

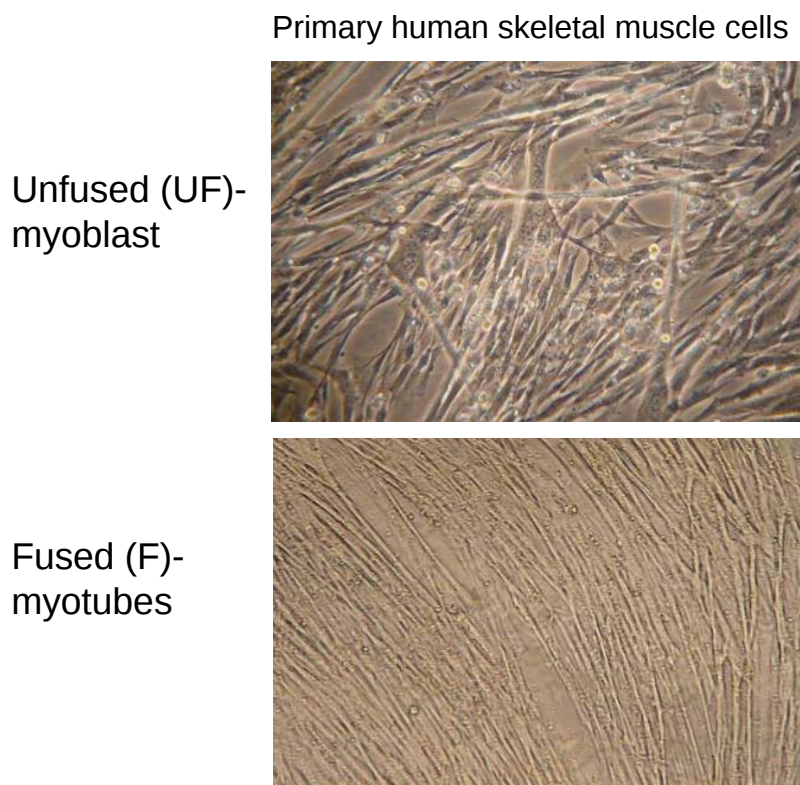
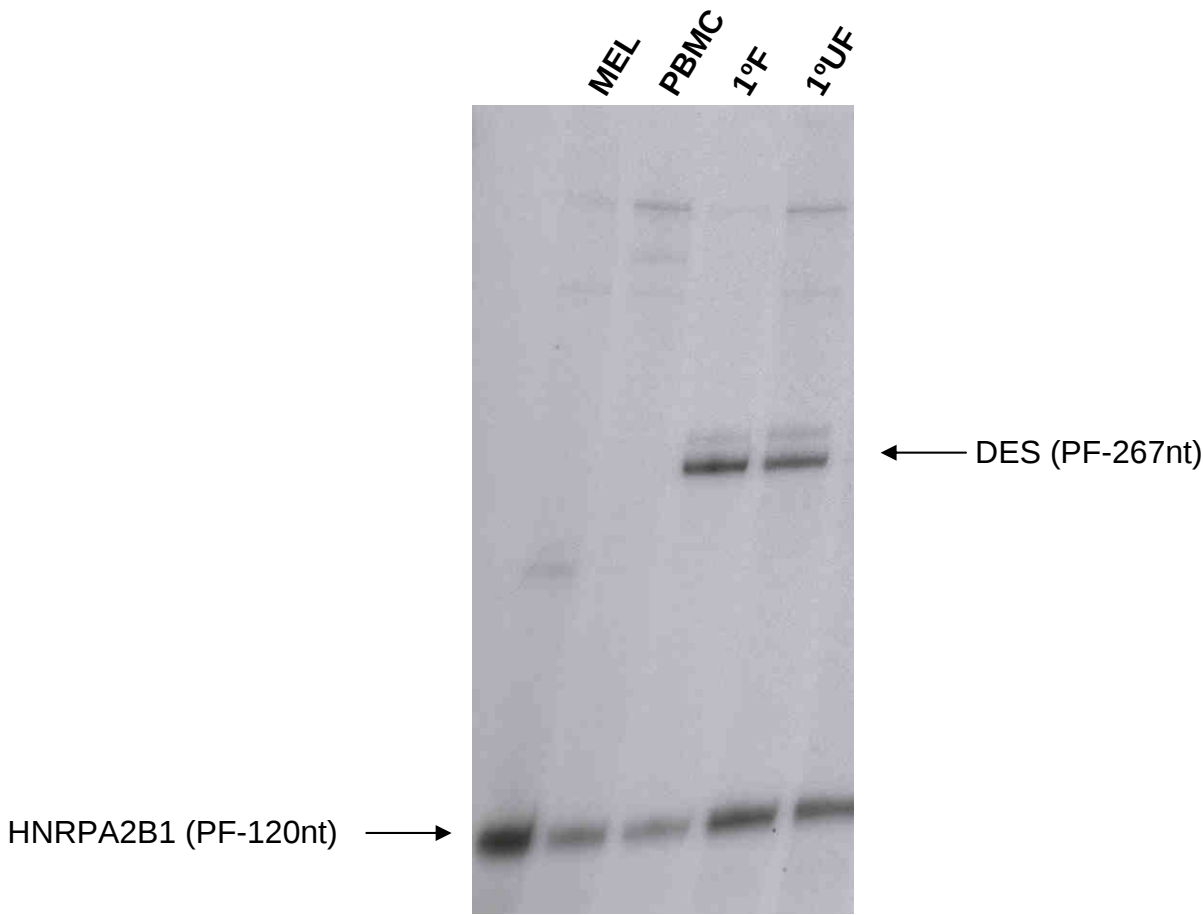


