**B** **Specific embodiment of the invention**

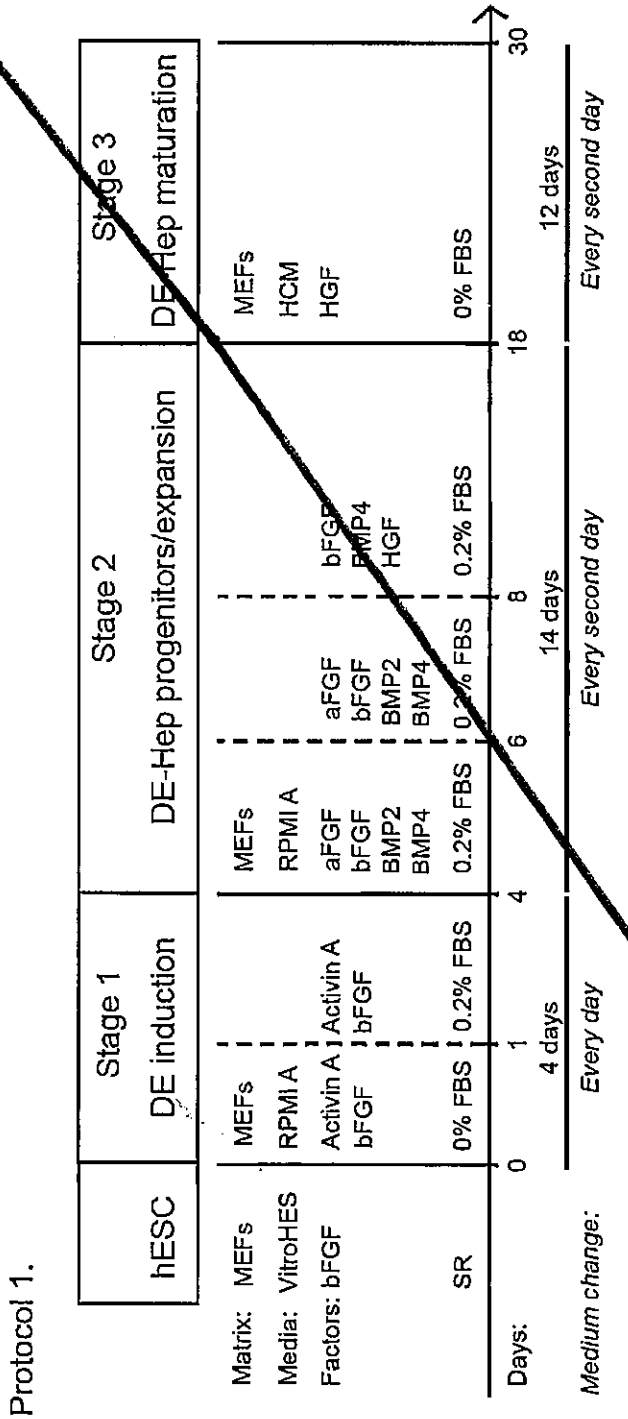


Fig.1

Examples of alternative protocols:

Protocol 2.

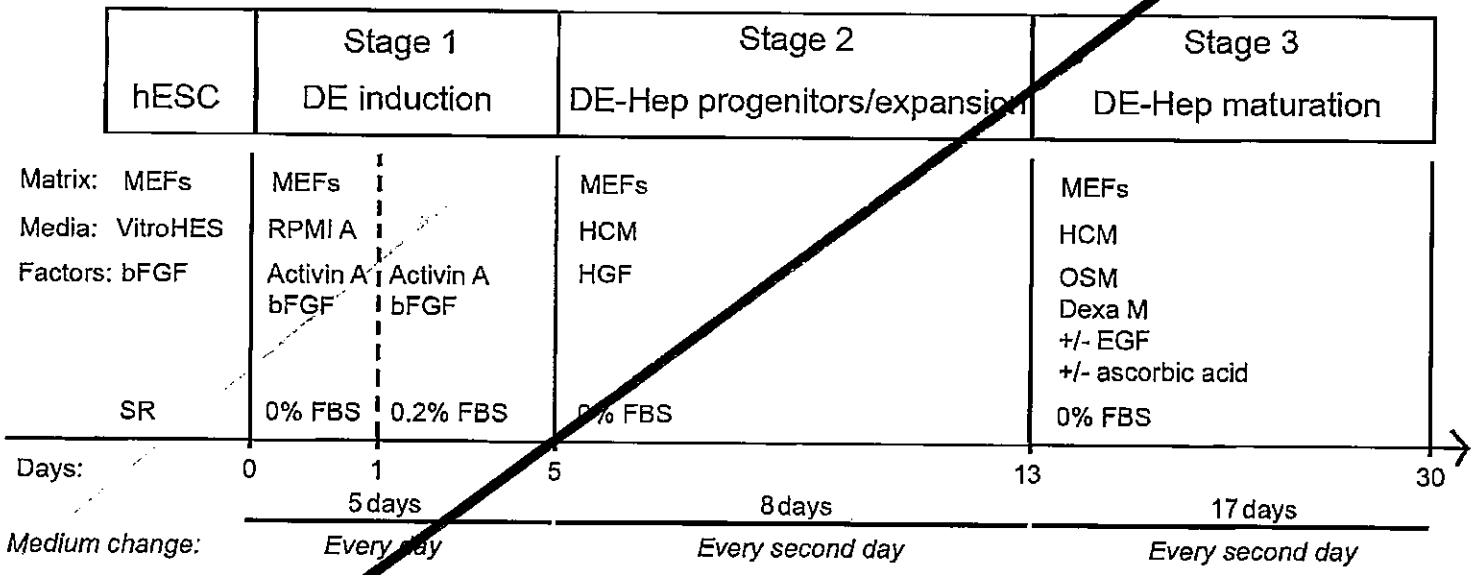


Fig.1

Protocol 3.

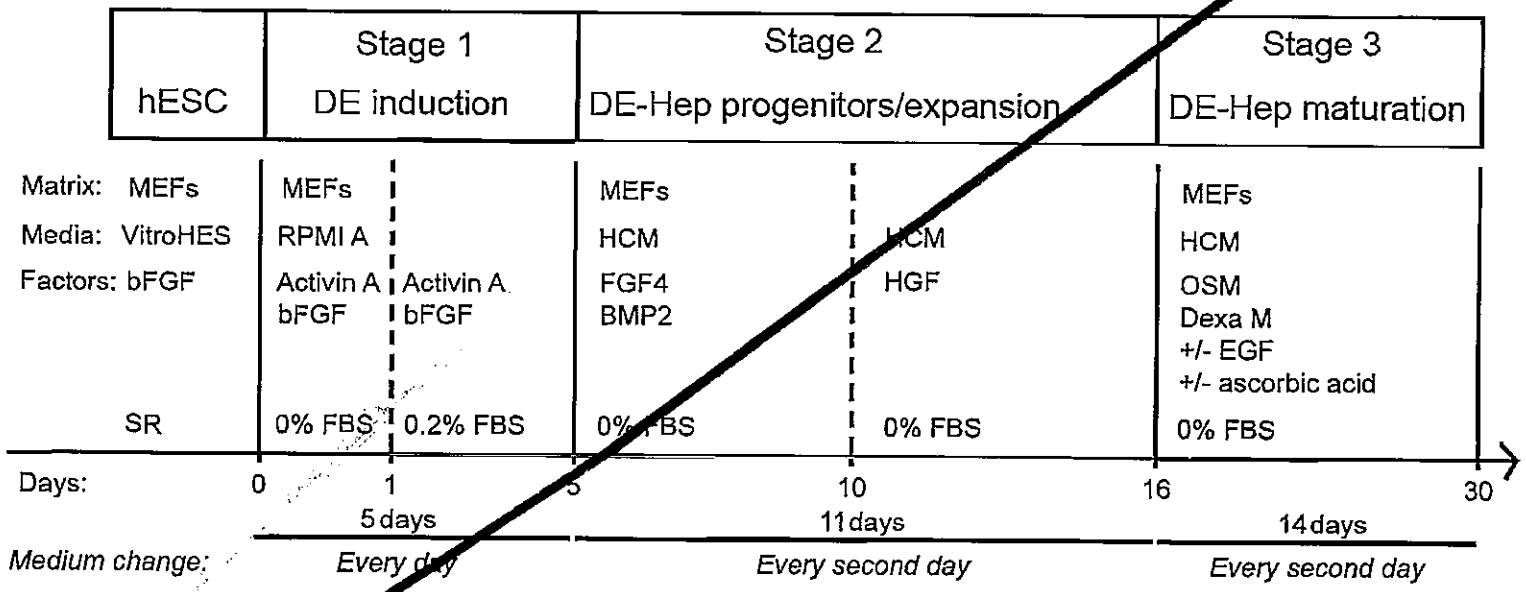


Fig.1

Protocol 4.

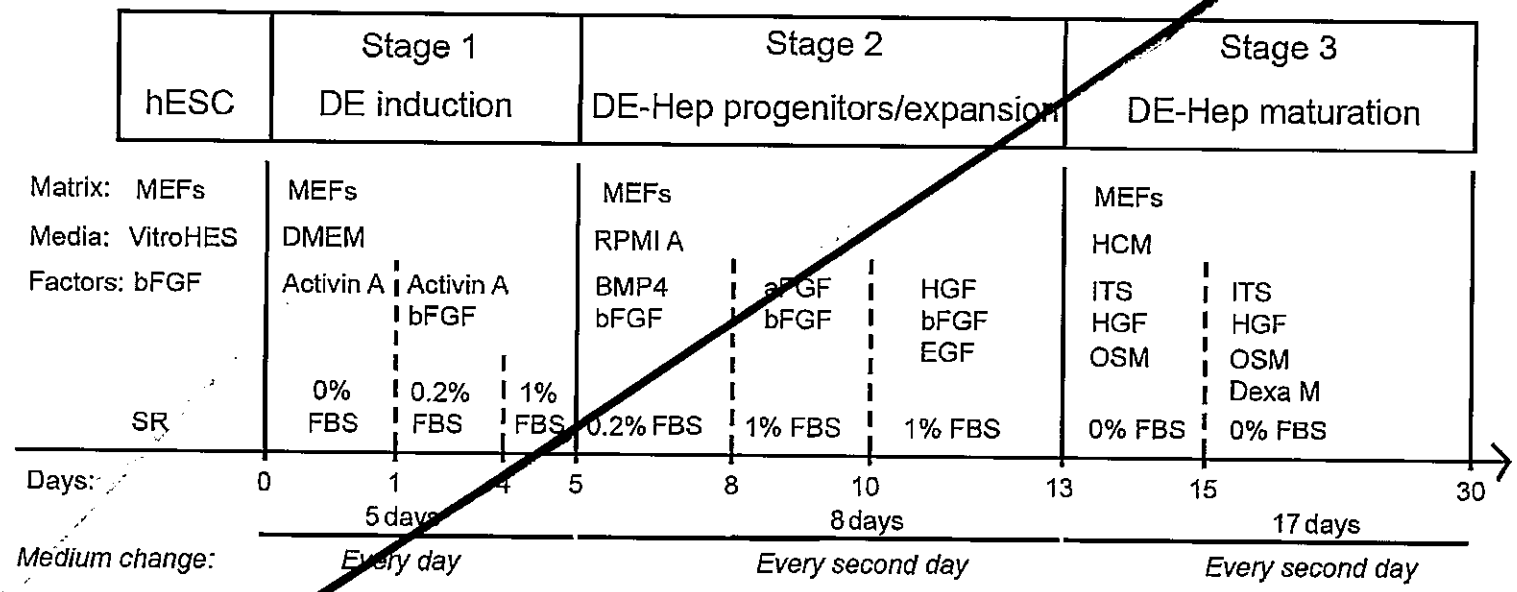


Fig.1

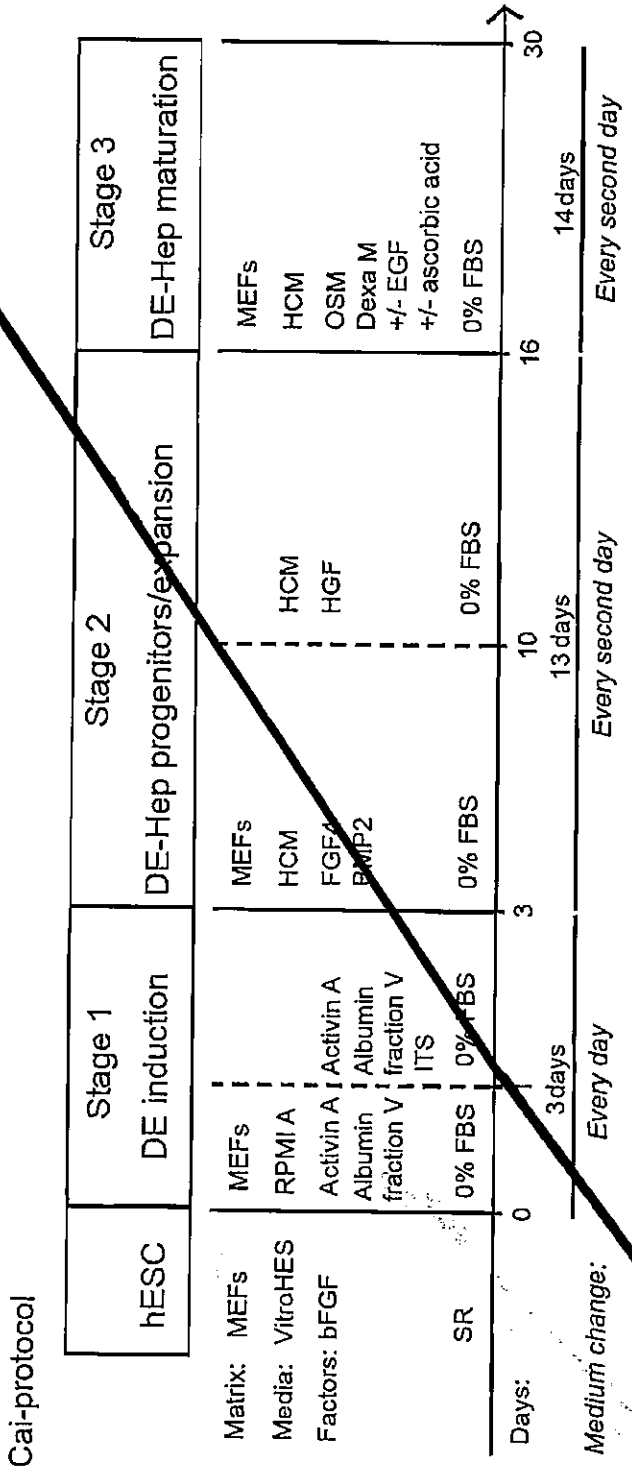
Cai-protocol
hESC
Stage 1
DE induction
Stage 2
DE-Hep progenitors/expansion
Stage 3
DE-Hep maturation
Matrix: MEFs
Media: VitroHES
Factors: bFGF
SR
MEFs
RPMI A
Activin A
Albumin fraction V
0% FBS
MEFs
HCM
FGF4
BMP2
Activin A
Albumin fraction V
ITS
0% FBS
HCM
HGF
0% FBS
MEFs
HCM
OSM
Dexa M
+/- EGF
+/- ascorbic acid
0% FBS
Days:
0
3
10
16
30
3days
13 days
14days
Medium change:
Every day
Every second day
Every second day

Fig.1

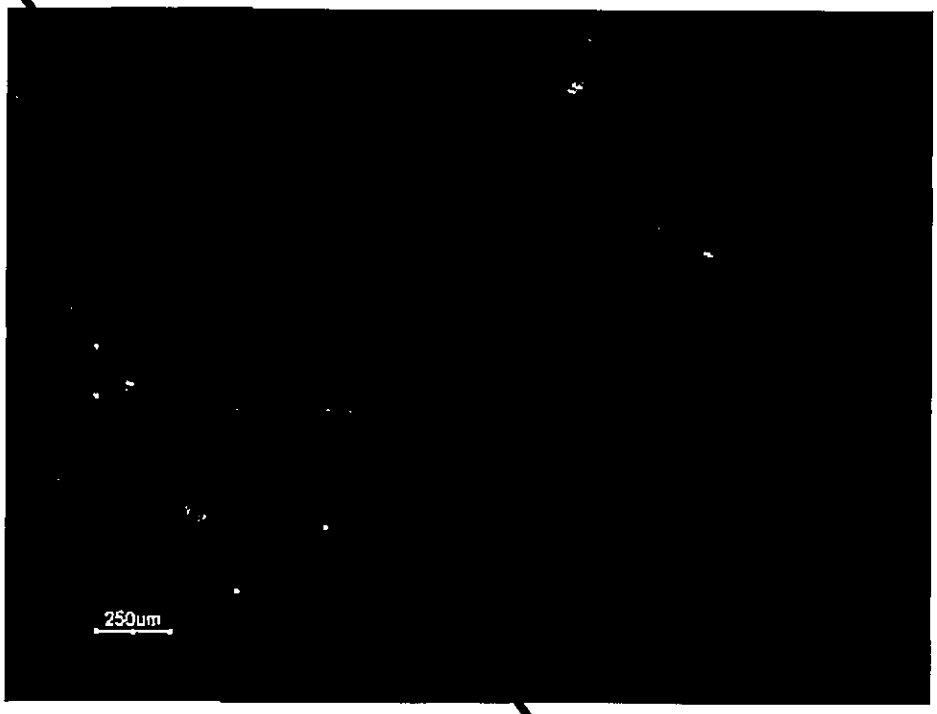


Fig.3

Nanog
Nanog
FPH
AL
FL
PPH
HepG2
SA461EE_20
SA461EE_10
SA461EE_04
SA461DE_20
SA461DE_10
SA461DE_04
SA461UD
SA002EE_20
SA002EE_10
SA002EE_04
SA002DE_20
SA002DE_10
SA002DE_04
SA002UD
SA167EE_20
SA167EE_10
SA167EE_04
SA167DE_20
SA167DE_10
SA167DE_04
SA167UD
0 1 2 3 4 5 6 7 8 9 10 12 14
2310T79_at

