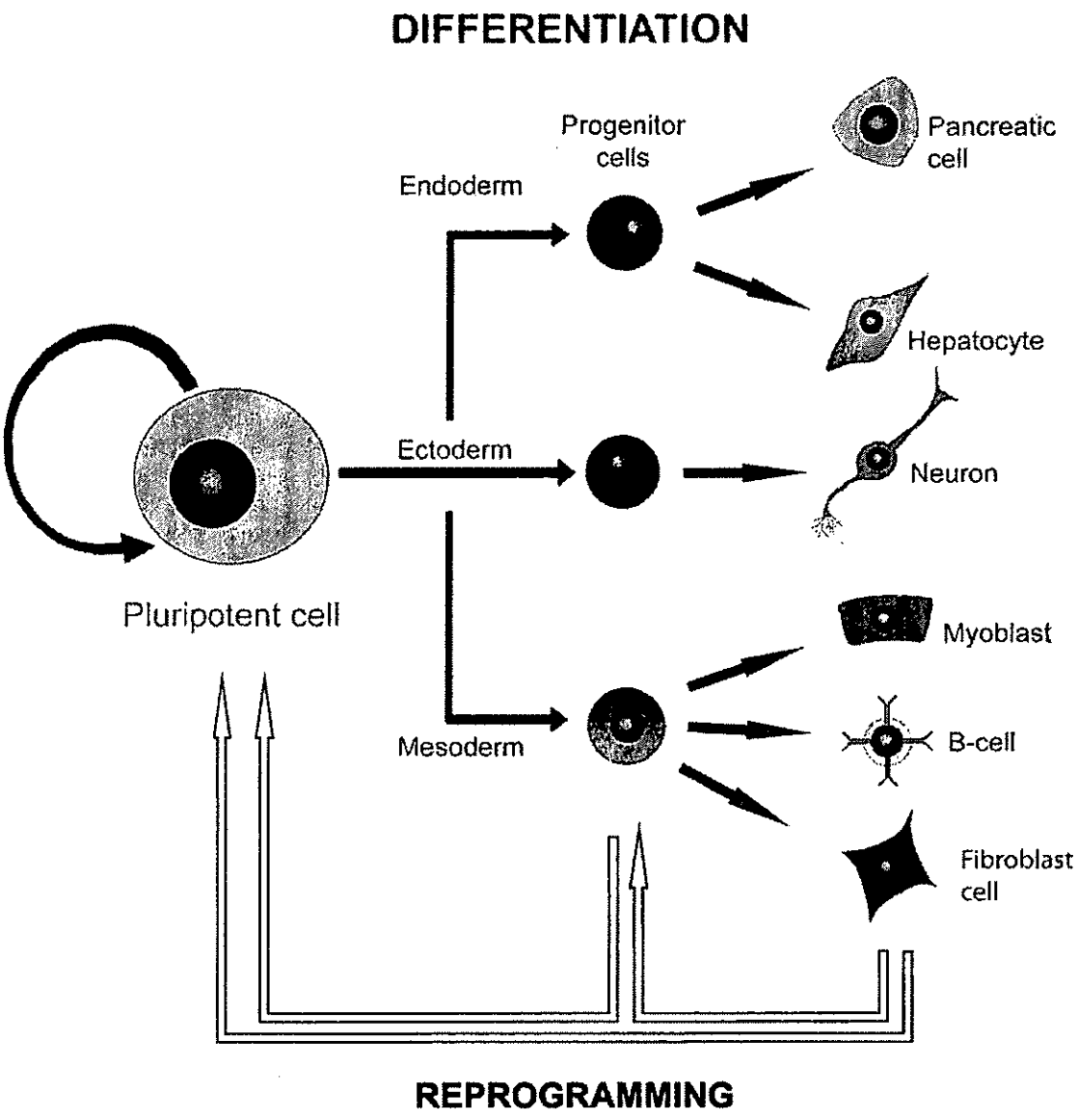

DIFFERENTIATION
Progenitor cells
Endoderm
Pancreatic cell
Hepatocyte
Ectoderm
Neuron
Pluripotent cell
Myoblast
Mesoderm
B-cell
Fibroblast cell
REPROGRAMMING

Fig. 1

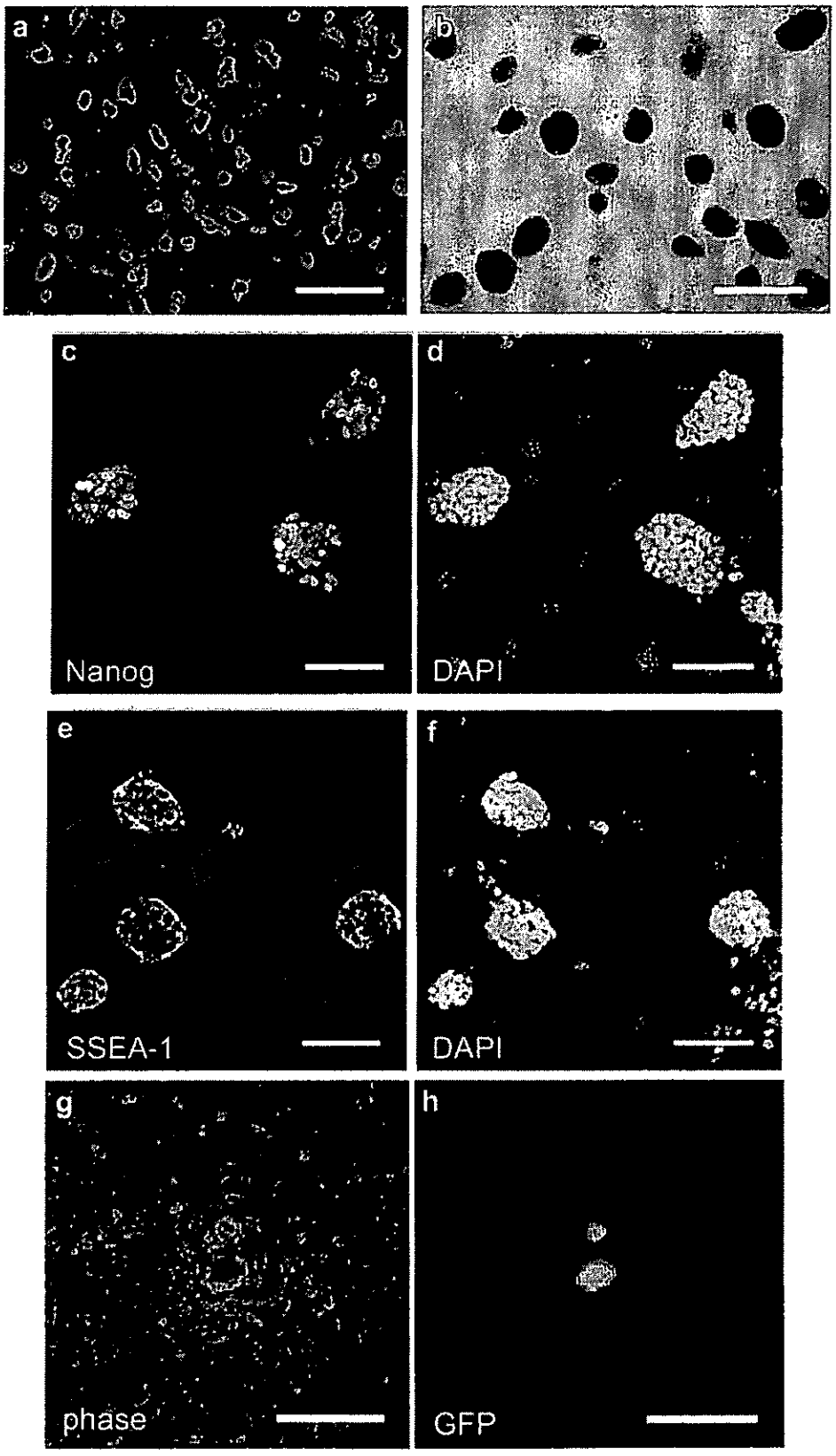


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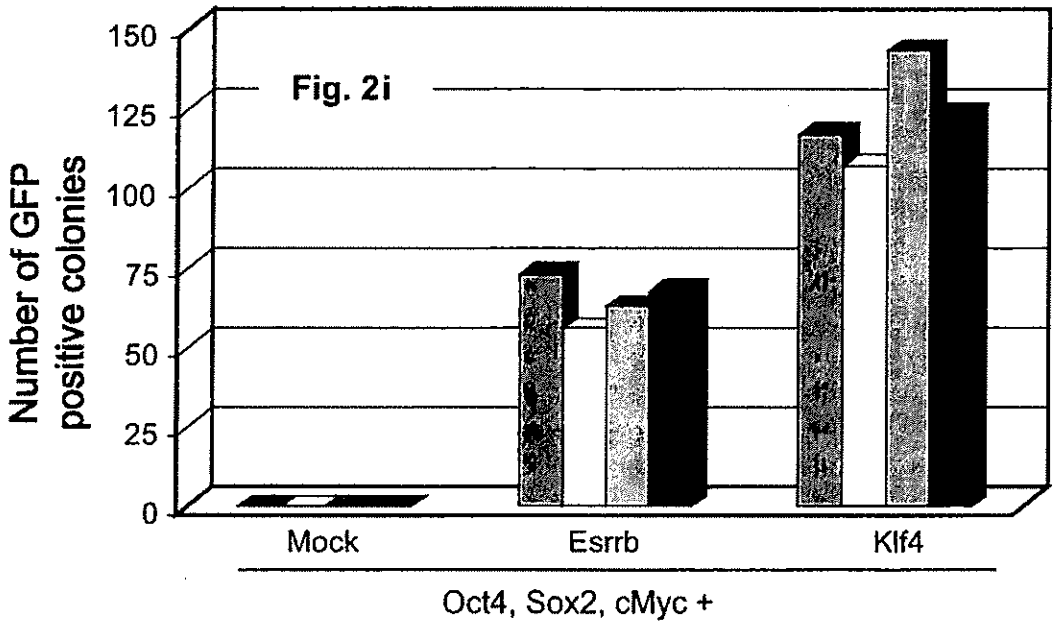

Fig. 2i
Number of GFP positive colonies
150
125
100
75
50
25
0
Mock
Esrrb
Klf4
Oct4, Sox2, cMyc +

Fig. 3a

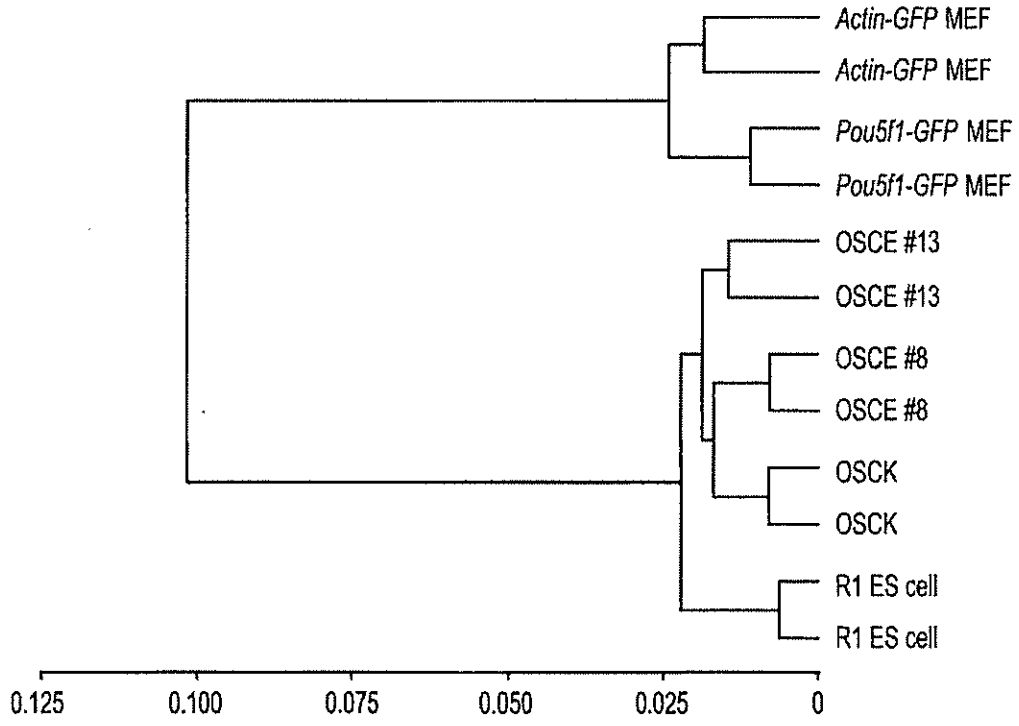

Actin-GFP MEF
Actin-GFP MEF
Pou5f1-GFP MEF
Pou5f1-GFP MEF
OSCE #13
OSCE #13
OSCE #8
OSCE #8
OSCK
OSCK
R1 ES cell
R1 ES cell
0.125
0.100
0.075
0.050
0.025
0

