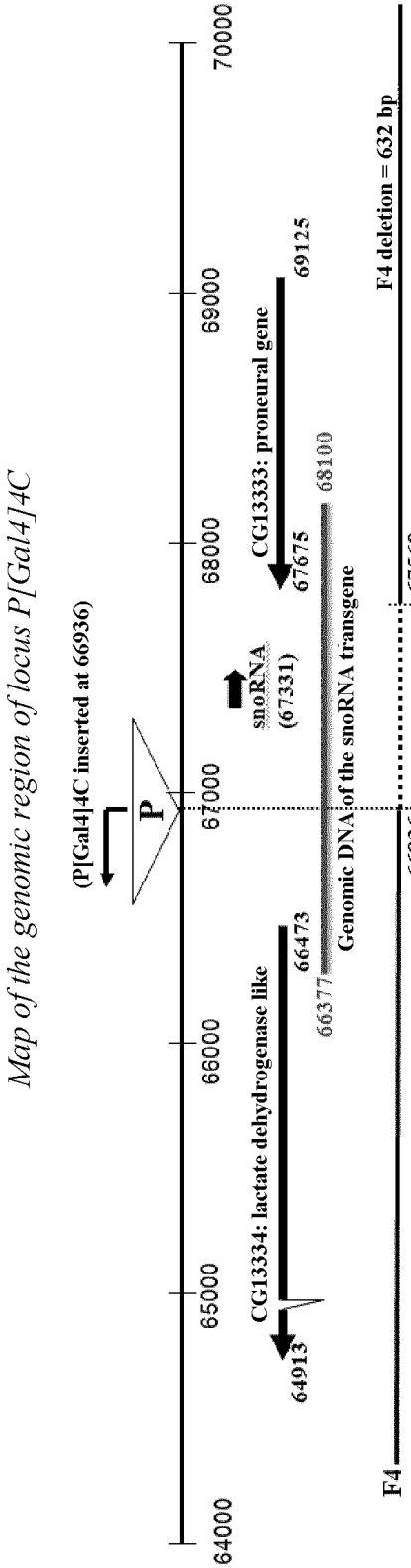
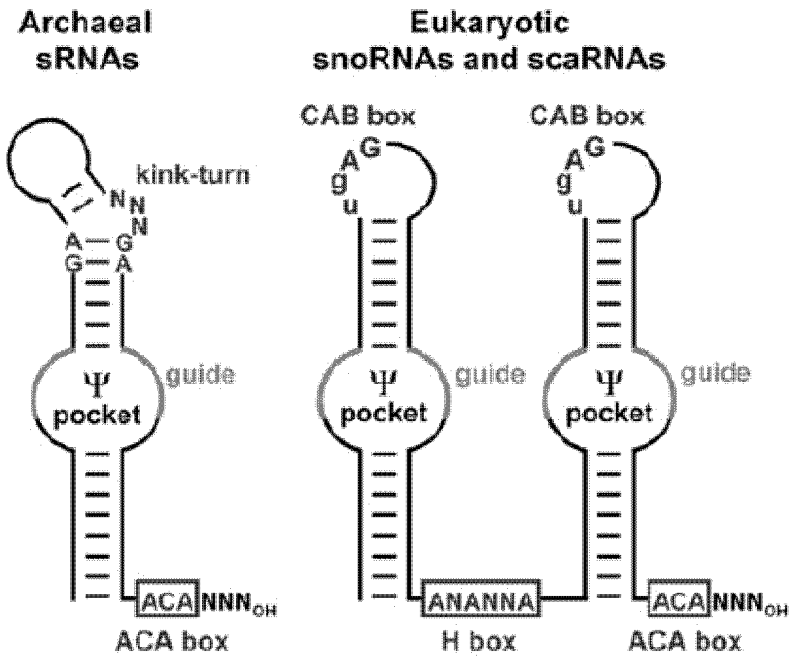

Map of the genomic region of locus P[Gal4]4C
(P[Gal4]4C inserted at 66936)
P
64000
65000
66000
67000
68000
69000
70000
CG13334: lactate dehydrogenase like
66473
64913
66377
Genomic DNA of the snoRNA transgene
68100
snoRNA
(67331)
CG13333: proneural gene
69125
67675
67568
F4 deletion = 632 bp
66936
F4

FIGURE 1

A


Archaeal
sRNAs
Eukaryotic
snoRNAs and scaRNAs
kink-turn
guide
pocket
ACA NNN OH
ACA box
CAB box
CAB box
guide
pocket
ANANNA
H box
guide
pocket
ACA NNN OH
ACA box

B

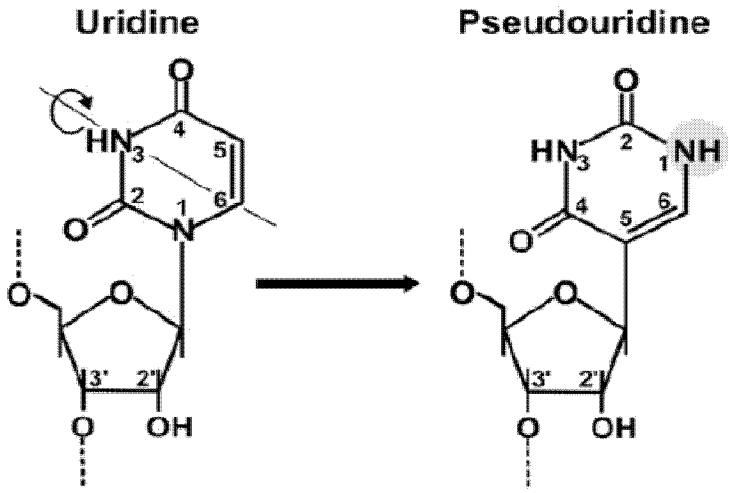

Uridine
Pseudouridine
HN
NH
OH

FIGURE 2

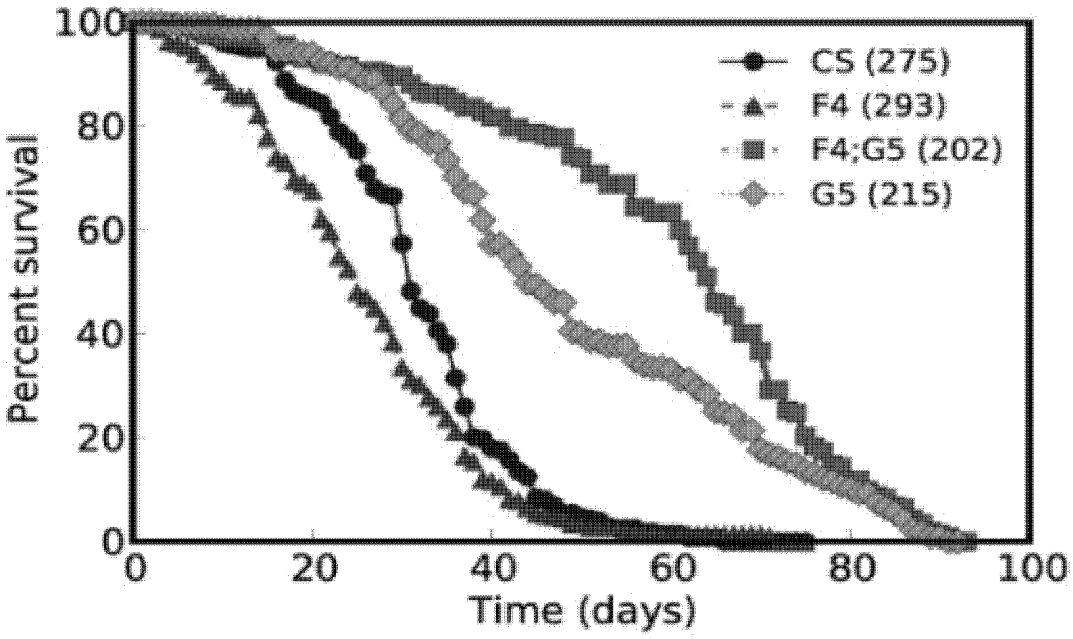
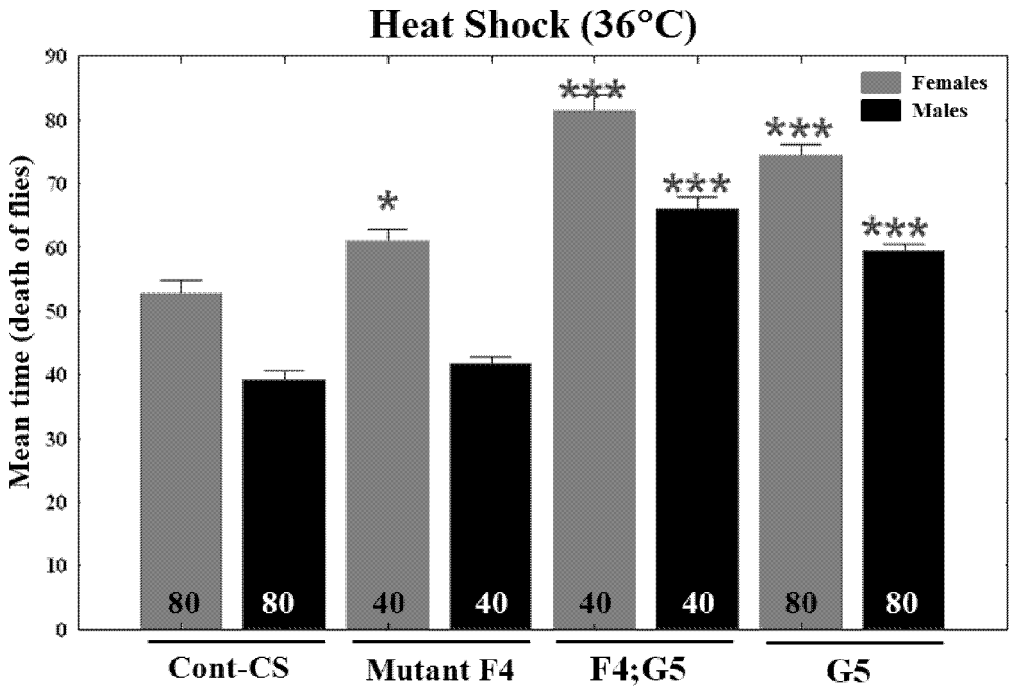

100
80
60
40
20
0
Percent survival
0
20
40
60
80
100
Time (days)
CS (275)
F4 (293)
F4;G5 (202)
G5 (215)

FIGURE 3

A)


Heat Shock (36°C)
Mean time (death of flies)
Females
Males
*
***
***
***
***
80
80
40
40
40
40
80
80
Cont-CS
Mutant F4
F4;G5
G5

B)

