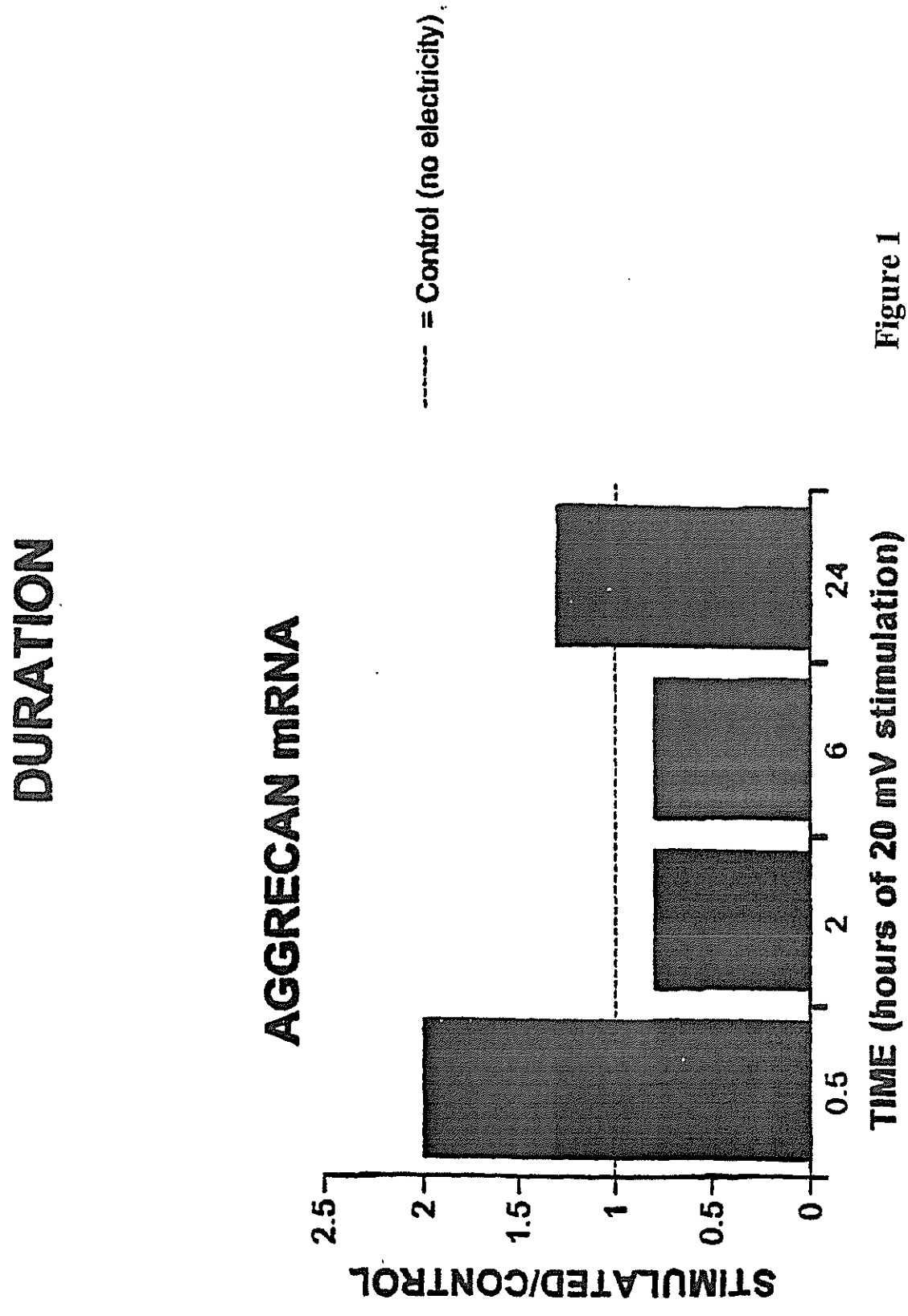

DURATION
AGGRECAN mRNA
----- = Control (no electricity)
STIMULATED/CONTROL
2.5
2
1.5
1
0.5
0
0.5
2
6
24
TIME (hours of 20 mV stimulation)

