

Outline

Mapping stats

Peak calling

- Correlation between replicates

- Stats peaks

- Number of shared peaks

- Number of peaks in 5kb upstream of up and downregulated genes

- Intersection ATACseq peaks and histones

Outline

Mapping stats

Peak calling

id	reads	Uniquely mapped reads	% Uniquely mapped reads	mapped multiple loci	% mapped multiple loci	unmapped too short
eye1	38,164,421	25,859,480	67.76%	1,086,242	2.85%	26.11%
eye2	39,553,256	33,523,739	84.76%	1,422,159	3.60%	7.81%
ctrl-96h-1	31,165,523	23,912,148	76.73%	790,514	2.54%	18.22%
ctrl-96h-2	42,554,815	33,301,213	78.25%	1,940,209	4.56%	13.04%
11h-0h-ctrl-1	42,755,866	33,232,371	77.73%	996,926	2.33%	17.32%
11h-0h-ctrl-2	40,629,916	30,849,827	75.93%	1,318,698	3.25%	17.48%
11h-0h-1	37,206,314	23,521,988	63.22%	2,055,780	5.53%	26.39%
11h-0h-2	39,172,203	28,179,076	71.94%	1,530,227	3.91%	20.77%
16h-0h-ctrl-1	27,229,630	23,345,989	85.74%	924,314	3.39%	7.59%
16h-0h-ctrl-2	31,163,300	24,285,870	77.93%	887,087	2.85%	16.46%
16h-0h-1	33,530,934	25,385,401	75.71%	985,095	2.94%	18.69%
16h-0h-2	39,498,659	26,695,941	67.59%	959,131	2.43%	27.88%
16h-15h-ctrl-1	33,805,236	19,462,562	57.57%	1,109,199	3.28%	35.99%
16h-15h-ctrl-2	35,428,731	25,439,143	71.80%	1,383,546	3.91%	20.37%
16h-15h-1	34,716,712	28,706,599	82.69%	1,433,437	4.13%	9.57%
16h-15h-2	30,936,937	22,732,653	73.48%	952,562	3.08%	20.47%
16h-25h-ctrl-1	36,511,208	29,609,781	81.10%	1,102,594	3.02%	12.67%
16h-25h-ctrl-2	39,248,886	30,389,394	77.43%	929,551	2.37%	17.50%
16h-25h-1	32,414,365	23,552,045	72.66%	1,348,374	4.16%	19.53%
16h-25h-2	36,262,439	26,846,043	74.03%	1,172,847	3.23%	19.68%
wing Marina	97,722,180	83,644,595	85.59%	2,877,021	2.94%	8.20%
Aerts et al 2015	16,077,656	14,138,498	87.94%	537,516	3.34%	4.21%

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- Intersection ATACseq peaks and histones

Peak calling

- ▶ uniquely mapped reads
- ▶ extsize 100
- ▶ shift -50

Outline

Mapping stats

Peak calling

Correlation between replicates

Stats peaks

Number of shared peaks

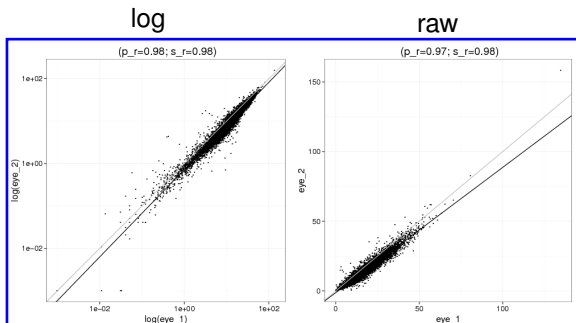
Number of peaks in 5kb upstream of up and downregulated genes