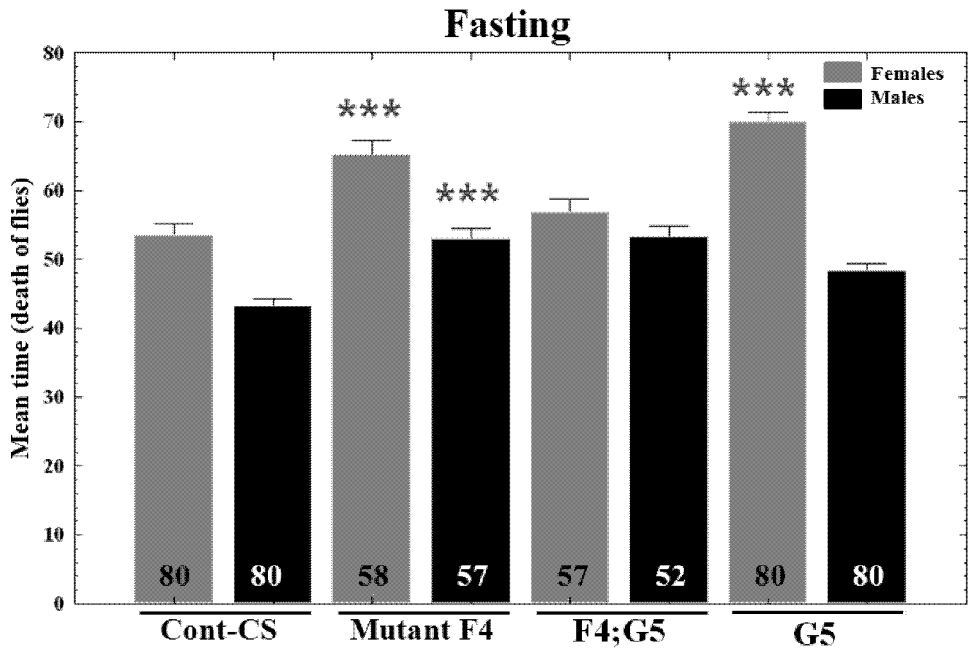

Fasting
Mean time (death of flies)
Females
Males
***
***
***
80
80
58
57
57
52
80
80
Cont-CS
Mutant F4
F4;G5
G5

FIGURE 4

C)

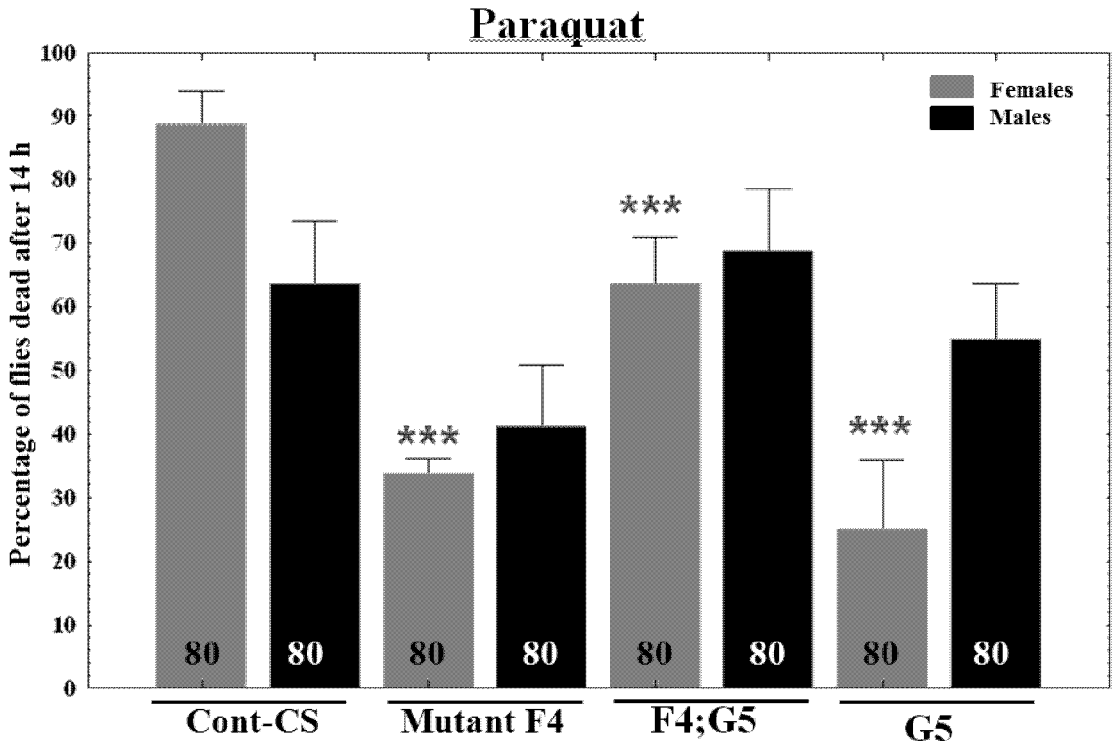


FIGURE 4 (continued)

A) Control: WC - stomach and intestine wall

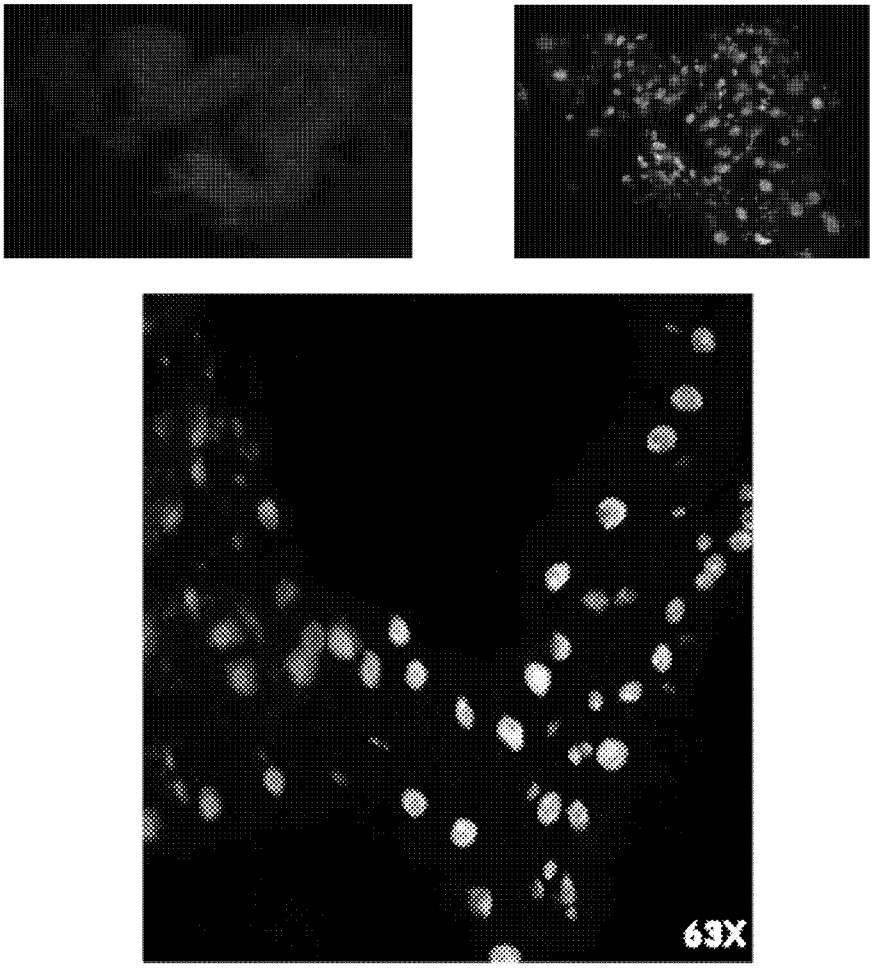


FIGURE 5

B) Mutant: F4 - stomach and intestine wall

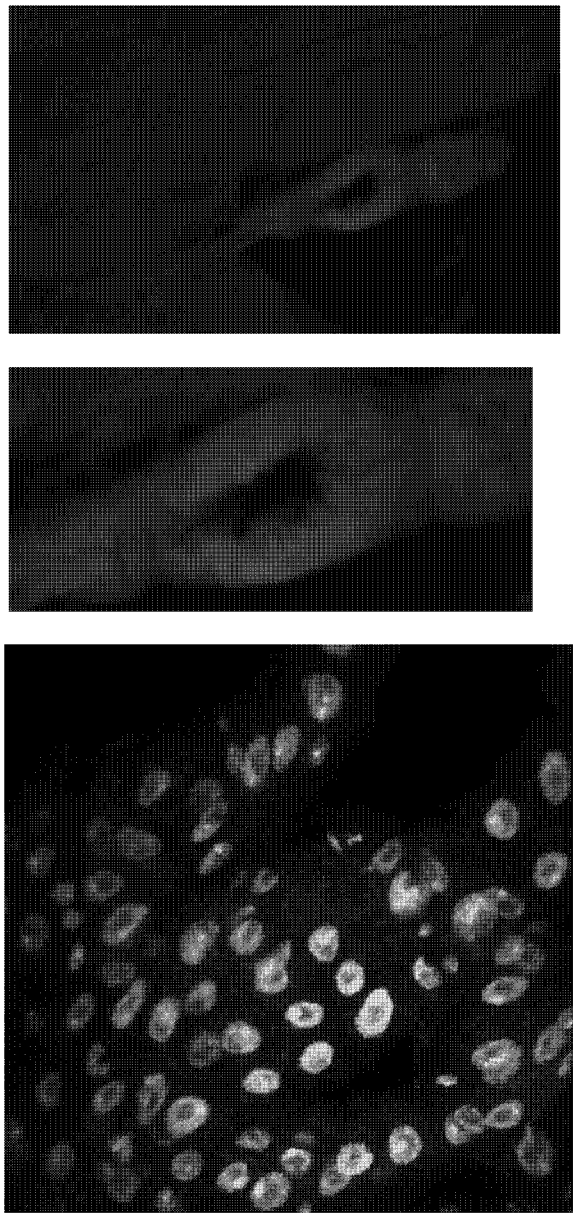
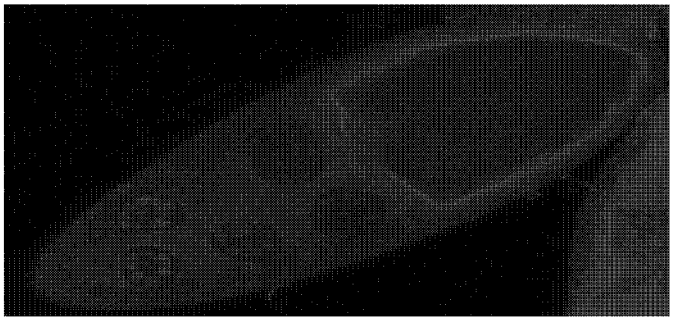


FIGURE 5 (continued)

C) Control: CS-ovaries



D) Mutant: F4 – ovaries

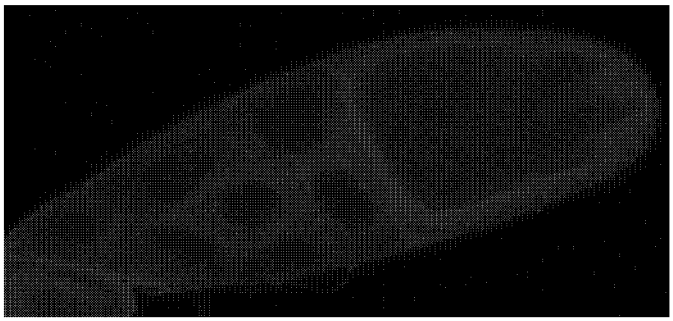
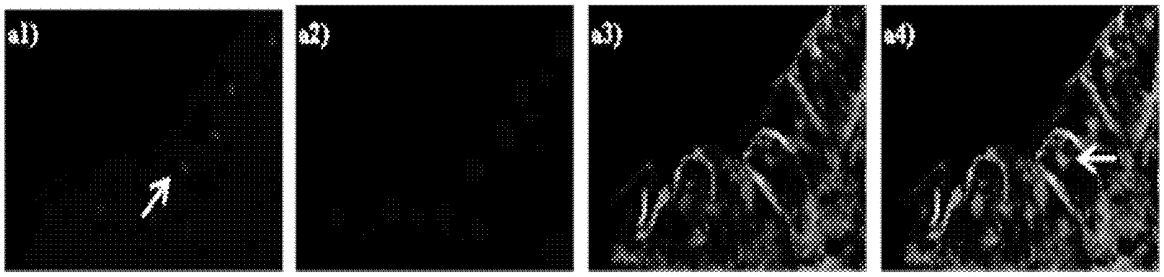
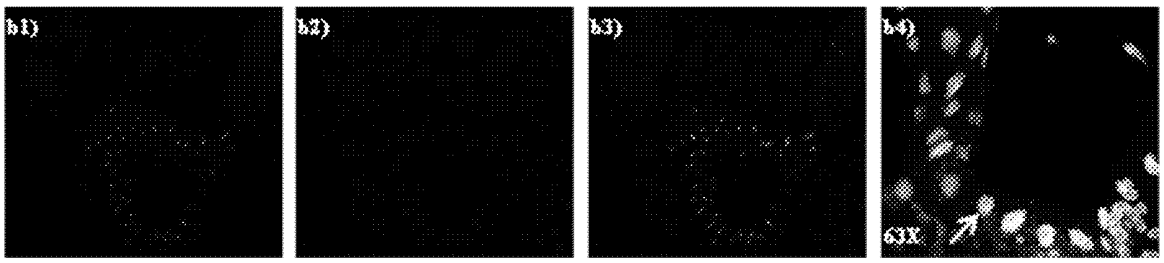