Figure 1

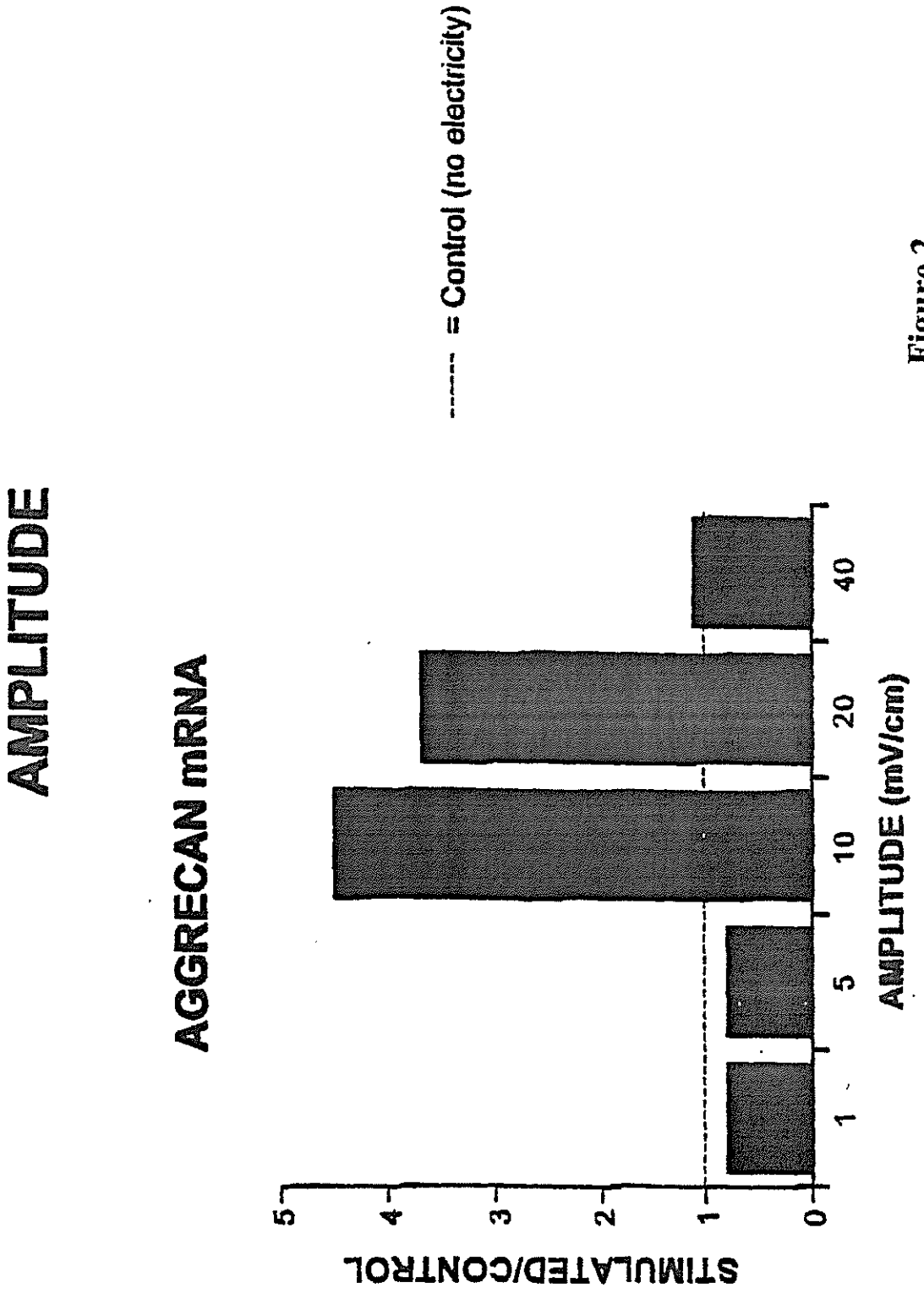