Intersection ATACseq peaks and histones

Correlation between replicates: mean 10kb window

Eye

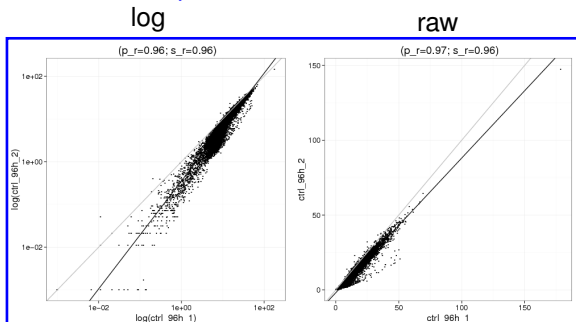
Control



Correlation between replicates: mean 10kb window

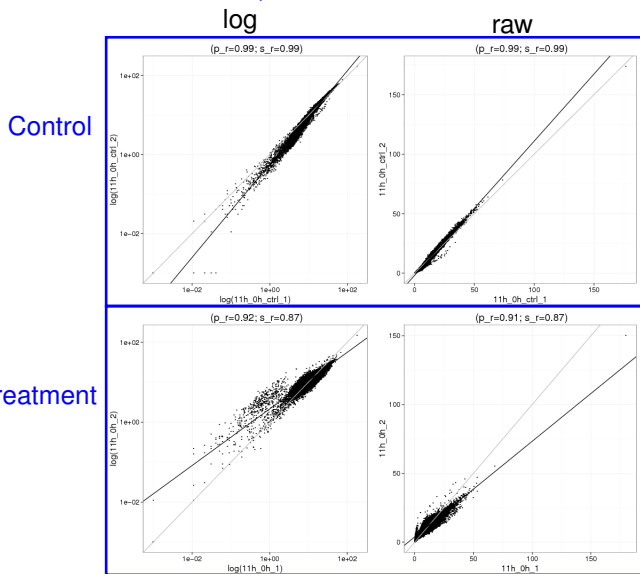
Control at 96h of development

Control



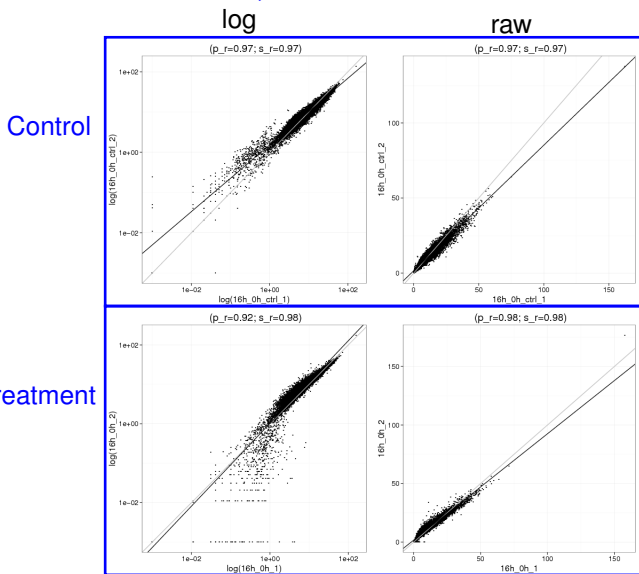
Correlation between replicates: mean 10kb window

11 hours of cell death, dissection at 0h after cell death induction



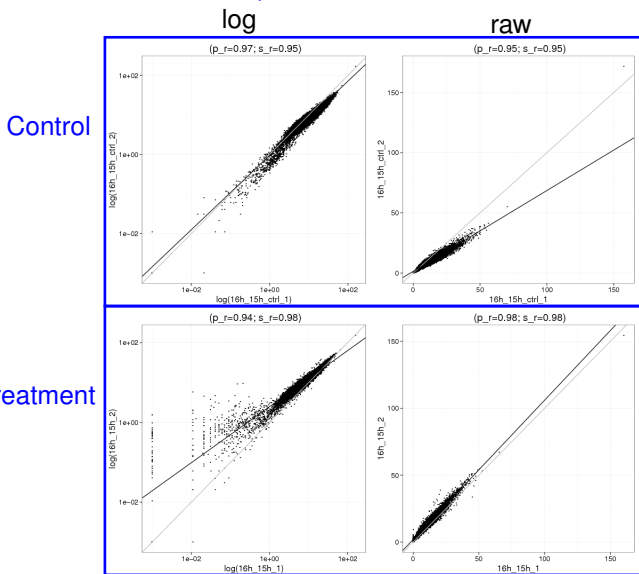
Correlation between replicates: mean 10kb window

16 hours of cell death, dissection at 0h after cell death induction



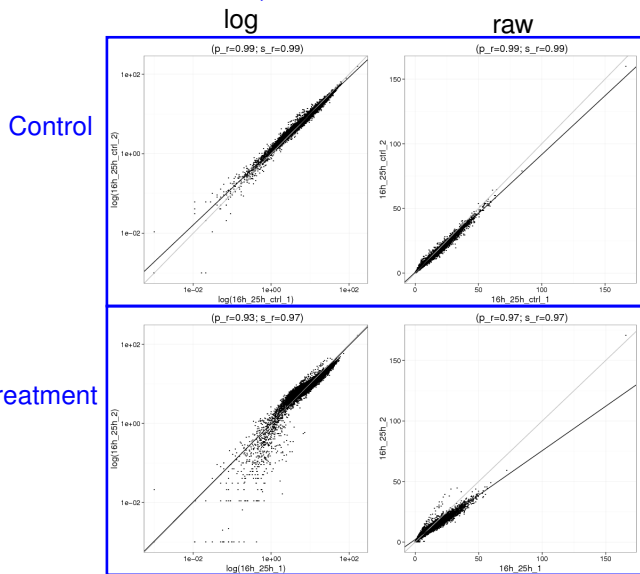
Correlation between replicates: mean 10kb window