FIGURE 5 (continued)

A) Targeted expression of snoRNA in enterocytes, under the control of Myo1A-Gal4 (Myo1A-Gal4; UAS-mCD8-GFP)



B) Targeted expression in enterocytes by Myo1A-Gal4, in the F4 mutant genetic background (Myo1A-Gal4, F4/F4; UAS-8M/+)



C) Targeted expression in intestinal stem cells (ISc) (esg-Gal4, UAS-GFP)

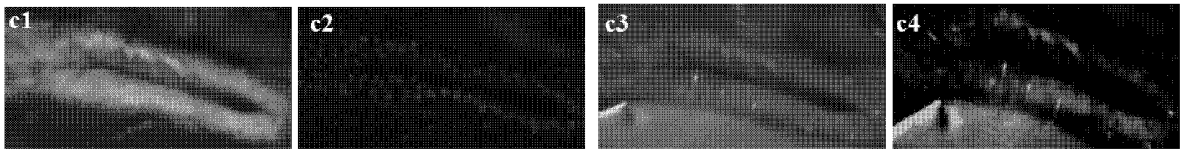
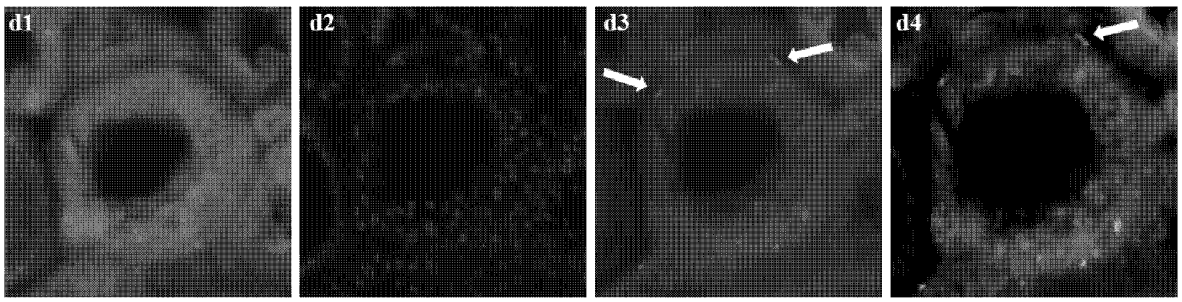


FIGURE 6

D) Targeted expression in enteroblasts: Su(H)-GBE-Gal4; UAS-mCDB-GFP.



E) Targeted expression in intestinal stem cells (ISc) (Dl-Gal4, UAS-GFP)

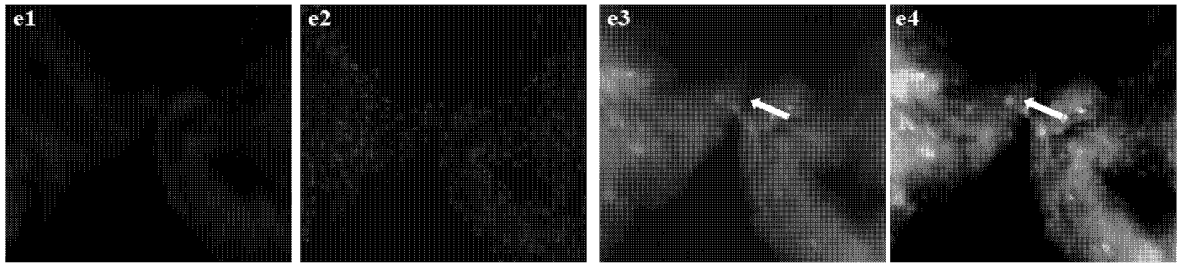
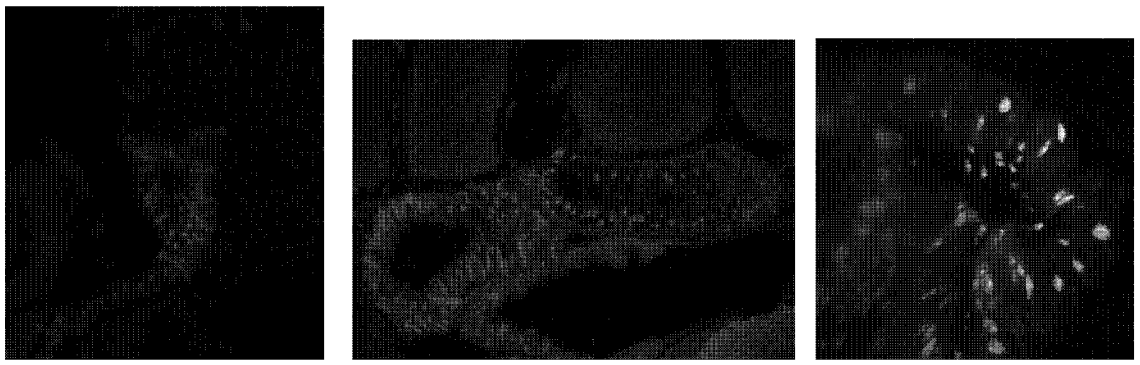


FIGURE 6 (continued)

A) Targeted expression under the control of esg-Gal4 (esg-Gal4, F4/F4; UAS-8M/+)



B) Targeted expression under the control of Su(H)-Gal4 (Su(H)-GBE-Gal4, F4/F4; UAS-8M/+)

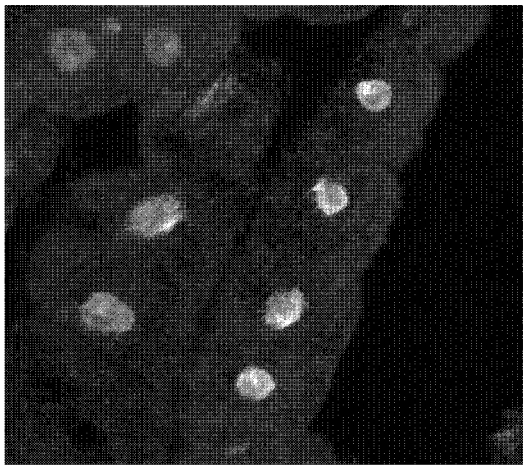


FIGURE 7

C) Targeted expression under the control of Delta-Gal4 (Delta-Gal4, F4/F4; UAS-8M/+)

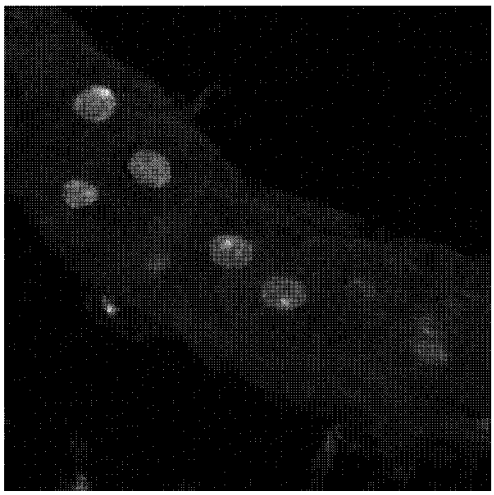
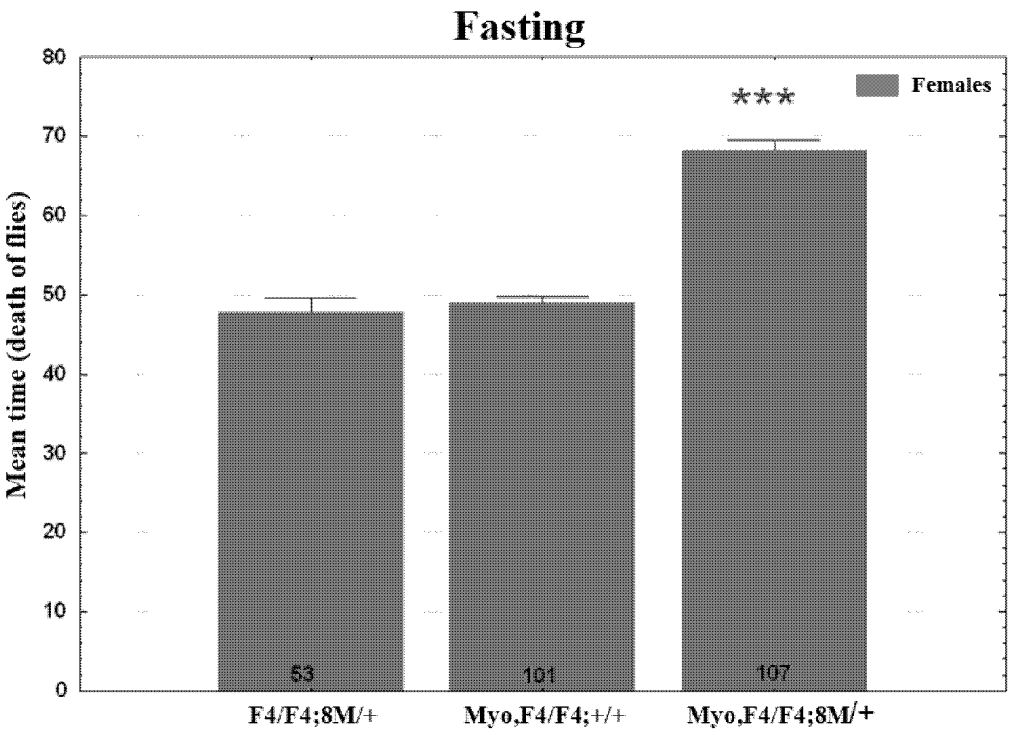


FIGURE 7 (continued)

A)


Fasting
Females
***
Mean time (death of flies)
0
10
20
30
40
50
60
70
80
53
101
107
F4/F4;8M/+
Myo,F4/F4;+/+
Myo,F4/F4;8M/+

B)