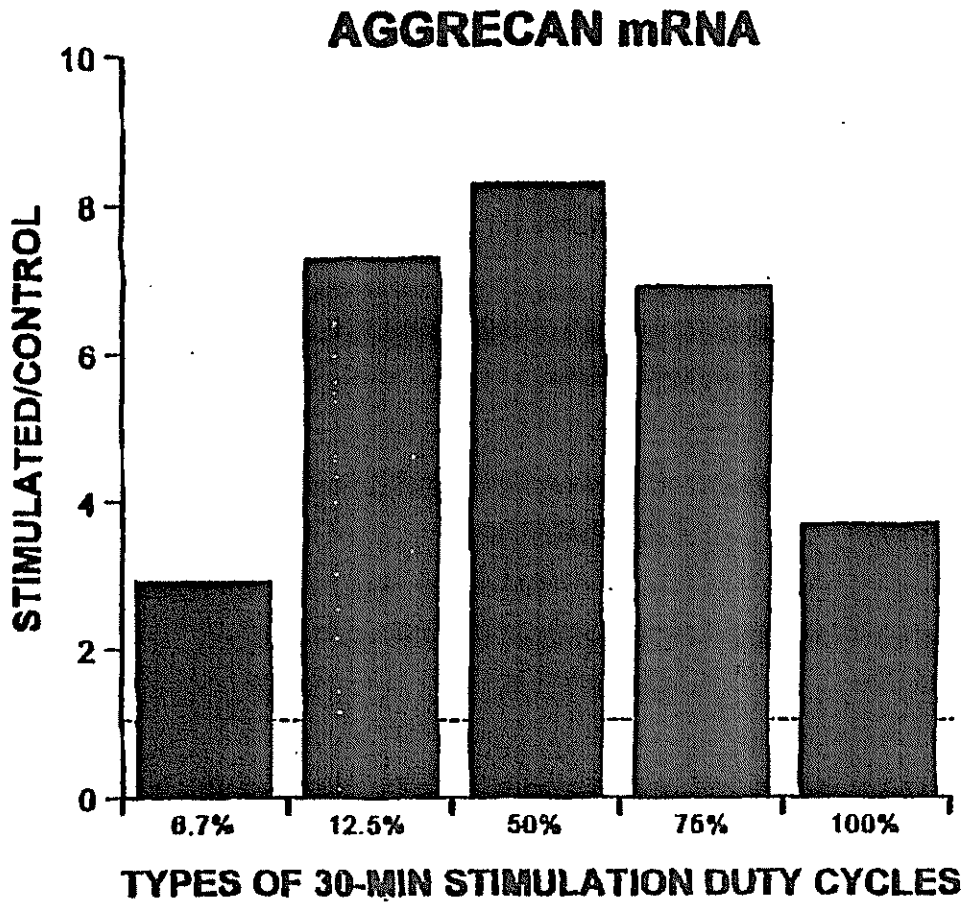

