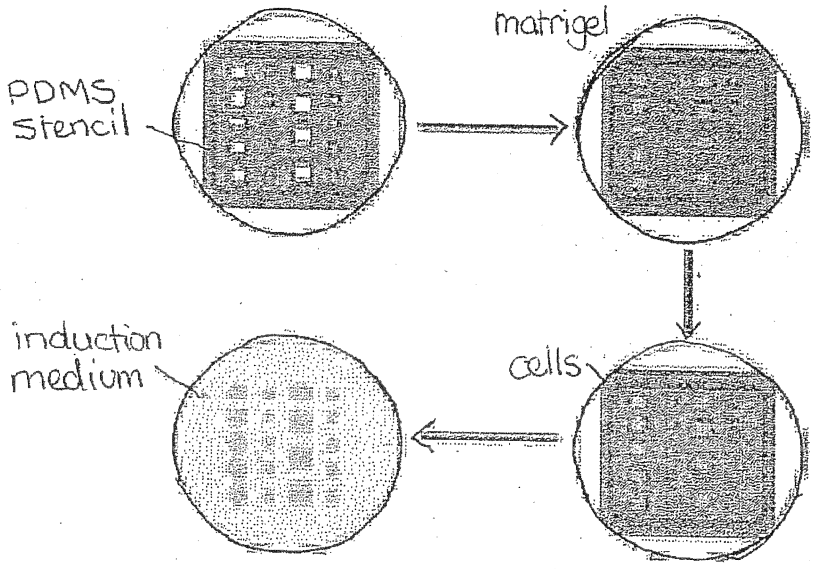
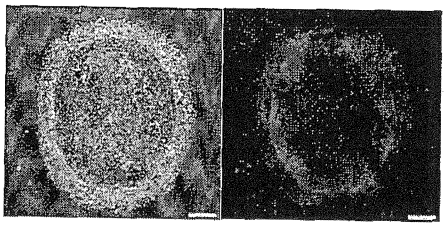


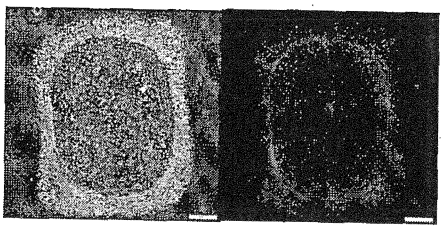
Figure 1

Figure 2

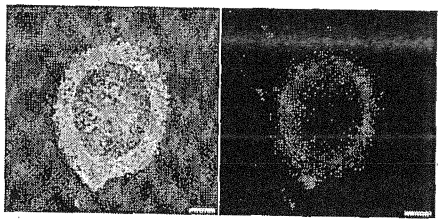
(a)



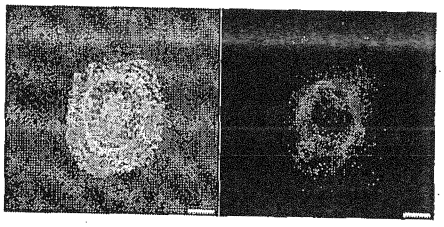
(b)



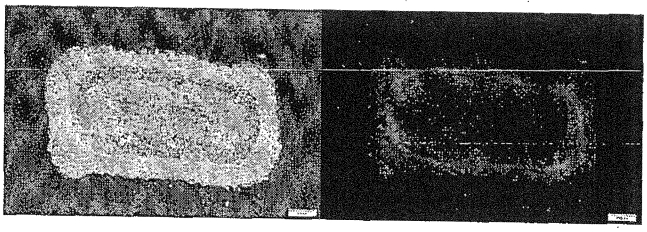
(c)



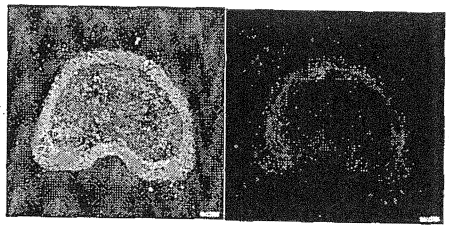
(d)