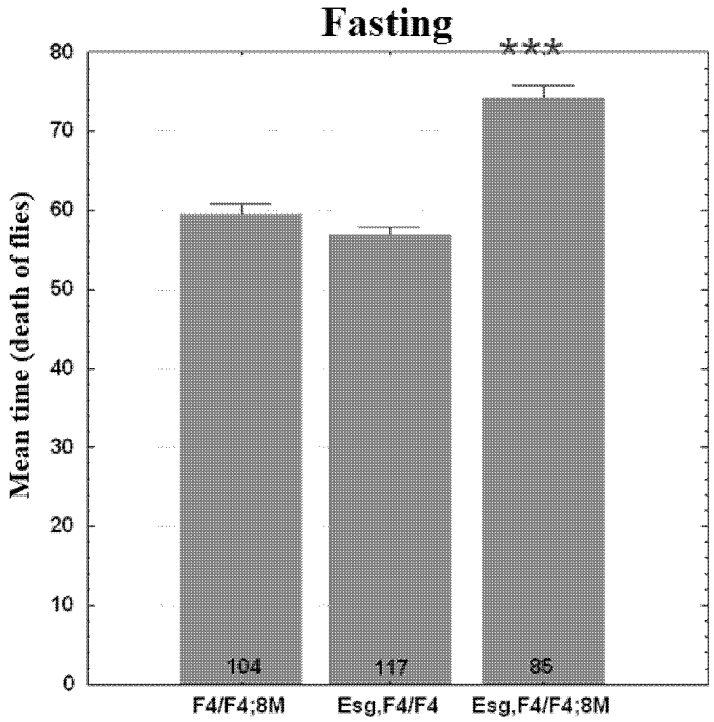
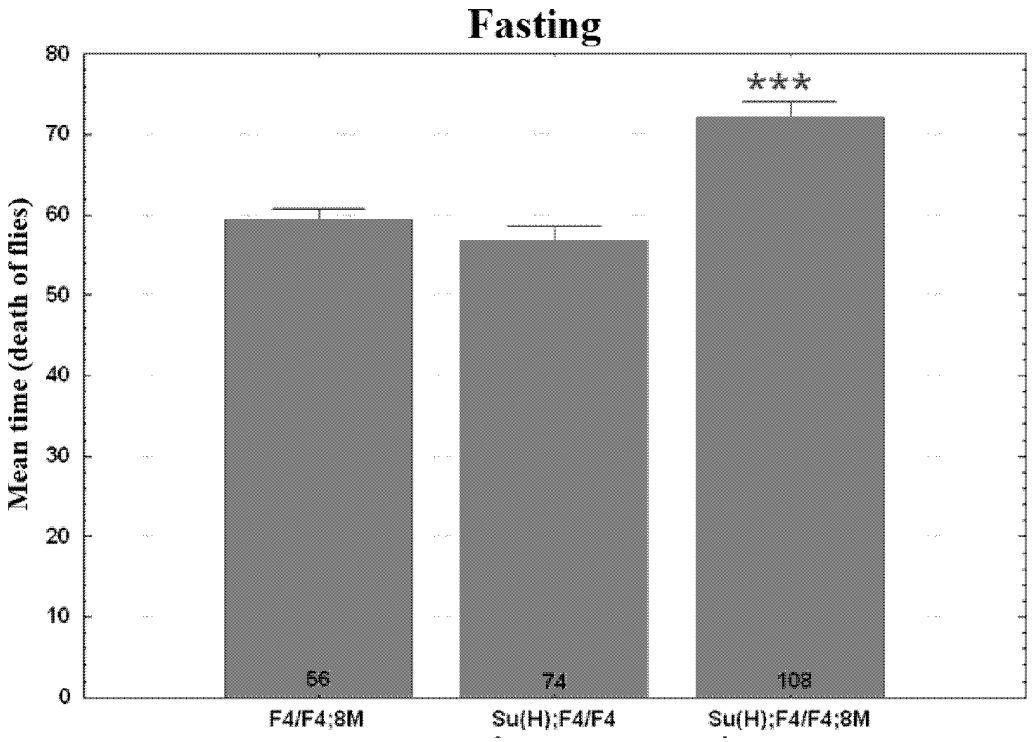

Fasting
***
Mean time (death of flies)
0
10
20
30
40
50
60
70
80
104
117
85
F4/F4;8M
Esg,F4/F4
Esg,F4/F4;8M

FIGURE 8

C)



D)

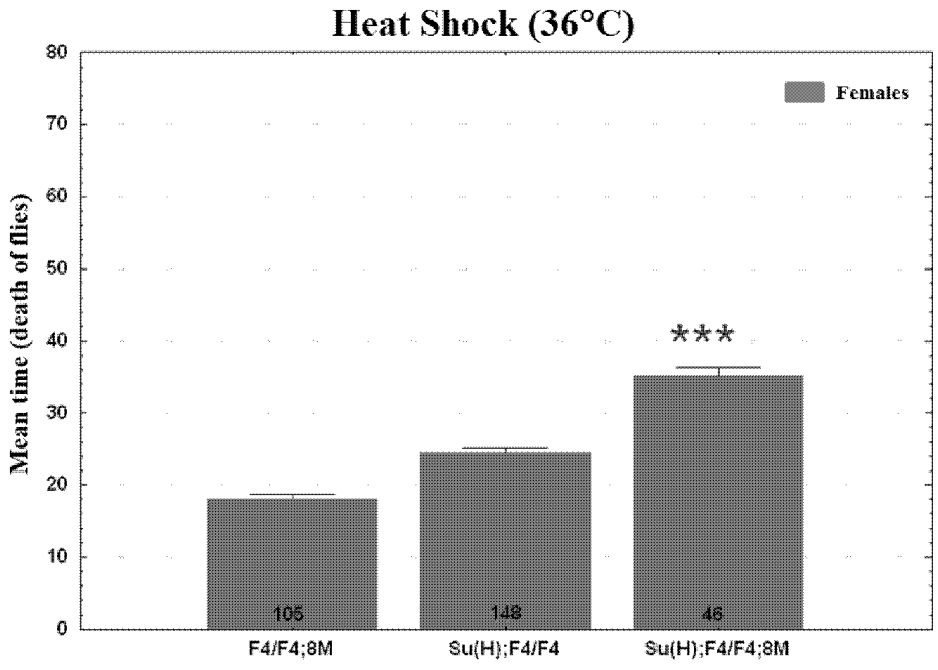


FIGURE 8 (continued)

A)