16 hours of cell death, dissection at 15h after cell death induction



Correlation between replicates: mean 10kb window

16 hours of cell death, dissection at 25h after cell death induction



Outline

Mapping stats

Peak calling

Correlation between replicates

Stats peaks

Number of shared peaks

Number of peaks in 5kb upstream of up and downregulated genes

Intersection ATACseq peaks and histones

Number of peaks called

nb of peaks

sample	nb of peaks
11h-0h-1	19417
11h-0h-2	21033
11h-0h-ctrl-1	25150
11h-0h-ctrl-2	24026
16h-0h-1	23532
16h-0h-2	26079
16h-0h-ctrl-1	24022
16h-0h-ctrl-2	23053
16h-15h-1	25156
16h-15h-2	24234
16h-15h-ctrl-1	23522
16h-15h-ctrl-2	24701
16h-25h-1	24337
16h-25h-2	24156
16h-25h-ctrl-1	23795
16h-25h-ctrl-2	23234
ctrl-96h-1	25866
ctrl-96h-2	25850
eye1	23095
eye2	24956

nb of peaks per chr

chr	sample	nb peaks
chr2L	11h-0h-1	3307
chr2L	11h-0h-2	3575
chr2L	11h-0h-ctrl-1	4518
chr2L	11h-0h-ctrl-2	4221
chr2L	16h-0h-1	4123
chr2L	16h-0h-2	4706
chr2L	16h-0h-ctrl-1	4336
chr2L	16h-0h-ctrl-2	4075
chr2L	16h-15h-1	4393
chr2L	16h-15h-2	4243
chr2L	16h-15h-ctrl-1	4083
chr2L	16h-15h-ctrl-2	4322
chr2L	16h-25h-1	4141
chr2L	16h-25h-2	4268
chr2L	16h-25h-ctrl-1	4228
chr2L	16h-25h-ctrl-2	4145
chr2L	ctrl-96h-1	4556
chr2L	ctrl-96h-2	4371
chr2L	eye1	4094
chr2L	eye2	4424

nb of peaks per chr

chr	sample	nb peaks
chr2R	11h-0h-1	3625
chr2R	11h-0h-2	3826
chr2R	11h-0h-ctrl-1	4744
chr2R	11h-0h-ctrl-2	4522
chr2R	16h-0h-1	4308
chr2R	16h-0h-2	4807
chr2R	16h-0h-ctrl-1	4485
chr2R	16h-0h-ctrl-2	4258
chr2R	16h-15h-1	4655
chr2R	16h-15h-2	4411
chr2R	16h-15h-ctrl-1	4327
chr2R	16h-15h-ctrl-2	4502
chr2R	16h-25h-1	4330
chr2R	16h-25h-2	4481
chr2R	16h-25h-ctrl-1	4455
chr2R	16h-25h-ctrl-2	4340
chr2R	ctrl-96h-1	4753
chr2R	ctrl-96h-2	4737
chr2R	eye1	4287
chr2R	eye2	4604

Number of peaks called

nb of peaks per chr

chr	sample	nb peaks
chr3L	11h-0h-1	4025
chr3L	11h-0h-2	4350
chr3L	11h-0h-ctrl-1	5285
chr3L	11h-0h-ctrl-2	4957
chr3L	16h-0h-1	4906
chr3L	16h-0h-2	5454
chr3L	16h-0h-ctrl-1	5023
chr3L	16h-0h-ctrl-2	4783
chr3L	16h-15h-1	5207
chr3L	16h-15h-2	5045
chr3L	16h-15h-ctrl-1	4838
chr3L	16h-15h-ctrl-2	5095
chr3L	16h-25h-1	4948
chr3L	16h-25h-2	5036
chr3L	16h-25h-ctrl-1	4874
chr3L	16h-25h-ctrl-2	4895
chr3L	ctrl-96h-1	5331
chr3L	ctrl-96h-2	5203
chr3L	eye1	4758
chr3L	eye2	5120

nb of peaks per chr

chr	sample	nb peaks
chr3R	11h-0h-1	4497
chr3R	11h-0h-2	4572
chr3R	11h-0h-ctrl-1	5760
chr3R	11h-0h-ctrl-2	5453
chr3R	16h-0h-1	5243
chr3R	16h-0h-2	5925
chr3R	16h-0h-ctrl-1	5431
chr3R	16h-0h-ctrl-2	5176
chr3R	16h-15h-1	5674
chr3R	16h-15h-2	5371
chr3R	16h-15h-ctrl-1	5244
chr3R	16h-15h-ctrl-2	5567
chr3R	16h-25h-1	5360
chr3R	16h-25h-2	5415
chr3R	16h-25h-ctrl-1	5444
chr3R	16h-25h-ctrl-2	5355
chr3R	ctrl-96h-1	5845
chr3R	ctrl-96h-2	5747
chr3R	eye1	5076
chr3R	eye2	5687

nb of peaks per chr

chr	sample	nb peaks
chr4	11h-0h-1	170
chr4	11h-0h-2	229
chr4	11h-0h-ctrl-1	266
chr4	11h-0h-ctrl-2	260
chr4	16h-0h-1	227
chr4	16h-0h-2	257
chr4	16h-0h-ctrl-1	228
chr4	16h-0h-ctrl-2	264
chr4	16h-15h-1	268
chr4	16h-15h-2	280
chr4	16h-15h-ctrl-1	205
chr4	16h-15h-ctrl-2	287
chr4	16h-25h-1	264
chr4	16h-25h-2	314
chr4	16h-25h-ctrl-1	334
chr4	16h-25h-ctrl-2	289
chr4	ctrl-96h-1	250
chr4	ctrl-96h-2	240
chr4	eye1	375
chr4	eye2	310