Figure S1: Light microscope images of human primary unfused myoblasts and fused myotubes. Mono-nucleated undifferentiated myoblasts (upper panel) can form multinucleated myotubes (lower panel) when grown to confluency and transferred into non-mitotic medium by reducing the fetal calf serum (FCS) concentration.

S2
A



B

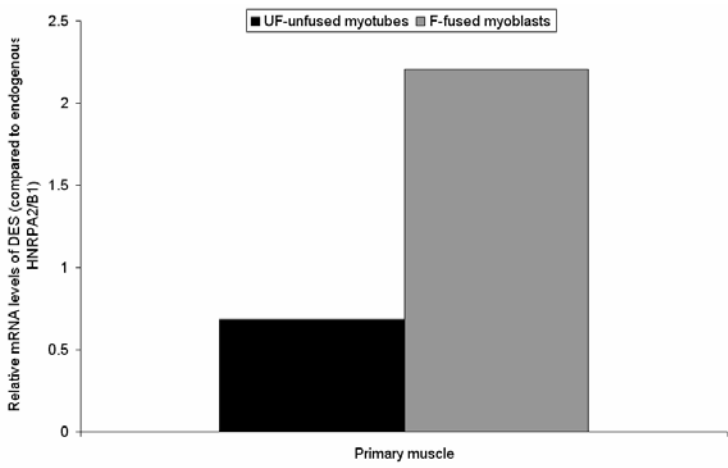
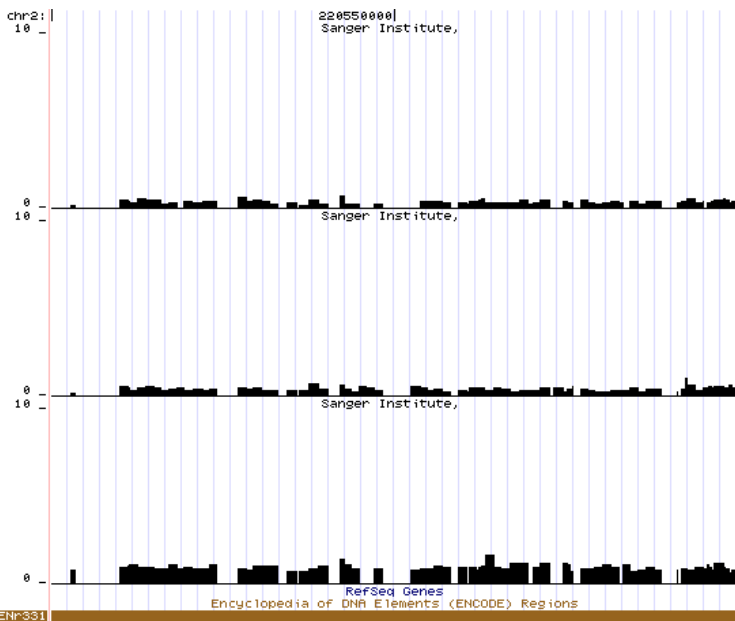
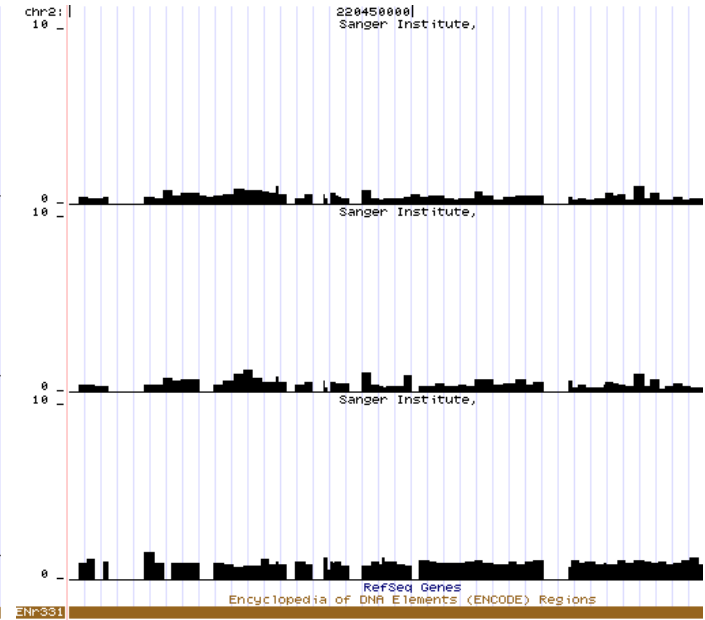
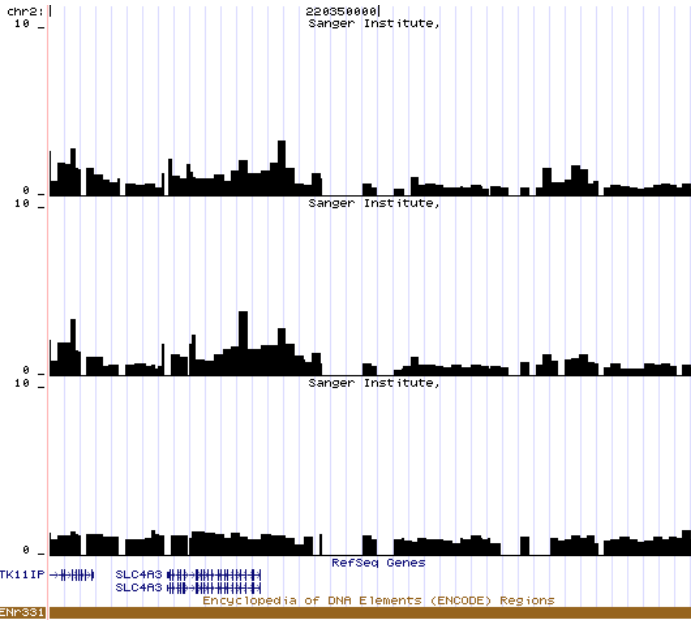
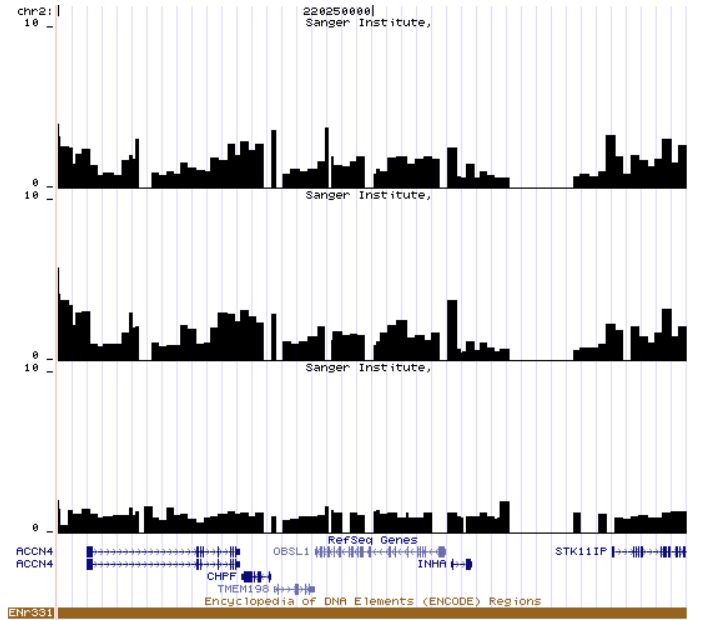
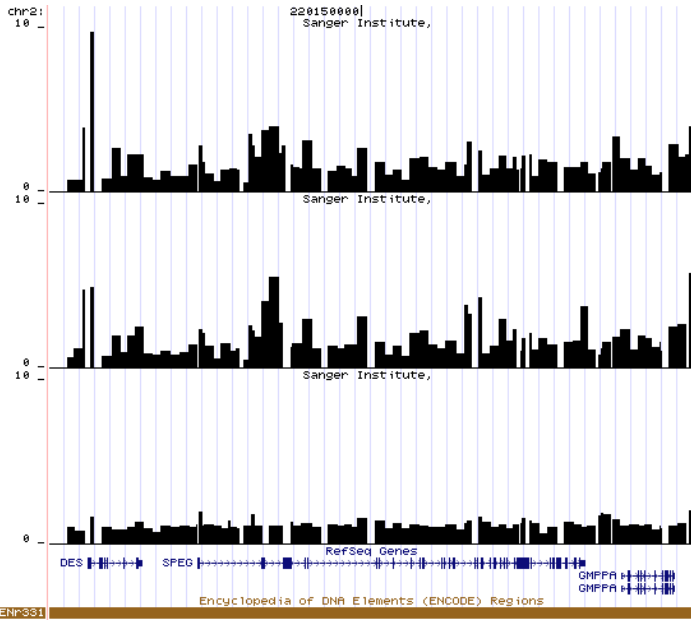