Fig.7

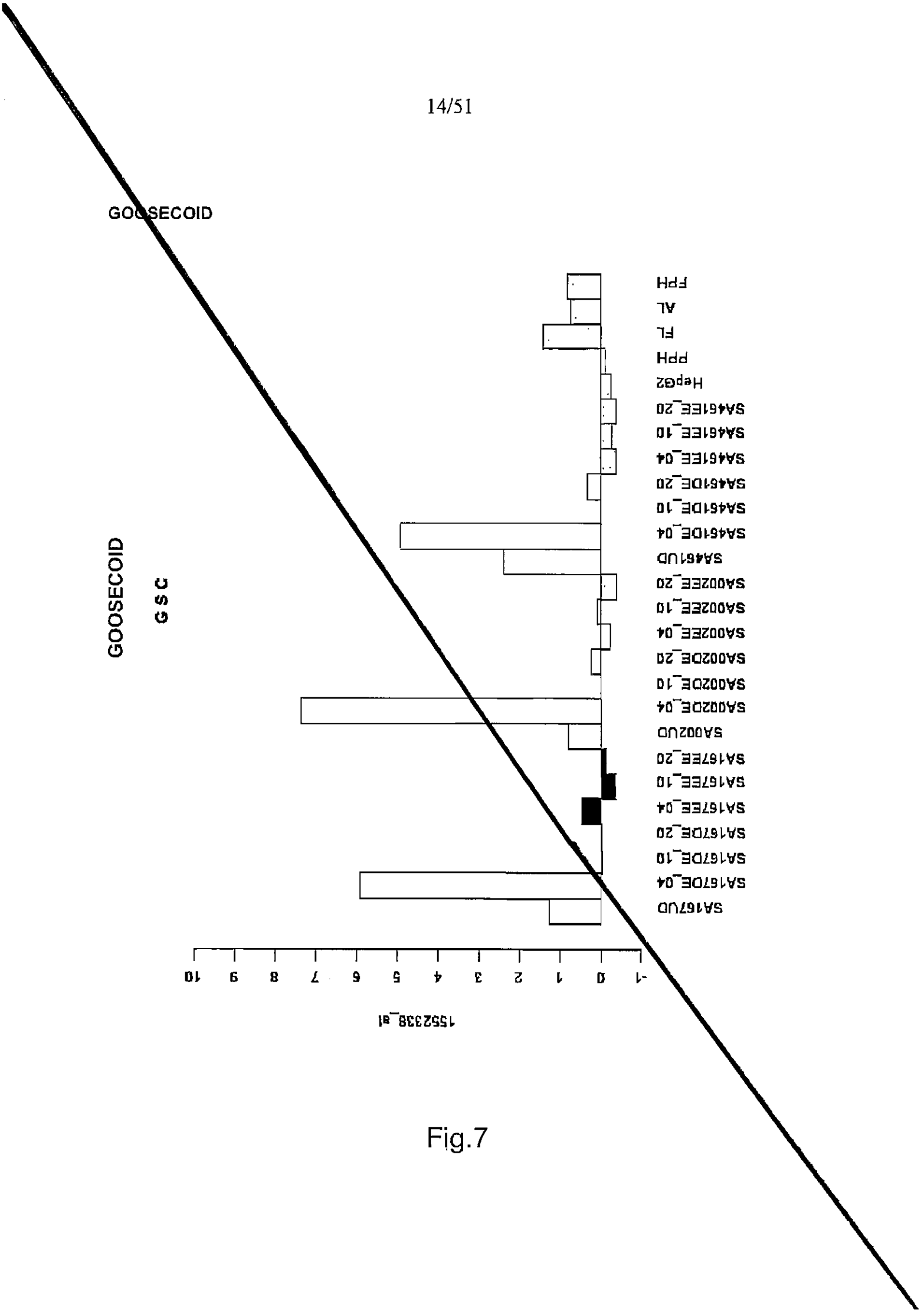
GOOSECOID
GOOSECOID
G S C
1552338_at
-1
0
1
2
3
4
5
6
7
8
9
10
SA167UD
SA167DE_04
SA167DE_10
SA167DE_20
SA167EE_04
SA167EE_10
SA167EE_20
SA002UD
SA002DE_04
SA002DE_10
SA002DE_20
SA002EE_04
SA002EE_10
SA002EE_20
SA461UD
SA461DE_04
SA461DE_10
SA461DE_20
SA461EE_04
SA461EE_10
SA461EE_20
HepG2
PPH
FL
AL
FPH

Fig.7

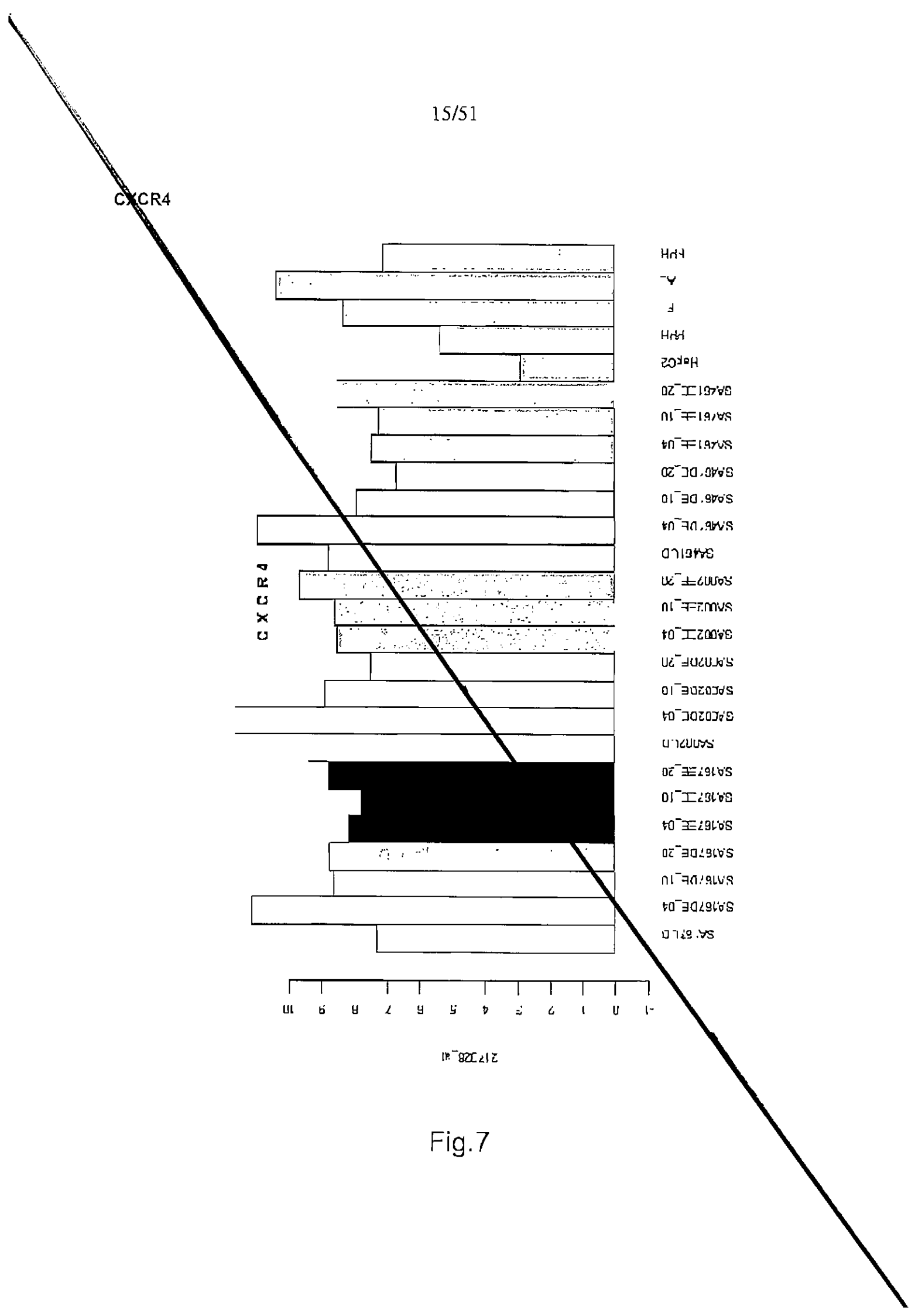


Fig.7

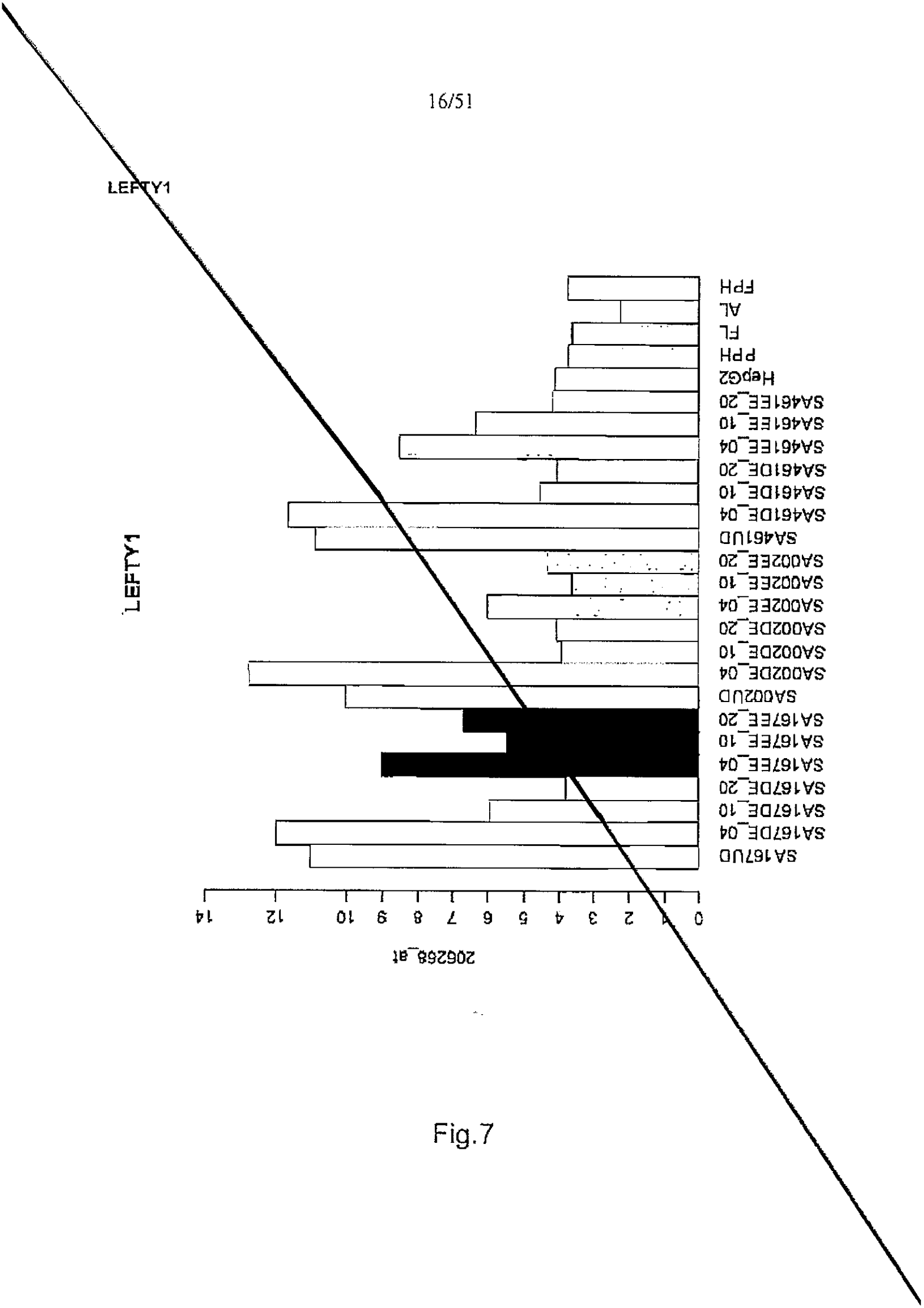
LEFTY1
LEFTY1
206268_at
0
1
2
3
4
5
6
7
8
9
10
12
14
SA167UD
SA167DE_04
SA167DE_10
SA167DE_20
SA167EE_04
SA167EE_10
SA167EE_20
SA002UD
SA002DE_04
SA002DE_10
SA002DE_20
SA002EE_04
SA002EE_10
SA002EE_20
SA461UD
SA461DE_04
SA461DE_10
SA461DE_20
SA461EE_04
SA461EE_10
SA461EE_20
HepG2
PPH
FL
AL
FPH

Fig.7

LEFTY2
LEFTY2
FPH
AL
FL
PPH
HepG2
SA461EE_20
SA461EE_10
SA461EE_04
SA461DE_20
SA461DE_10
SA461DE_04
SA461UD
SA002EE_20
SA002EE_10
SA002EE_04
SA002DE_20
SA002DE_10
SA002DE_04
SA002UD
SA167EE_20
SA167EE_10
SA167EE_04
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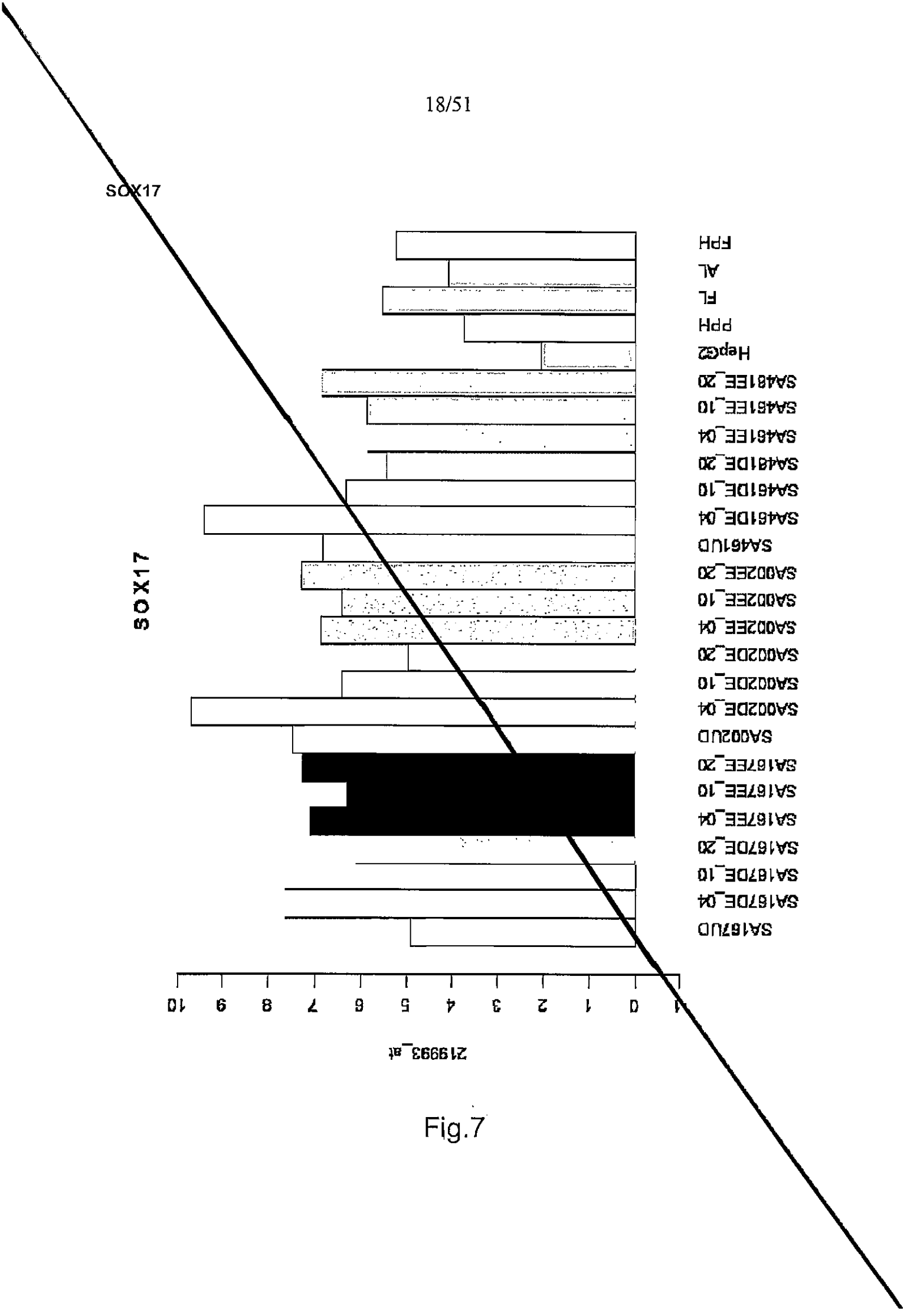
SA167DE_10
SA167DE_04
SA167UD
0 1 2 3 4 5 6 7 8 9 10 12 14
206012_at