Number of peaks called

nb of peaks per chr

chr	sample	nb peaks
chrM	11h-0h-1	8
chrM	11h-0h-2	8
chrM	11h-0h-ctrl-1	8
chrM	11h-0h-ctrl-2	9
chrM	16h-0h-1	10
chrM	16h-0h-2	8
chrM	16h-0h-ctrl-1	11
chrM	16h-0h-ctrl-2	9
chrM	16h-15h-1	8
chrM	16h-15h-2	9
chrM	16h-15h-ctrl-1	8
chrM	16h-15h-ctrl-2	9
chrM	16h-25h-1	9
chrM	16h-25h-2	9
chrM	16h-25h-ctrl-1	9
chrM	16h-25h-ctrl-2	10
chrM	ctrl-96h-1	10
chrM	ctrl-96h-2	6
chrM	eye1	8
chrM	eye2	11

Number of peaks called shared by replicates

Peaks should have 50% overlap between replicates

nb of peaks for each replicate

sample	nb of peaks
11h-0h-1	19417
11h-0h-2	21033
11h-0h-ctrl-1	25150
11h-0h-ctrl-2	24026
16h-0h-1	23532
16h-0h-2	26079
16h-0h-ctrl-1	24022
16h-0h-ctrl-2	23053
16h-15h-1	25156
16h-15h-2	24234
16h-15h-ctrl-1	23522
16h-15h-ctrl-2	24701
16h-25h-1	24337
16h-25h-2	24156
16h-25h-ctrl-1	23795
16h-25h-ctrl-2	23234
ctrl-96h-1	25866
ctrl-96h-2	25850
eye1	23095
eye2	24956

nb of peaks shared by replicates

sample	shared peaks
11h-0h-ctrl	19318
11h-0h	12671
16h-0h-ctrl	17180
16h-0h	19080
16h-15h-ctrl	17950
16h-15h	18711
16h-25h-ctrl	18291
16h-25h	17989
ctrl-96h	19037

Number of peaks - comparison between samples

Peaks should have 40% overlap between samples

Used only the peaks shared by both replicates

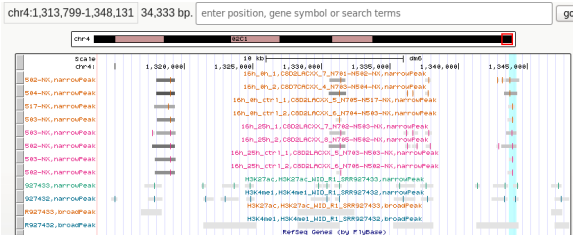
nb of peaks shared in each comparison

sample	shared peaks
16h-0h-treat VS 16h-25h-treat	15041
16h-0h-ctrl VS 16h-0h-treat	14775
16h-0h-ctrl VS 16h-25h-ctrl	14298
16h-25h-ctrl VS 16h-25h-treat	14668

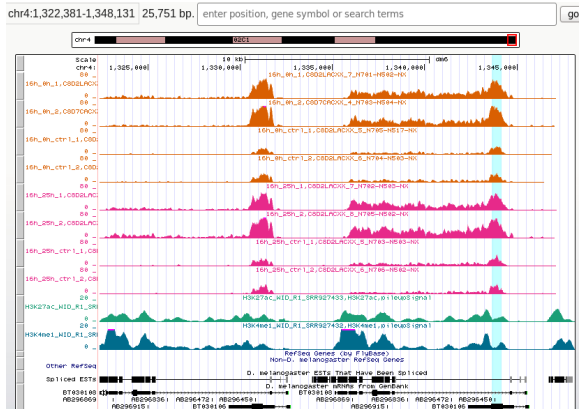
nb of peaks different in each comparison

sample	different peaks
16h-0h-treat VS 16h-25h-treat	4048
16h-25h-treat VS 16h-0h-treat	2692
16h-0h-ctrl VS 16h-0h-treat	2412
16h-0h-treat VS 16h-0h-ctrl	4262
16h-0h-ctrl VS 16h-25h-ctrl	2890
16h-25h-ctrl VS 16h-0h-ctrl	3755
16h-25h-ctrl VS 16h-25h-treat	3631
16h-25h-treat VS 16h-25h-ctrl	3189