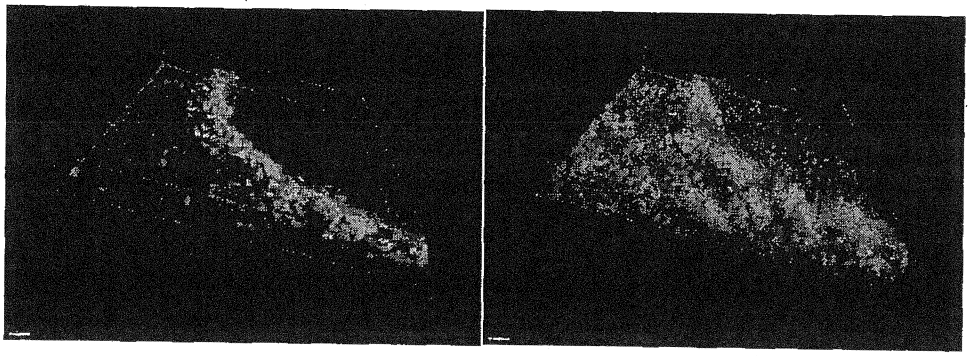
(e)



(f)



(a)



(b)

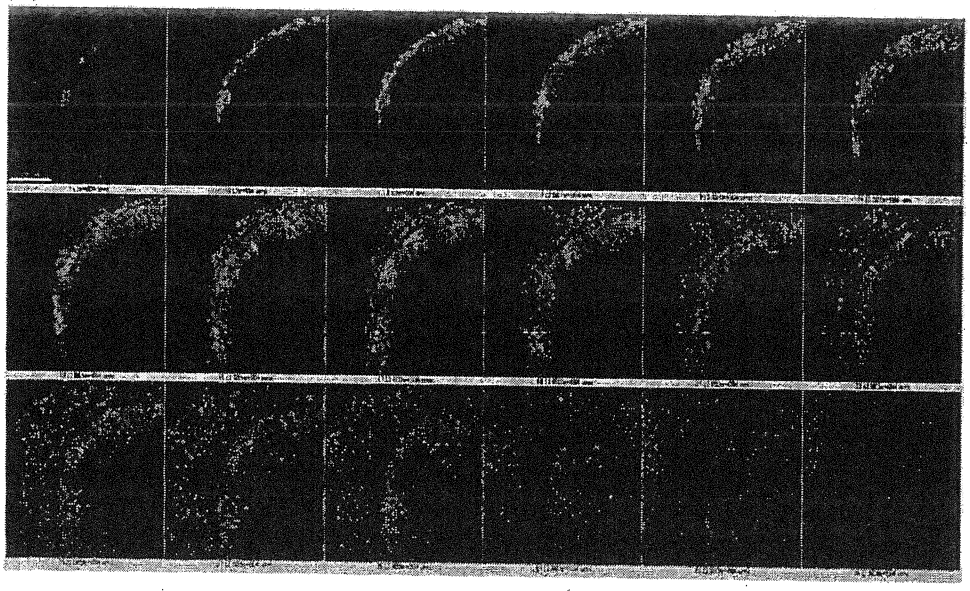


Figure 3

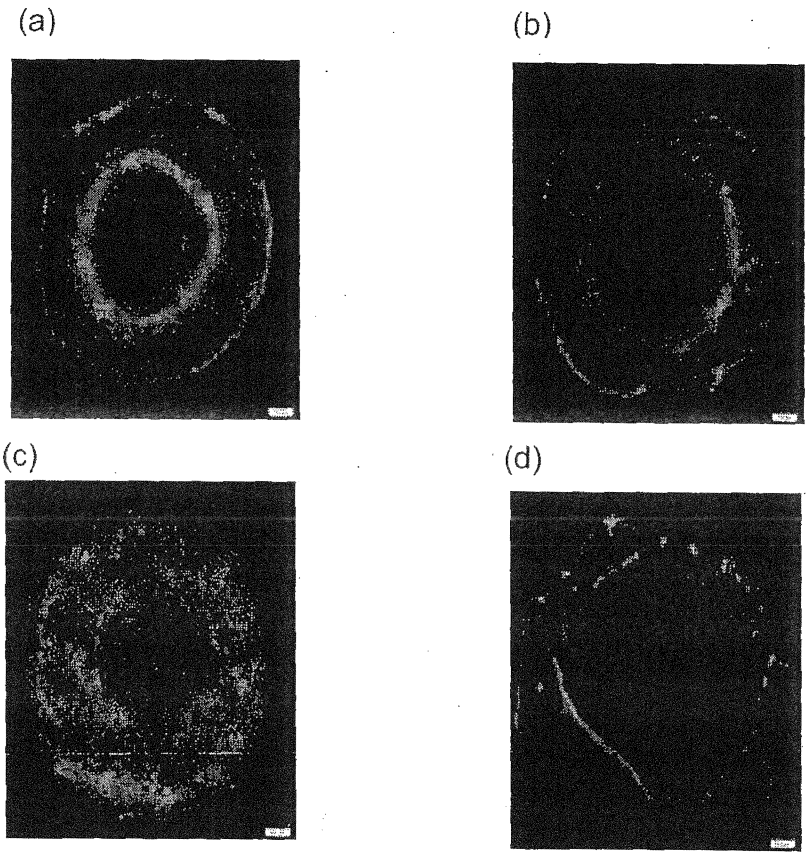


Figure 4