Figure S2: S1-Nuclease Protection Assay for *DES* expression in primary skeletal myoblast cell cultures. (A) Autoradiogram of S1-nuclease protection assay products after resolution on a denaturing polyacrylamide gel. Reactions were conducted on total RNA from murine erythroleukaemia (MEL) cells, human peripheral blood mononuclear cells (PBMCs), human primary adult skeletal myoblast (1°UF) and fused myotube (1°F) cultures. The end-labeled DNA probes gave S1-nuclease protected fragments (PF) of 267 nucleotides (nt) for *DES* mRNA and 120nt for *HNRPA2B1*. (B) *DES* expression was quantified from the phosphorimager scanned gel image using the ImageQuant © software (Version 5.1, GE Healthcare) and expressed as a ratio to *HNRPA2B1* mRNA levels.



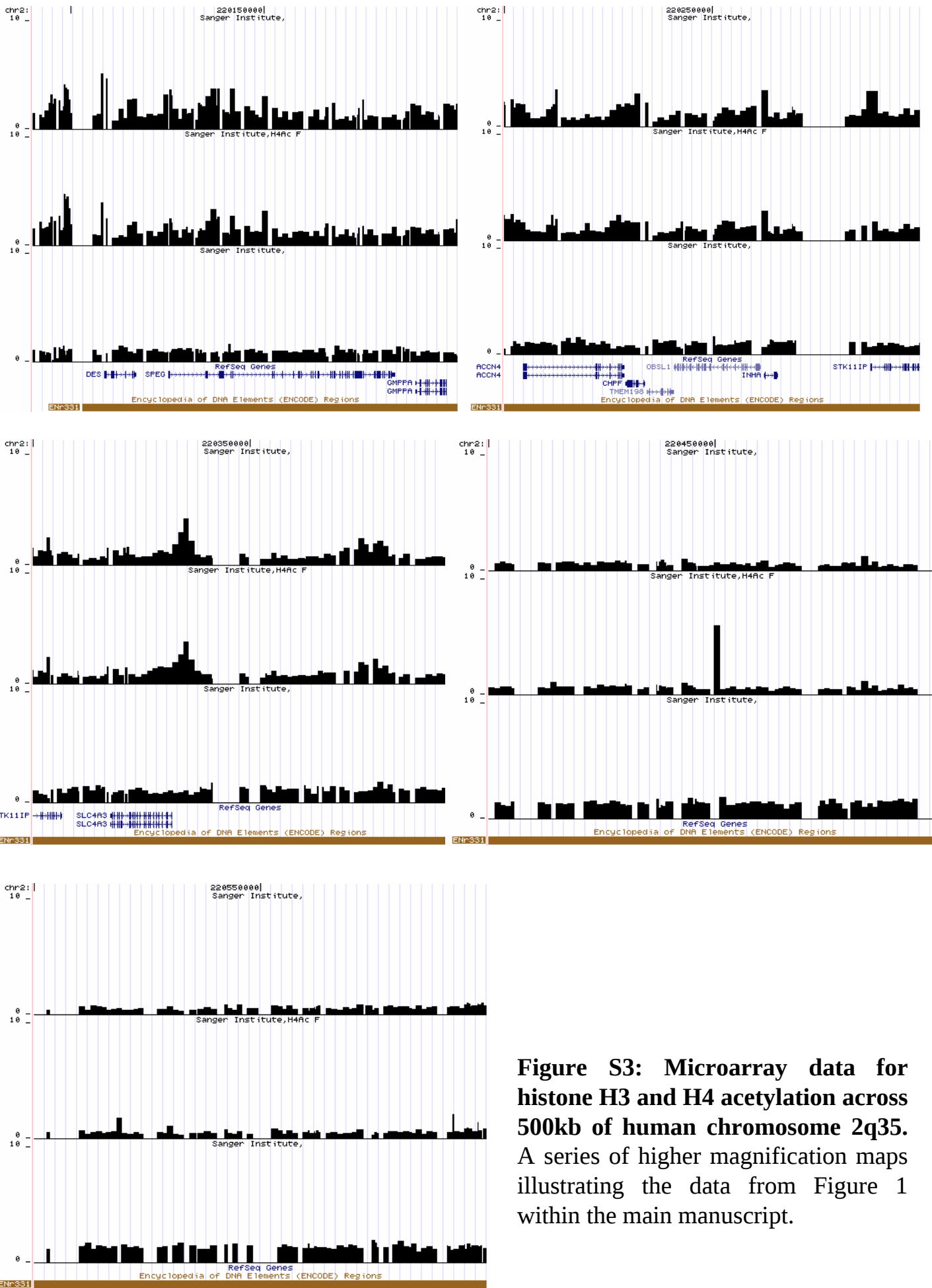