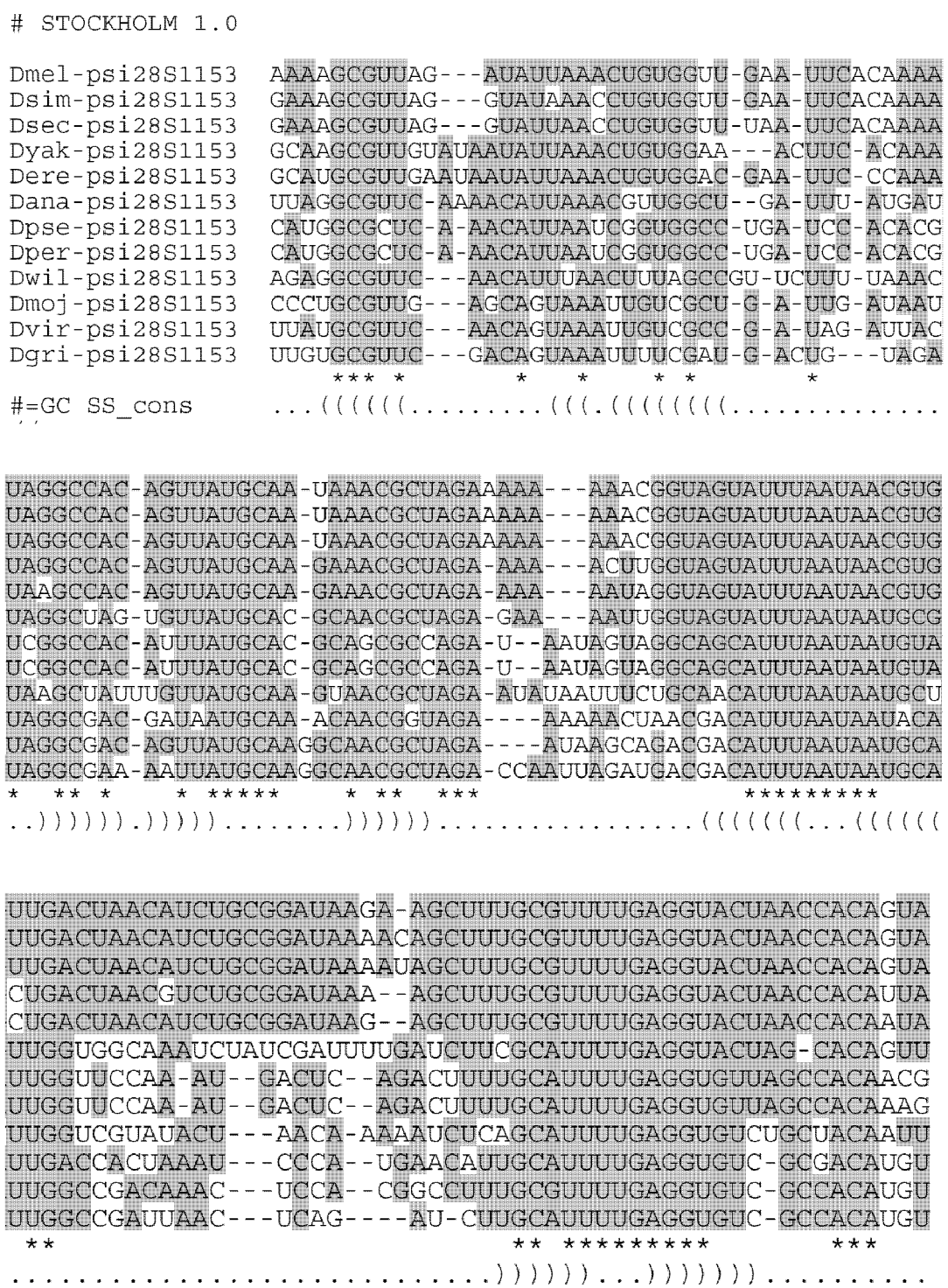

STOCKHOLM 1.0
Dmel-psi28S1153 AAAAGCGUUAG---AUAUUAAACUGUGGUU-GAA-UUCACAAAA
Dsim-psi28S1153 GAAAGCGUUAG---GUAUAAACCUGUGGUU-GAA-UUCACAAAA
Dsec-psi28S1153 GAAAGCGUUAG---GUAUUAACCUGUGGUU-UAA-UUCACAAAA
Dyak-psi28S1153 GCAAGCGUUGUAUAAUAUUAAACUGUGGAA---ACUUC-ACAAA
Dere-psi28S1153 GCAUGCGUUGAAUAAUAUUAAACUGUGGAC-GAA-UUC-CCAAA
Dana-psi28S1153 UUAGGCGUUC-AAAACAUUAAACGUUGGCU--GA-UUU-AUGAU
Dpse-psi28S1153 CAUGGCGCUC-A-AACAUUAAUCGGUGGCC-UGA-UCC-ACACG
Dper-psi28S1153 CAUGGCGCUC-A-AACAUUAAUCGGUGGCC-UGA-UCC-ACACG
Dwil-psi28S1153 AGAGGCGUUC---AACAUUUAACUUUAGCCGU-UCUUU-UAAAC
Dmoj-psi28S1153 CCCUGCGUUG---AGCAGUAAAUUGUCGCU-G-A-UUG-AUAAU
Dvir-psi28S1153 UUAUGCGUUC---AACAGUAAAUUGUCGCC-G-A-UAG-AUUAC
Dgri-psi28S1153 UUGUGCGUUC---GACAGUAAAUUUUCGAU-G-ACUG---UAGA
#=GC SS_cons ...((((((.....(((.(((((((.....
UAGGCCAC-AGUUAUGCAA-UAAACGCUAGAAAAA---AAACGGUAGUAUUUAAUAACGUG
UAGGCCAC-AGUUAUGCAA-UAAACGCUAGAAAAA---AAACGGUAGUAUUUAAUAACGUG
UAGGCCAC-AGUUAUGCAA-UAAACGCUAGAAAAA---AAACGGUAGUAUUUAAUAACGUG
UAGGCCAC-AGUUAUGCAA-GAAACGCUAGA-AAA---ACUUGGUAGUAUUUAAUAACGUG
UAAGCCAC-AGUUAUGCAA-GAAACGCUAGA-AAA---AAUAGGUAGUAUUUAAUAACGUG
UAGGCUAG-UGUUAUGCAC-GCAACGCUAGA-GAA---AAUUGGUAGUAUUUAAUAAUGCG
UCGGCCAC-AUUUAUGCAC-GCAGCGCCAGA-U--AAUAGUAGGCAGCAUUUAAUAAUGUA
UCGGCCAC-AUUUAUGCAC-GCAGCGCCAGA-U--AAUAGUAGGCAGCAUUUAAUAAUGUA
UAAGCUAUUUGUUAUGCAA-GUAACGCUAGA-AUAUAAUUUCUGCAACAUUUAAUAAUGCU
UAGGCGAC-GAUAAUGCAA-ACAACGGUAGA----AAAAACUAACGACAUUUAAUAAUACA
UAGGCGAC-AGUUAUGCAAGGCAACGCUAGA----AUAAGCAGACGACAUUUAAUAAUGCA
UAGGCGAA-AAUUAUGCAAGGCAACGCUAGA-CCAAUUAGAUGACGACAUUUAAUAAUGCA
..)))))).)))))........))))))..................((((((...((((((
UUGACUAACAUCUGCGGAUAAGA-AGCUUUGCGUUUUGAGGUACUAACCACAGUA
UUGACUAACAUCUGCGGAUAAAACAGCUUUGCGUUUUGAGGUACUAACCACAGUA
UUGACUAACAUCUGCGGAUAAAAUAGCUUUGCGUUUUGAGGUACUAACCACAGUA
CUGACUAACGUCUGCGGAUAAA--AGCUUUGCGUUUUGAGGUACUAACCACAUUA
CUGACUAACAUCUGCGGAUAAG--AGCUUUGCGUUUUGAGGUACUAACCACAAUA
UUGGUGGCAAAUCUAUCGAUUUUGAUCUUCGCAUUUUGAGGUACUAG-CACAGUU
UUGGUUCCAA-AU--GACUC--AGACUUUUGCAUUUUGAGGUGUUAGCCACAACG
UUGGUUCCAA-AU--GACUC--AGACUUUUGCAUUUUGAGGUGUUAGCCACAAAG
UUGGUCGUAUACU---AACA-AAAAUCUCAGCAUUUUGAGGUGUCUGCUACAAUU
UUGACCACUAAAU---CCCA--UGAACAUUGCAUUUUGAGGUGUC-GCGACAUGU
UUGGCCGACAAAC---UCCA--CGGCCUUUGCGUUUUGAGGUGUC-GCCACAUGU
UUGGCCGAUUAAC---UCAG----AU-CUUGCAUUUUGAGGUGUC-GCCACAUGU
.....)))))...)))))))..........

FIGURE 9

B)



FIGURE 9 (continued)

```
# STOCKHOLM 1.0

Dmel-psi28S1153                 AAAAGCGUUAGAUAUUAAACUGUGGUUGAAUUCACAAAAU
hg18-chr11_12822722-12822880    GUAAGUGUA-GCCUAGAAAUUGGGGCUGGAUUUGAA-AAU
                                  *** **  *     *** ** ** ** ***   * ***
#=GC SS_cons                    ...((((((........((((((((((.........)
//

AGGCCACAGUUAUGCAAUAAACGCUAGAAAAAAAAAC------GGUAGUAUUUAAUAAC--GUGUUGACUAA
UAGCCCCAAUUCUGCAAUUUUCACCGCAAUAAAAGCUUCUCCAGUUAUACAUGGUGAUUGGUCUUGAUGGG
  *** ** ** ******   * *   ** **** *       **  **  *  * *   ** ****
))))))))))).........))))))........(((.....((((((((((.(((((....((.......

CAUCUGCGGAUA-AGAAGCUU--UGCGUUUUGAGGUACU-AACCACAGUA
CUAUUGUGGACAGAGGAGGGUGCUAGGUUGGGGUGGACGGGGCCACAGCU
*    ** *** * ** **   *   *  ***   *  * **     ******
((((((........)))))......)))))))..)))))))..))))..))).
```

FIGURE 10

A) mouse-1 homolog

```
# STOCKHOLM 1.0

Dmel-psi28S1153                 AAAAGCGUUAGAUAUUAAACUGUGGUUGAA
mm9-chr15_30336889-30337017     AAAGGGGUUGAAGAAUG----GU--AUGGA
                                *** * ***   * * *      **    ** *
#=GC SS_cons                    ...((((((.....................
//

UUCACAAAAUAGGCCACAGUUAUGCAAUAAACGCUAGAAAAAAAACGGUAGUAUUUAAUA
UUCAGA--AUG------AACUAUCAGAGAAACUCCAGAGCCAGCA-GGAAACAUU--AUA
**** *  **       *  ***   * **** * ***   *  * ** *  ***  ***
.............................))))))..........(((((((((((....

ACGUGUUGACUAACAUCUGCGGAUAAGAAGCUUUGCGUUUUGAGGUACUAACCACAGUA
GAGCCUUUGCUACAAUGUCCUGUUUC-UUUCUUGGCU--UUUAGUUCUGUUCCACAGAU
  *  **  ***  ** * * * *      *** **   ** ** *     ******
((((((.............................)))))....))))))))))).......
```

FIGURE 11

B) mouse-2 homolog

```
# STOCKHOLM 1.0

Dmel-psi28S1153                 AAAAGCGUUAGAUAUUAAACUGUGGUUGAAUU
mm9-chr18_6495012-6495133       GAAAGCAUUUAAUAUUUACCAAUAGUUUAU-U
                                 ***** **  ***** * *  * *** *  *
#=GC SS_cons                    ...((((((.....((((((.((((((....
//
```

```
CACAAAAUAGGCCACAGUUAUGCAAUAAACGCUAGAAAAAAAACGGUAGUAUUUAAUAA
C-CGAGCUAG-----GGUAAAGCAGUCAGUGCUAGAAAAAUG---AGAAAACACAAUA-
* * *  ***       ** * *** * *  **********        *  *   ****
...)))))).)....))))))......))))))..........................
```

```
CGUGUUGACUAACAUCUGCGGAUAAGAAGCUUUGCGUUUUGAGGUACUAACCACAGUA
CAUAA-----GACCUCUCAAGGGGAGAUGCU-----------GUUACUGUAUAUACUG
* *         ** ***   *   *** ***             * ****    * * *
............((((....))))..................................
```

FIGURE 11 (continued)

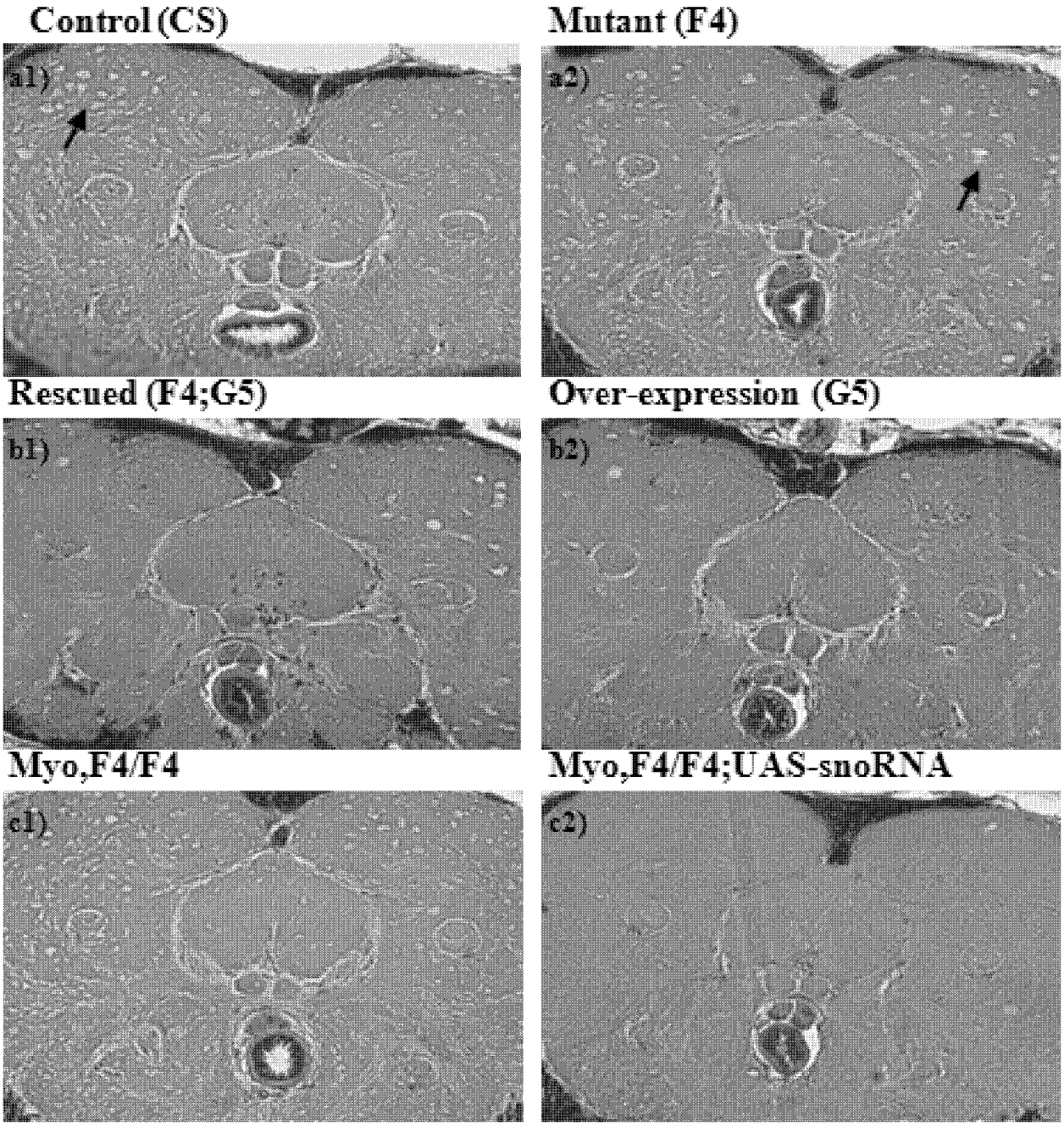

Control (CS)
Mutant (F4)
a1)
a2)
Rescued (F4;G5)
Over-expression (G5)
b1)
b2)
Myo,F4/F4
Myo,F4/F4;UAS-snoRNA
c1)
c2)