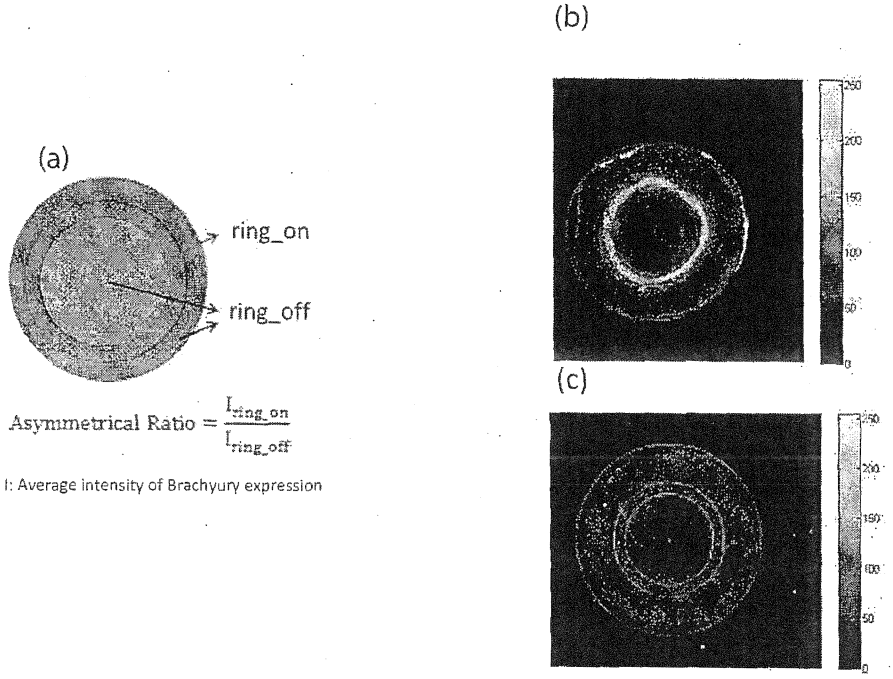

(a)
ring_on
ring_off
Asymmetrical Ratio = $\frac{I_{ring_on}}{I_{ring_off}}$
I: Average intensity of Brachyury expression
(b)
250
200
150
100
50
0
(c)
250
200
150
100
50
0