Figure S3: Microarray data for histone H3 and H4 acetylation across 500kb of human chromosome 2q35. A series of higher magnification maps illustrating the data from Figure 1 within the main manuscript.

S4

A

B

C

+ve-DNPEP

A-HS5

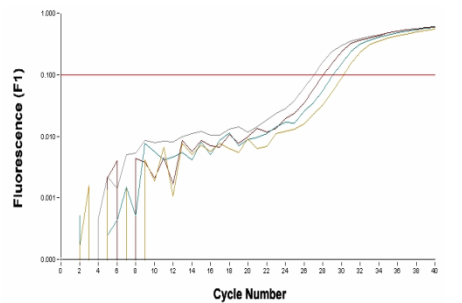
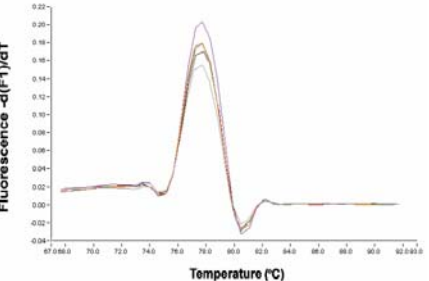
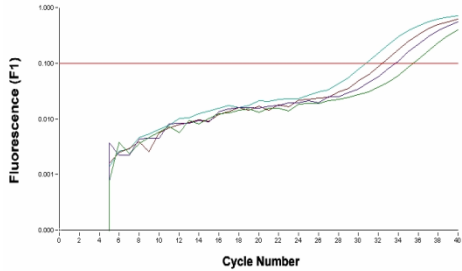
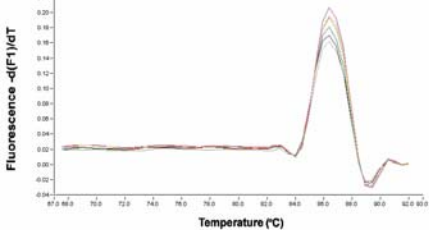
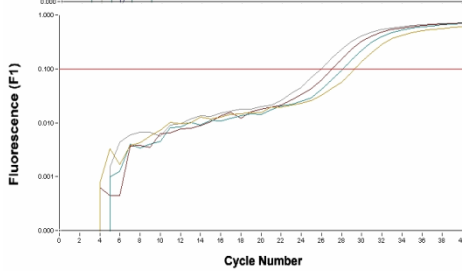
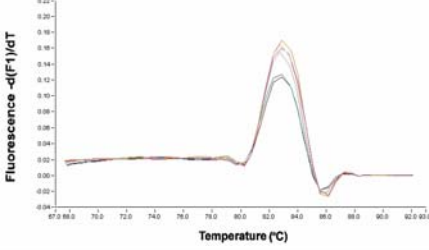
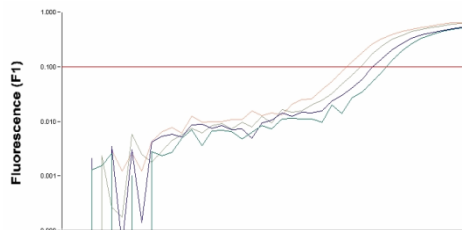
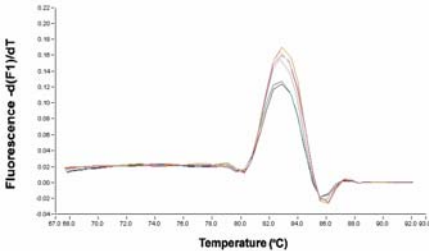
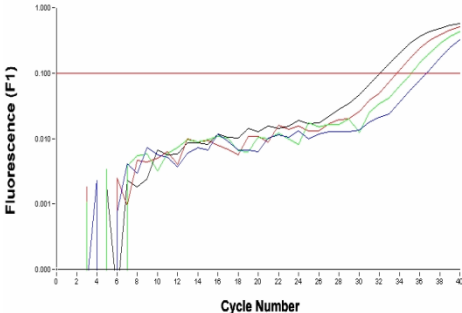
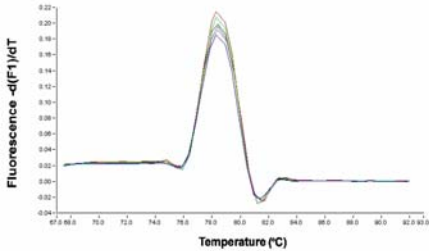
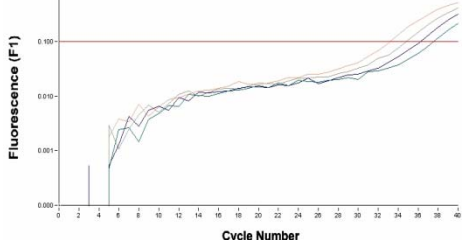
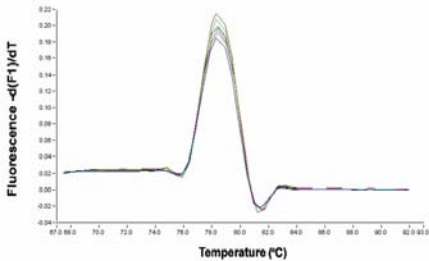
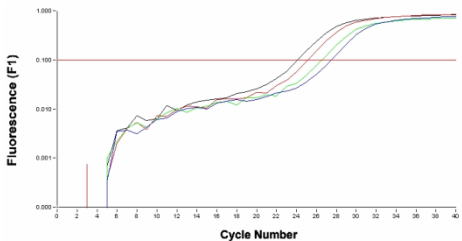
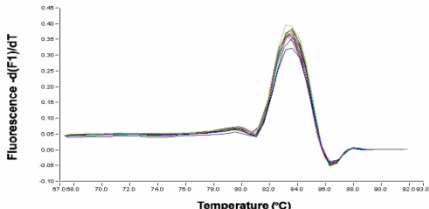
B-HS4d