Fig.7


SOX17
SOX17
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2
3
4
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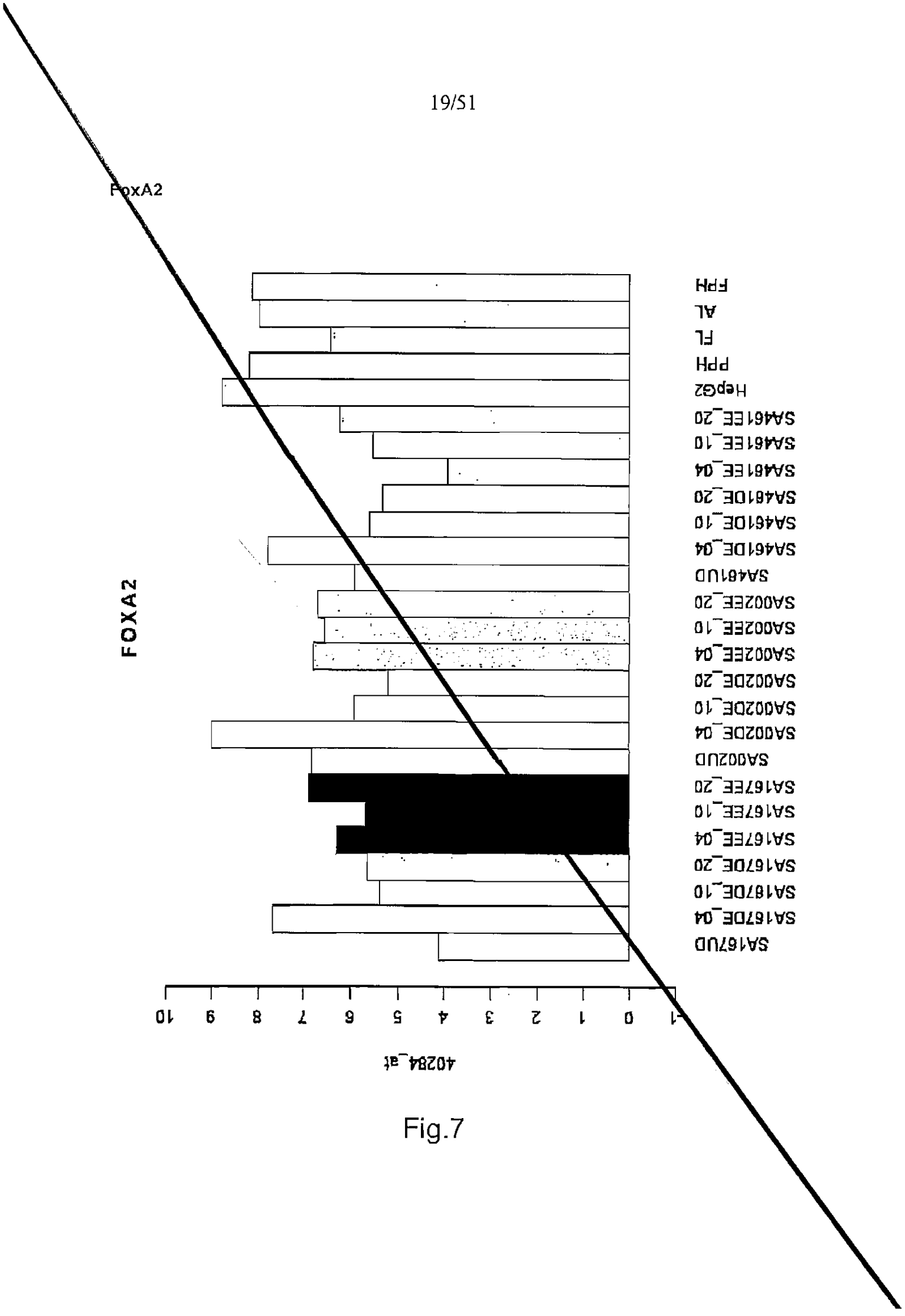
6
7
8
9
10
SA167UD
SA167DE_04
SA167DE_10
SA167DE_20
SA167EE_04
SA167EE_10
SA167EE_20
SA002UD
SA002DE_04
SA002DE_10
SA002DE_20
SA002EE_04
SA002EE_10
SA002EE_20
SA461UD
SA461DE_04
SA461DE_10
SA481DE_20
SA461EE_04
SA461EE_10
SA481EE_20
HepG2
PPH
FL
AL
FPH

Fig.7


FoxA2
FOXA2
402B4_at
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4
5
6
7
8
9
10
SA167UD
SA167DE_04
SA187DE_10
SA167DE_20
SA167EE_04
SA167EE_10
SA167EE_20
SA002UD
SA002DE_04
SA002DE_10
SA002DE_20
SA002EE_04
SA002EE_10
SA002EE_20
SA461UD
SA461DE_04
SA461DE_10
SA461DE_20
SA461EE_04
SA461EE_10
SA461EE_20
HepG2
PPH
FL
AL
FPH

Fig.7

AFP

Fig.7

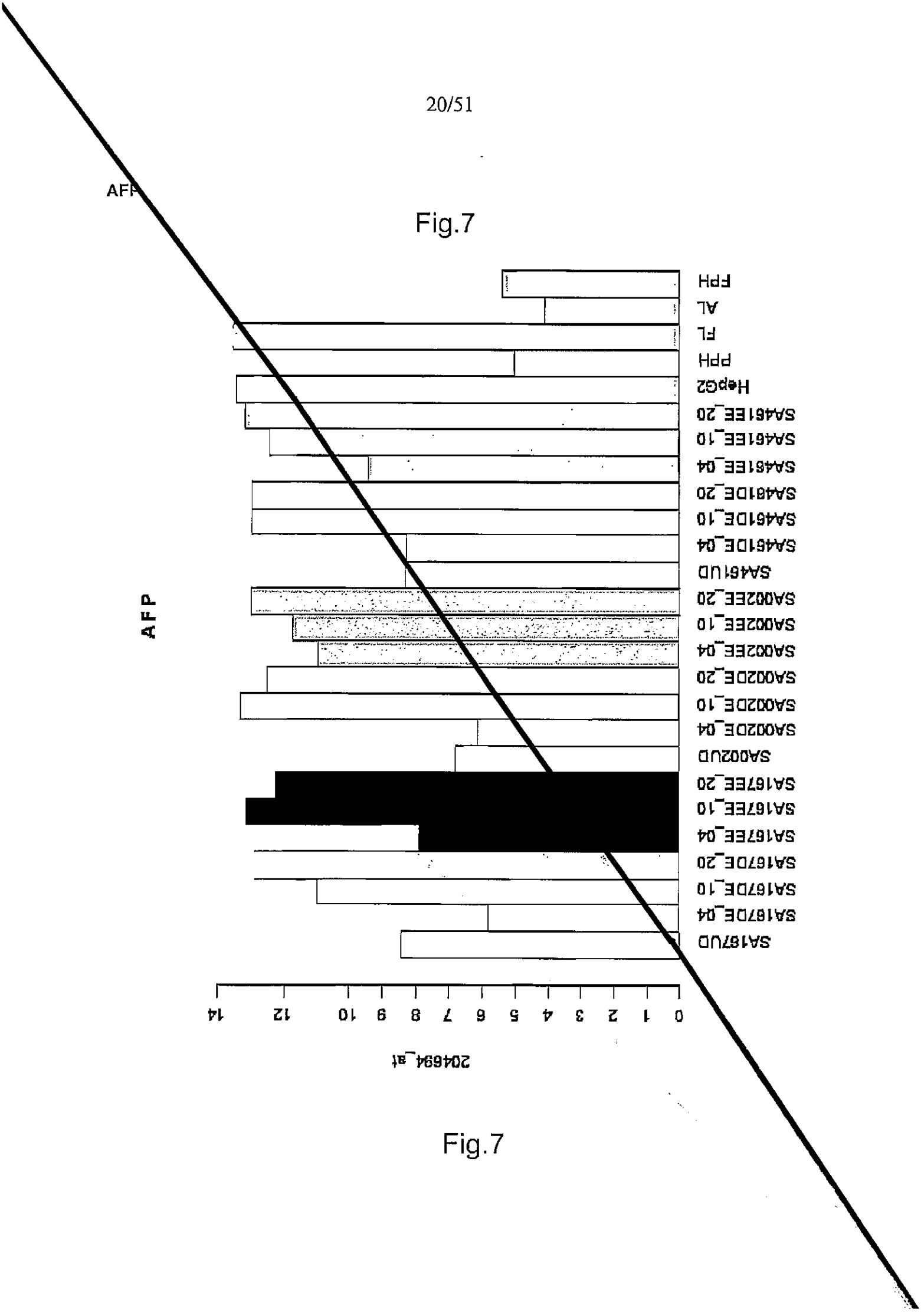
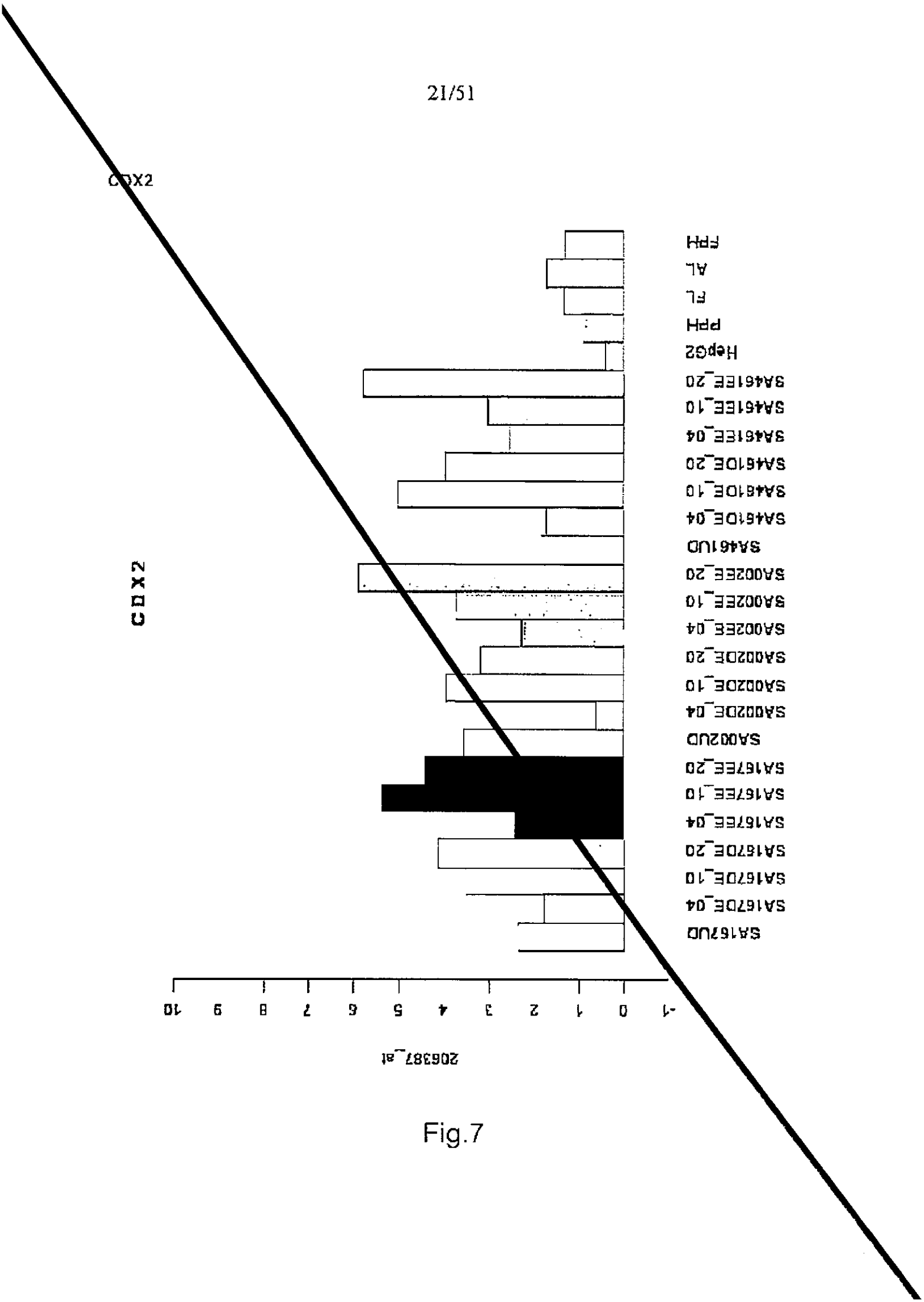



Fig.7


CDX2
CDX2
206387_at
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5
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9
10
SA167UD
SA167DE_04
SA167DE_10
SA167DE_20
SA167EE_04
SA167EE_10
SA167EE_20
SA002UD
SA002DE_04
SA002DE_10
SA002DE_20
SA002EE_04
SA002EE_10
SA002EE_20
SA461UD
SA461DE_04
SA461DE_10
SA461DE_20
SA461EE_04
SA461EE_10
SA461EE_20
HepG2
PPH
FL
AL
FPH