Figure 5

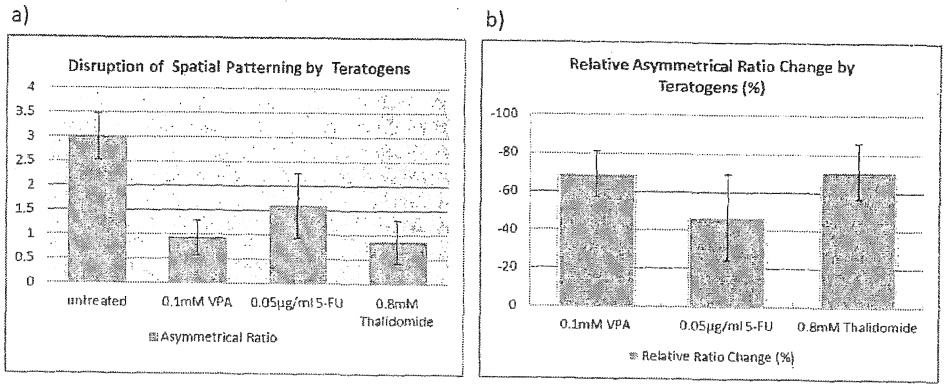

a)
Disruption of Spatial Patterning by Teratogens
4
3.5
3
2.5
2
1.5
1
0.5
0
untreated
0.1mM VPA
0.05µg/ml 5-FU
0.8mM Thalidomide
Asymmetrical Ratio
b)
Relative Asymmetrical Ratio Change by Teratogens (%)