C-HS3c

D-HS3b

E-HS1

F- DES -3.5kb



S4'

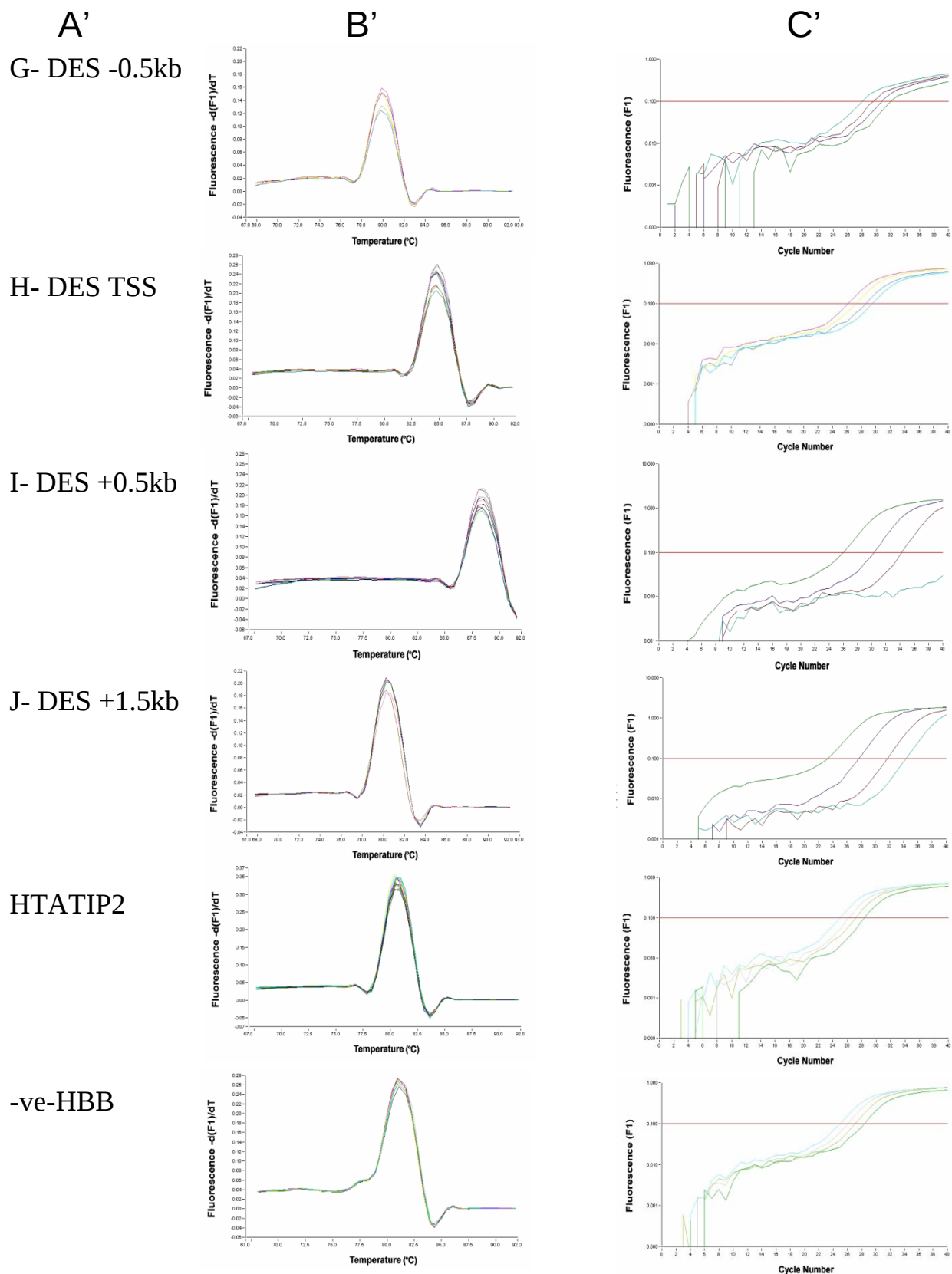


Figure S4: Melting curves and DNA titrations for primers used in the real-time PCR analysis across the *DES* LCR and *DES*. To assess the specificity of the PCR primer sets for their target sequence a melting curve programme was run and DNA titrations with input chromatin were performed on each primer set to evaluate their amplification efficiency. **(A and A')** Names of amplicons across the *DES* LCR and *DES* including the positive controls *DNPEP* and *HTATIP2* and the negative control *HBB*. Positions of amplicons given relative to the *DES* TSS are indicated for the primers which amplify *DES*. **(B and B')** The melting curves for all the amplicons. A single peak indicates PCR primers that are specific for their target sequence. **(C and C')** DNA titrations on input micrococcal nuclease (MNase) digested DNA were performed in order to examine their amplification efficiency so that primer sets could be compared against each other. All primer sets amplified the varying amounts of DNA with similar efficiency.

Primers for tiling array	
MLA1	5'-tgaccatgacagaactagacaggccccc-3' 3'-aaacagggagggtcgtgtcc-5'
MLA2	5'-tgaccatgacacgaccctccctgttcc-3' 3'-gtgagcggtcgggattgatt-5'
stSG1510983	5'-accatggtctaggagtagaggaccagc-3' 3'-accatgacttagcagccaca-5'