Fig. 3b

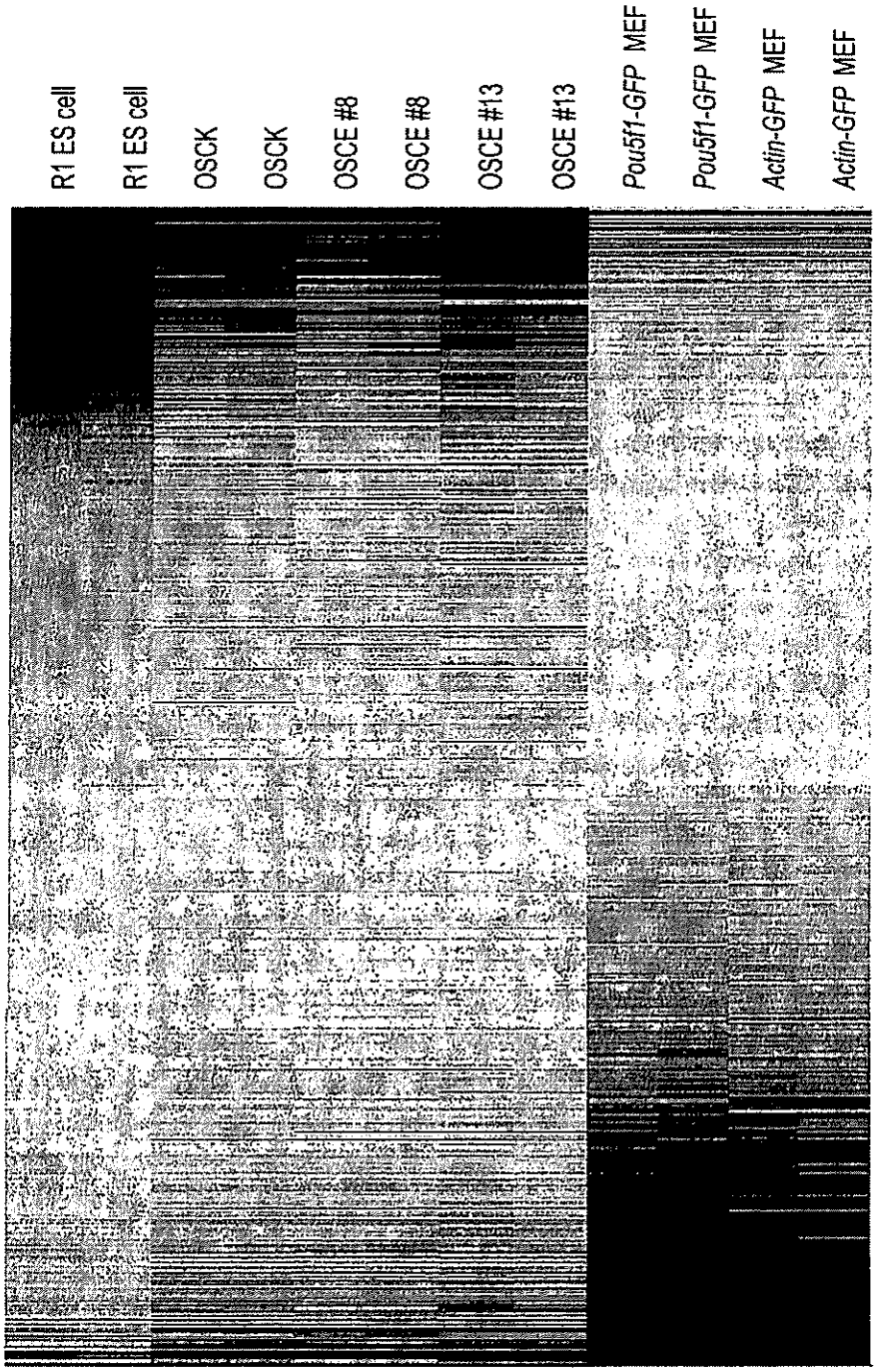
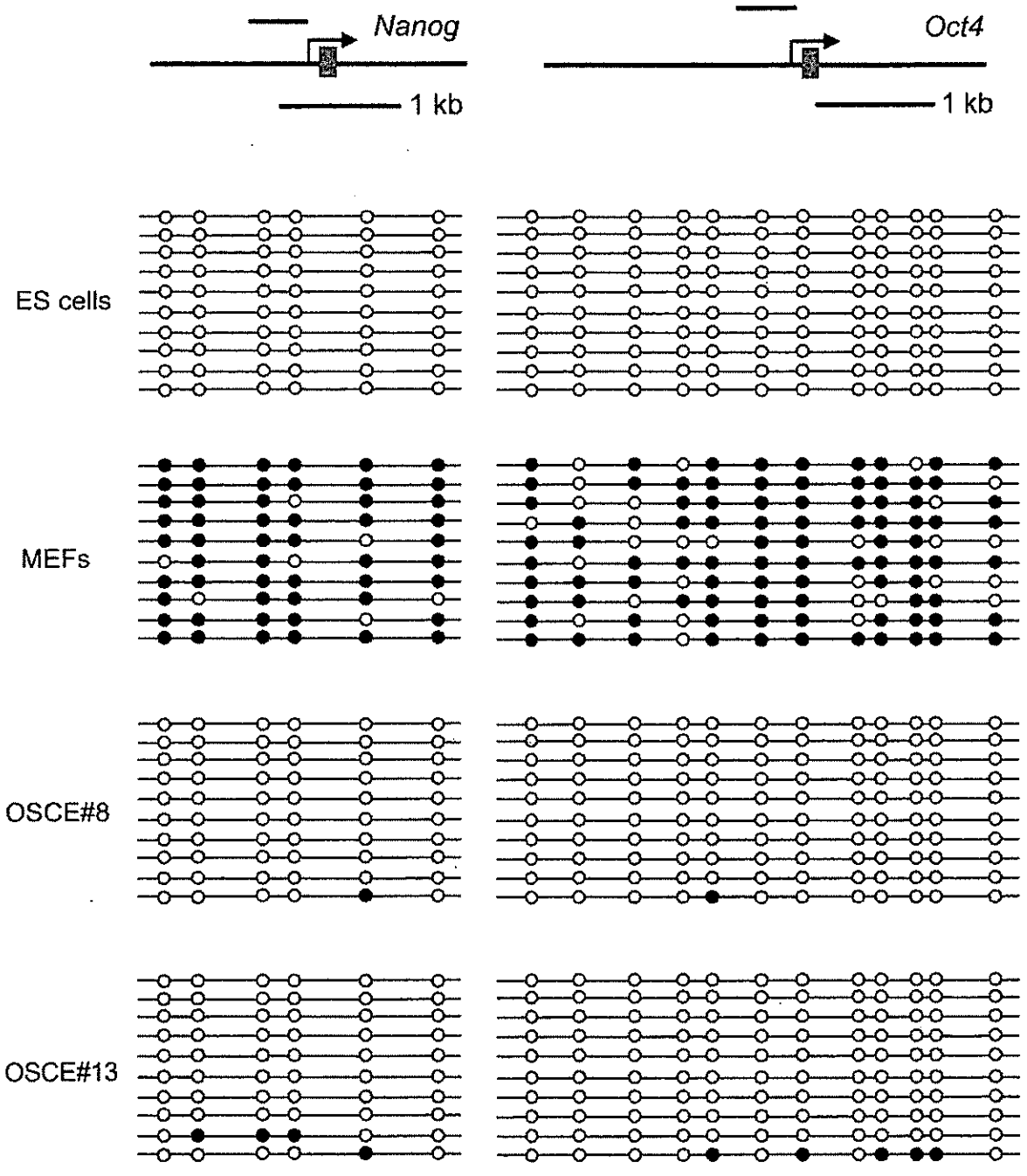
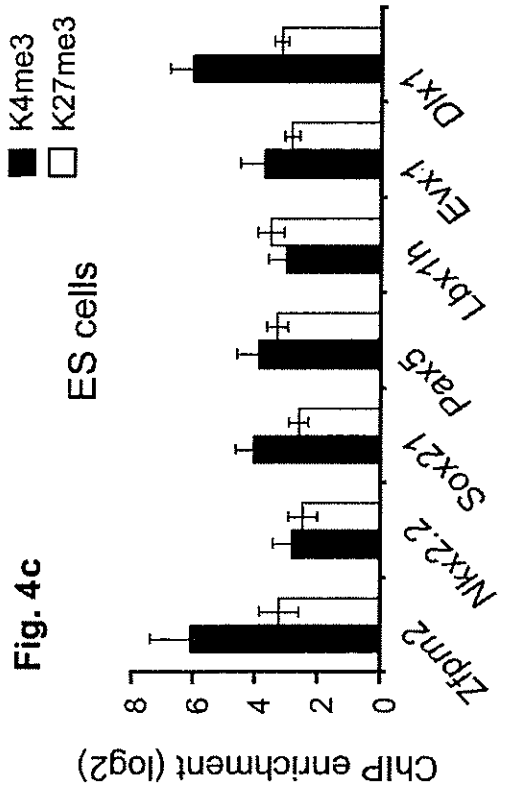
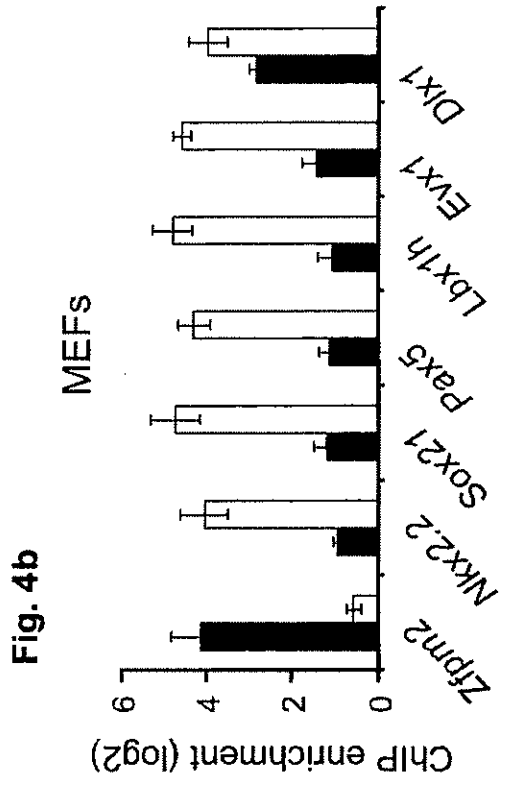
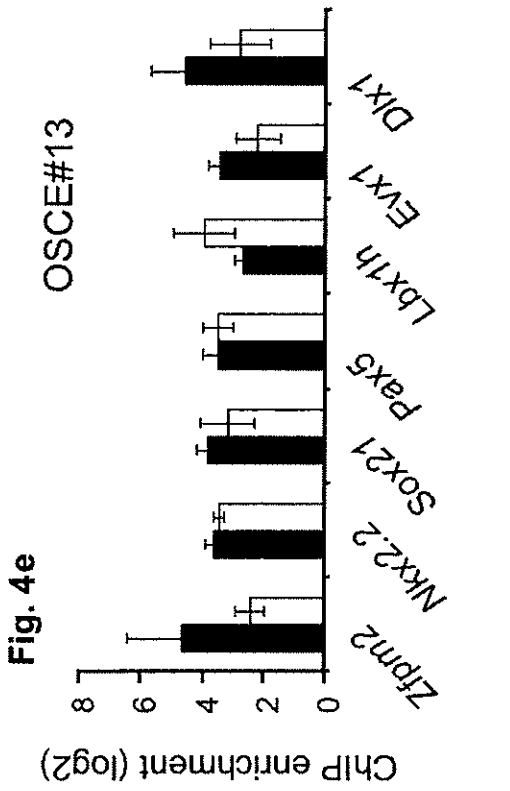