-100
-80
-60
-40
-20
0
0.1mM VPA
0.05µg/ml 5-FU
0.8mM Thalidomide
Relative Ratio Change (%)

Figure 6

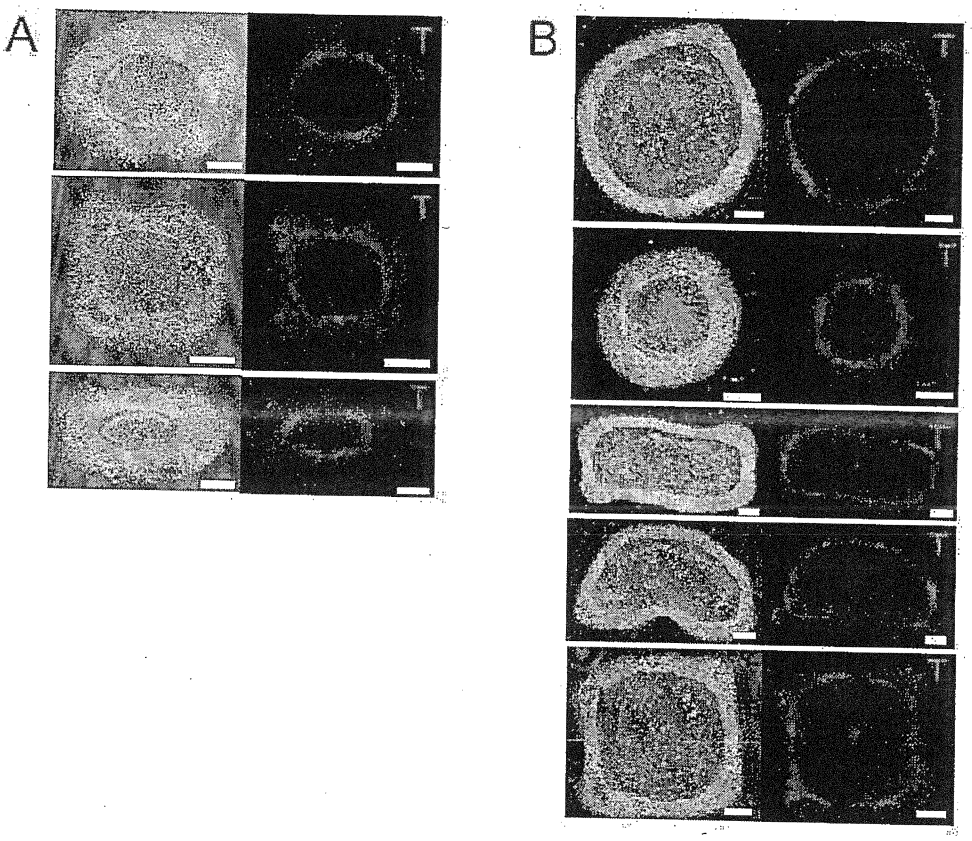
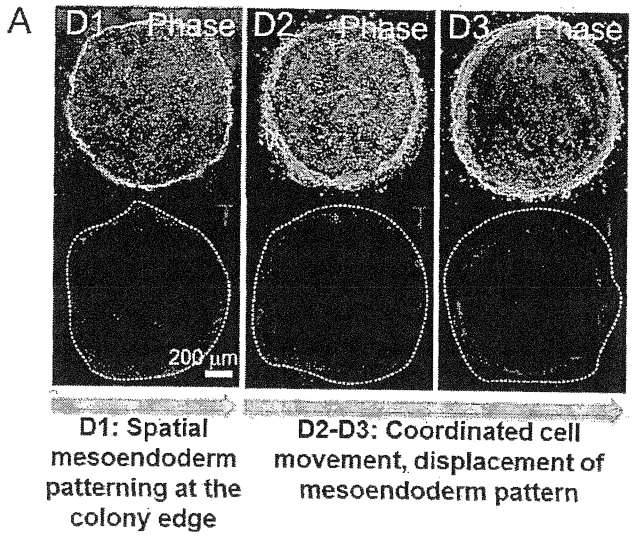
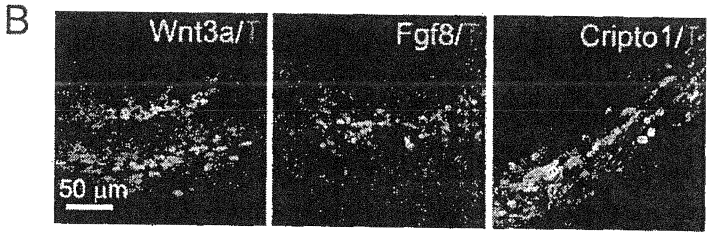