Fig.7

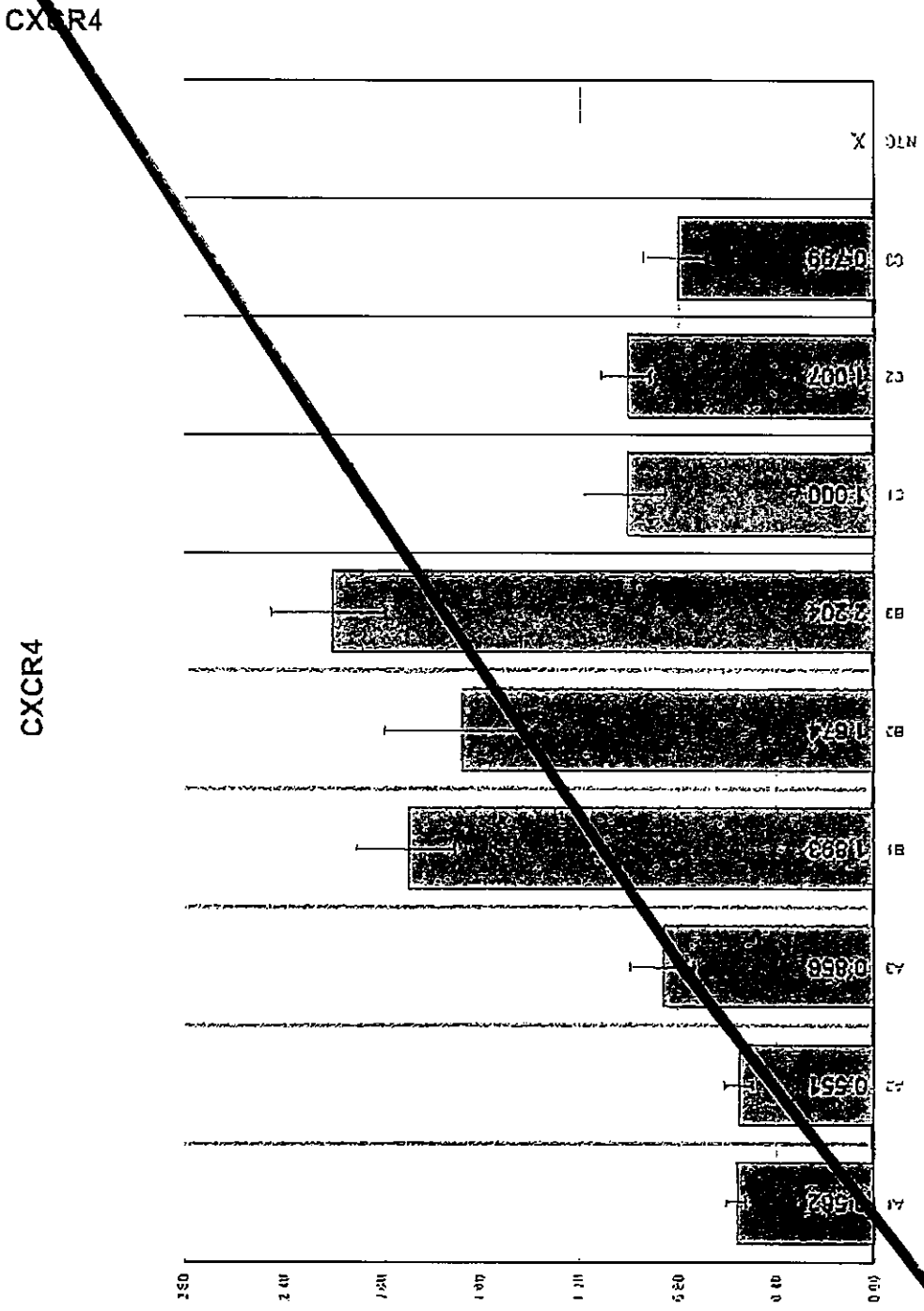



Fig.23

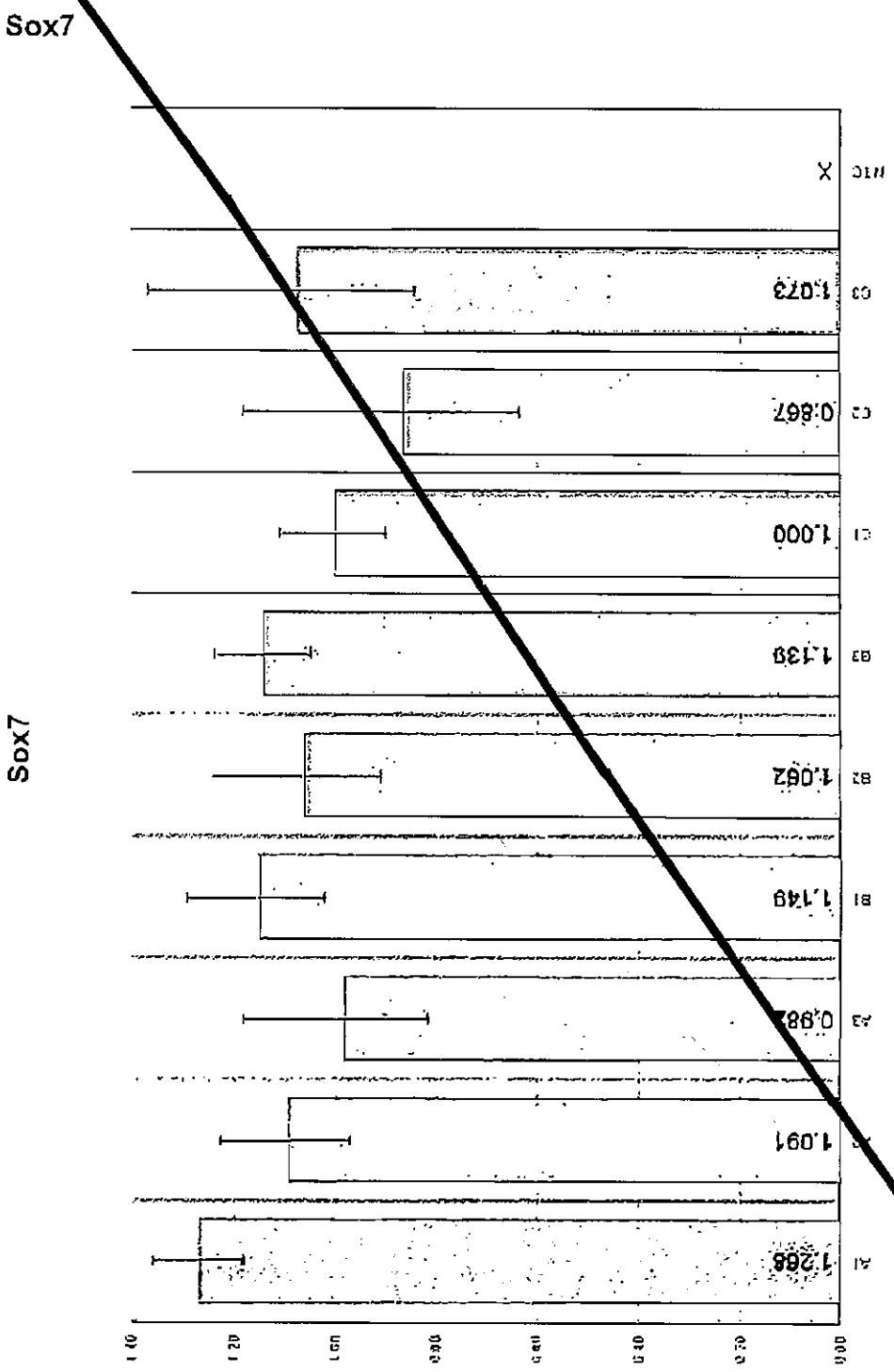



Fig.23

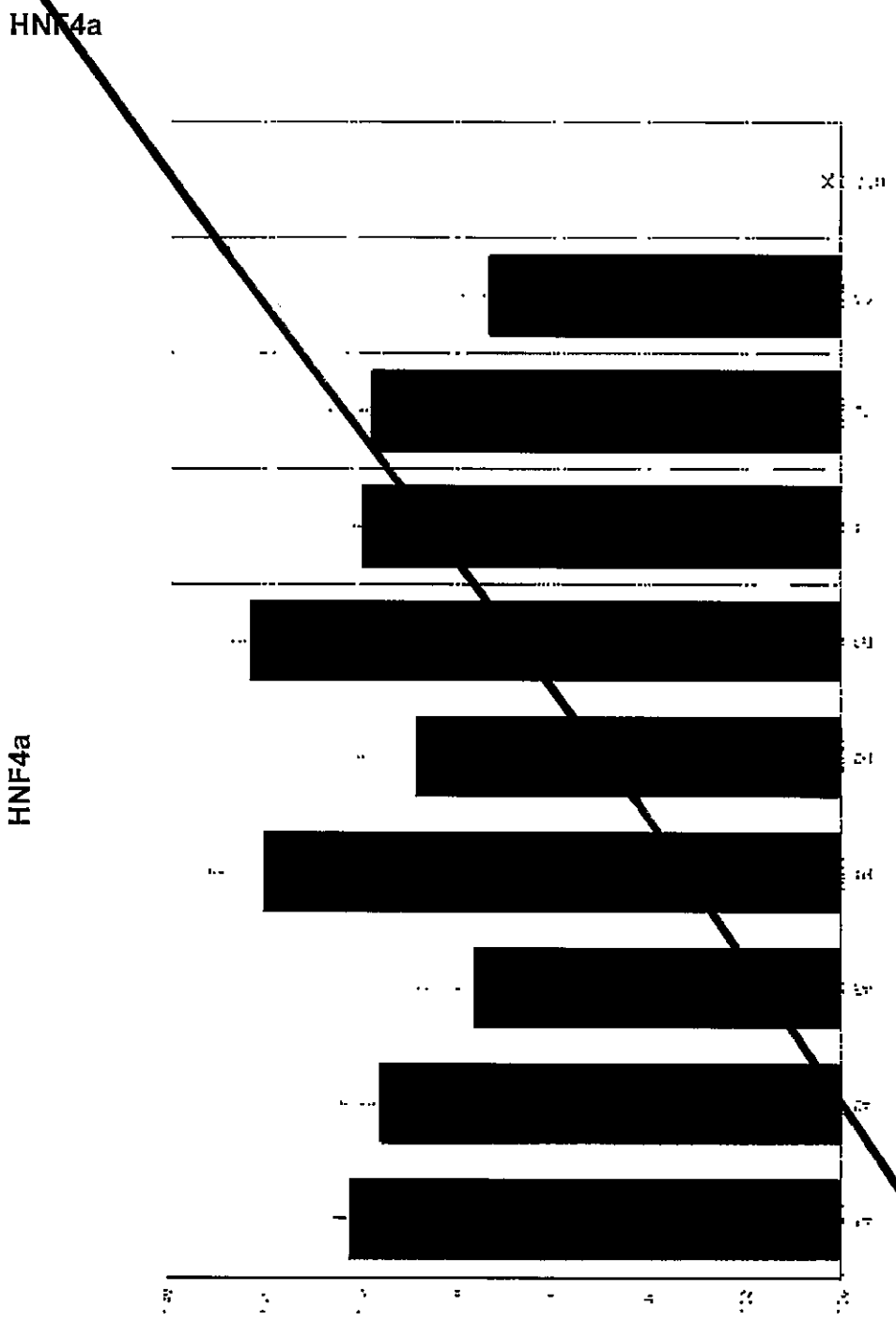
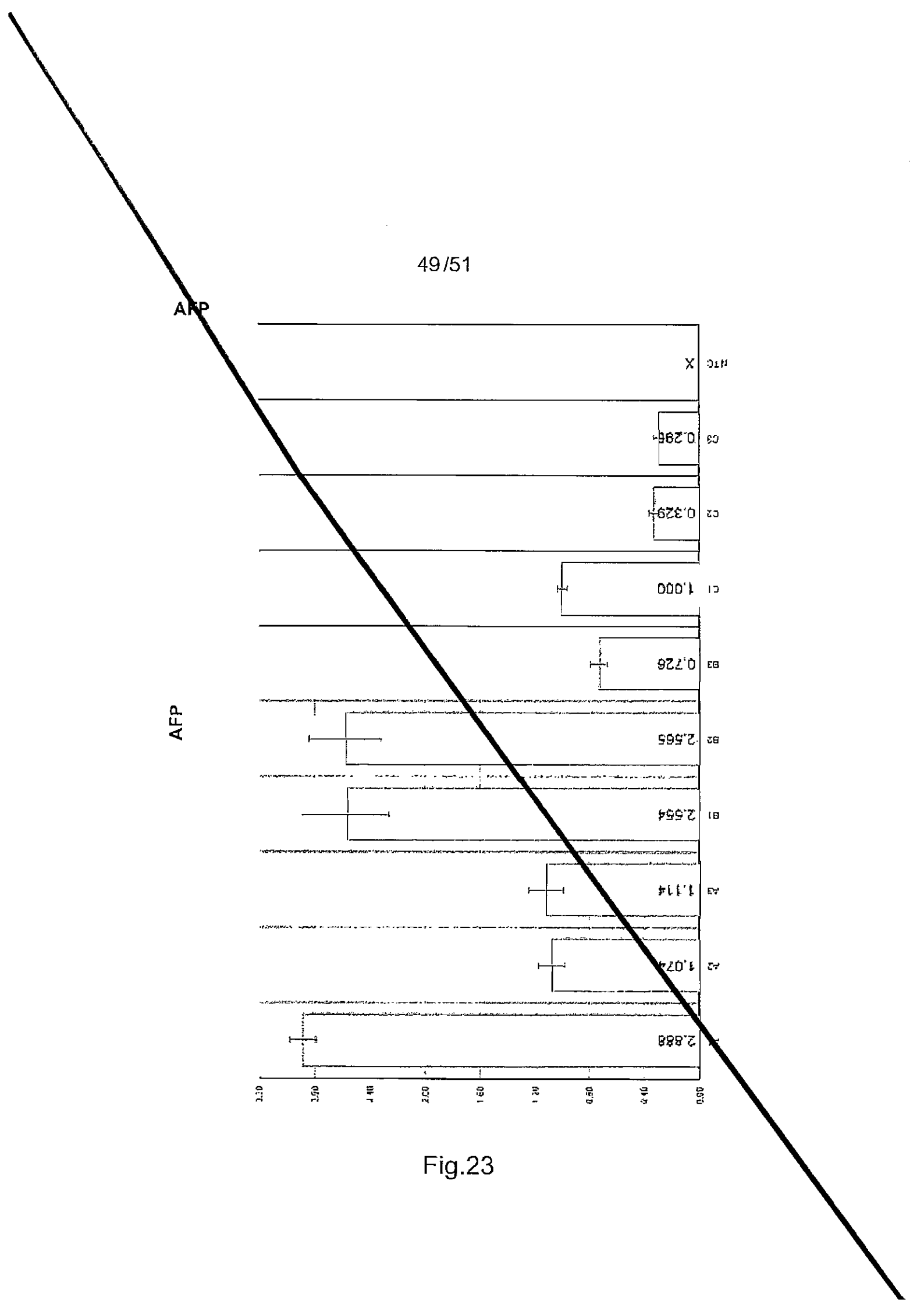



Fig.23


AFP
AFP
MTC
X
C3
0.296
C2
0.329
C1
1.000
B3
0.726
B2
2.565
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A3
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A2
1.074
A1
2.888

Fig.23

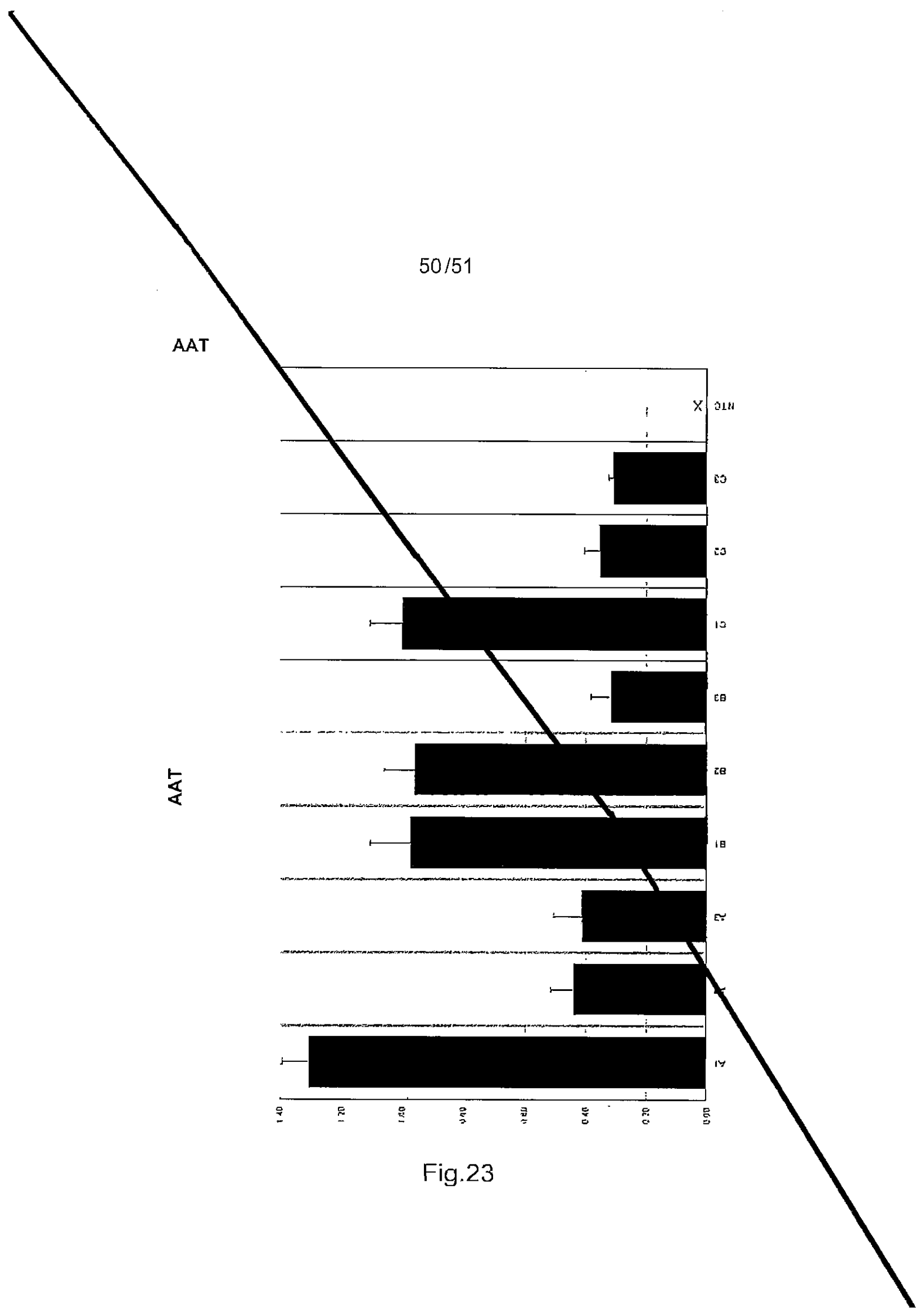


Fig.23

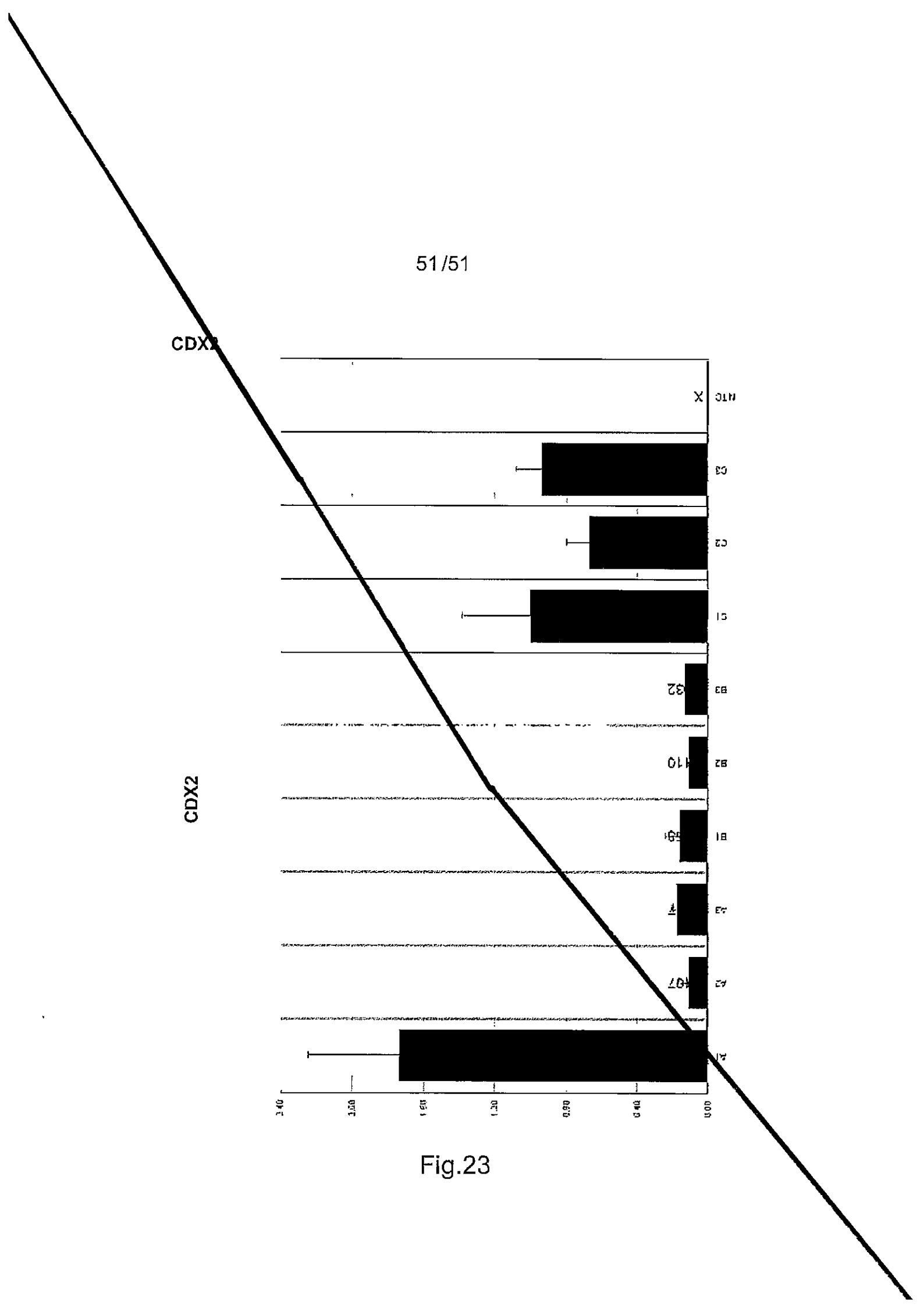


Fig.23

**B** **Specific embodiment of the invention**

Protocol 1.