R1 ES cell
R1 ES cell
OSCK
OSCK
OSCE #8
OSCE #8
OSCE #13
OSCE #13
Pou5f1-GFP MEF
Pou5f1-GFP MEF
Actin-GFP MEF
Actin-GFP MEF

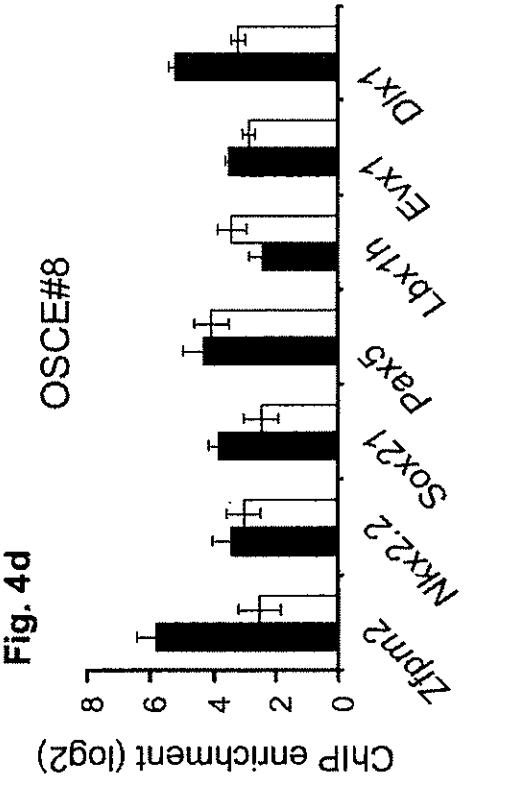
Fig. 4a

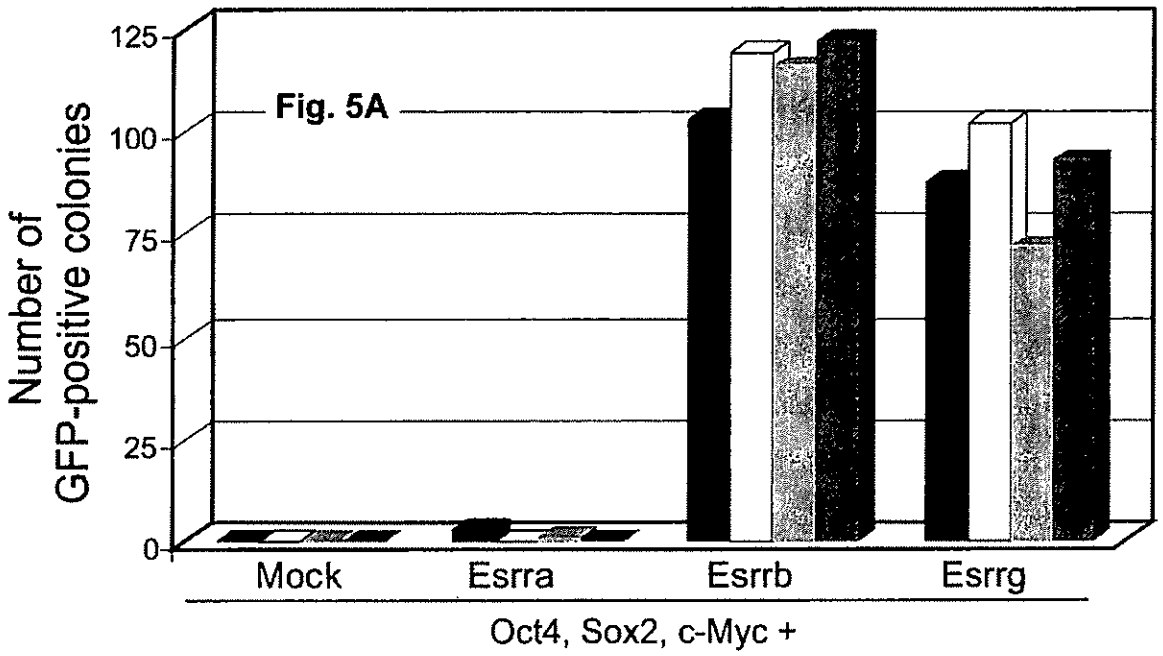



Fig. 4c
ES cells
K4me3
K27me3
ChIP enrichment (log2)
0
2
4
6
8
Zfpm2
Nkx2.2
Sox21
Pax5
Lbx1h
Evx1
Dlx1


Fig. 4b
MEFs
ChIP enrichment (log2)
0
2
4
6
Zfpm2
Nkx2.2
Sox21
Pax5
Lbx1h
Evx1
Dlx1


Fig. 4e
OSCE#13
ChIP enrichment (log2)
0
2
4
6
8
Zfpm2
Nkx2.2
Sox21
Pax5
Lbx1h
Evx1
Dlx1


Fig. 4d
OSCE#8
ChIP enrichment (log2)
0
2
4
6
8
Zfpm2
Nkx2.2
Sox21
Pax5
Lbx1h
Evx1
Dlx1


Fig. 5A
Number of GFP-positive colonies
125
100
75
50
25
0
Mock
Esrra
Esrrb
Esrrg
Oct4, Sox2, c-Myc +

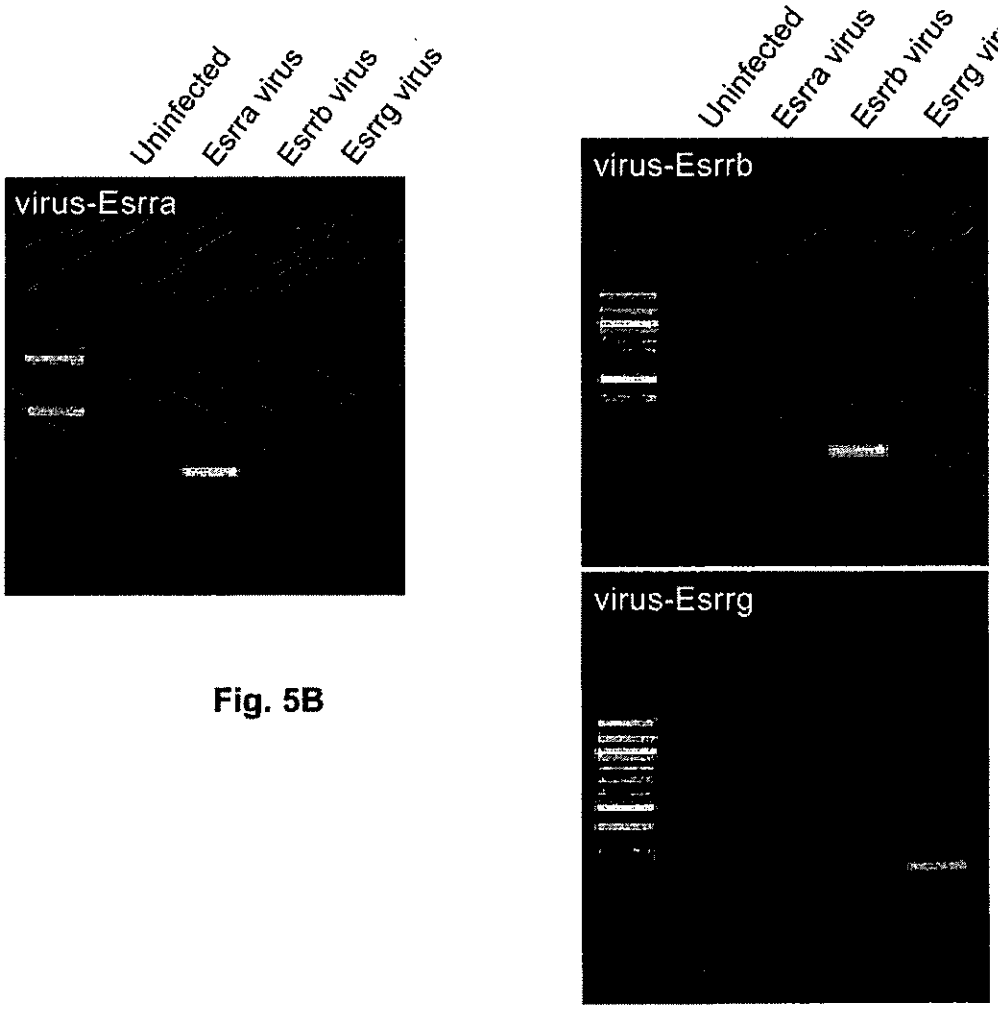

Uninfected
Esrra virus
Esrrb virus
Esrrg virus
virus-Esrra
virus-Esrrb
virus-Esrrg

Fig. 5B

Fig. 5
(continued)