Figure 7


A
D1 Phase
D2 Phase
D3 Phase
200 µm
D1: Spatial mesoendoderm patterning at the colony edge
D2-D3: Coordinated cell movement, displacement of mesoendoderm pattern


B
Wnt3a/T
Fgf8/T
Cripto1/T
50 µm

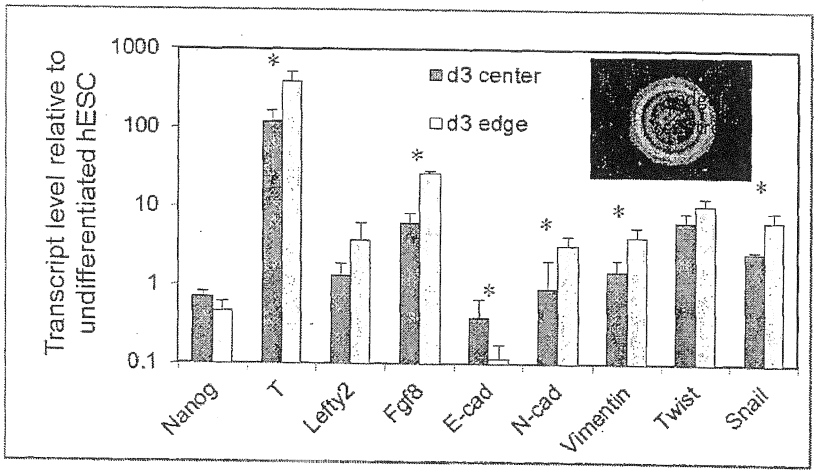
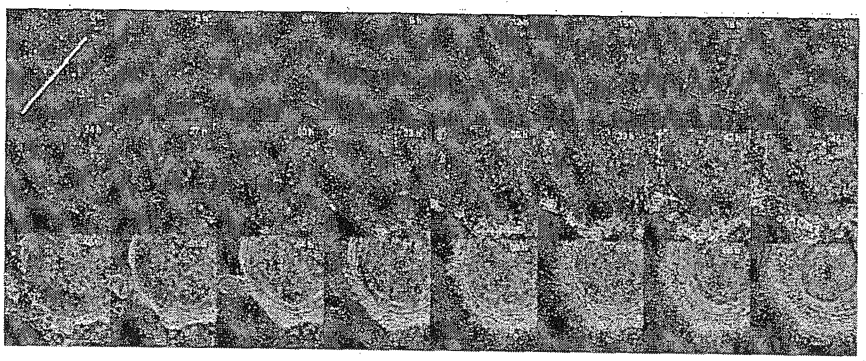
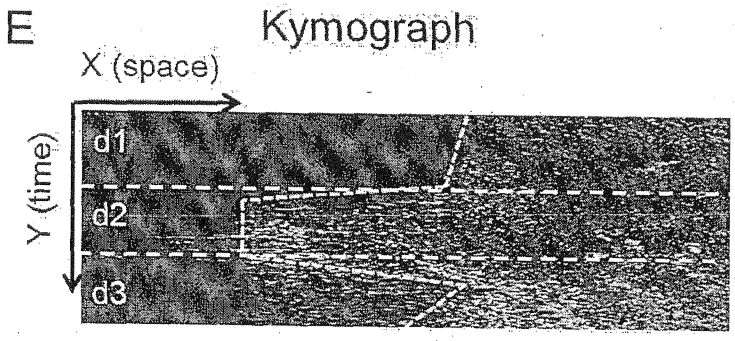

C
Transcript level relative to undifferentiated hESC
1000
100
10
1
0.1
d3 center
d3 edge
Nanog
T
Lefty2
Fgf8
E-cad
N-cad
Vimentin
Twist
Snail

Figure 8

D

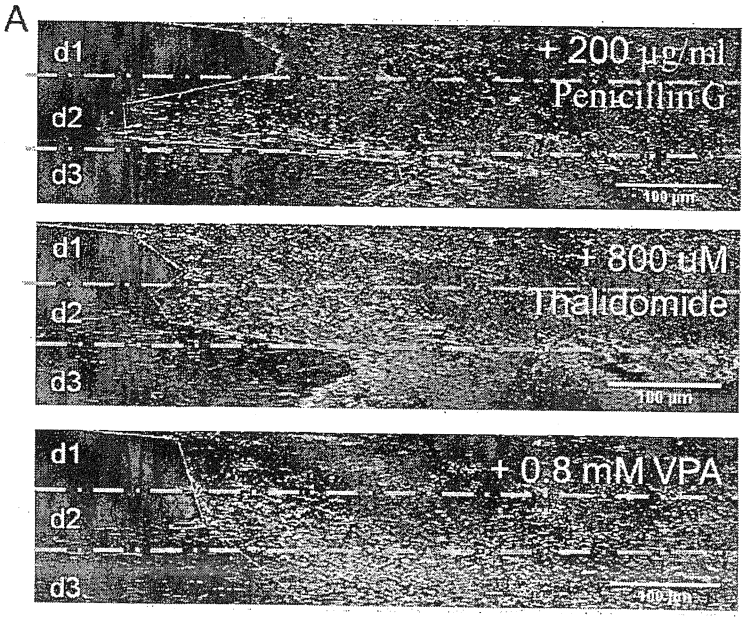


E



d2: Random cell migration
d3: Directed collective cell migration

Figure 8 cont.