AMPLITUDE
AGGRECAN mRNA
----- = Control (no electricity)
STIMULATED/CONTROL
0
1
2
3
4
5
1
5
10
20
40
AMPLITUDE (mV/cm)

Figure 2

DUTY CYCLE



------ = Control (no electricity)

6.7% = 1 min ON/14 min OFF (30 cycles)

12.5% = 1 min ON/7 min OFF (30 cycles)

50% = 1 min ON/1 min OFF (30 cycles)

75% = 1 min ON/20 sec OFF (30 cycles)

100% = 30 min ON (1 cycle)

Figure 3

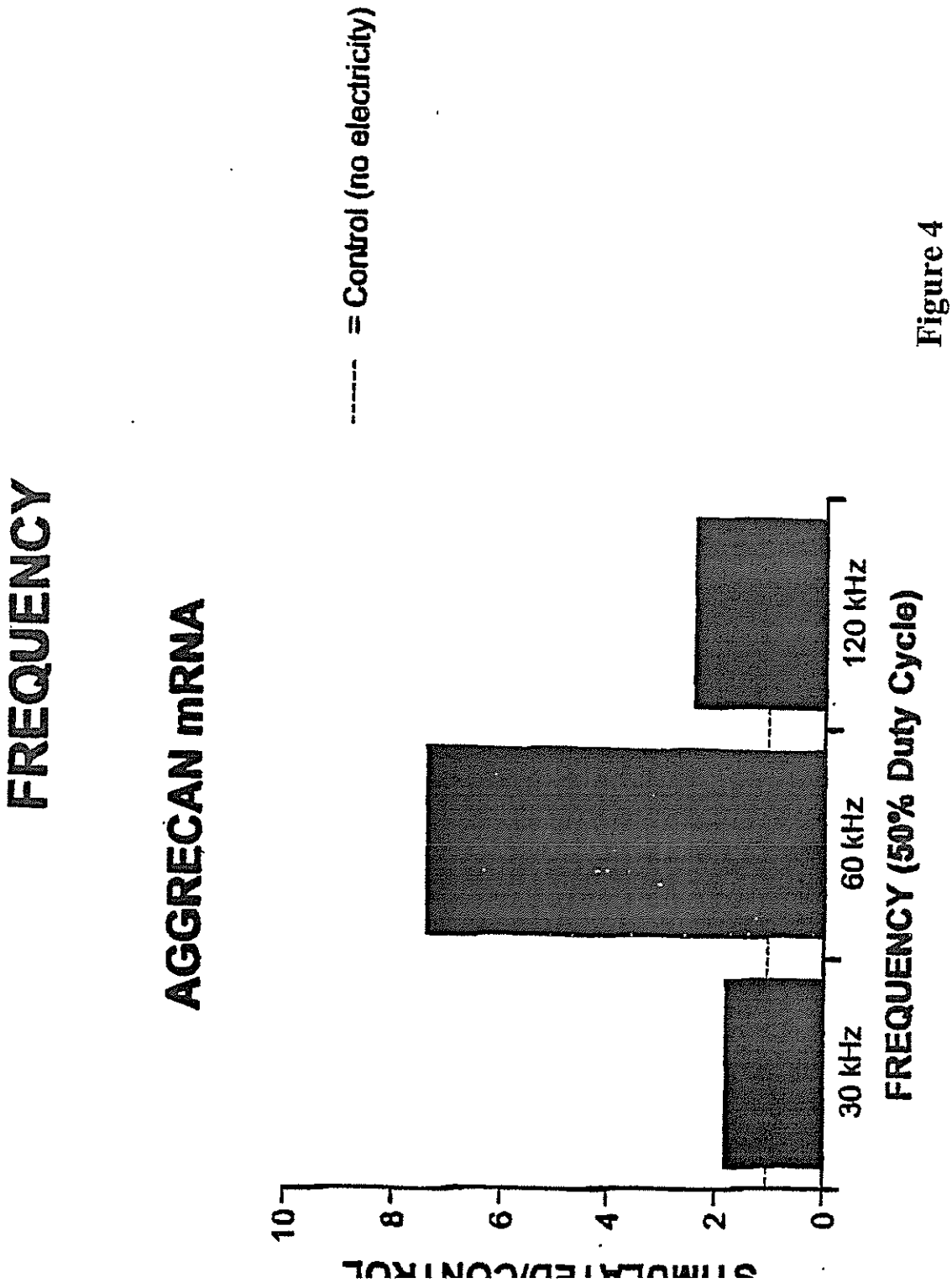

FREQUENCY
AGGRECAN mRNA
----- = Control (no electricity)
10
8
6
4
2
0
30 kHz
60 kHz
120 kHz
FREQUENCY (50% Duty Cycle)