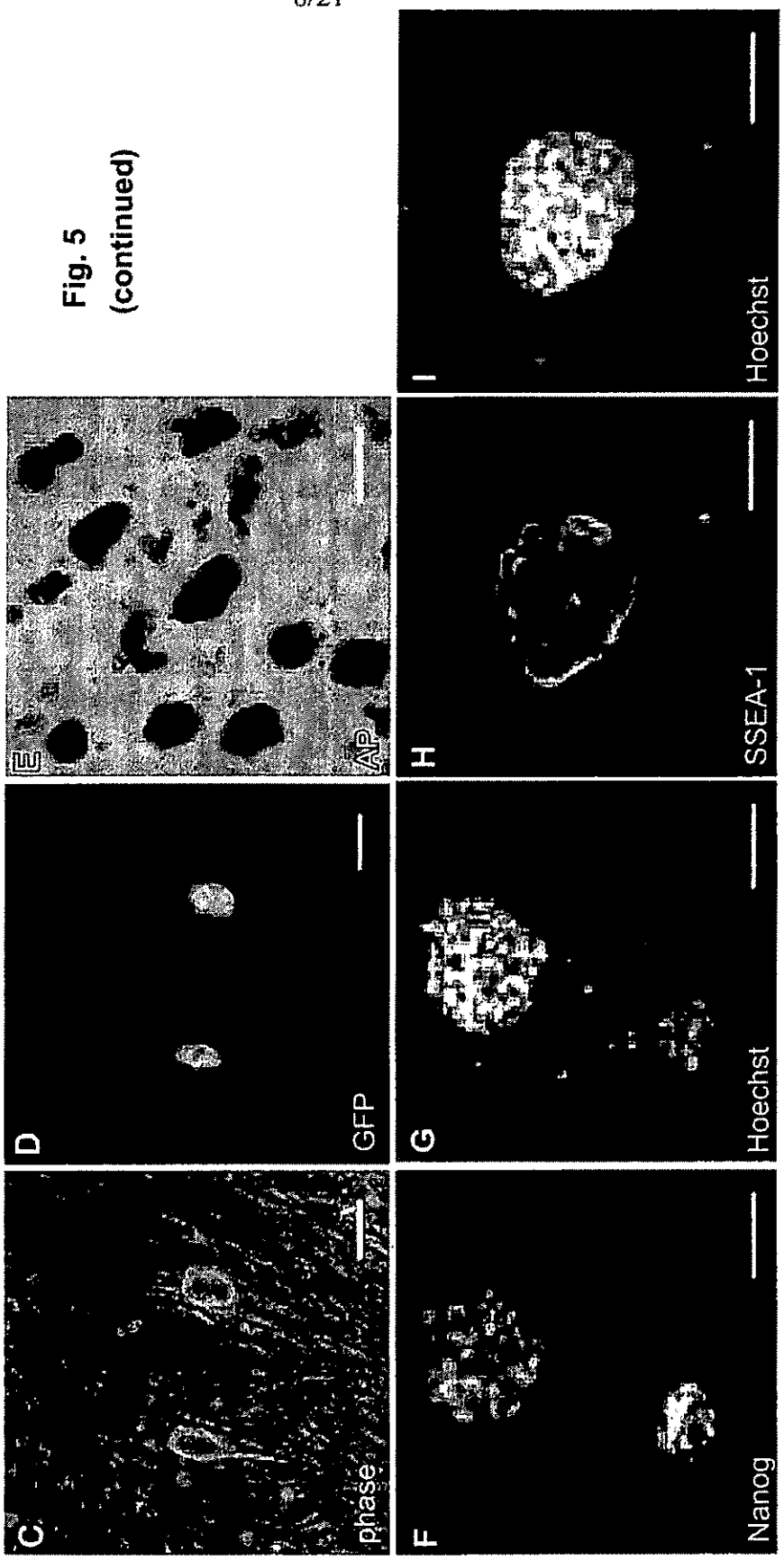


Fig. 5J

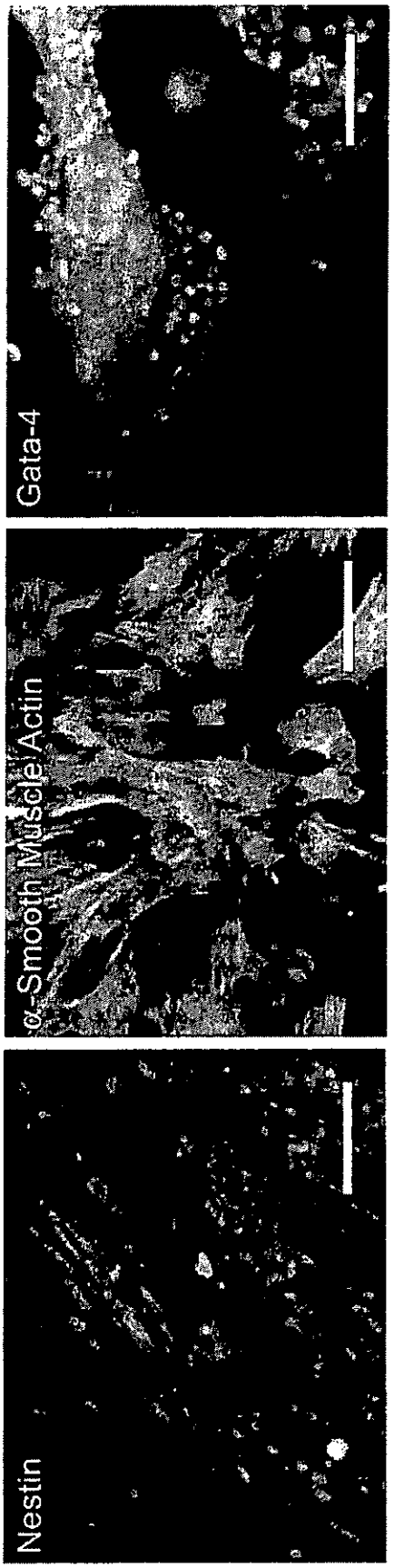
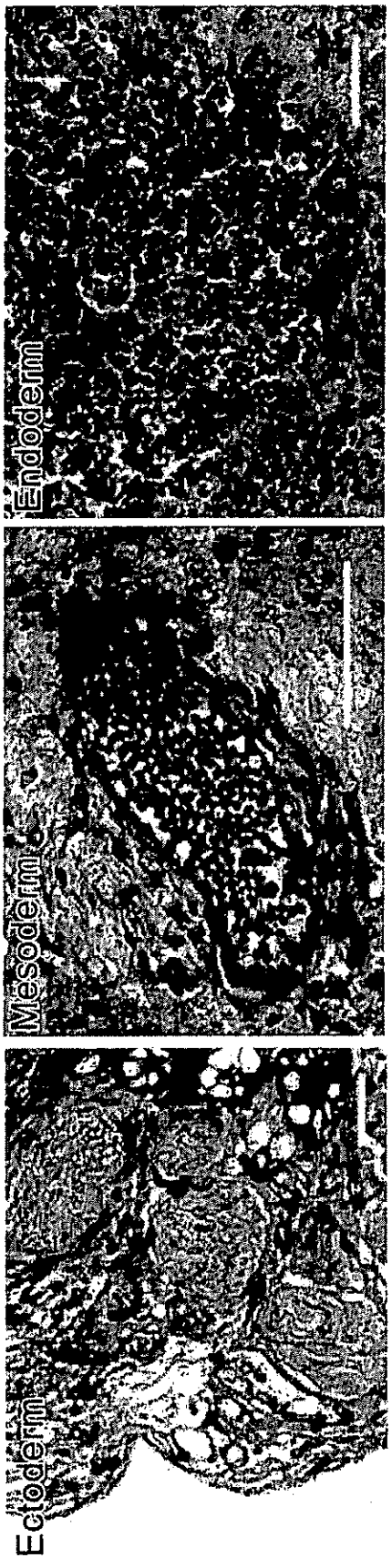

Nestin
α-Smooth Muscle Actin
Gata-4

Fig. 5K


Ectoderm
Mesoderm
Endoderm

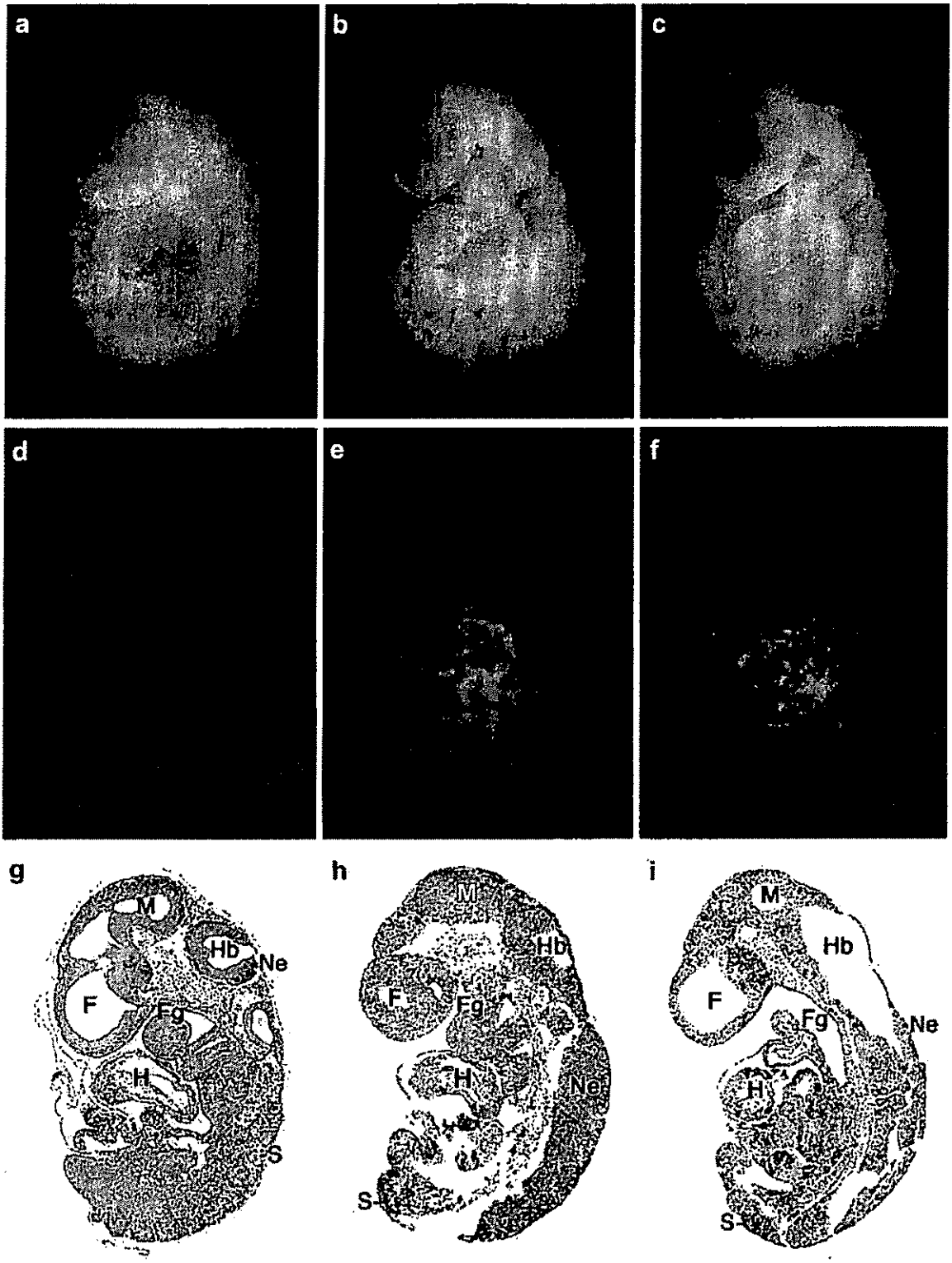
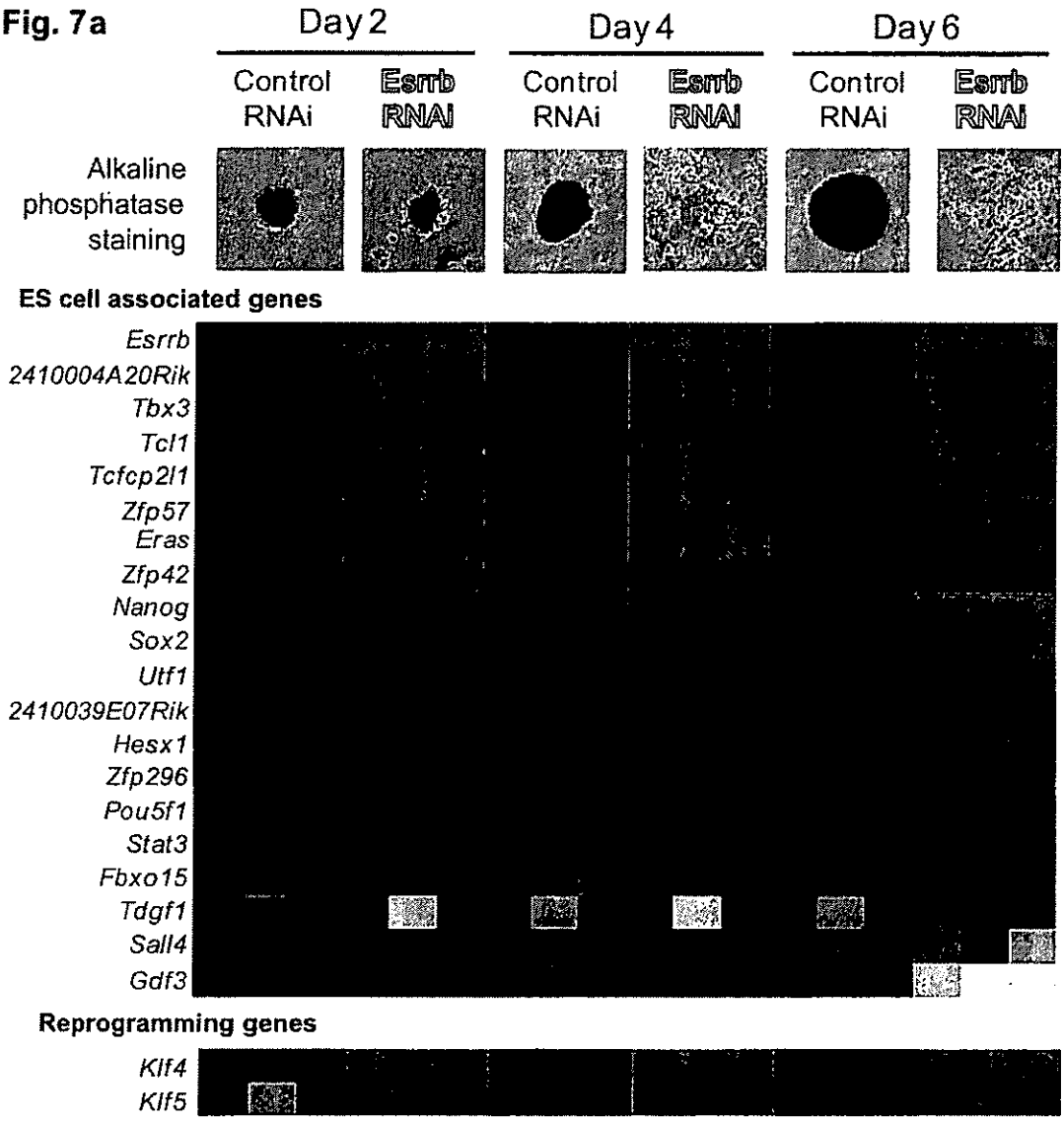


