div5	DIV5_2-2-17_Rep2	66127710	43785136
Div5	DIV5_2-5-17_Rep2	74490452	45382360
Untreated	DIV16_Untreat_2-13-17_Rep1	76292600	45728980
Untreated	DIV16_Untreat_2-13-17_Rep2	70313996	43709559
Untreated	DIV16_Untreat_2-16-17_Rep2	73031884	41965444
TTX	DIV16_TTX_2-13-17_Rep1	67865345	42933935
TTX	DIV16_TTX_2-13-17_Rep2	71808738	43452817
TTX	DIV16_TTX_2-16-17_Rep1	80579287	54155741
Bic	DIV16_Bicuc_2-13-17_Rep1	71158871	46802769
Bic	DIV16_Bicuc_2-13-17_Rep2	70726507	43333176
Bic	DIV16_Bicuc_2-16-17_Rep2	76301581	46085188

Table S3 –Transcripts per million (TPM) counts across DIV and activation time points for RefSeq transcriptome

Provided in separate spreadsheet.

Table S4 – Results of the Sleuth Wald test for differential expression

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Table S5 – Summary of previously published HiC datasets analyzed

Tissue/Cell Type	Rep	Total Mapped Reads (Paired End 1)	Total Mapped Reads (Paired End 2)	Total Valid Pairs	Assembly	GEO Sample ID	Reference
ES	1	2456874859	2410167937	1694547628	mm9	GSM2533818	(Bonev et al. 2017)
ES	2	1263130596	1228304467	874261374	mm9	GSM2533819	(Bonev et al. 2017)
ES	3	2673778757	2640856932	1861707555	mm9	GSM2533820	(Bonev et al. 2017)
ES	4	508261688	499843892	355266330	mm9	GSM2533821	(Bonev et al. 2017)
ES	merged	6902045900	6779173228	4785782887			
NPC	1	1224587101	1216240550	850812082	mm9	GSM2533822	(Bonev et al. 2017)
NPC	2	2076449282	2073685785	1425496094	mm9	GSM2533823	(Bonev et al. 2017)
NPC	3	1443846007	1437360743	967787722	mm9	GSM2533824	(Bonev et al. 2017)
NPC	4	3538265465	3534220365	2465796658	mm9	GSM2533825	(Bonev et al. 2017)

NPC	merged	8283147855	8261507443	5709892556			
Cortical Neuron	1	742260464	738703350	510995484	mm9	GSM2533826	(Bonev et al. 2017)
Cortical Neuron	2	741509478	736455469	515304241	mm9	GSM2533827	(Bonev et al. 2017)
Cortical Neuron	3	1050785183	1052901789	732518157	mm9	GSM2533828	(Bonev et al. 2017)
Cortical Neuron	4	1668657503	1662949431	1163551034	mm9	GSM2533829	(Bonev et al. 2017)
Cortical Neuron	5	2324686938	2092692067	1430515014	mm9	GSM2533830	(Bonev et al. 2017)
Cortical Neuron	6	1797395887	1792866442	1237396926	mm9	GSM2533831	(Bonev et al. 2017)
Cortical Neuron	merged	8325295453	8076568548	5590280856			
Cortical Plate	1	680901460	669828525	477401617	hg19	GSM2054564	(Won et al. 2016)
Cortical Plate	2	668075261	655925822	479063672	hg19	GSM2054565	(Won et al. 2016)
Cortical Plate	3	502608925	489115991	362837579	hg19	GSM2054566	(Won et al. 2016)
Cortical Plate	merged	1851585646	1814870338	1319302868			
Germinal Zone	1	682518562	675056439	487874057	hg19	GSM2054567	(Won et al. 2016)
Germinal Zone	2	696799199	689981271	503166075	hg19	GSM2054568	(Won et al. 2016)
Germinal Zone	3	523694404	512704502	384384534	hg19	GSM2054569	(Won et al. 2016)
Germinal Zone	merged	1903012165	1877742212	1375424666			

Table S6 – 5C Loop Calls

Provided in separate spreadsheet.

Table S7 – Summary of new ChIP-seq datasets provided in this study

Target	Condition	Cell Type	Mapped Test ChIP-seq Reads	Number non-redundant tags utilized (after down-sampling)	Control Samples	Mapped Control ChIP-seq Reads	Number non-redundant tags utilized (after down-sampling)
H3K27ac	Bic	Cortical Neuron	41021267	38000000	Bic Treated Cortical Neuron	47530457	44000000
H3K27ac	TTX	Cortical Neuron	56699076	38000000	TTX Treated Cortical Neuron	52796934	44000000

H3K27ac	Untreat	Cortical Neuron	66252853	38000000	Untreated Cortical Neuron	83933042	44000000
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REFERENCES

1. Wang, J., Vasaiakar, S., Shi, Z., Greer, M. & Zhang, B. WebGestalt 2017: a more comprehensive, powerful, flexible and interactive gene set enrichment analysis toolkit. *Nucleic Acids Res* **45**, W130-W137 (2017).