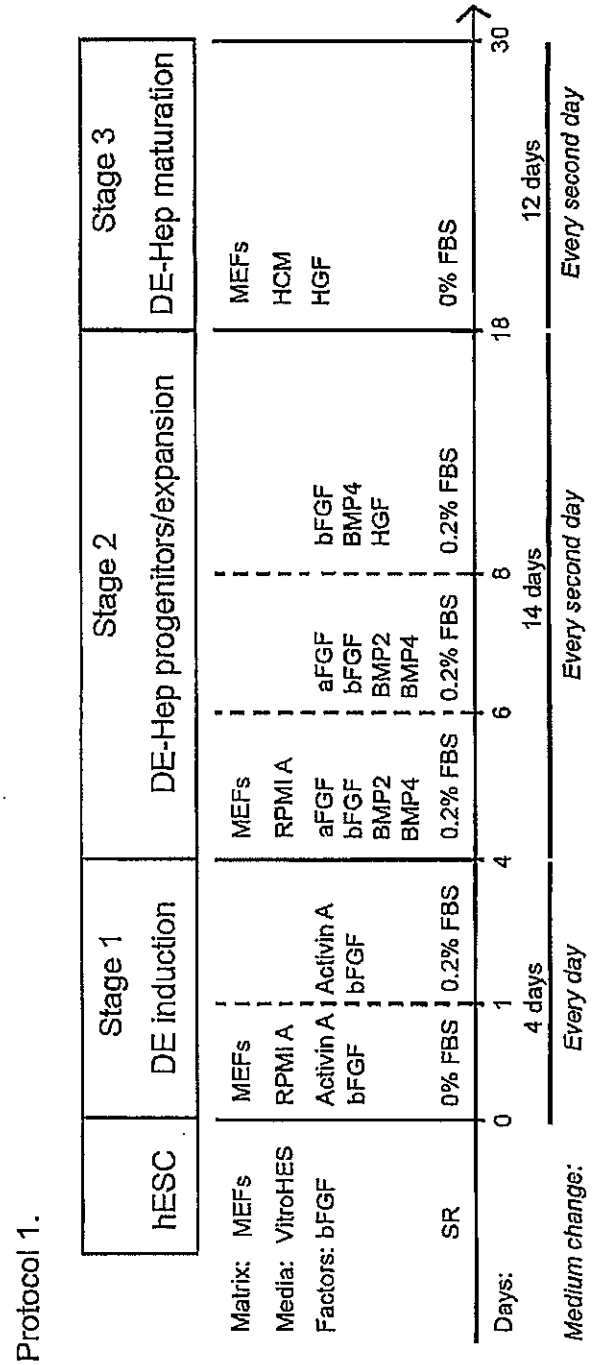


Fig.1 (continuous)

Examples of alternative protocols:

Protocol 2.

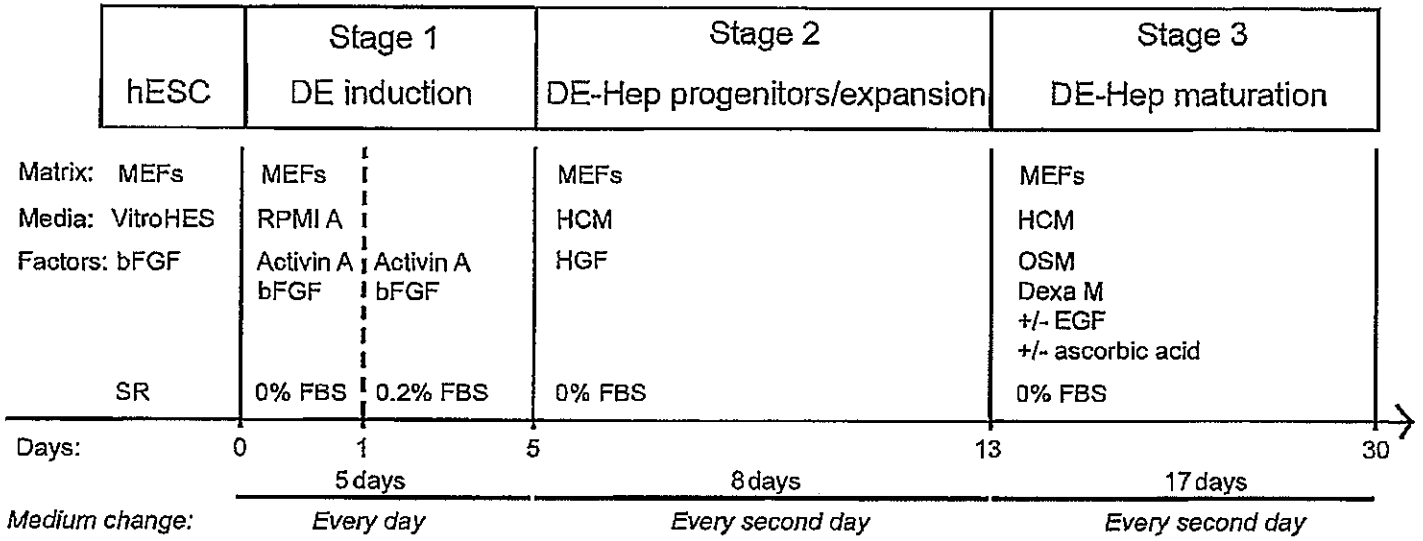


Fig.1 (continuous)

Protocol 3.

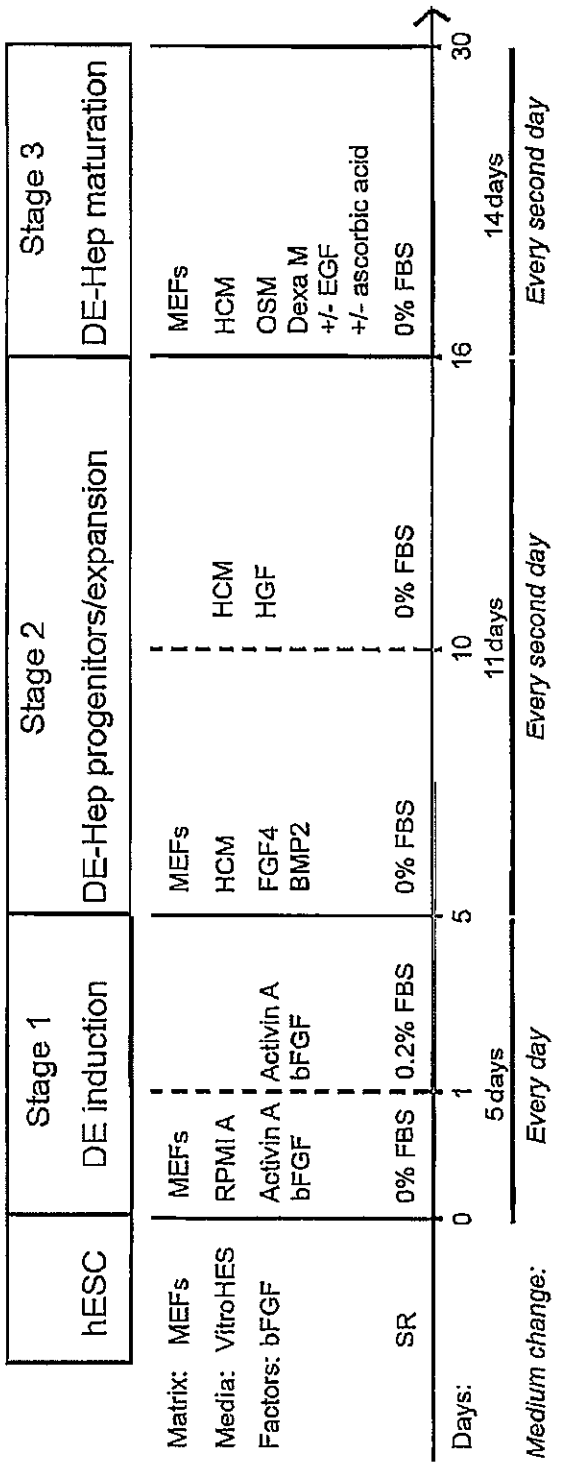


Fig.1 (continuous)

Protocol 4.

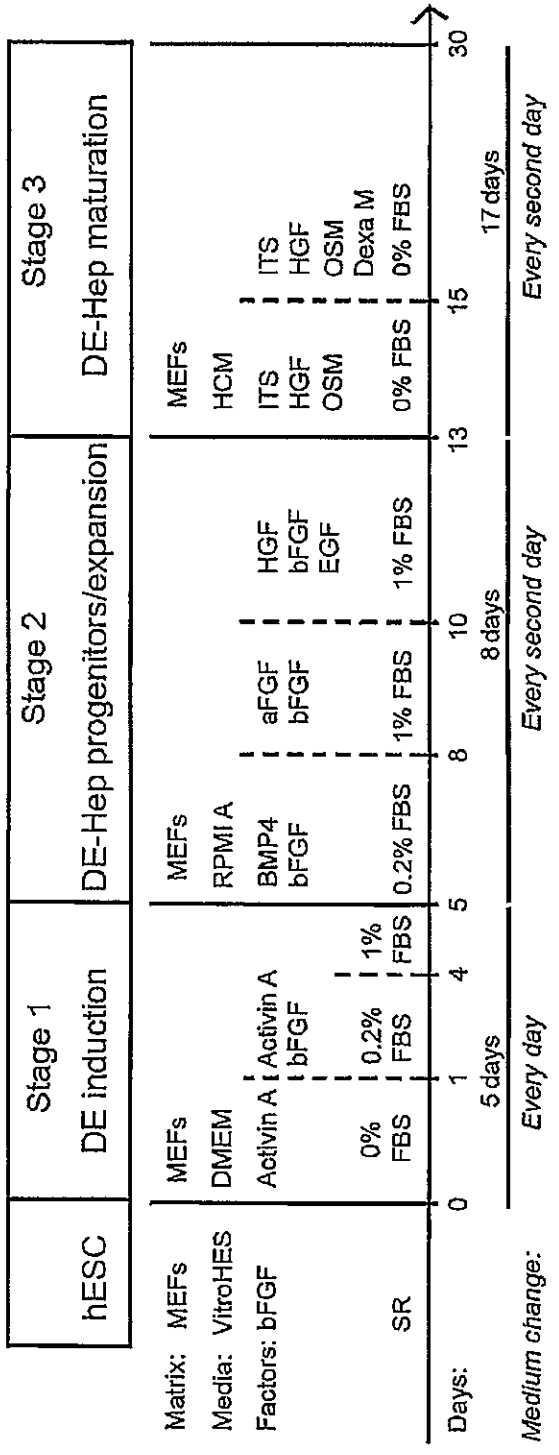


Fig.1(continuous)

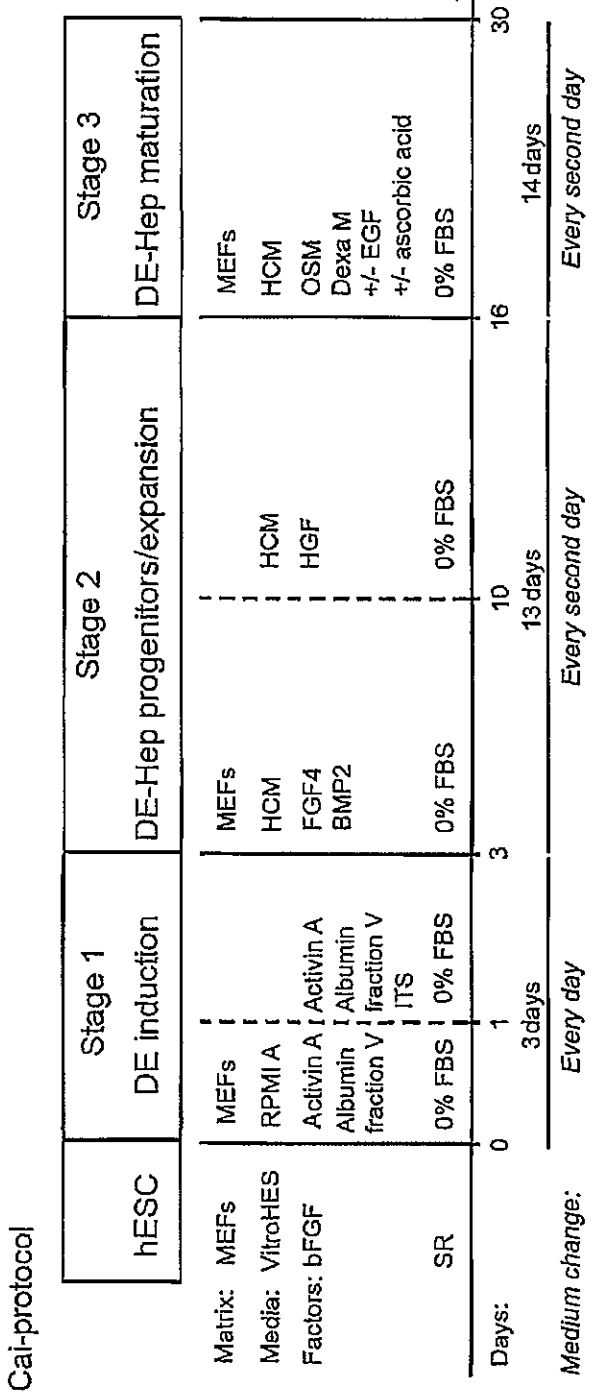


Fig.1 (continuous)