Fig. 6

Fig. 7a


Day 2
Day 4
Day 6
Control RNAi
Esrrb RNAi
Control RNAi
Esrrb RNAi
Control RNAi
Esrrb RNAi
Alkaline phosphatase staining
ES cell associated genes
Esrrb
2410004A20Rik
Tbx3
Tcl1
Tcfcp2l1
Zfp57
Eras
Zfp42
Nanog
Sox2
Utf1
2410039E07Rik
Hesx1
Zfp296
Pou5f1
Stat3
Fbxo15
Tdgf1
Sall4
Gdf3
Reprogramming genes
Klf4
Klf5

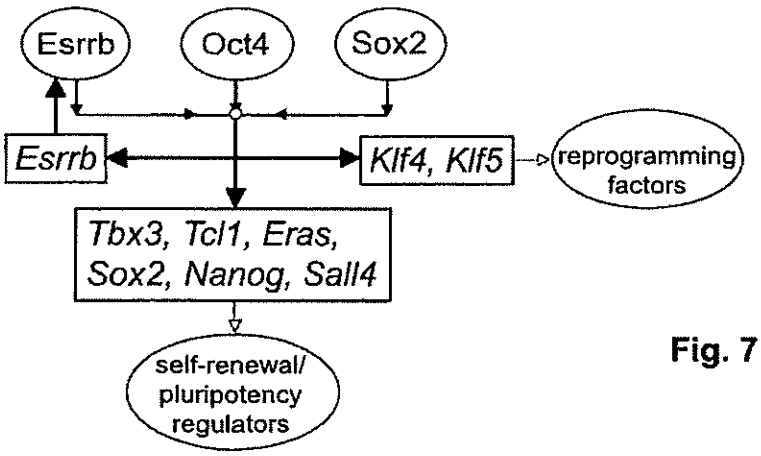

Esrrb
Oct4
Sox2
Esrrb
Klf4, Klf5
reprogramming factors
Tbx3, Tcl1, Eras, Sox2, Nanog, Sall4
self-renewal/ pluripotency regulators

Fig. 7b

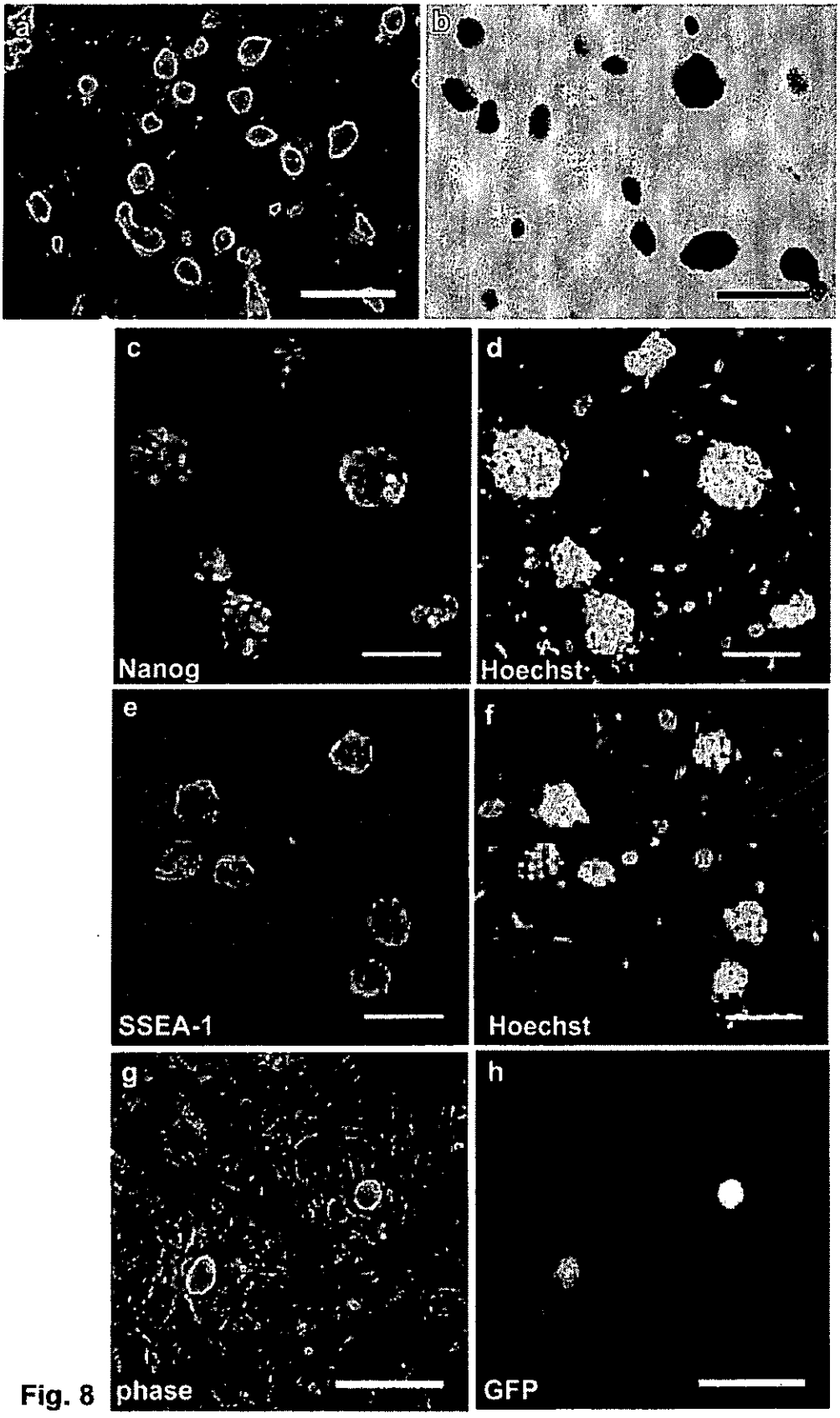


Fig. 8

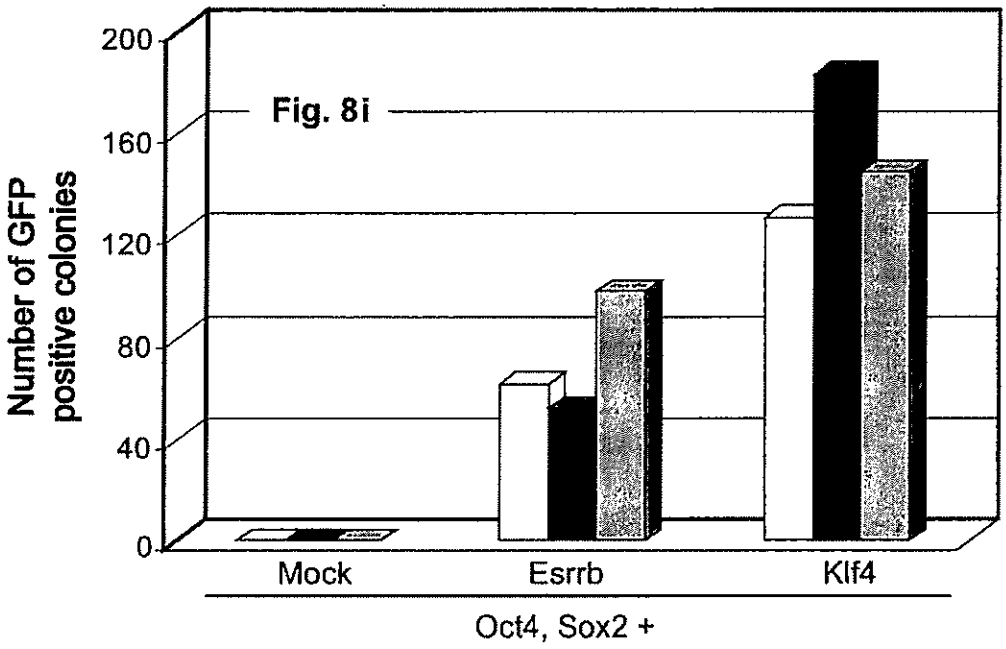

Fig. 8i
Number of GFP positive colonies
200
160
120
80
40
0
Mock
Esrrb
Klf4
Oct4, Sox2 +