A
d1
d2
d3
+ 200 µg/ml
Penicillin G
100 µm
d1
d2
d3
+ 800 uM
Thalidomide
100 µm
d1
d2
d3
+ 0.8 mM VPA
100 µm

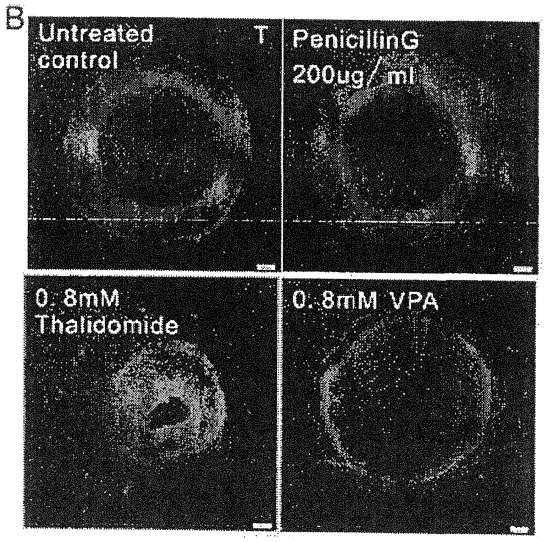
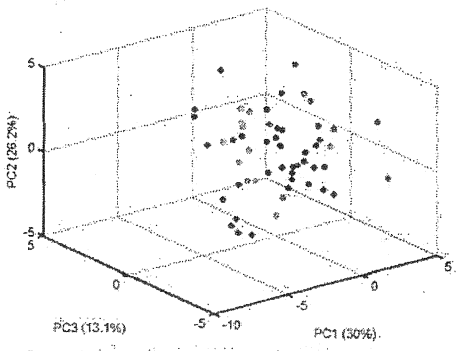

B
Untreated
control
T
PenicillinG
200ug/ml
0.8mM
Thalidomide
0.8mM VPA

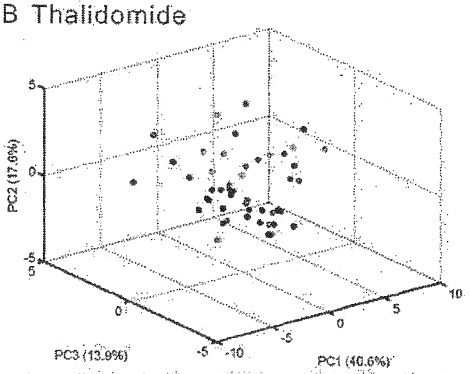
Figure 9

A RA



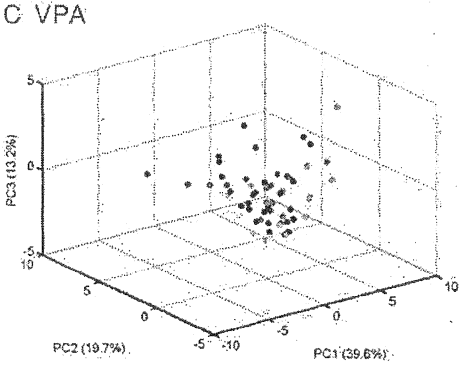
Control (black), 0.00036 µg/ml RA (red), 0.0036 µg/ml RA (green), 0.036 µg/ml RA (blue).

B Thalidomide



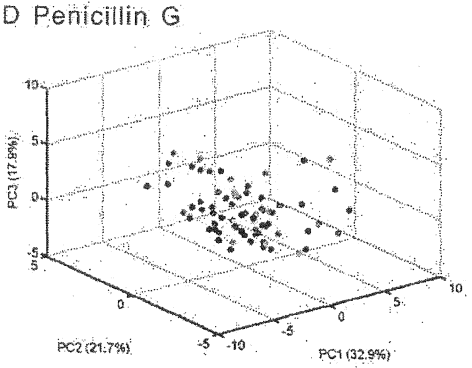
Control (black), 27 µM Thalidomide (red), 300 µM Thalidomide (green), 800 µM Thalidomide (blue).

C VPA



Control (black), 0.1 mM VPA (red), 0.4 mM VPA (green), 0.8 mM VPA (blue).