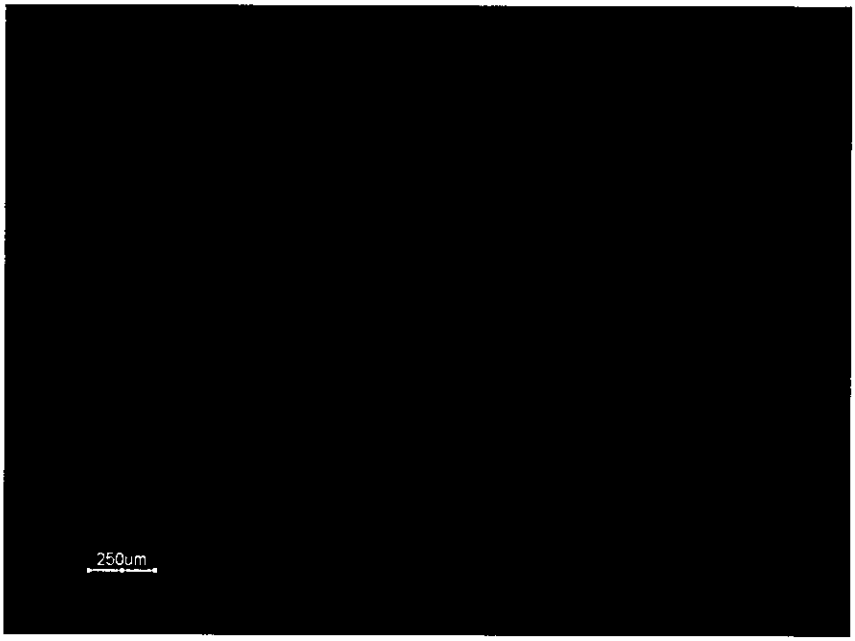


Fig.3

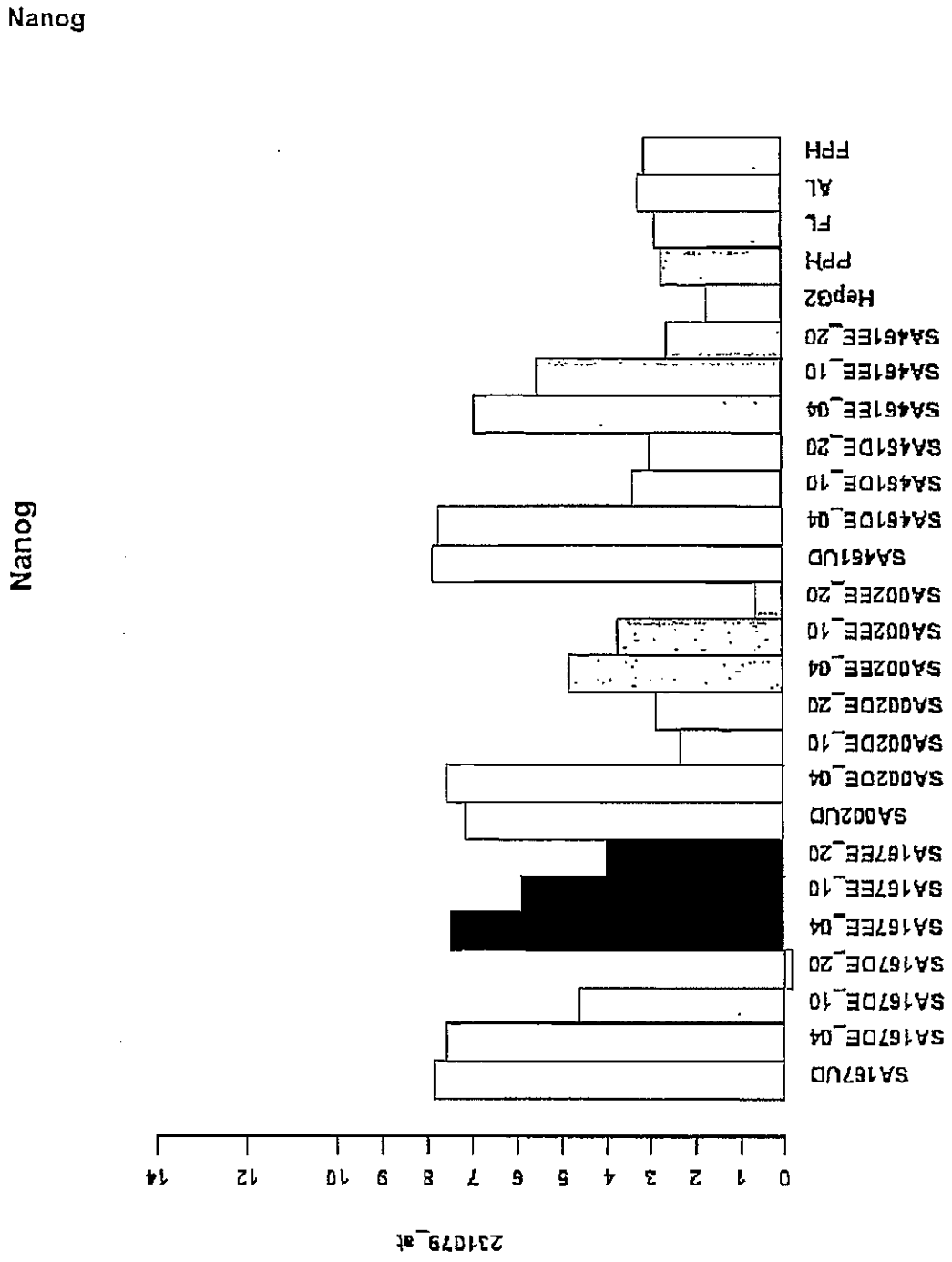


Fig.7 (continuous)

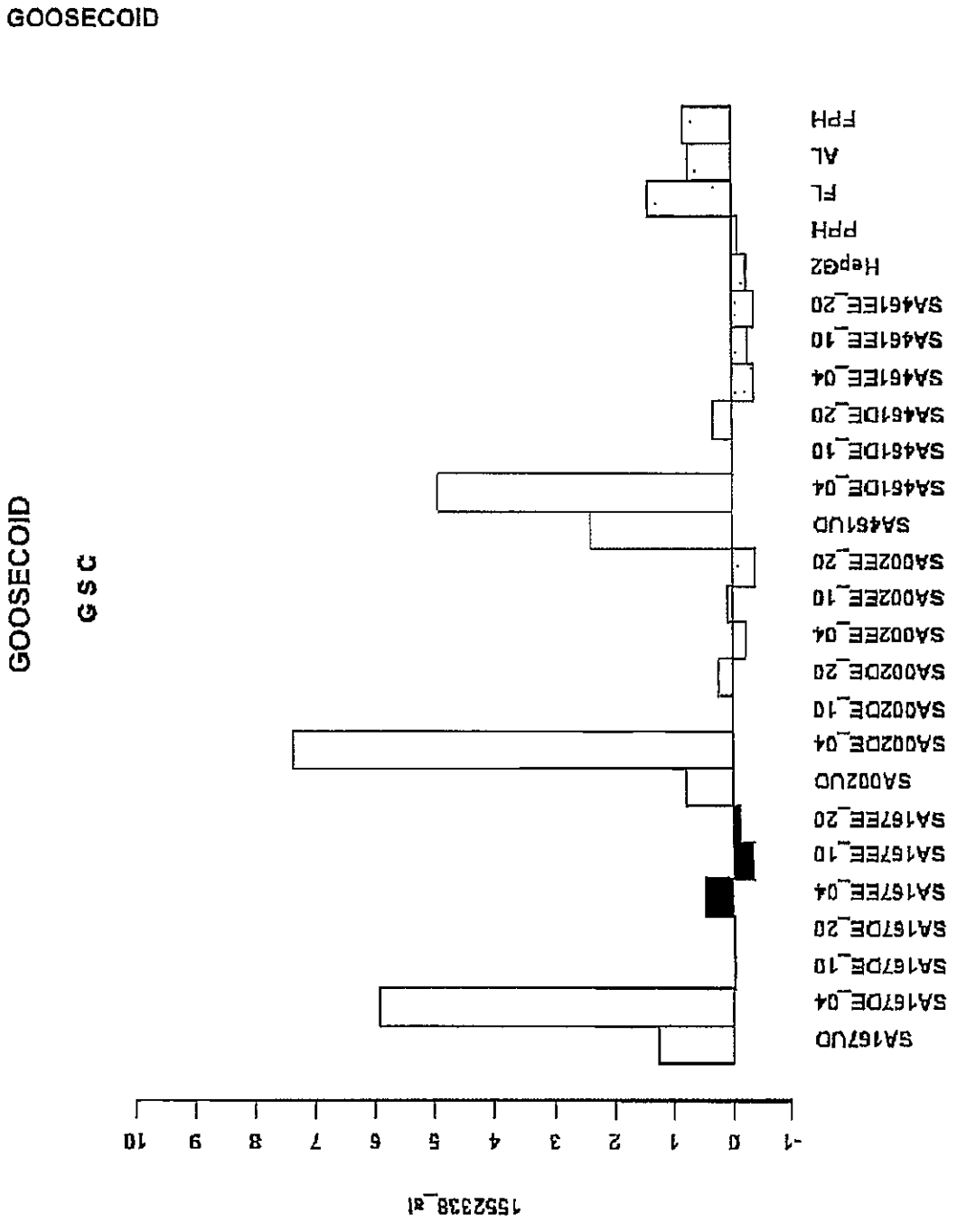


Fig.7(continuous)

CXCR4

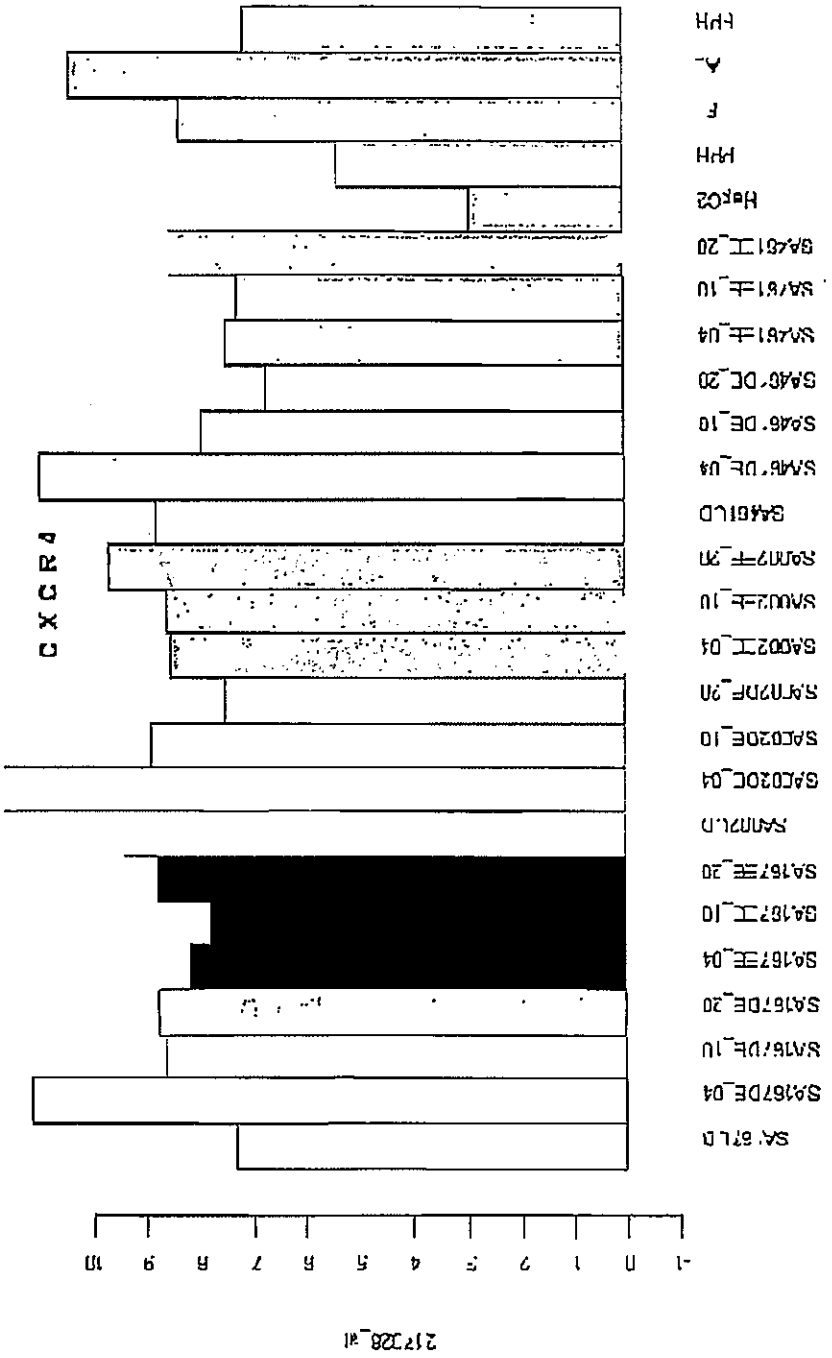


Fig.7(continuous)

LEFTY1

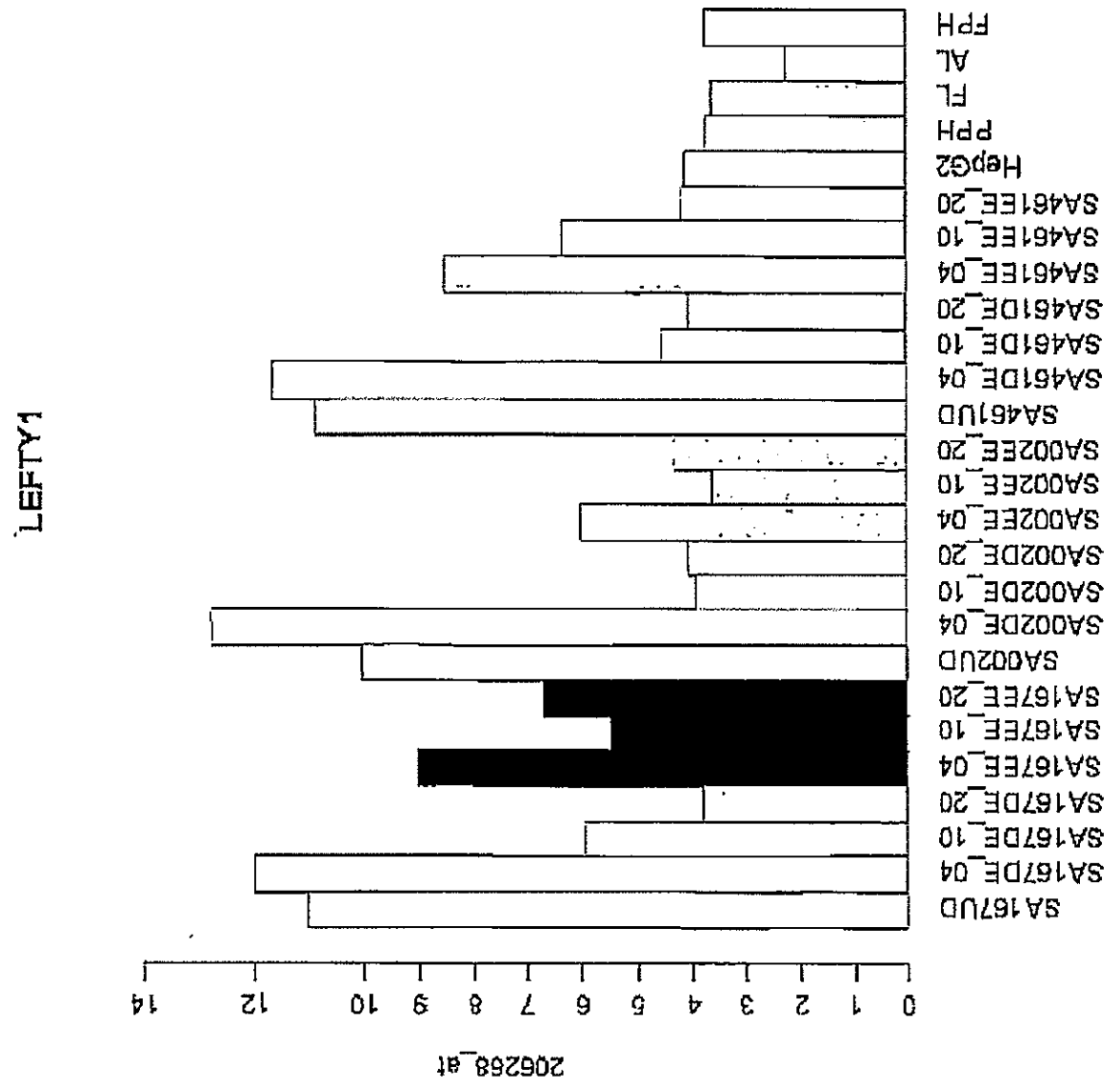


Fig.7(continuous)

Fig.7(continuous)

SOX17

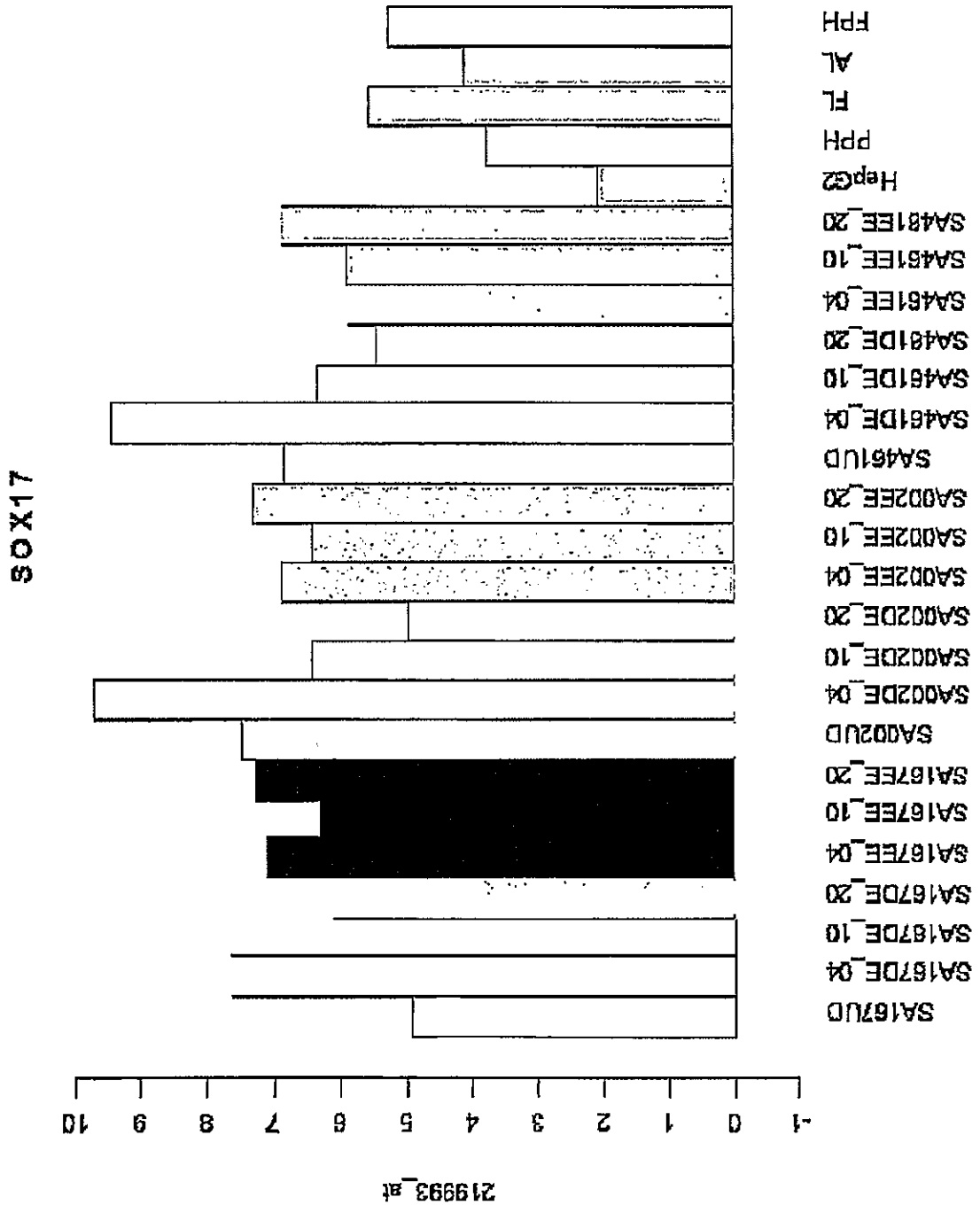


Fig.7(continuous)