Fig. 9a

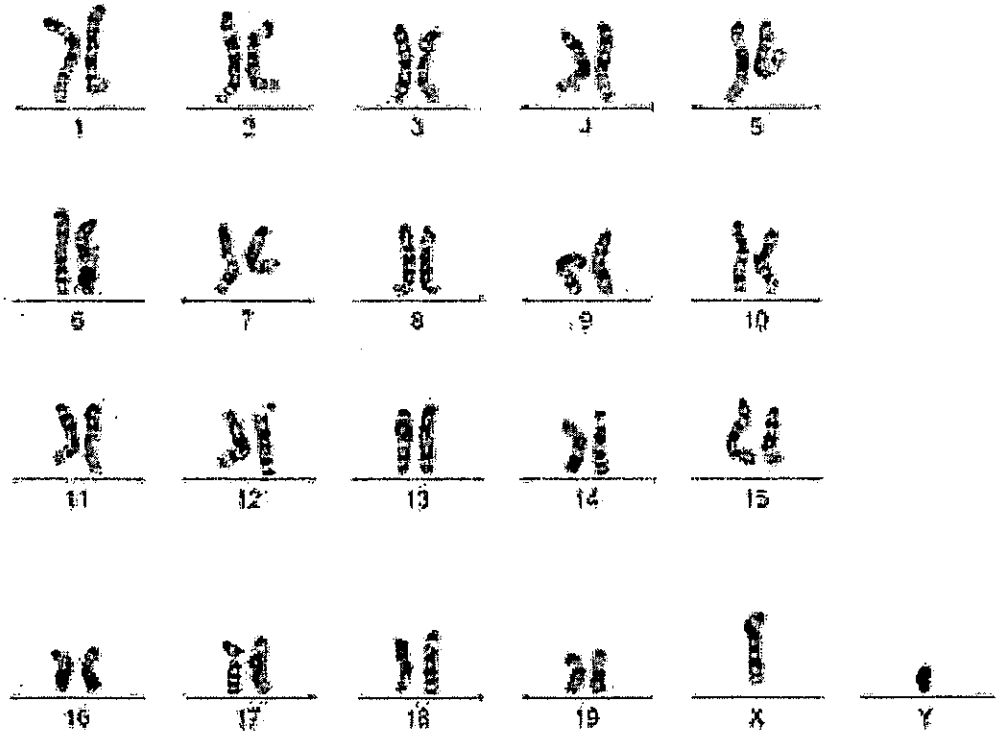

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
X
Y

Fig. 9b

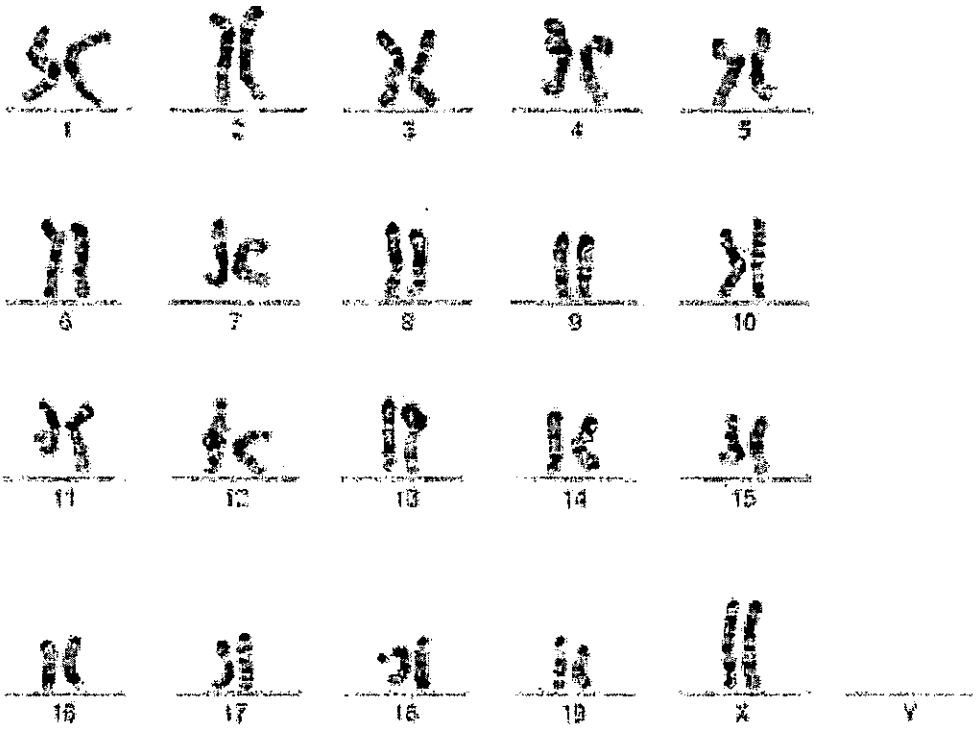

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
X
Y

Fig. 9c

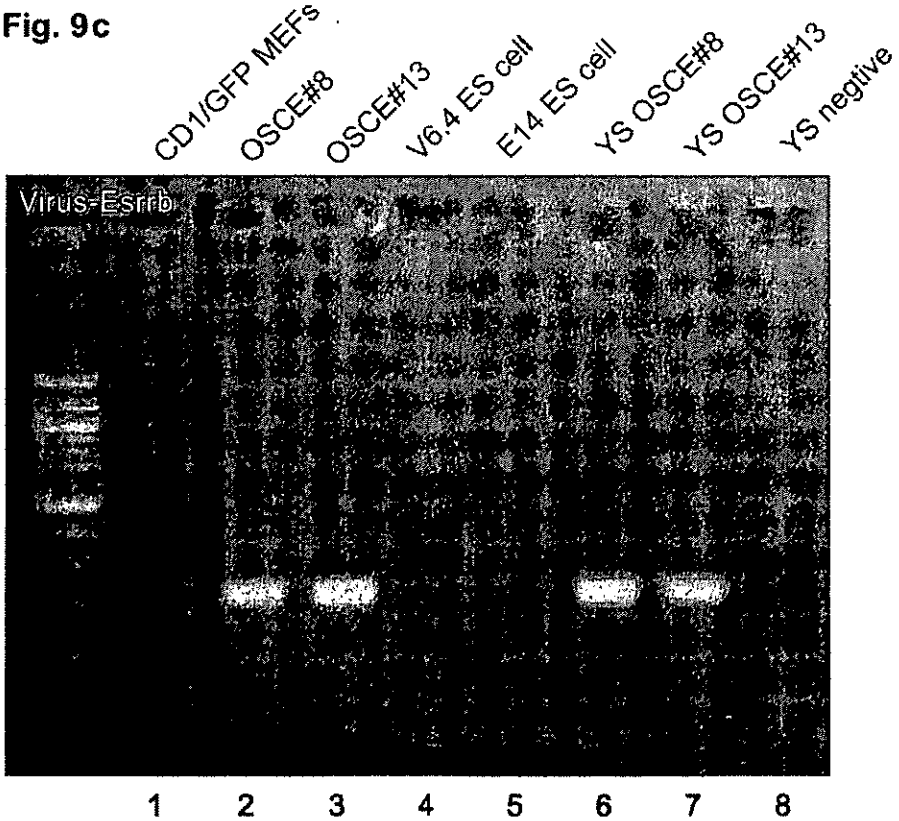

CD1/GFP MEFs
OSCE#8
OSCE#13
V6.4 ES cell
E14 ES cell
YS OSCE#8
YS OSCE#13
YS negtive
Virus-Esrrb
1
2
3
4
5
6
7
8

Fig. 9d

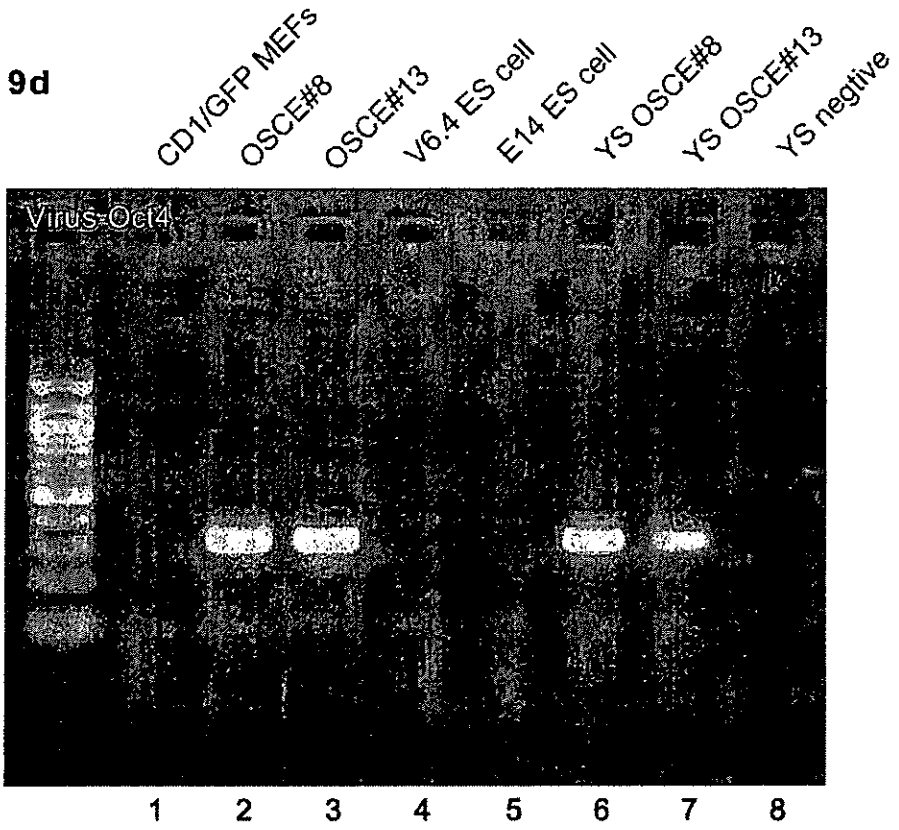

CD1/GFP MEFs
OSCE#8
OSCE#13
V6.4 ES cell
E14 ES cell
YS OSCE#8
YS OSCE#13
YS negtive
Virus-Oct4
1
2
3
4
5
6
7
8

Fig. 9e

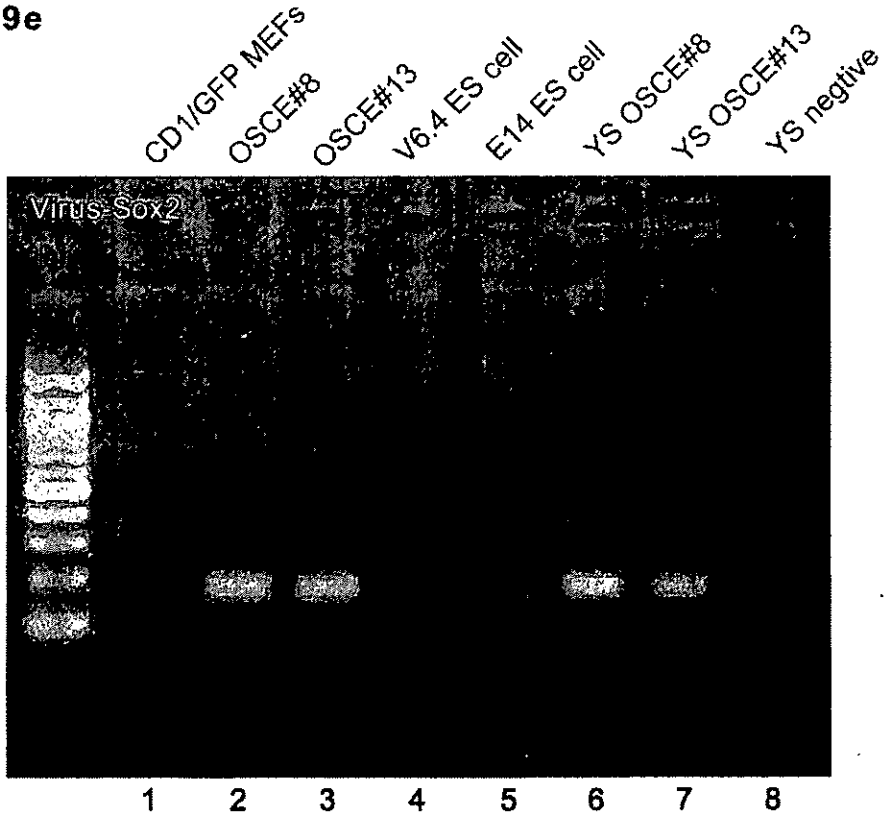

CD1/GFP MEFs
OSCE#8
OSCE#13
V6.4 ES cell
E14 ES cell
YS OSCE#8
YS OSCE#13
YS negtive
Virus-Sox2
1
2
3
4
5
6
7
8

Fig. 9f

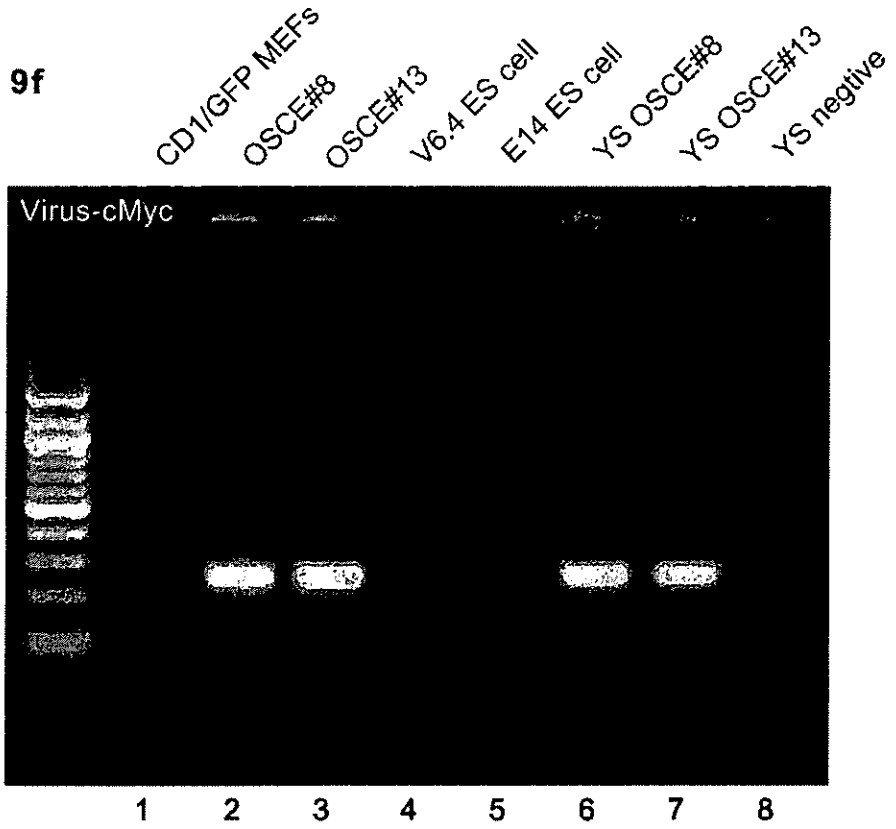

CD1/GFP MEFs
OSCE#8
OSCE#13
V6.4 ES cell
E14 ES cell
YS OSCE#8
YS OSCE#13
YS negtive
Virus-cMyc
1
2
3
4
5
6
7
8