FIGURE 12

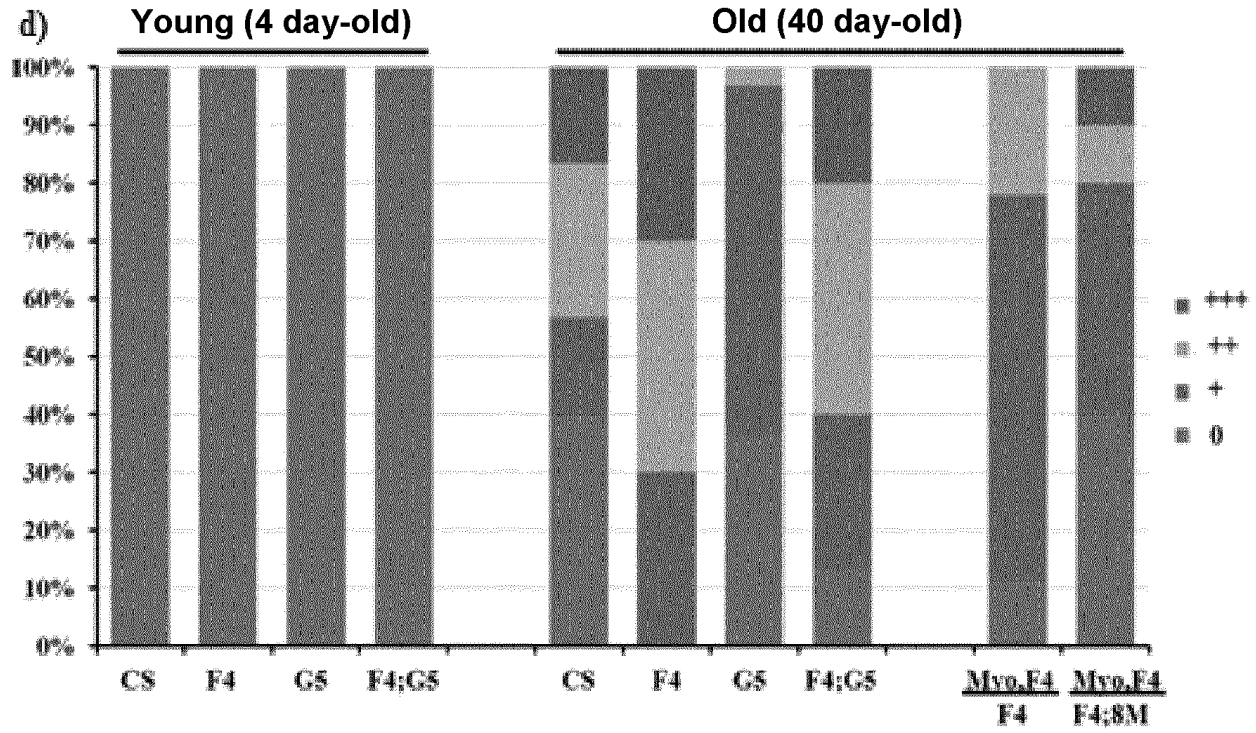
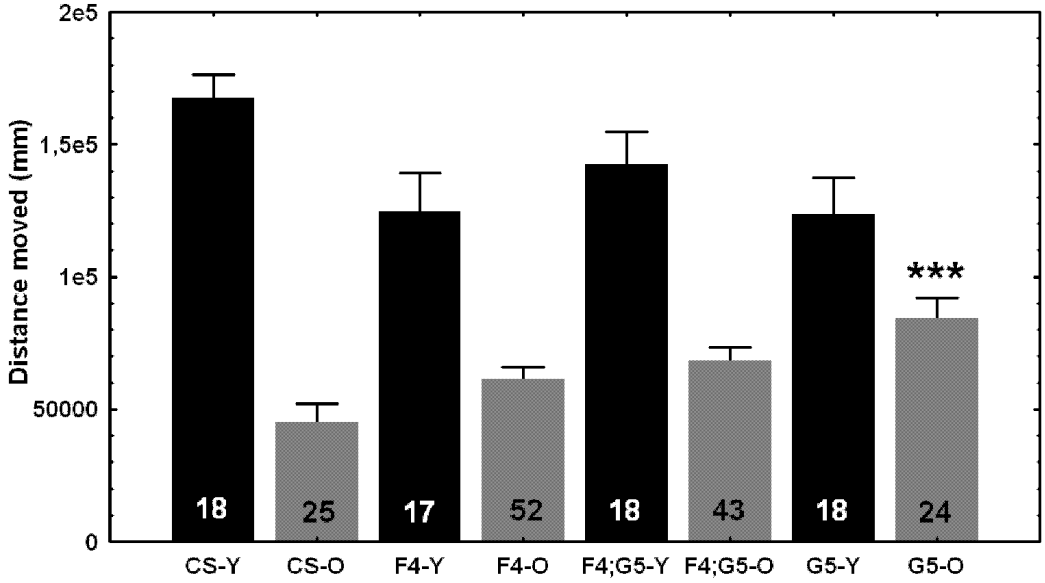


FIGURE 12 (continued)

A) Females



B) Males

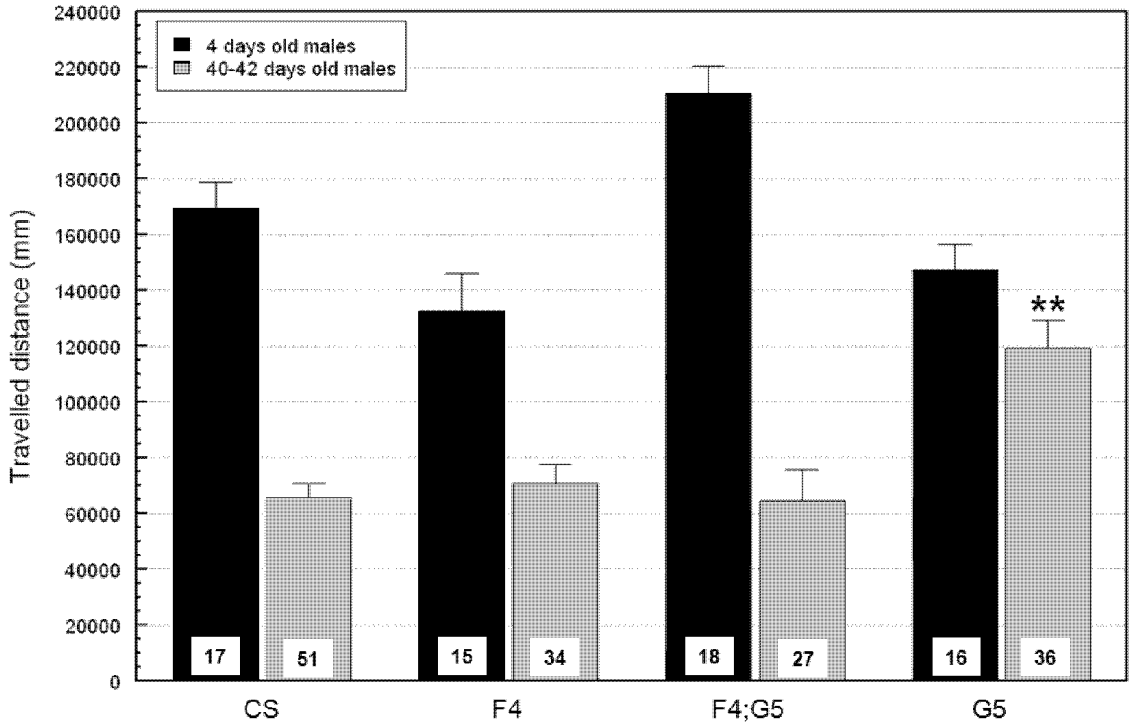
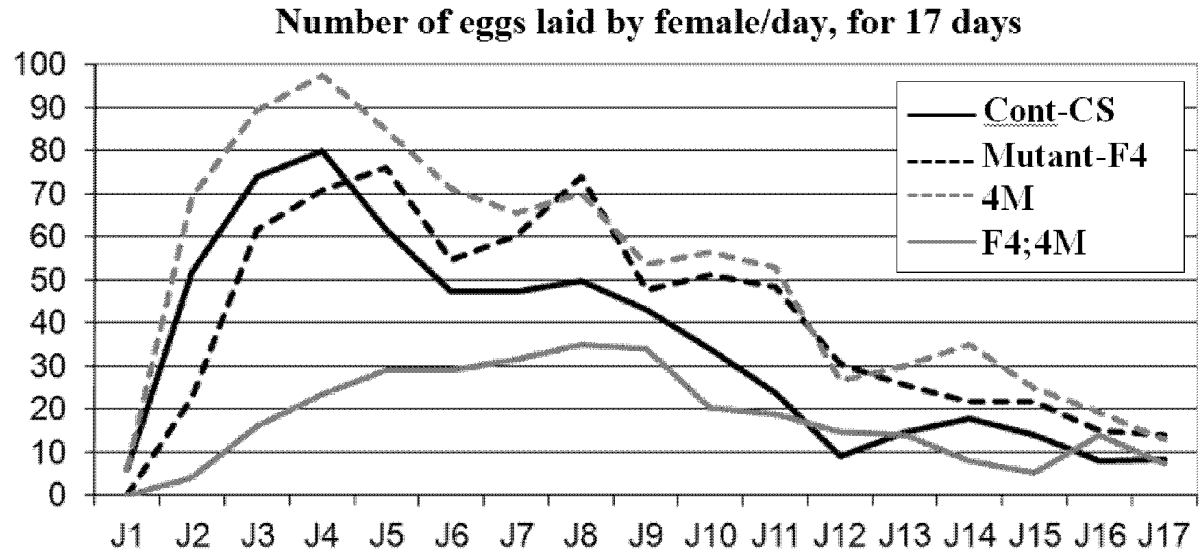


FIGURE 13

A)


Number of eggs laid by female/day, for 17 days
100
90
80
70
60
50
40
30
20
10
0
J1 J2 J3 J4 J5 J6 J7 J8 J9 J10 J11 J12 J13 J14 J15 J16 J17
Cont-CS
Mutant-F4
4M
F4;4M

B)

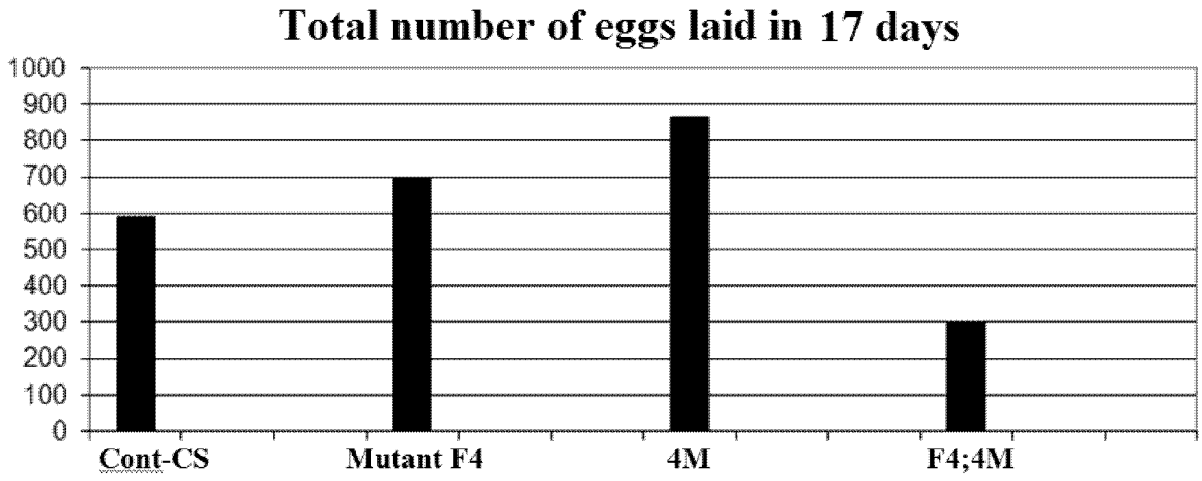
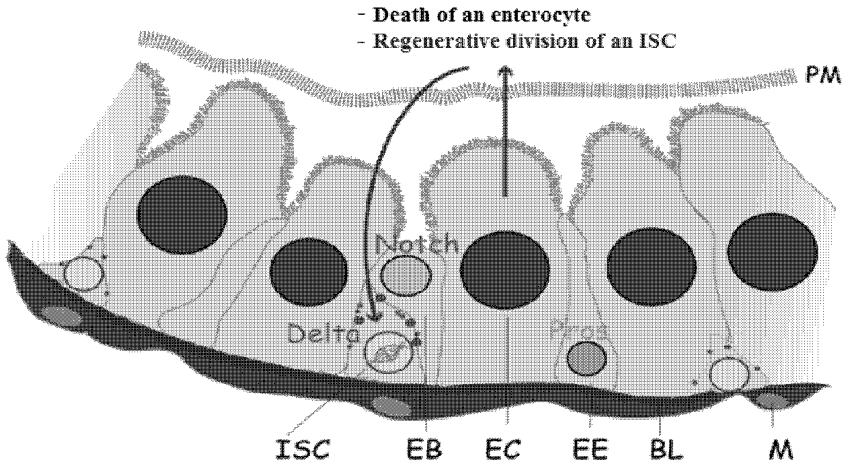