Figure 4

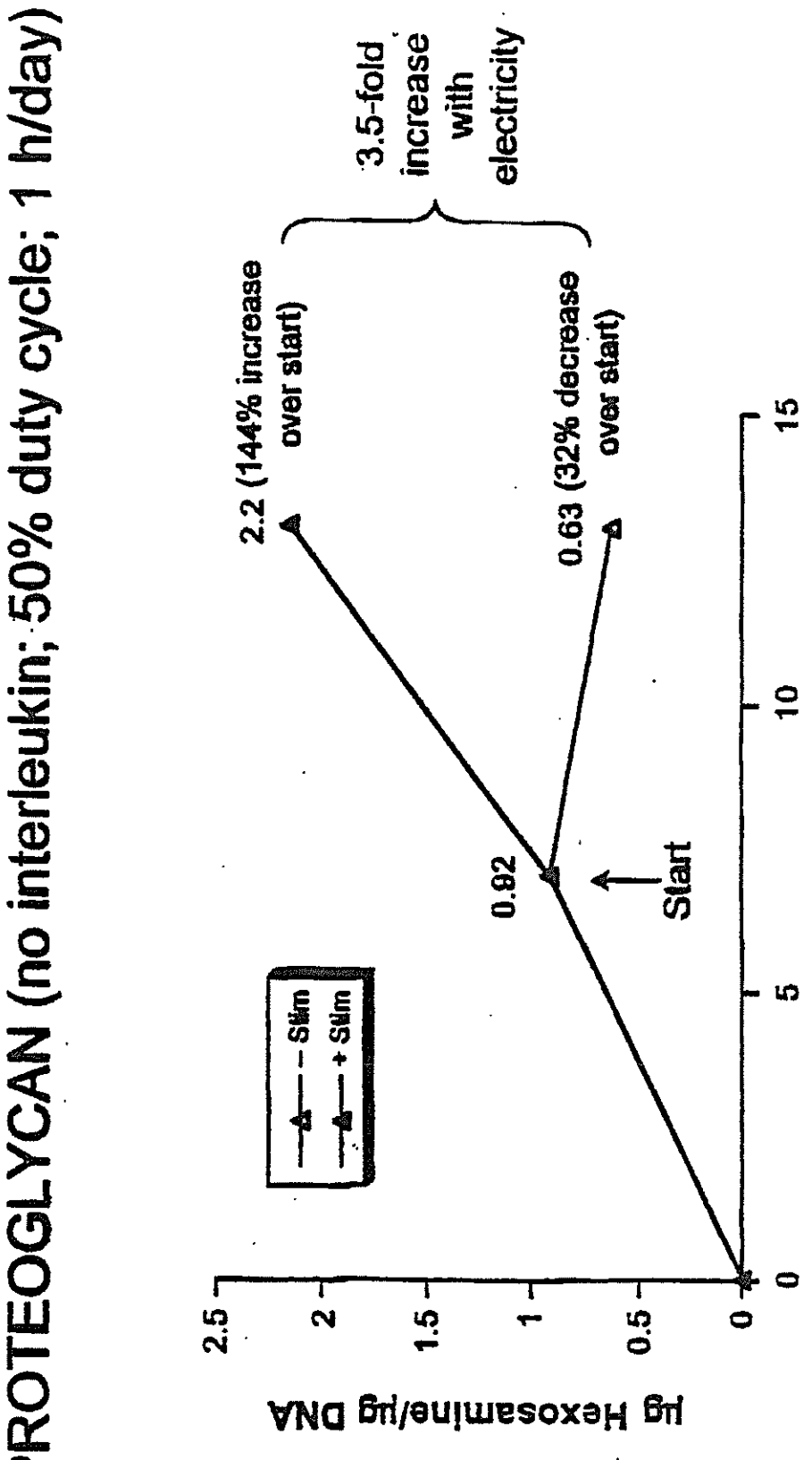

PROTEOGLYCAN (no interleukin; 50% duty cycle; 1 h/day)
3.5-fold increase with electricity
2.2 (144% increase over start)
0.63 (32% decrease over start)
0.82
Start
– Stim
+ Stim
μg Hexosamine/μg DNA
Days in Culture
2.5
2
1.5
1
0.5
0
0
5
10
15