Fig. 9g

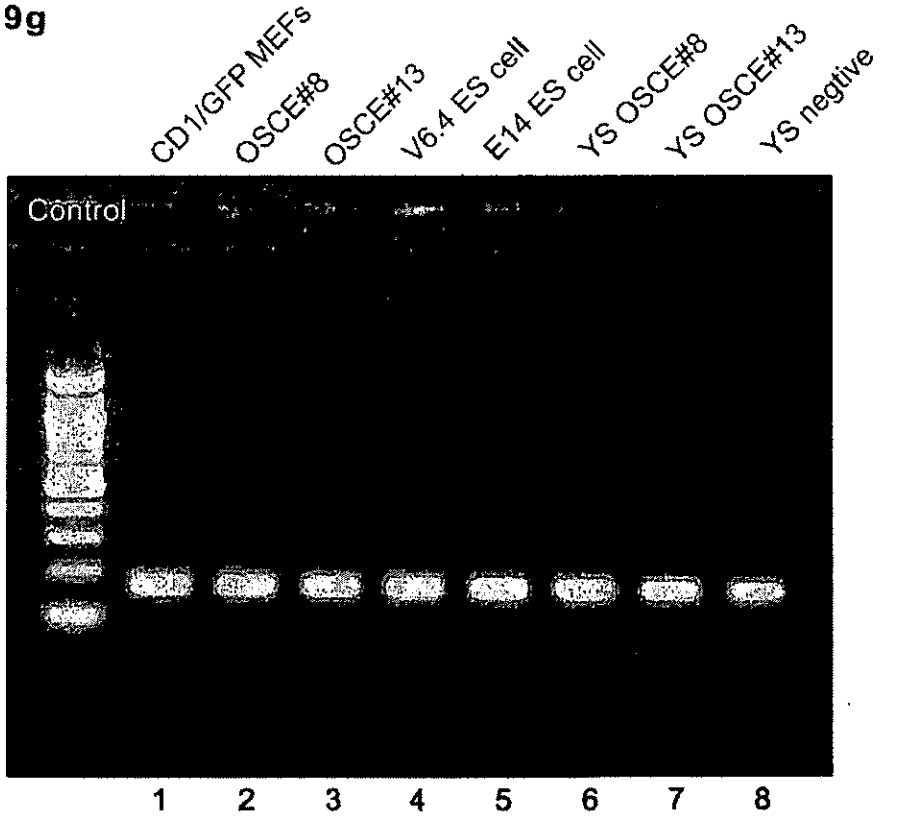

CD1/GFP MEFs
OSCE#8
OSCE#13
V6.4 ES cell
E14 ES cell
YS OSCE#8
YS OSCE#13
YS negtive
Control
1
2
3
4
5
6
7
8