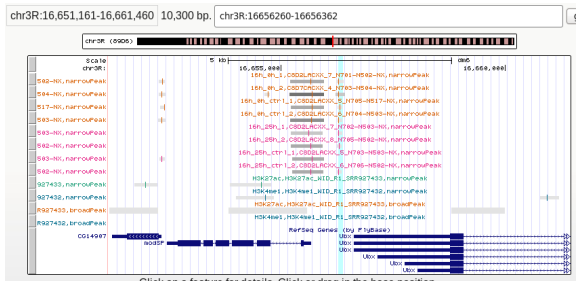
Compare peaks heights between 0h control and 0h treatment



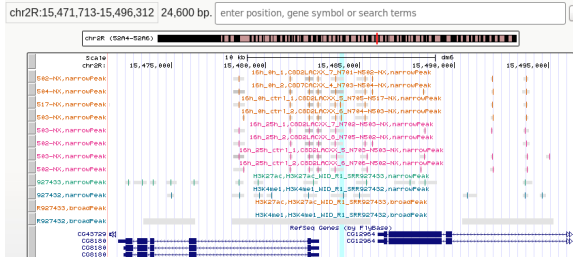
Compare peaks heights between 0h control and 0h treatment



Compare peaks heights between 0h control and 0h treatment



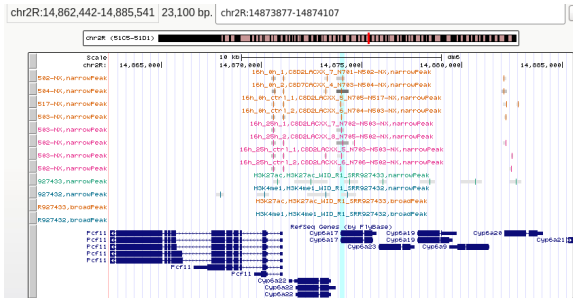
Compare peaks heights between 0h control and 0h treatment



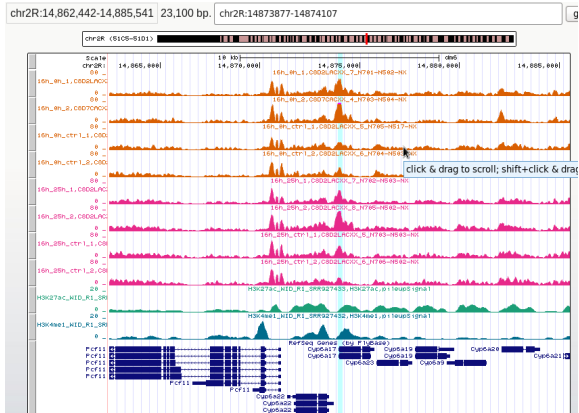
Compare peaks heights between 0h control and 0h treatment



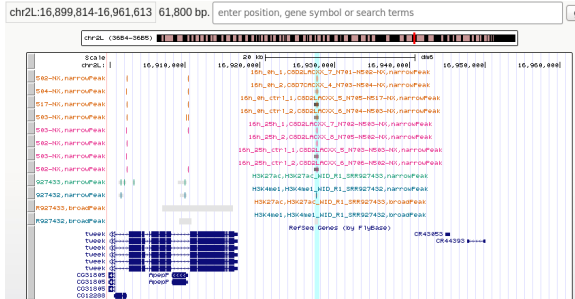
Compare peaks heights between 0h control and 0h treatment



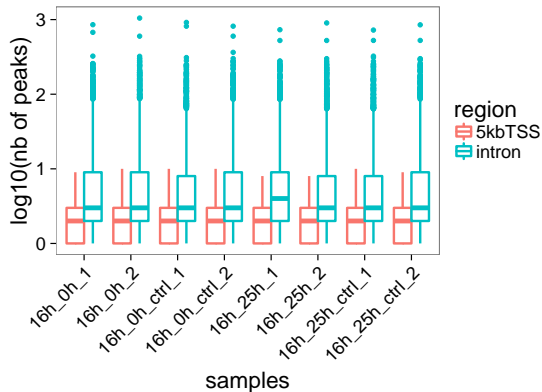
Compare peaks heights between 0h control and 0h treatment



Compare peaks heights between 0h control and 0h treatment



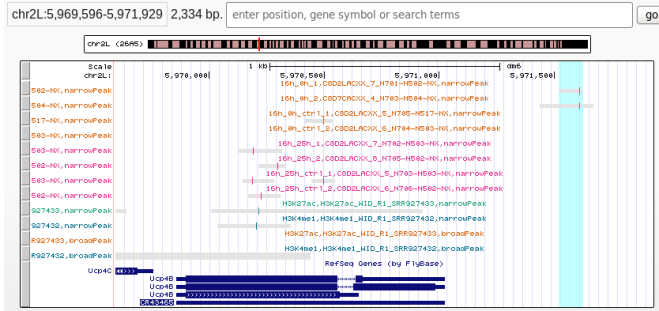
Number of peaks in the 5kb upstream of genes