Figure 5

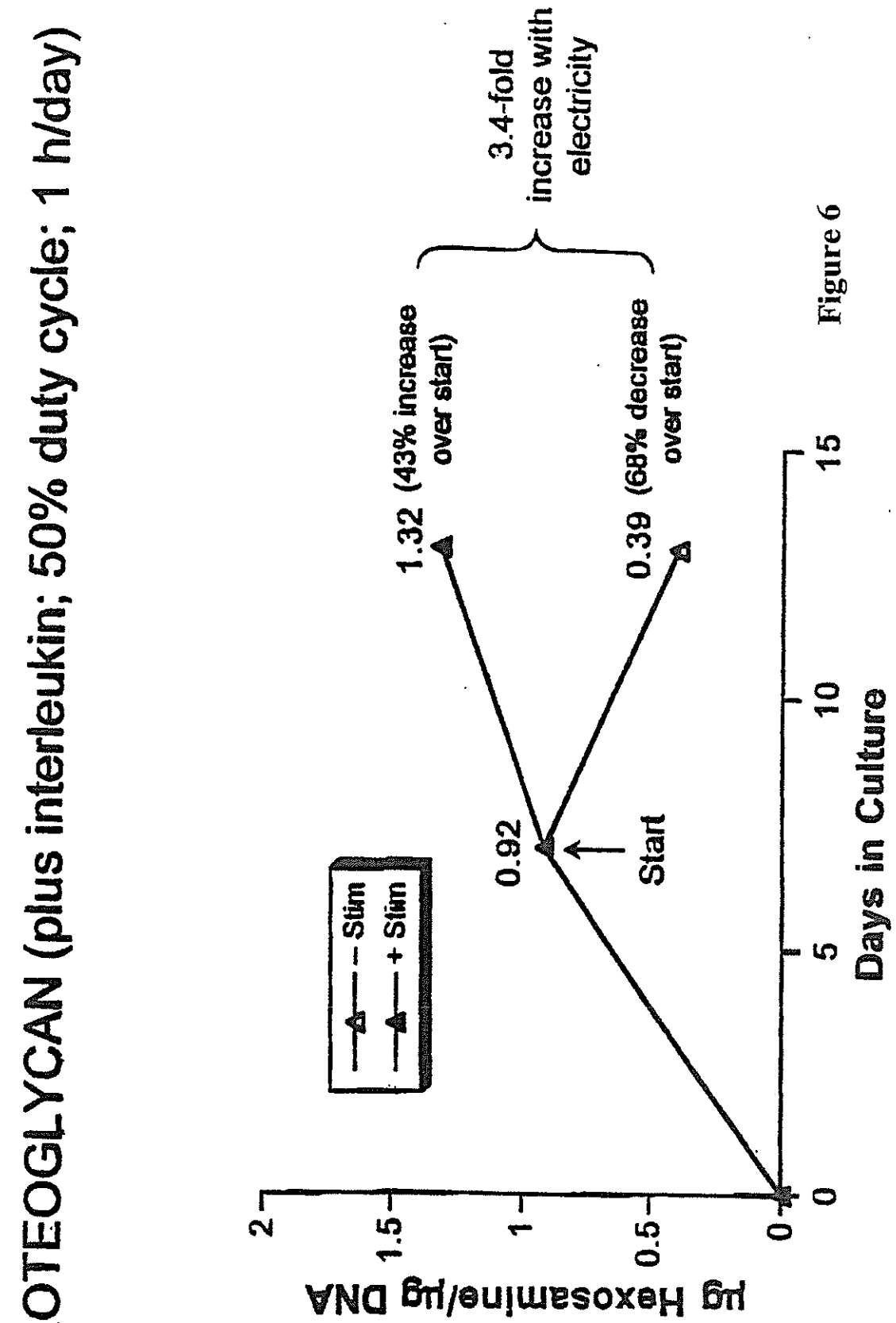

PROTEOGLYCAN (plus interleukin; 50% duty cycle; 1 h/day)
μg Hexosamine/μg DNA
2
1.5
1
0.5
0
0
5
10
15
Days in Culture
– Stim
+ Stim
0.92
Start
1.32 (43% increase over start)
0.39 (68% decrease over start)
3.4-fold increase with electricity