stSG1510984	5'-tgaccatgagttagccagagatggcatt-3' 3'-cccacccatagtcaggctta-5'
stSG1510985	5'-tgaccatgtaagcctgactatgggtgg-3' 3'-gtgtgcacctattgcttatgg-5'
stSG1510986	5'-tgaccatgaggtgcacacaaagctgaaa-3' 3'-cctccacagggcatttcta-5'
stSG1510987	5'-tgaccatgggtaagaaatgcctgtgga-3' 3'-gctctggctctgcaagactc-5'
stSG1510988	5'-tgaccatggagtcttgacagagccagagc-3' 3'-taggctccaacttctccaa-5'
stSG1510989	5'-tgaccatgttgggagaagtggagccta-3' 3'-gcatcaggagtgcccagat-5'
stSG1510990	5'-tgaccatgatctgggacactcctgatgc-3' 3'-ttctgctctgctcctctcc-5'
stSG1510991	5'-tgaccatgtccatgcctagaccgtttct-3' 3'-ttatagcccagcccatcatc-5'
stSG1510992	5'-accatgtcagatgcttctcaaattcctc-3' 3'-aggctggcaatgacctcac-5'
stSG1510993	5'-tgaccatgggaggaagaggaggatgagc-3' 3'-gctgtgtgacattggactgg-5'
stSG1510994	5'-accatggggtcagagtagggaggtatgt-3' 3'-gcattaagaaagggtcccagg-5'
stSG1510995	5'-tgaccatgtcccaaagtgtgggattac-3' 3'-ggctaattcacctcctccc-5'
stSG1510996	5'-tgaccatggagtccacaaagcccttca-3' 3'-tttggttaagacattcggg-5'
stSG1510997	5'-tgaccatggaagatatggcccgaatgtc-3' 3'-cctgtgtgatcccagtg-5'
stSG1510998	5'-tgaccatgcactgggatcacacagg-3' 3'-tggtatgtagggcgatag-5'
stSG1510999	5'-tgtgaccatgcaaagccctatgtggc-3' 3'-ccagcttctccttccct-5'
Primers for high resolution nChIP	
DNPEP	5'-gccaataaaaagctcgcccct-3' 3'-cccatggacattagccttattgct-5'
A (HS5)	5'-caatggtatctcatctagcaggattt-3' 3'-agtgggtgtcagcacaggcaga-5'
B (HS4d)	5'-agccacacagagaagctgtaaa-3'