Number of peaks in the TSS of 41 upregulated genes

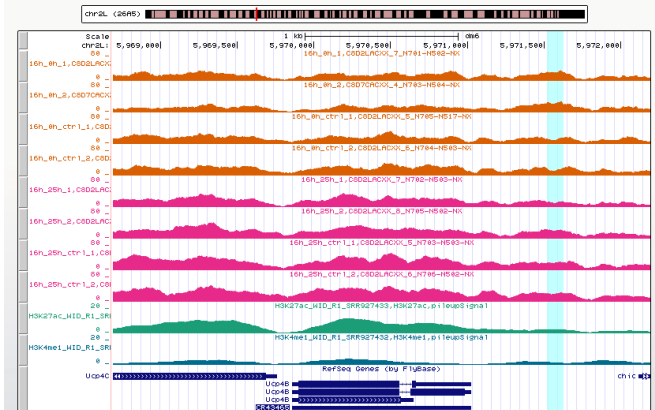
meta-gene	0h-ctrl-1	0h-ctrl-2	0h-treat-1	0h-treat-2	25h-treat-1	25h-treat-2
CG31955-mRNA-FBgn0051955	3	2	1	2	2	2
CR43465-ncRNA-FBgn0263442	0	0	1	1	0	0
CG12560-mRNA-FBgn0031974	3	4	3	4	2	3
Aldh-mRNA-FBgn0012036	1	0	0	1	1	0
CR44845-ncRNA-FBgn0266139	3	3	3	4	1	3
CG7294-mRNA-FBgn0032284	1	1	1	2	2	1
Adh-mRNA-FBgn0000055	0	0	1	2	0	0
CG10621-mRNA-FBgn0032726	0	0	0	1	0	1
fon-mRNA-FBgn0032773	2	3	3	2	3	3
CG33509-mRNA-FBgn0053509	0	0	0	1	0	0
ppk13-mRNA-FBgn0053508	1	1	1	2	1	1
scaf-mRNA-FBgn0033033	3	2	3	2	3	3
Cpr49Ah-mRNA-FBgn0033731	2	3	3	2	2	2
CG6701-mRNA-FBgn0033889	2	2	3	3	2	3
Arc1-mRNA-FBgn0033926	5	5	5	4	4	3
LamC-mRNA-FBgn0010397	2	3	1	2	1	3
CG10527-mRNA-FBgn0034583	4	3	3	3	3	4
lama-mRNA-FBgn0016031	4	5	5	5	5	4
rpr-mRNA-FBgn0011706	5	5	5	4	4	4

CR43465-ncRNA-FBgn0263442

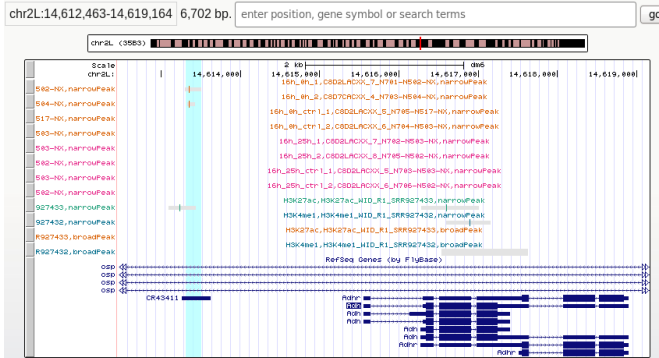


CR43465-ncRNA-FBgn0263442

chr2L:5,968,692-5,972,192 3,501 bp.