FoxA2

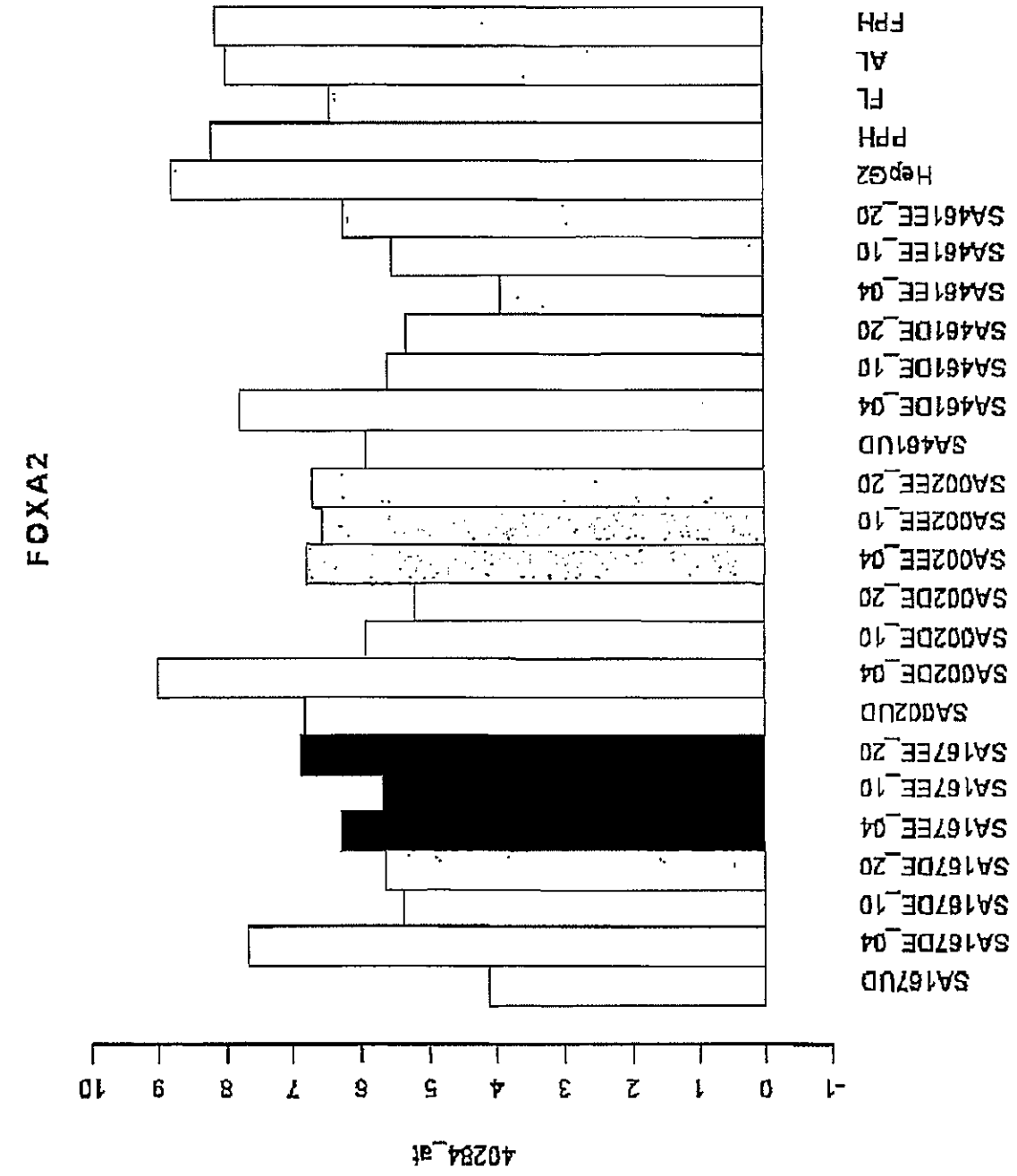


Fig.7(continuous)

AFP

Fig.7

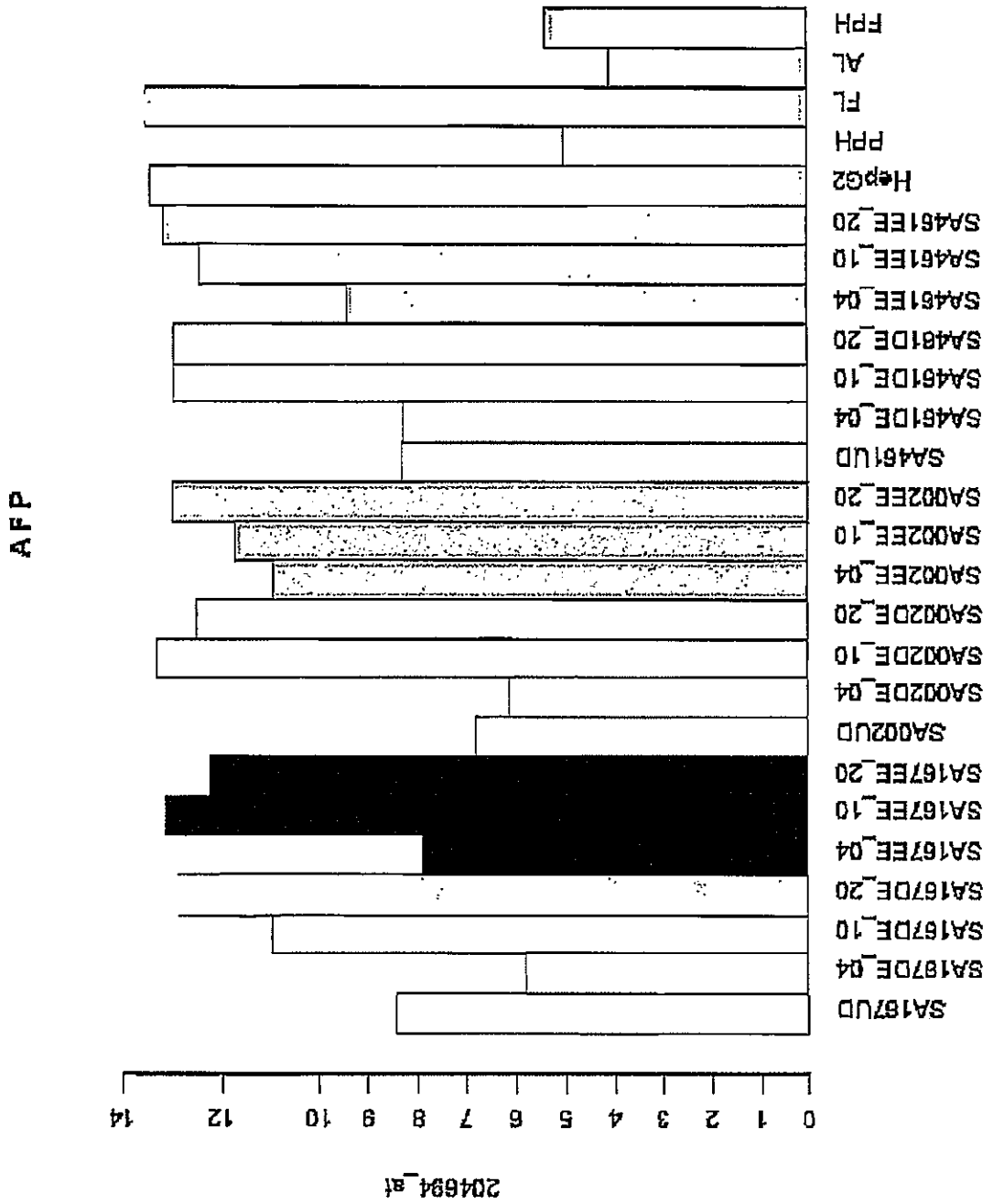


Fig.7(continuous)

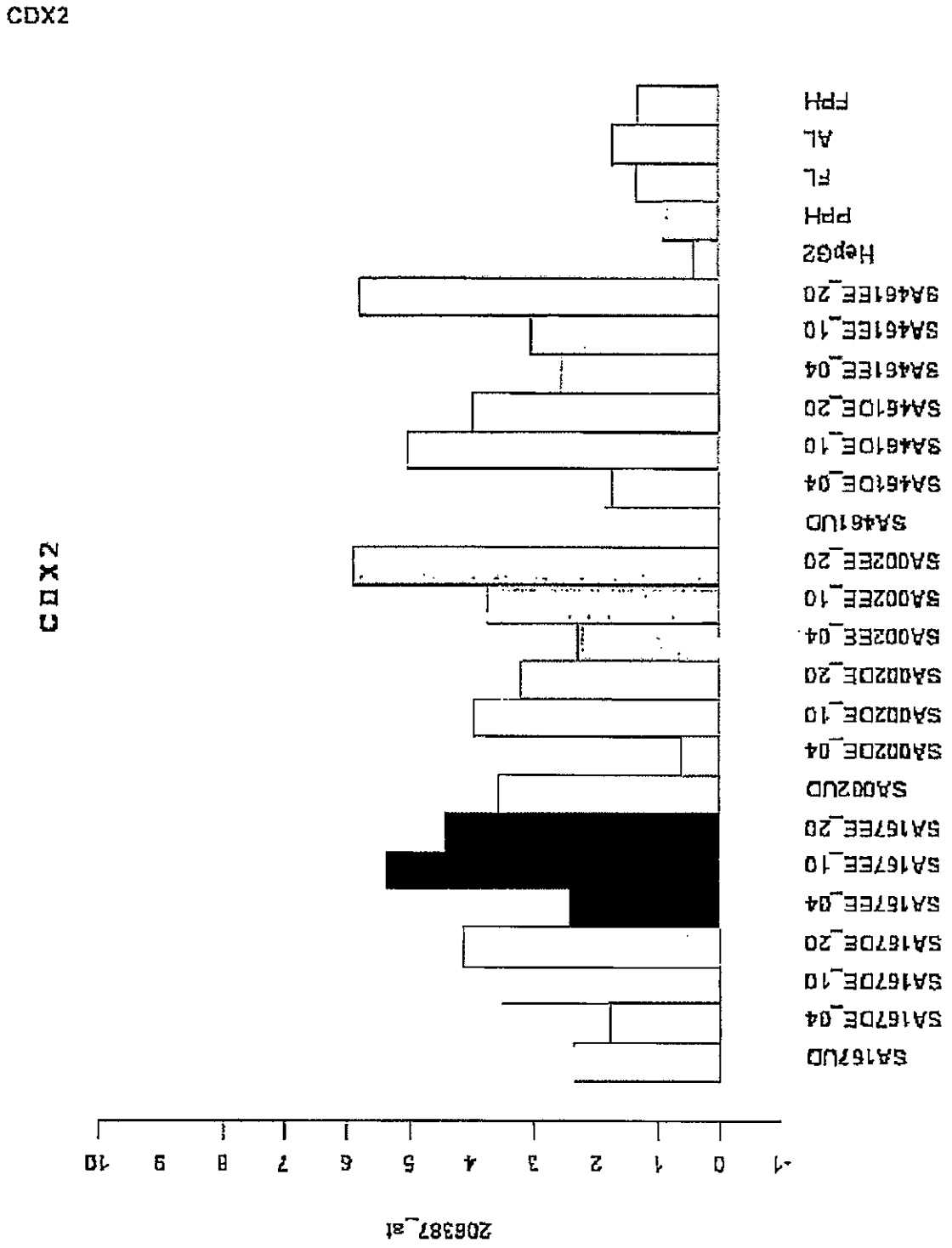


Fig.7(continuous)

CXCR4

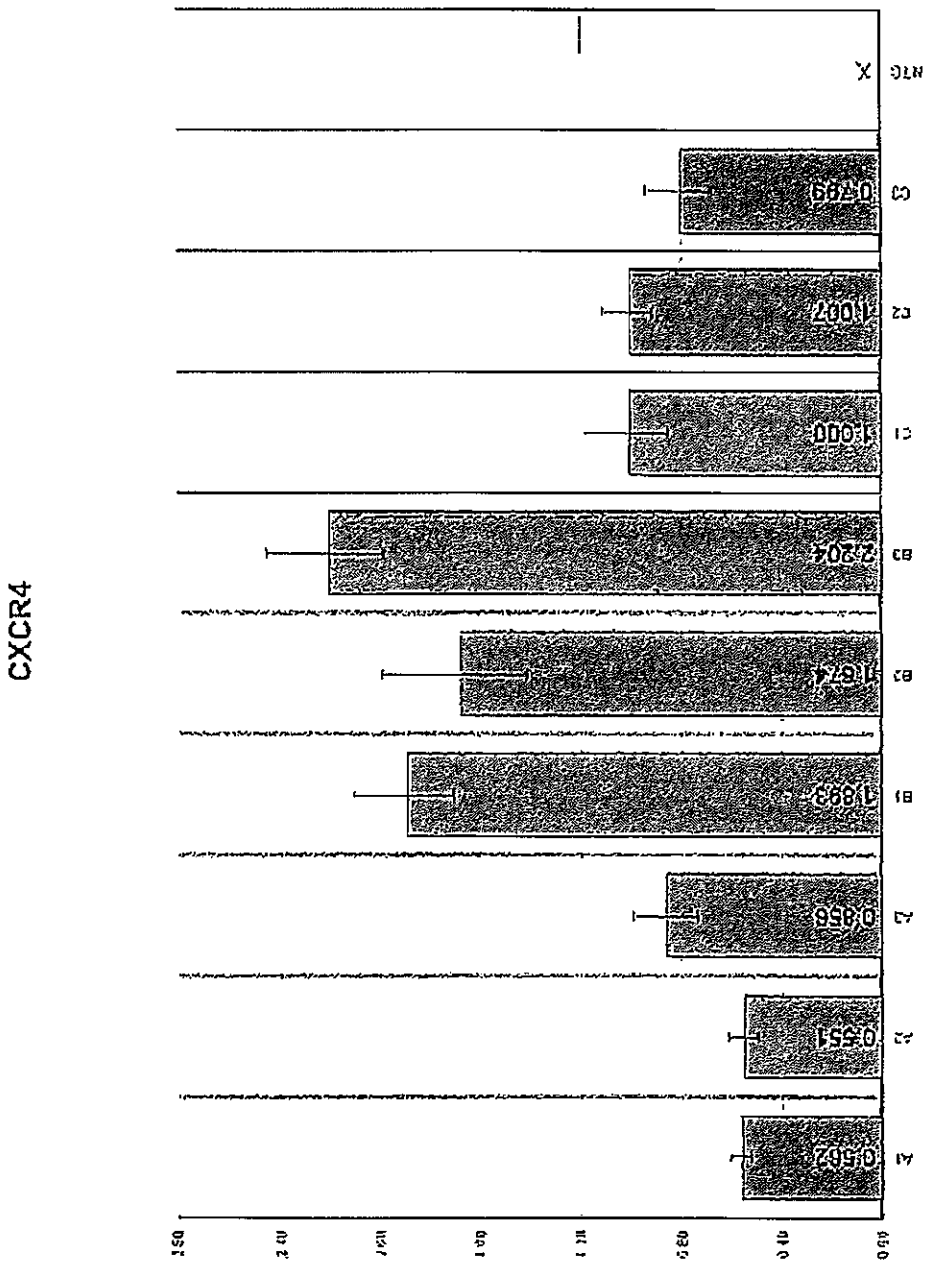


Fig.23(continuous)