Figure 6

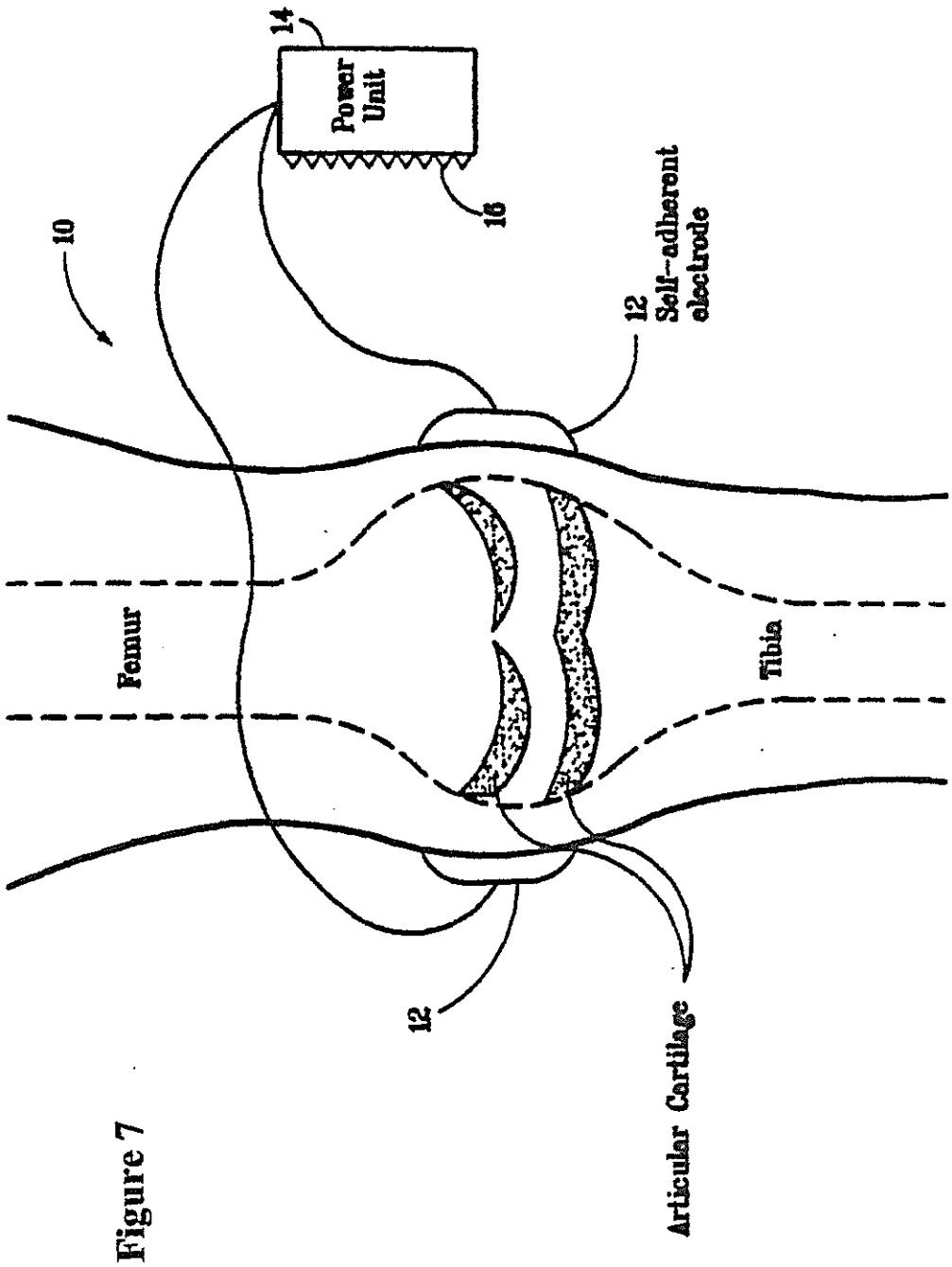

14
Power Unit
16
10
12
Self-adherent electrode
Femur
Tibia
12
Articular Cartilage

Figure 7