D Penicillin G



Control (black), 40 µg/ml Penicillin G (red), 200 µg/ml Penicillin G (green), 1000 µg/ml Penicillin G (blue).

Figure 10

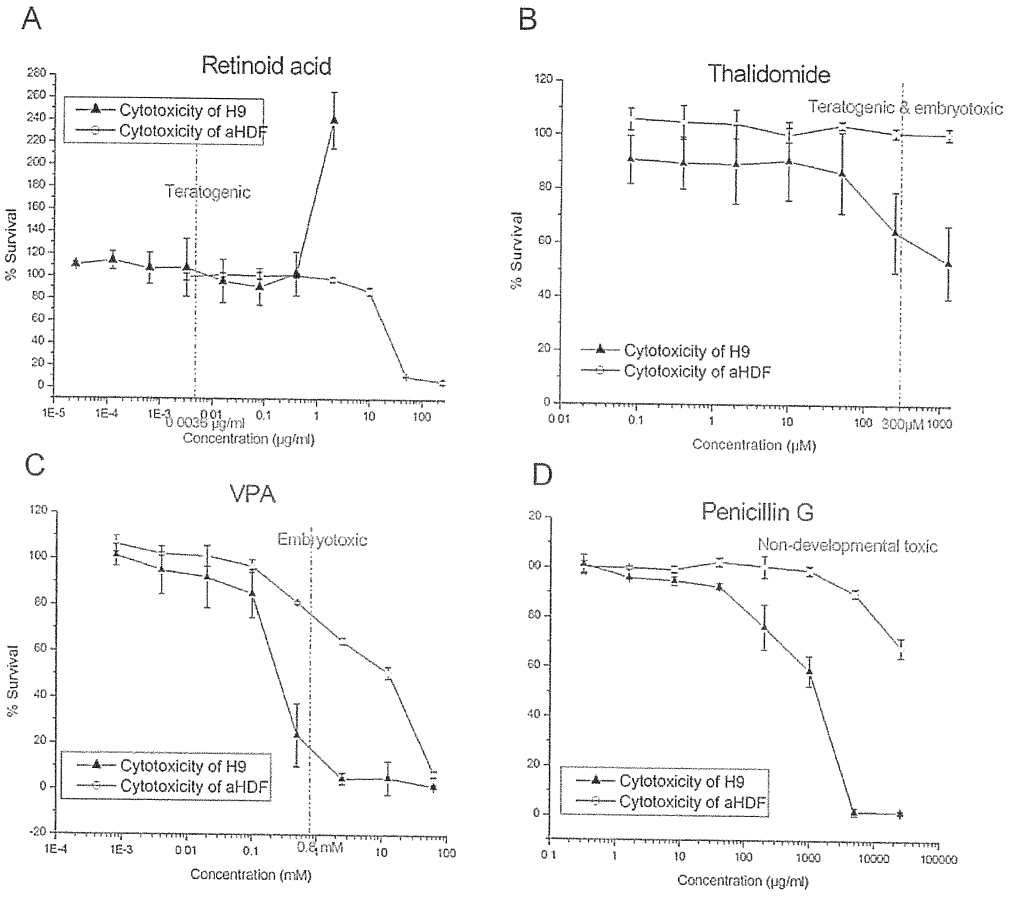

A
Retinoid acid
Cytotoxicity of H9
Cytotoxicity of aHDF
Teratogenic
% Survival
0.0035 μg/ml
Concentration (μg/ml)
B
Thalidomide
Teratogenic & embryotoxic
% Survival
Cytotoxicity of H9
Cytotoxicity of aHDF
300μM
Concentration (μM)
C
VPA
Embryotoxic
% Survival
Cytotoxicity of H9
Cytotoxicity of aHDF
0.8 mM
Concentration (mM)
D
Penicillin G
Non-developmental toxic
Cytotoxicity of H9
Cytotoxicity of aHDF
Concentration (μg/ml)

Figure 11