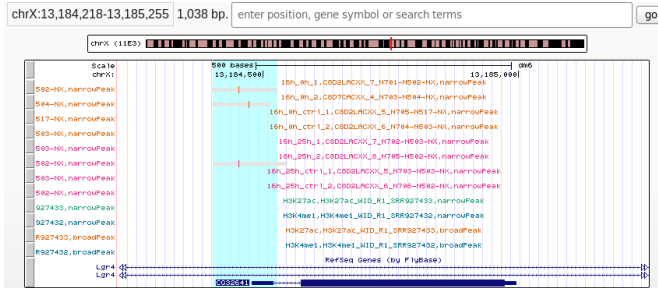
Adh-mRNA-FBgn0000055



Number of peaks in the TSS of 41 upregulated genes

meta-gene	0h-ctrl-1	0h-ctrl-2	0h-treat-1	0h-treat-2	25h-treat-1	25h-treat-2
TfAP-2-mRNA-FBgn0261953	1	1	2	2	2	2
CR46123-ncRNA-FBgn0267798	0	0	0	1	0	0
alpha-Est2-mRNA-FBgn0015570	2	1	1	1	2	0
Hsp70Ab-mRNA-FBgn0013276	4	4	4	3	2	4
CG5167-mRNA-FBgn0038038	1	1	2	1	4	1
Hsp70Bb-mRNA-FBgn0013278	1	2	2	3	3	3
CG31313-mRNA-FBgn0051313	1	0	0	0	0	0
ea-mRNA-FBgn0000533	2	3	3	3	3	3
CG33099-mRNA-FBgn0053099	1	2	1	2	2	1
CG5326-mRNA-FBgn0038983	2	2	1	2	1	2
Hsp68-mRNA-FBgn0001230	3	2	2	1	1	1
Ude-mRNA-FBgn0039226	2	1	1	2	1	1
CG34291-mRNA-FBgn0085320	4	3	3	5	4	5
CR44030-ncRNA-FBgn0264822	1	2	1	2	1	2
CR40469-ncRNA-FBgn0058469	2	1	3	4	2	3
CG13360-mRNA-FBgn0025620	2	1	1	1	1	1
w-mRNA-FBgn0003996	0	0	1	1	0	1
ssp7-mRNA-FBgn0052667	0	0	0	1	0	0
CG32641-mRNA-FBgn0052641	0	0	1	1	0	1
CR44383-pseudogene-FBgn0265533	1	4	3	4	3	3
CG32581-mRNA-FBgn0052581	2	4	5	7	4	5
CG32857-mRNA-FBgn0052857	0	0	0	1	0	0

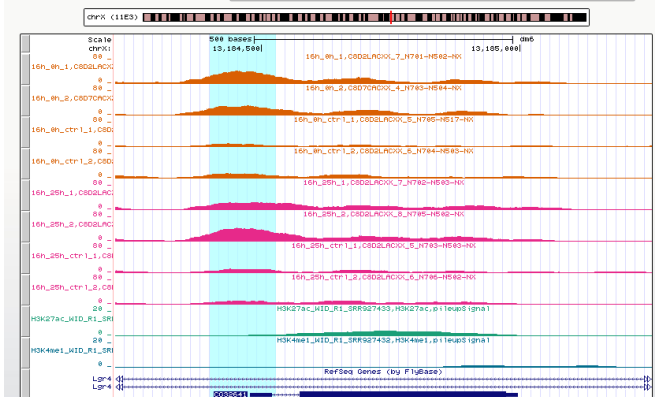
CG32641-mRNA-FBgn0052641



CG32641-mRNA-FBgn0052641

chrX:13,184,218-13,185,255 1,038 bp enter position, gene symbol or search terms

gc

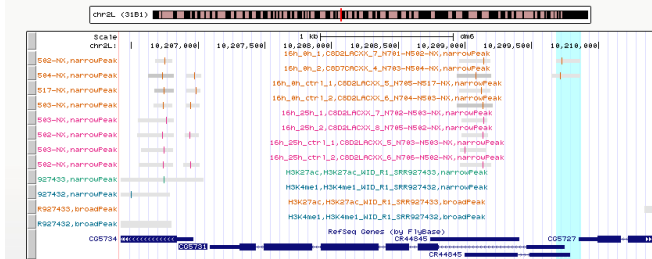


Number of peaks in the TSS of 48 downregulated genes

meta-gene	0h-ctrl-1	0h-ctrl-2	0h-treat-1	0h-treat-2	25h-treat-1	25h-treat-2
CR43767-ncRNA-FBgn0264267	0	0	0	1	0	0
CG3355-mRNA-FBgn0031619	3	2	4	2	3	3
CG5731-mRNA-FBgn0032192	0	0	1	1	0	0
NimC2-mRNA-FBgn0028939	2	1	1	1	2	1
CG44476-mRNA-FBgn0265669	2	2	1	3	2	2
CR43144-ncRNA-FBgn0262620	3	2	2	3	1	3
CR43242-ncRNA-FBgn0262887	2	3	1	2	1	2
Prosalph1-mRNA-FBgn0263121	2	3	2	3	2	2
CG18853-mRNA-FBgn0042173	4	4	3	4	3	5
sut2-mRNA-FBgn0028562	1	1	2	1	1	1
Obp44a-mRNA-FBgn0033268	1	0	0	1	0	0
Lcp1-mRNA-FBgn0002531	3	2	1	2	1	3
Lcp2-mRNA-FBgn0002533	2	1	0	1	0	2
Spn47C-mRNA-FBgn0033574	1	1	0	0	1	0
Cpr49Ac-mRNA-FBgn0033725	1	2	2	2	2	2
CG8157-mRNA-FBgn0034010	0	0	0	2	1	1
CG34193-mRNA-FBgn0085222	1	1	0	2	1	1
Cpr57A-mRNA-FBgn0034517	2	3	2	3	2	2
CG9344-mRNA-FBgn0034564	4	4	4	3	3	3