Total number of eggs laid in 17 days
1000
900
800
700
600
500
400
300
200
100
0
Cont-CS
Mutant F4
4M
F4;4M

FIGURE 14

A)



ISC: Intestinal stem cells
EB: enteroblasts
EC: enterocytes
EE: Entero-endocrine cells
BL: basal lamina
M: Visceral muscle cells
PM: Peritrophic membrane

B)

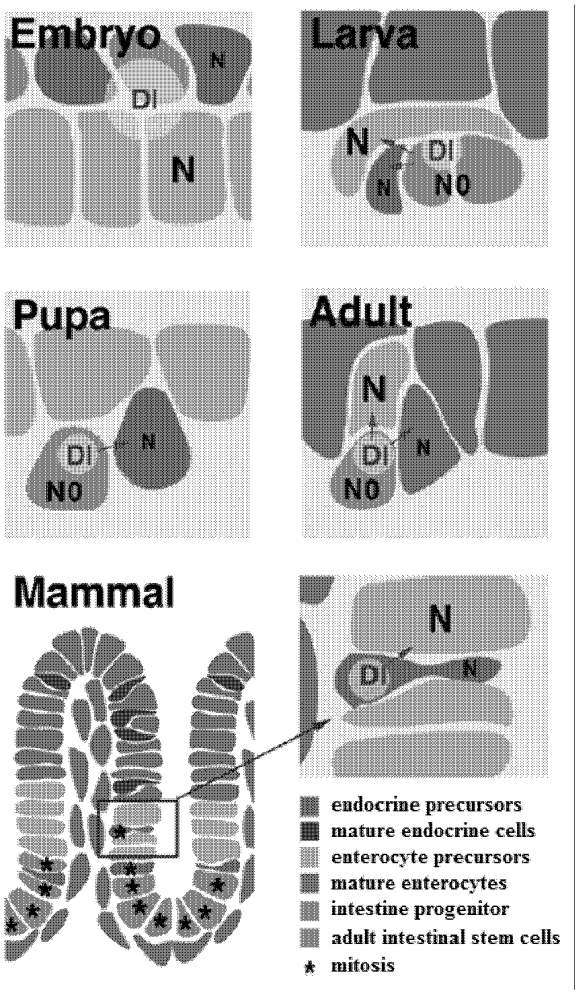


FIGURE 15

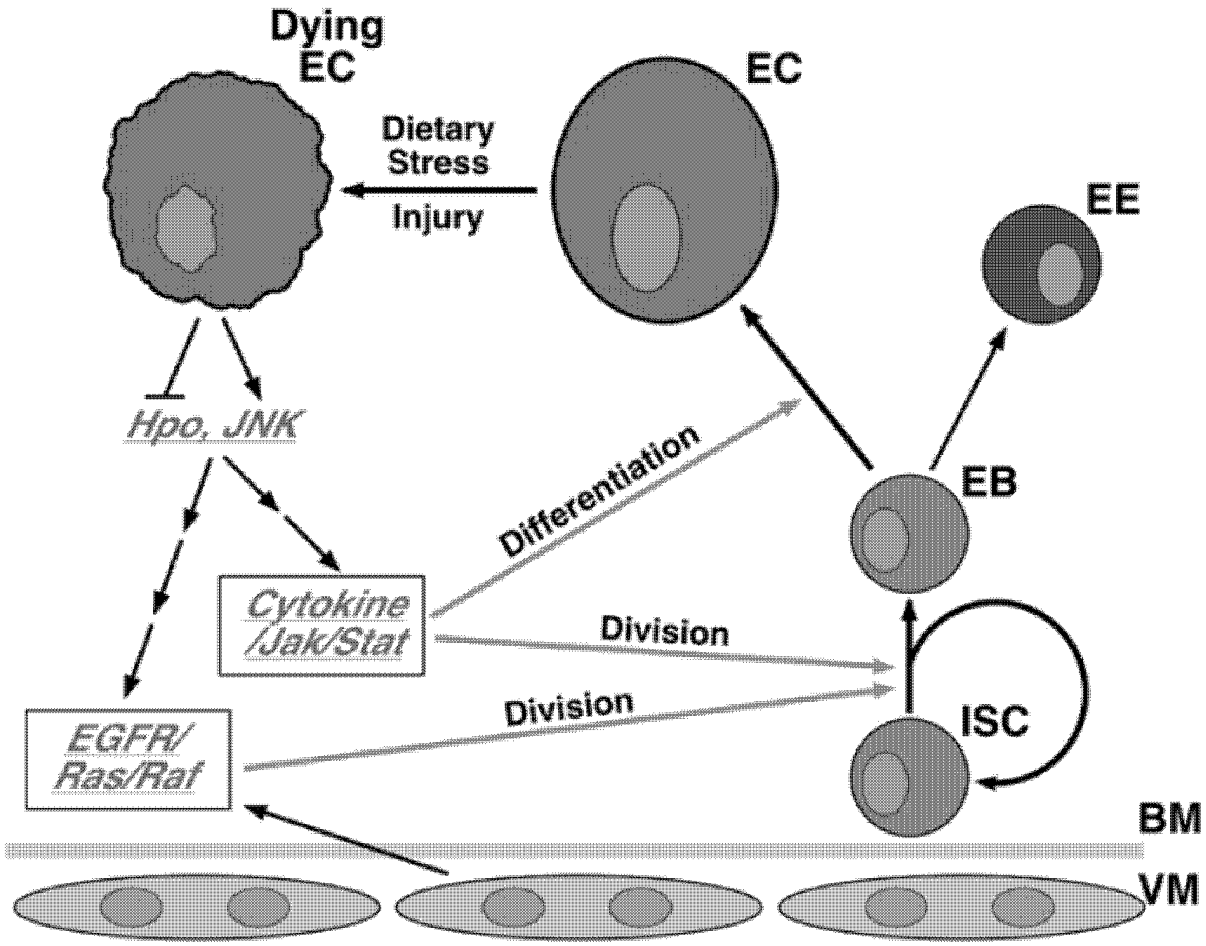

Dying
EC
EC
Dietary
Stress
Injury
EE
Hpo, JNK
Differentiation
EB
Cytokine
/Jak/Stat
Division
Division
EGFR/
Ras/Raf
ISC
BM
VM

FIGURE 16

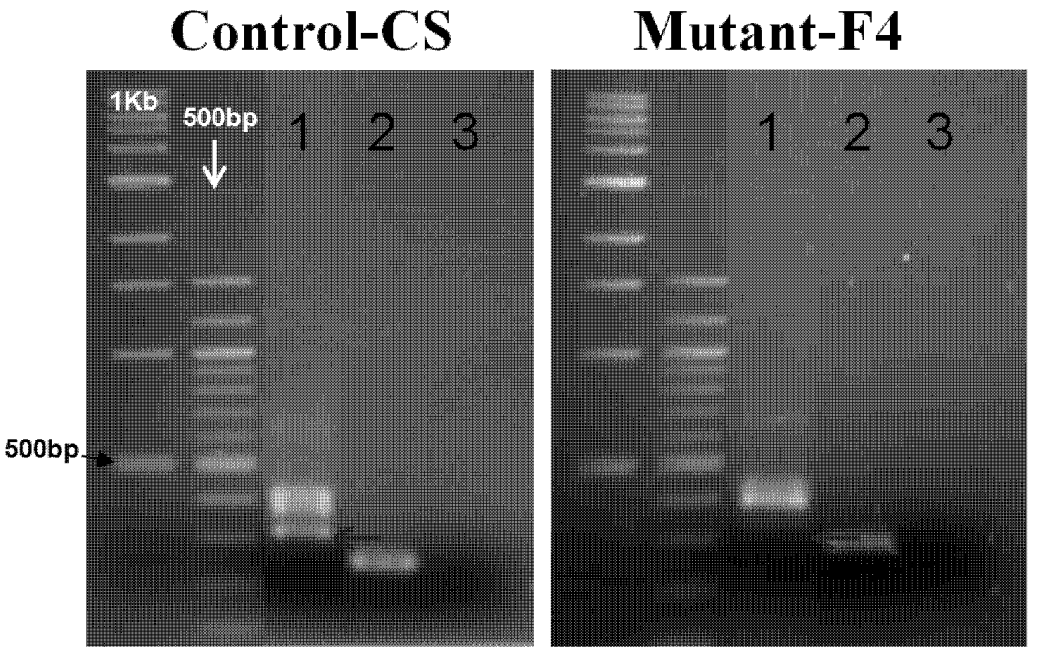

Control-CS
Mutant-F4
1Kb
500bp
1 2 3
1 2 3
500bp
1) CG9339: skywalker: 345-400-432-462pb
2) RP49 control 300 bp
3) Non-contamination by genomic DNA control