	3'-acagccaccaagagttgttca-5'
C (HS3c)	5'-tctccaggaaggccattt-3' 3'-cttctggacacctctccaa-5'
D (HS3b)	5'-tcccagcctgagtggcagca-3' 3'-gccaccctggataccagaata-5'
E (HS1)	5'-gtggattgctggctgagcctg-3' 3'-ggaatgtccagaggcggtgtt-5'
F (DES -3.5kb)	5'-cttaatctggaaatatttcaaacggaga-3' 3'-gtgtatgtgggatggtgcctt-5'
G (DES -0.5kb)	5'-ttaggaacaagggtggttaggg-3' 3'-aggcttcccttagtttgag-5'
H (DES TSS)	5'-cgagctgctggacttctcac-3' 3'-cgaagcggtcattgagctcc-5'
I (DES +0.5kb)	5'-agggcccggcaccacaga-3' 3'-tttctccacatggggcaggaga-5'
J (DES +1.5kb)	5'-acgtggatgcagctactctag-3' 3'-ctctcatgcactttctaagg-5'
HTATIP2	5'-aaagtcacgctcattggccg 3' 3'- tcctgggggtccatttgagt-5'
-ve (HBB)	5'-cagtgcaggctgcctatcag-3' 5'-ccccagtttagtagttgga-3'
Primers for HpaII methylation analysis	
HS1 HS1	5'-ttcagccatgtgctcccaat-3' 3'-ggagctggagtgactgtaaaag-5'
DES	
DES+0.5 DES+0.5	5'-tggcaggacagcgggatctt-3' 3'-cacacaggtggaggaccctt-5'
DES+1.5 DES+1.5	5'-aggctgcaggaggagatt-3' 3'-cagcacatccaagctgggatt-5'
Quality control chr2:219,973,389-219,974,059	5'- ctttctggggcatgaagacat-3' 3'- ttcttacttggcatccacga-5'
Primers for amplification of bisulphite treated DNA	
I (HS5) I nested	5'-attagaatgtgagtttaggaggata-3' 3'- ccaacataaaaaaacctcatctacta-5' 5'-aatgtatgtttggtgtattgtgtgg-3' 3'- aaacacctataatcccaactactcaaa-5'
II (HS4) II nested	5'- tagtgtggttaggaggaggaagt-3' 3'- ttataaatcatcttccaatttcaaaatata-5' 5' agtttgatttgatgtttat-3' 3'- cctaataaacctaataactcaciaa-5'
III (HS3b&c) III nested	5'- ggtagttgaggtaggagaattgtt-3' 3'- aaaacaaatactccctctaccctct-5' 5'- tgagggtgttttaggtatag-3' 3'- caaccaccctaataacaaaaa-5'

V (Intergenic region)	5'- aaataaatagaaaatagtaagtgtt-3'
V nested	3'- acattcacattattatacaactat-5'
	5'- tgyggaaaatagtatggtagtttt-3'
	3'- actccatatatattaaaaataaccct-5'
VI (5'DES)	5'- gttgttgtagggagatggtgggtt-3'
VI nested	3'- actatttatatccctcctaacaatcaa-5'
	5'- ctcccctcccctaacaactacaaaatc-3'
	3'- agggggtaggagttatataaagttt-5'
VII (DES)	5'- ttaggtggaggtgtttattaattag-3'
VII nested	3'- aacaaaacaaaacccaaaaccatac-5'
	5'- ggtagggtaggaggttaggtttg-3'
	3'- aataaccaatctctacccaaaaac-5'