Fig. 10a

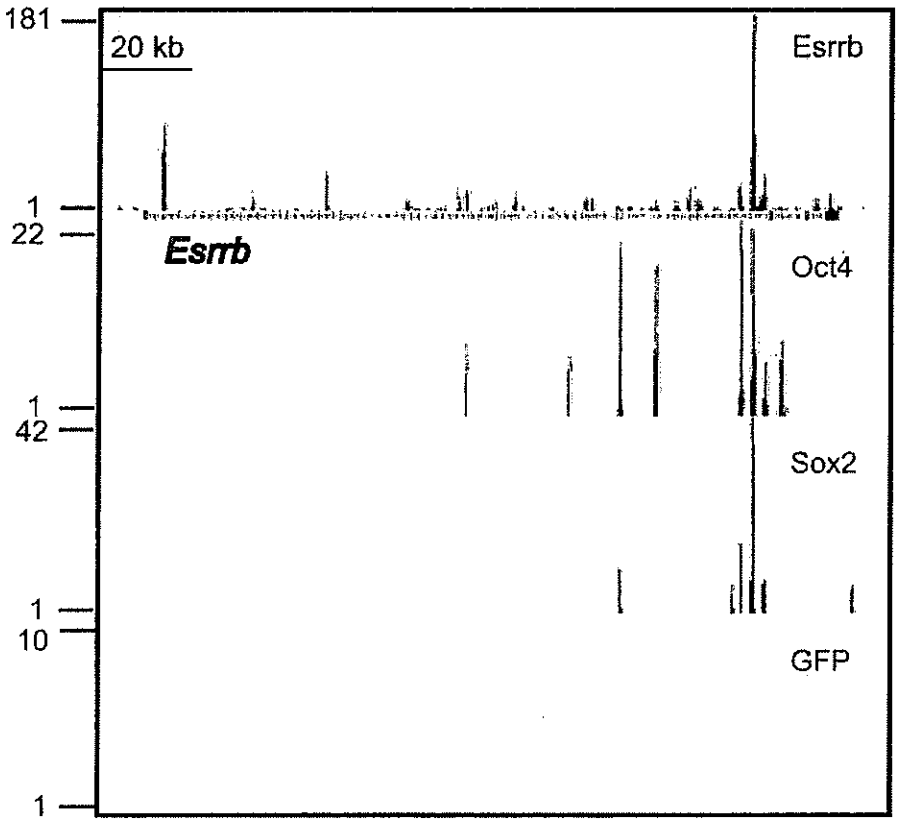


Fig. 10b

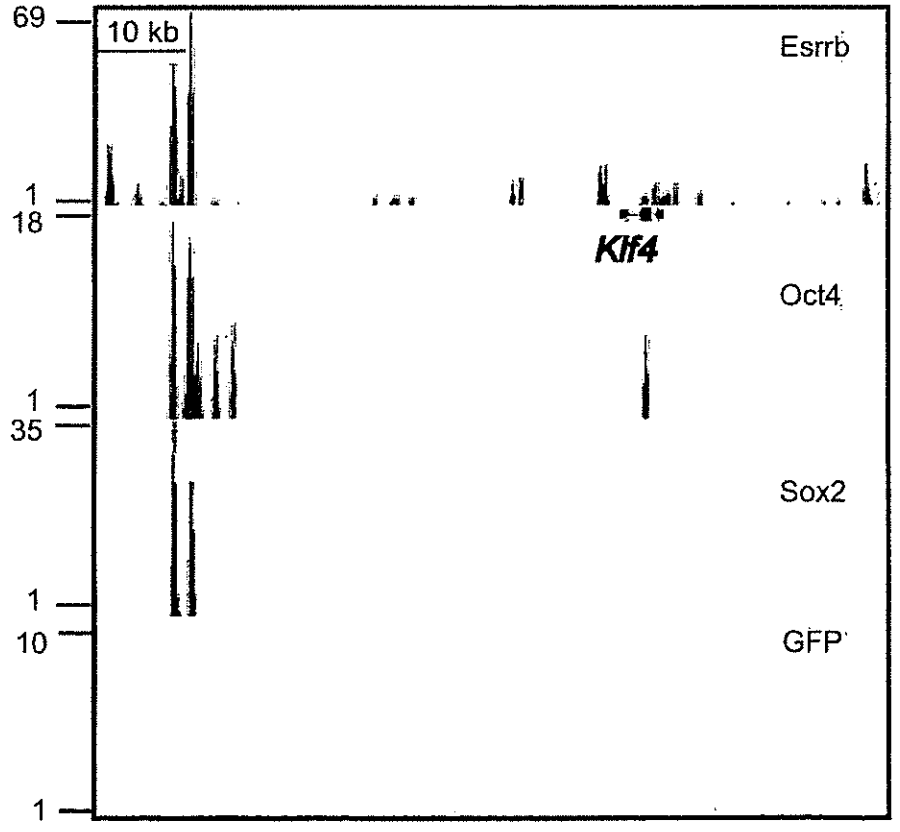


Fig. 10c

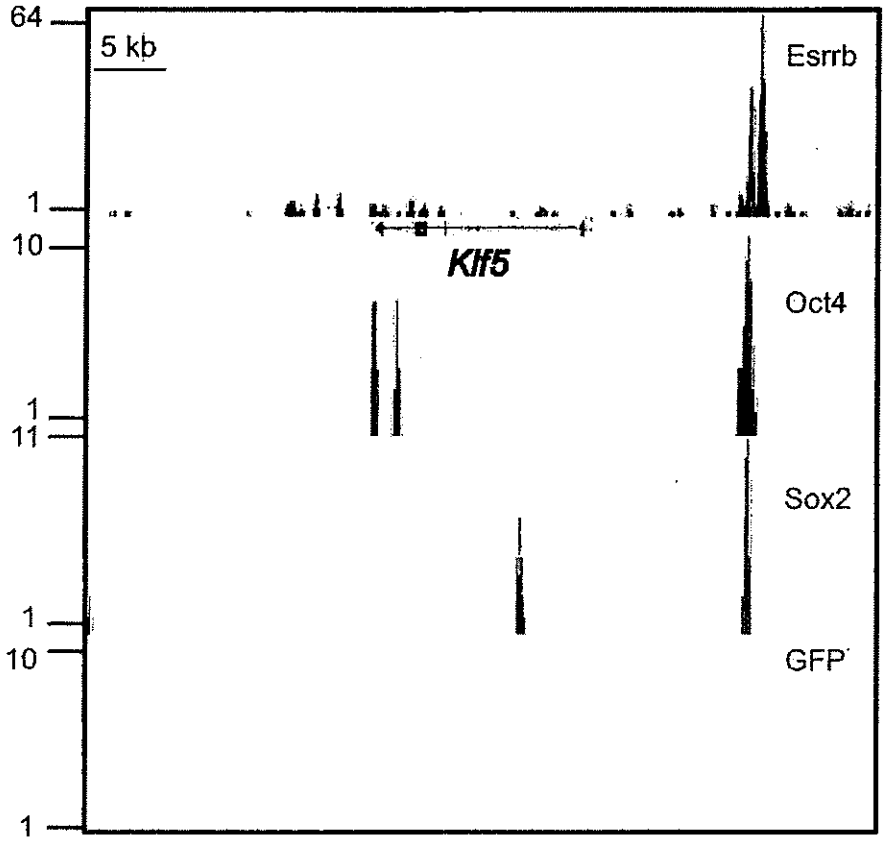


Fig. 10d

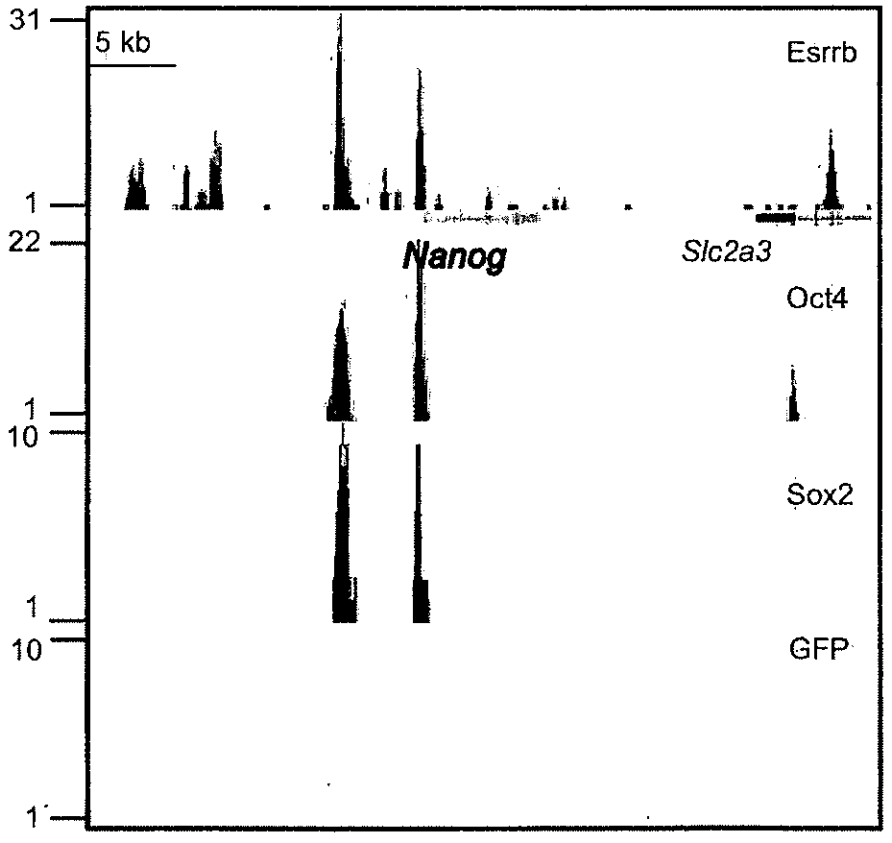


Fig. 10e

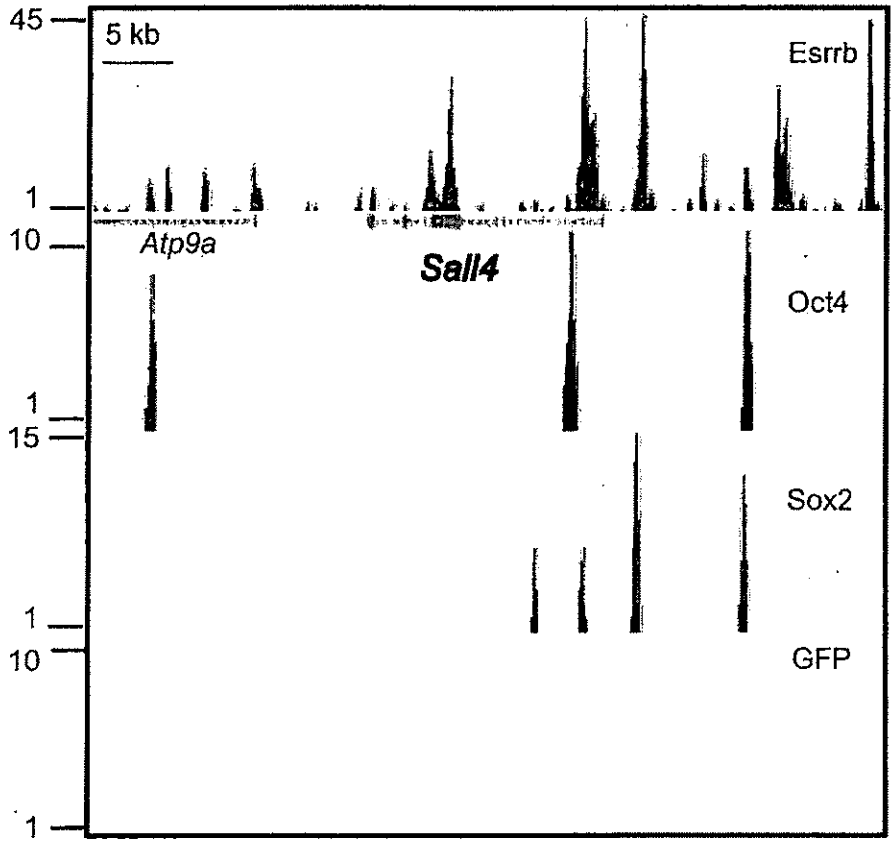


Fig. 10f

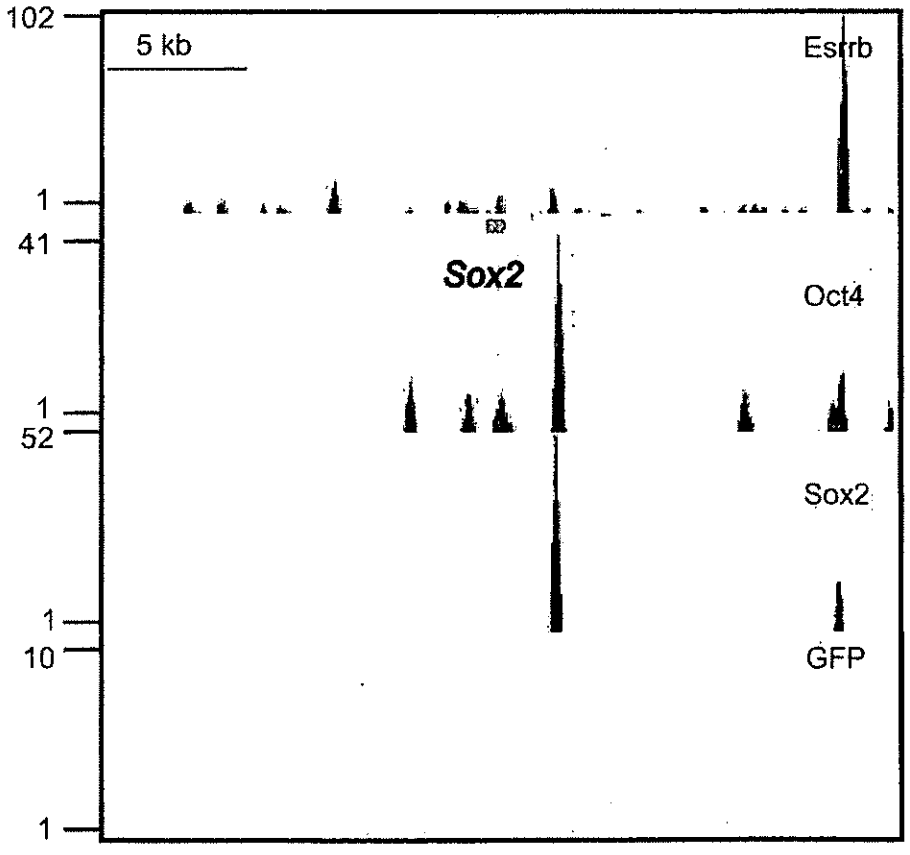


Fig. 10g

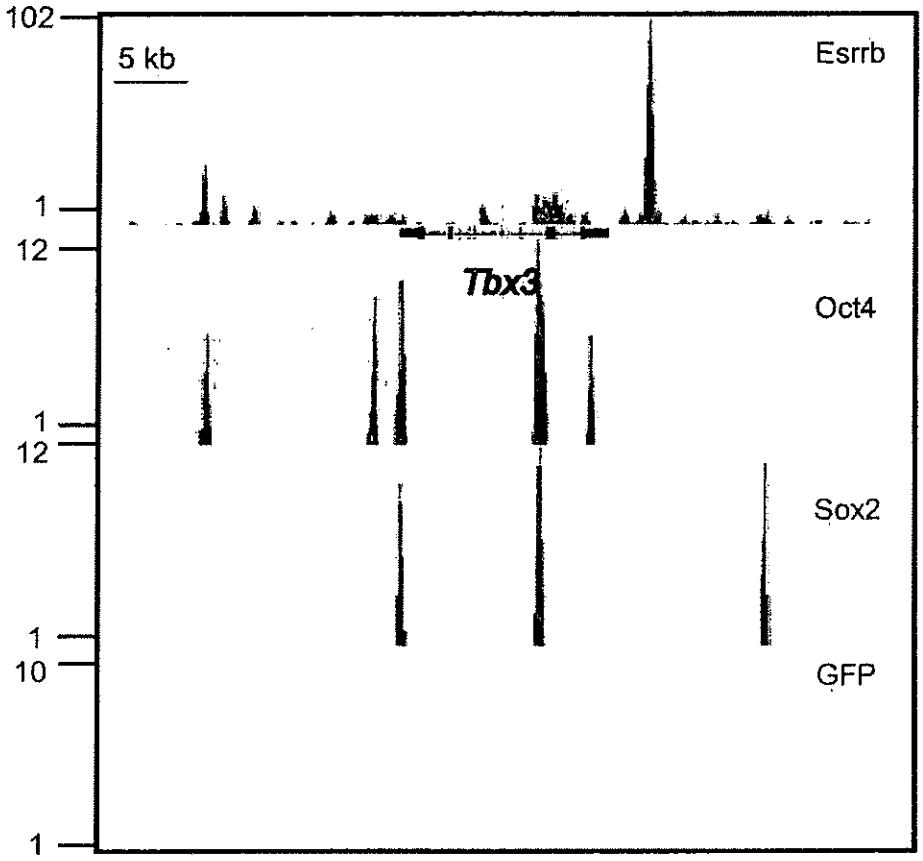
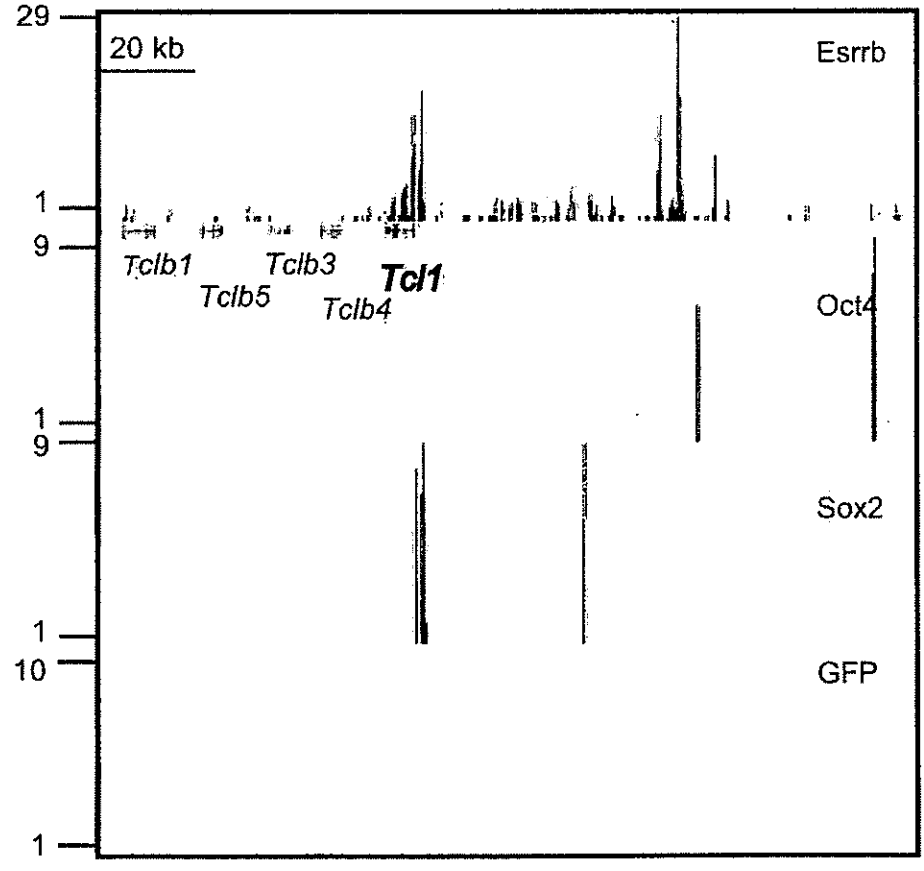


Fig. 10h



Tab. 1

List of 15 candidate reprogramming factors screened

Factors	Functions
Esrrb	Transcription factor, self-renewal regulator
Klf2	Transcription factor, exhibit redundant function with Klf4
YY1	Transcription factor
E2F2	Transcription factor
Tpt1	Transcription factor, activator of Oct4
Zfx	Transcription factor, self-renewal regulator
Jmjd1a	Epigenetic regulator, histone demethylase
Jmjd2c	Epigenetic regulator, histone demethylase
Jmjd3	Epigenetic regulator, histone demethylase
Utx	Epigenetic regulator, histone demethylase
Gadd45a	Epigenetic regulator, regulator of DNA methylation
Gadd45b	Epigenetic regulator, regulator of DNA methylation
Gadd45g	Epigenetic regulator, regulator of DNA methylation
Eed	Epigenetic regulator, polycomb repressive complex 2
Baf53a	A component of chromatin remodelling complexes

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<150> US 61/050,726
<151> 2008-05-06

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<213> artificial sequence

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<223> primer

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<212> DNA
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tgtggtggct gagggcatca 20

<210> 3
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<213> artificial sequence

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<400> 3

tgtagagagg ctcgatgccc accac 25

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<212> DNA
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