FIGURE 17

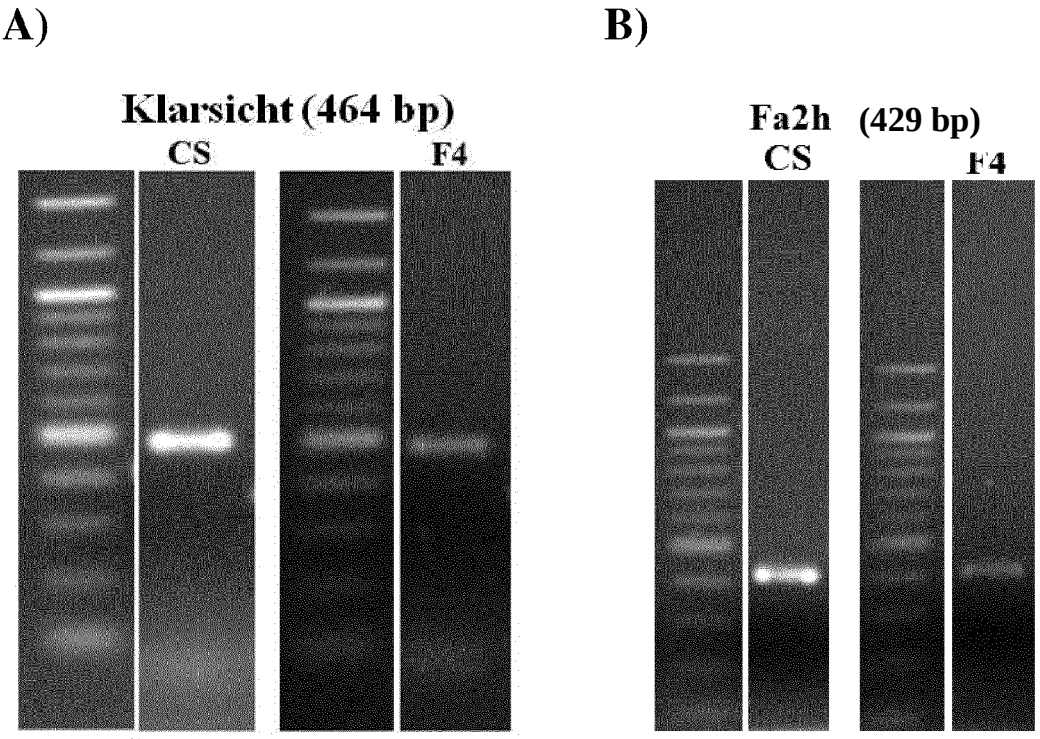
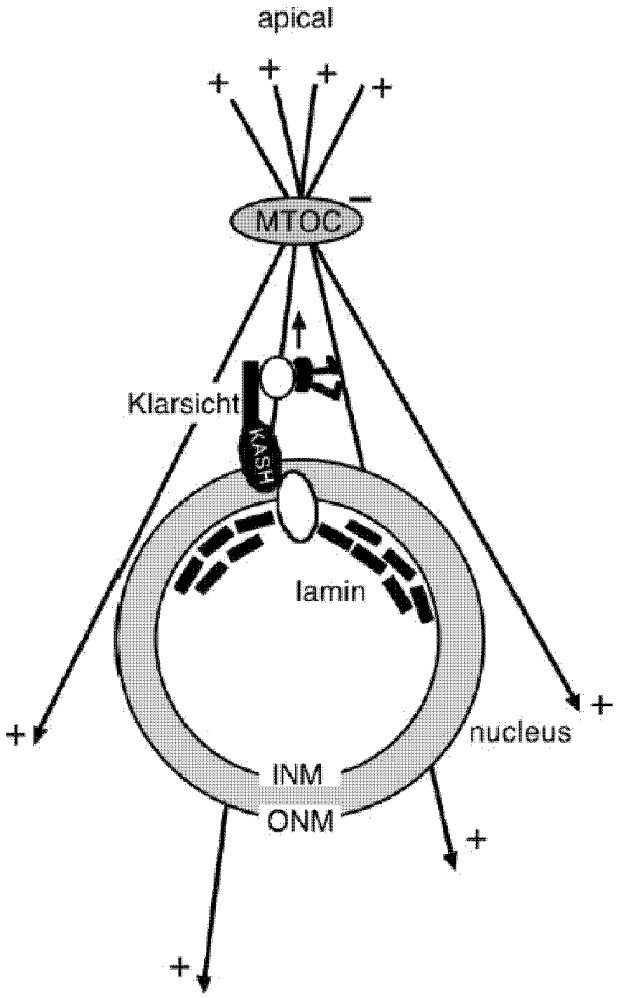


FIGURE 18

A)


apical
MTOC
Klarsicht
KASH
lamin
nucleus
INM
ONM
basal

B)

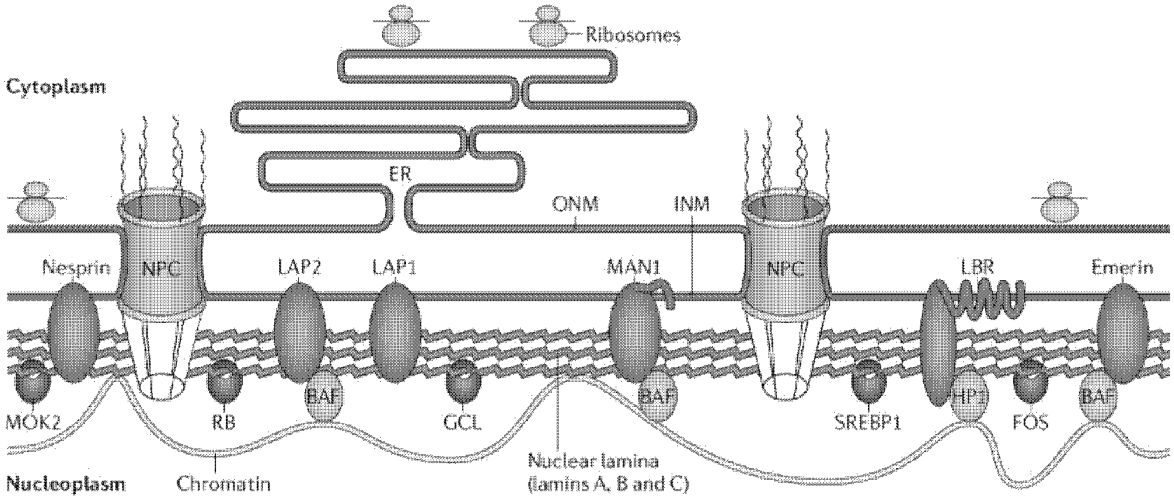

Ribosomes
Cytoplasm
ER
ONM
INM
Nesprin
NPC
LAP2
LAP1
MAN1
NPC
LBR
Emerin
MOK2
RB
BAF
GCL
BAF
SREBP1
HP1
FOS
BAF
Nucleoplasm
Chromatin
Nuclear lamina
(lamins A, B and C)

FIGURE 19

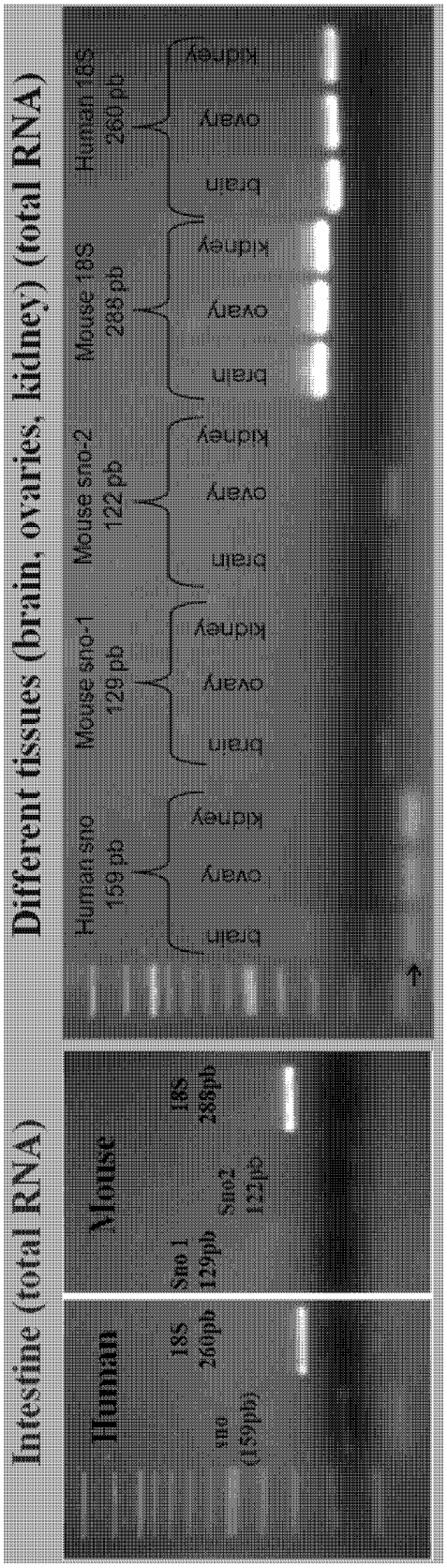

Intestine (total RNA)
Human
18S
260pb
sno
(159pb)
Mouse
18S
288pb
Sno 1
129pb
Sno2
122pb
Different tissues (brain, ovaries, kidney) (total RNA)
Human sno
159 pb
Mouse sno-1
129 pb
Mouse sno-2
122 pb
Mouse 18S
288 pb
Human 18S
260 pb
brain
ovary
kidney

FIGURE 20

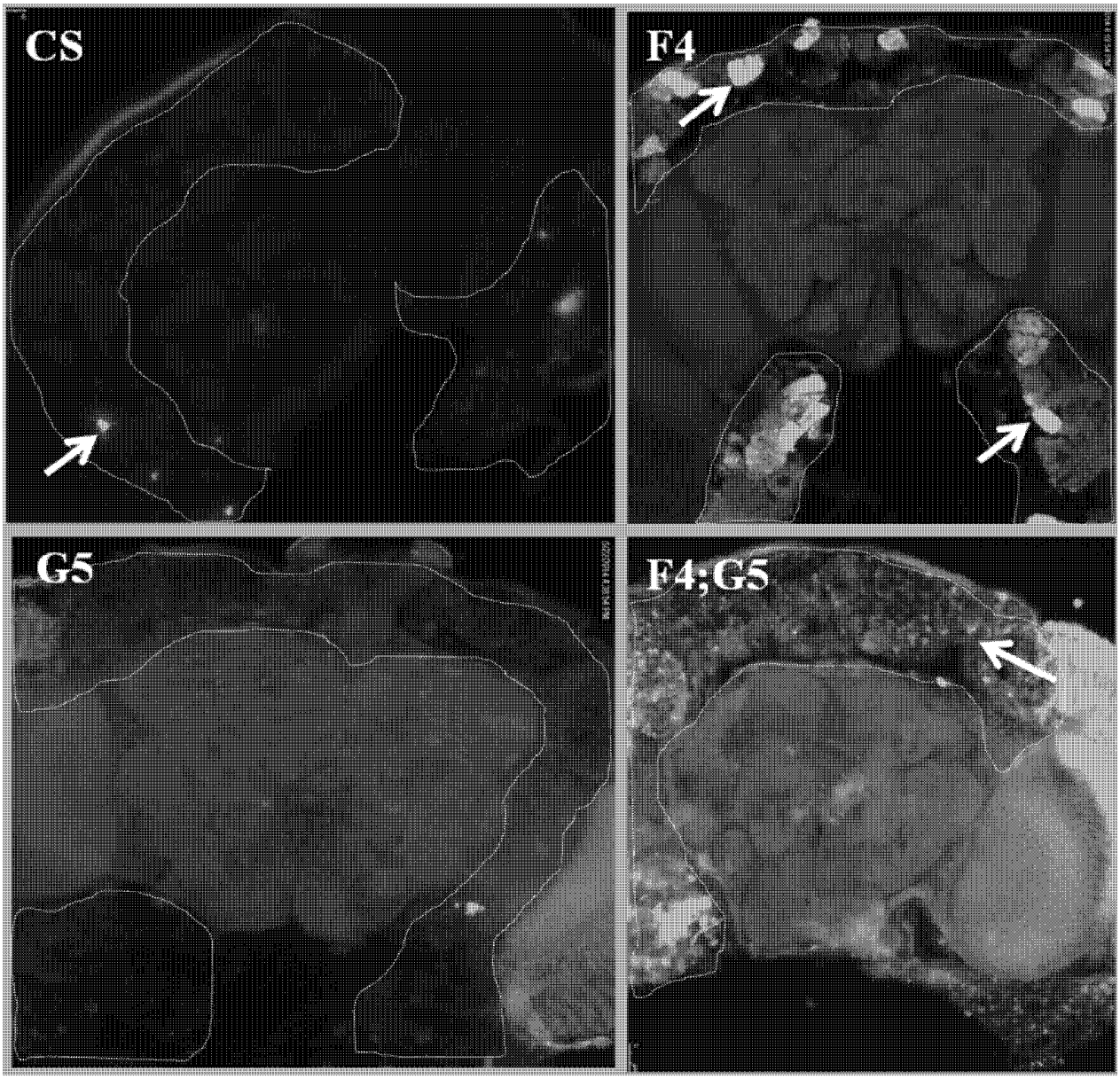


FIGURE 21