CG5731-mRNA-FBgn0032192

chr2L:10,206,420-10,210,409 3,990 bp. g



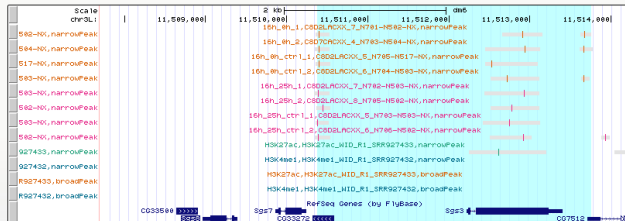
Number of peaks in the TSS of 48 downregulated genes

meta-gene	0h-ctrl-1	0h-ctrl-2	0h-treat-1	0h-treat-2	25h-treat-1	25h-treat-2
CG34206-mRNA-FBgn0085235	1	0	1	2	1	1
CG4250-mRNA-FBgn0034761	1	2	0	1	2	1
CG9192-mRNA-FBgn0035193	2	1	1	2	1	1
Drsl5-mRNA-FBgn0035434	2	4	3	3	2	3
Zasp66-mRNA-FBgn0035917	0	0	1	0	0	0
Hsp67Bb-mRNA-FBgn0001228	1	1	0	1	0	0
CR43482-pseudogene-FBgn0263493	4	6	4	5	5	4
Cpr67Fa2-mRNA-FBgn0036109	1	1	0	2	0	2
Sgs8-mRNA-FBgn0003378	2	2	3	3	2	2
CG34244-mRNA-FBgn0085273	2	1	1	2	3	2
CG13064-mRNA-FBgn0040796	2	1	1	2	1	2
Oat-mRNA-FBgn0022774	1	1	0	2	1	1
Cpr78E-mRNA-FBgn0037114	2	0	0	1	2	2
CG11370-mRNA-FBgn0037181	1	1	0	0	2	1
CG14664-mRNA-FBgn0040682	2	2	1	2	1	3
CG2663-mRNA-FBgn0037323	0	1	1	1	1	1
CG43060-mRNA-FBgn0262362	3	2	1	2	1	1
CG8369-mRNA-FBgn0040532	2	2	3	3	4	3
CG3397-mRNA-FBgn0037975	0	0	0	1	1	0
NijC-mRNA-FBgn0038079	2	2	3	3	3	1
CR43166-ncRNA-FBgn0262722	3	2	2	2	2	2
CG13641-mRNA-FBgn0039239	1	0	0	2	0	1
Ef1alpha100E-mRNA-FBgn0000557	2	1	2	3	1	2
18SrRNA:CR41548-rRNA-FBgn0085802	3	3	4	3	4	4
CR43461-ncRNA-FBgn0263415	2	3	3	3	3	3
CG15345-mRNA-FBgn0040928	4	3	4	3	3	3
CG9686-mRNA-FBgn0030158	1	1	1	2	1	1
roX2-ncRNA-FBgn0019660	1	2	3	1	0	2
CG33502-mRNA-FBgn0053502	1	1	2	1	3	1

Sgs8-mRNA-FBgn0003378

chr3L:11,507,714-11,514,214 6,501 bp.

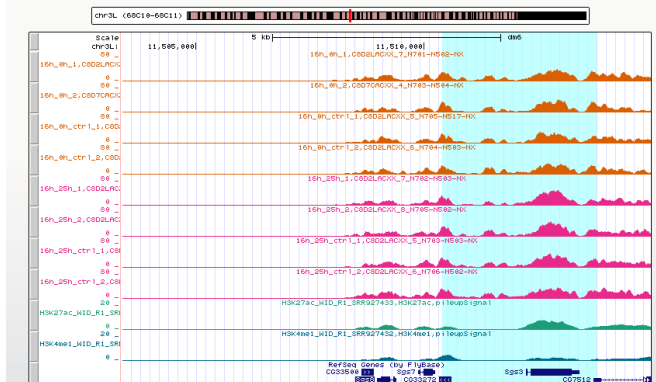
chr3L (60C11)



Sgs8-mRNA-FBgn0003378

chr3L:11,503,403-11,514,958 11,556 bp.

gn



Intersection ATACseq peaks and histones

H3K4me1

mark	nb-narrowPeaks	nb-broadPeaks
H3K4me1	21555	6411

sample	nb-shared-narrowPeaks	nb-shared-broadPeaks
16h-0h-1	13354	10635
16h-0h-2	14626	11689
16h-0h-ctrl-1	13897	10804
16h-0h-ctrl-2	13228	10488
16h-25h-1	12894	10265
16h-25h-2	13393	10653
16h-25h-ctrl-1	13402	10653
16h-25h-ctrl-2	13319	10526

H3K27ac

mark	nb-narrowPeaks	nb-broadPeaks
H3K4me1	30969	6053

sample	nb-shared-narrowPeaks	nb-shared-broadPeaks
16h-0h-1	12639	6516
16h-0h-2	13793	7120
16h-0h-ctrl-1	13530	6806
16h-0h-ctrl-2	12596	6477
16h-25h-1	13351	6763
16h-25h-2	13418	6747
16h-25h-ctrl-1	13330	6716
16h-25h-ctrl-2	12945	6619