Sox7

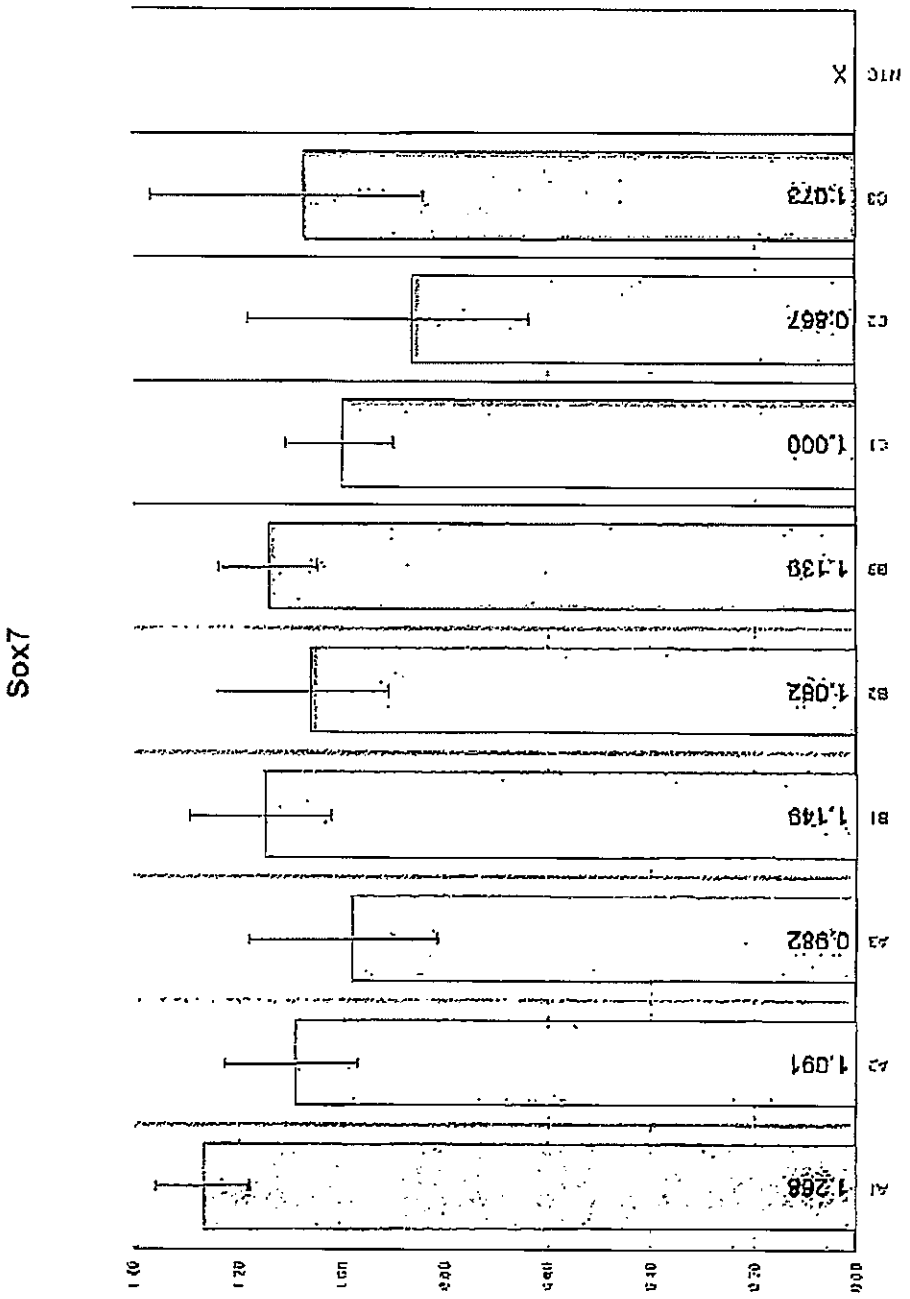


Fig.23 (continuous)

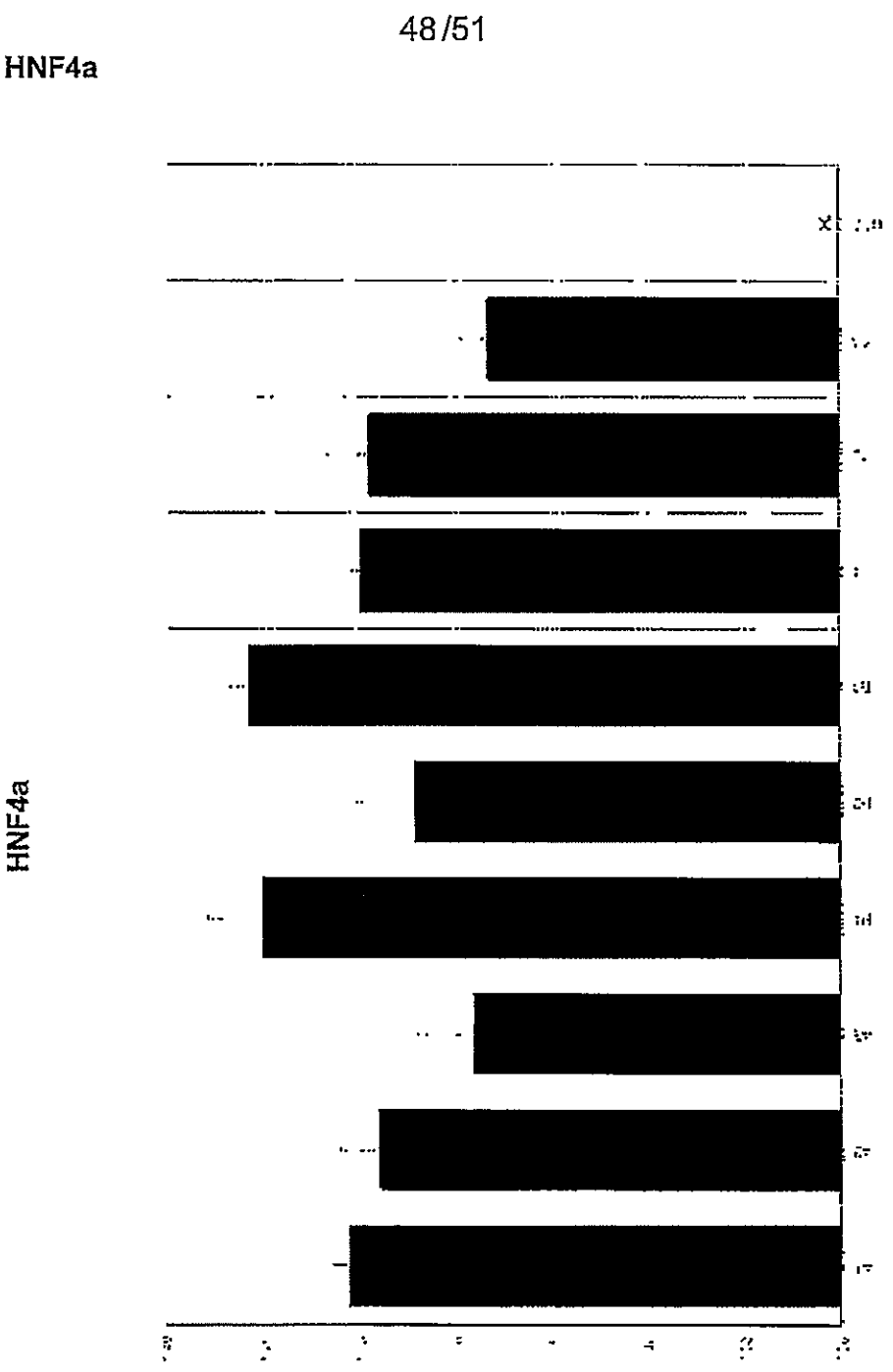


Fig.23(continuous)

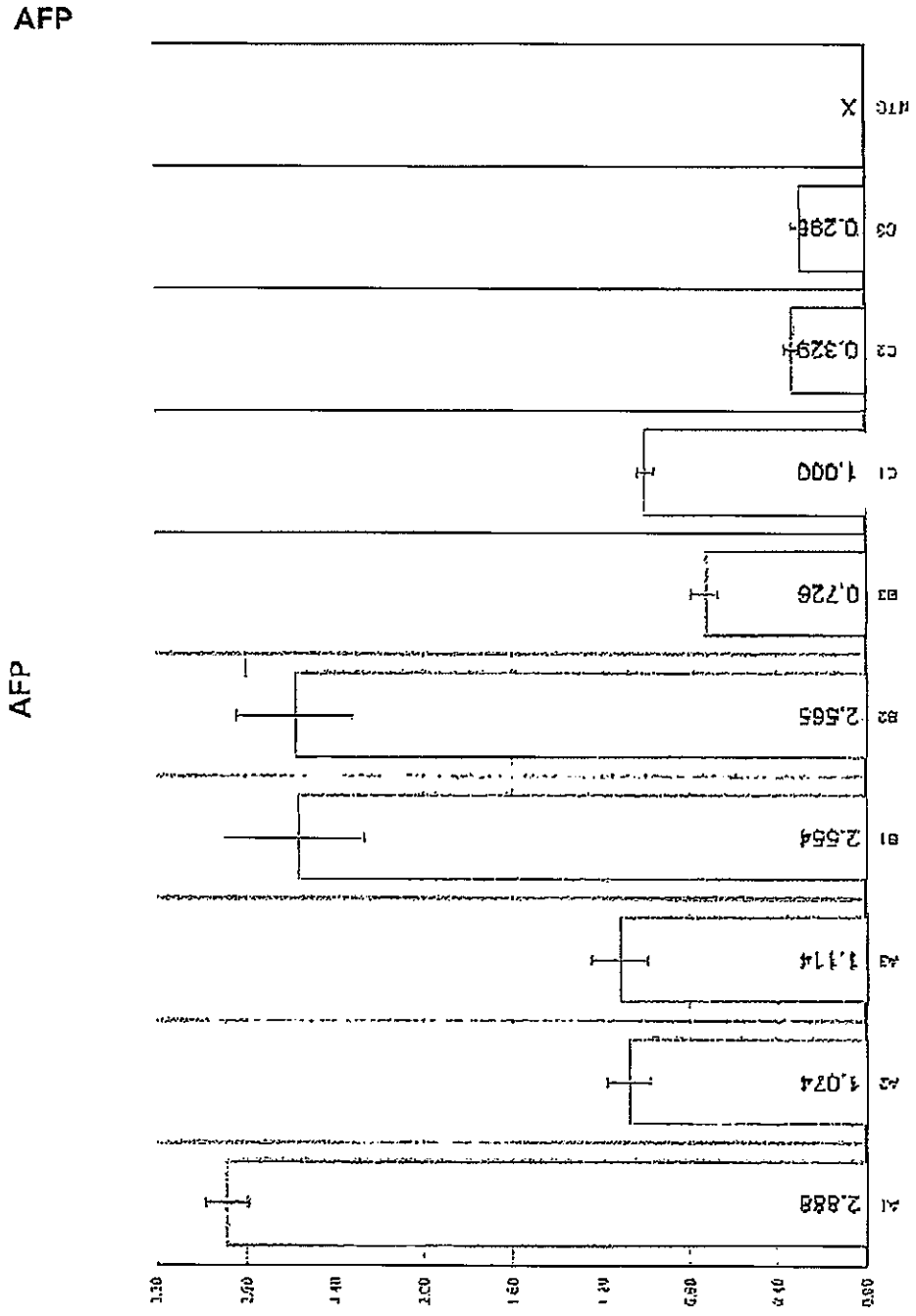


Fig.23(continuous)

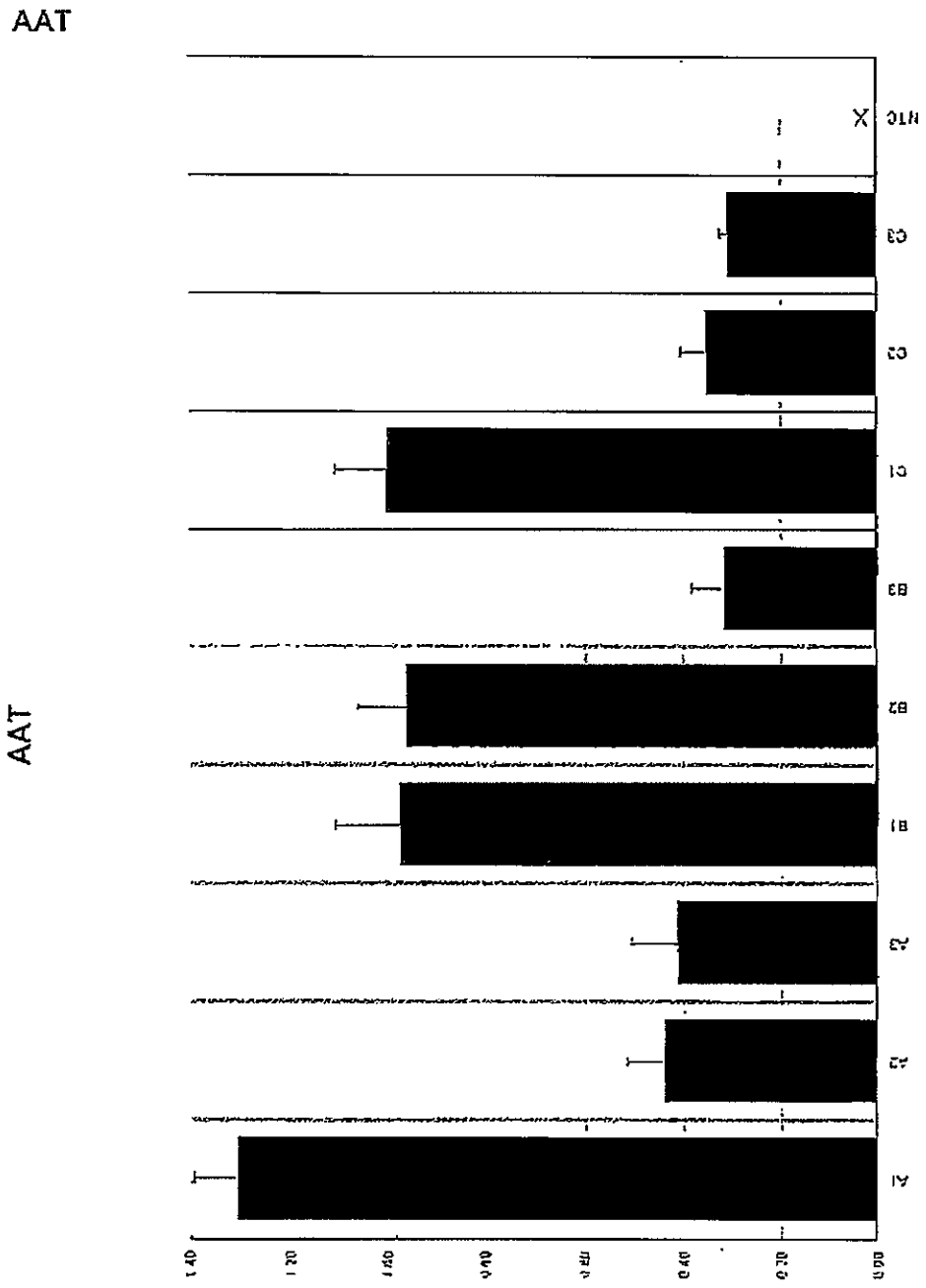


Fig.23 (continuous)

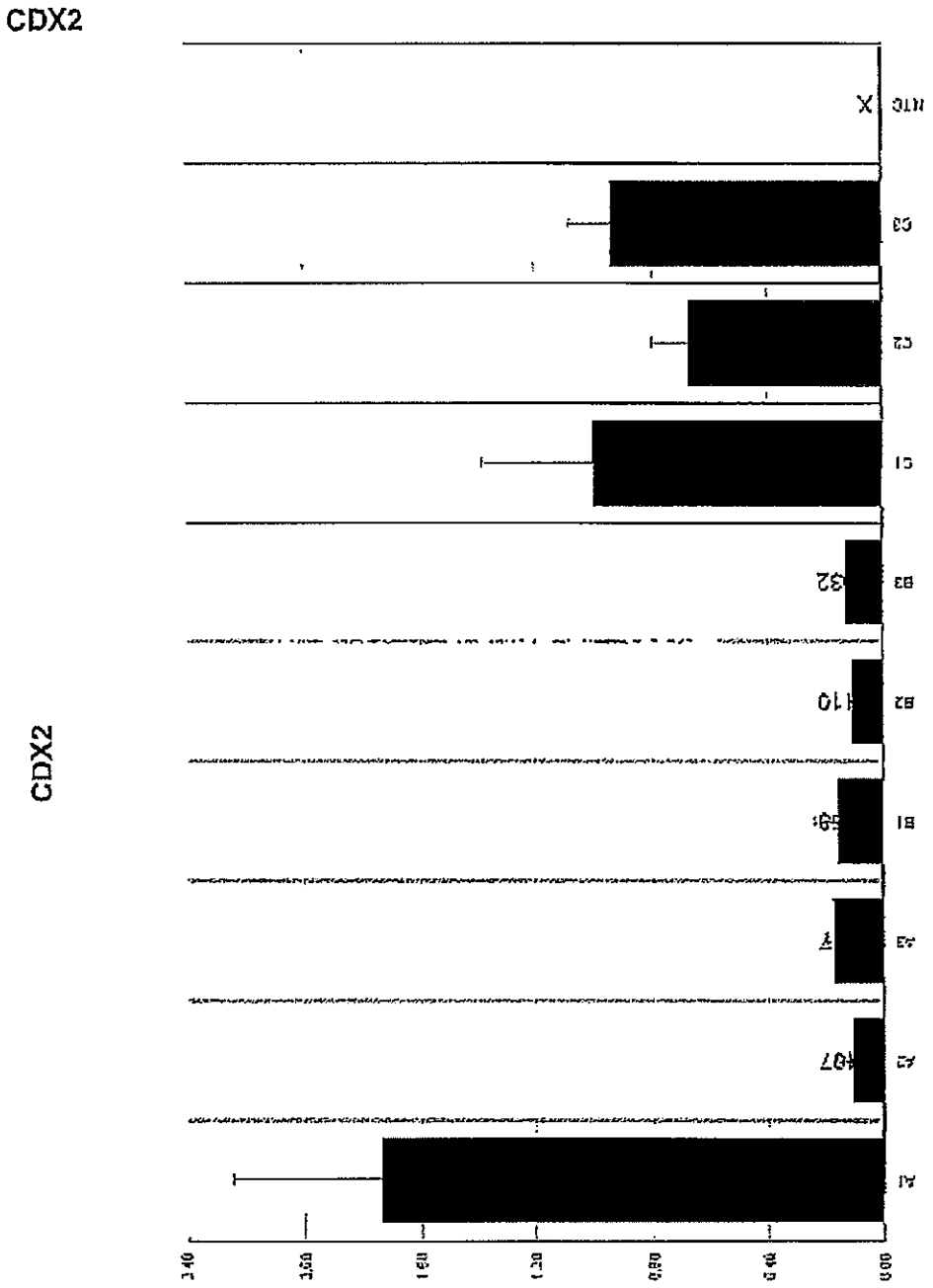


Fig.23 (continuous)