

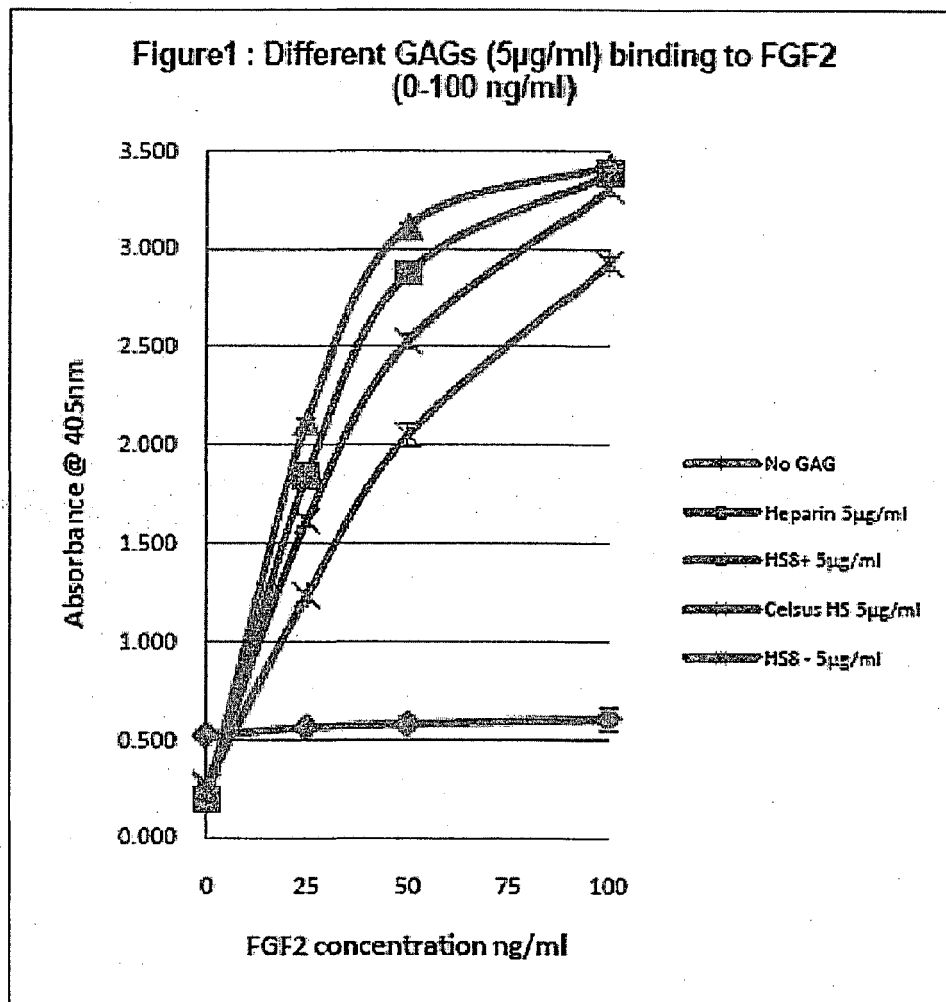


Figure 1

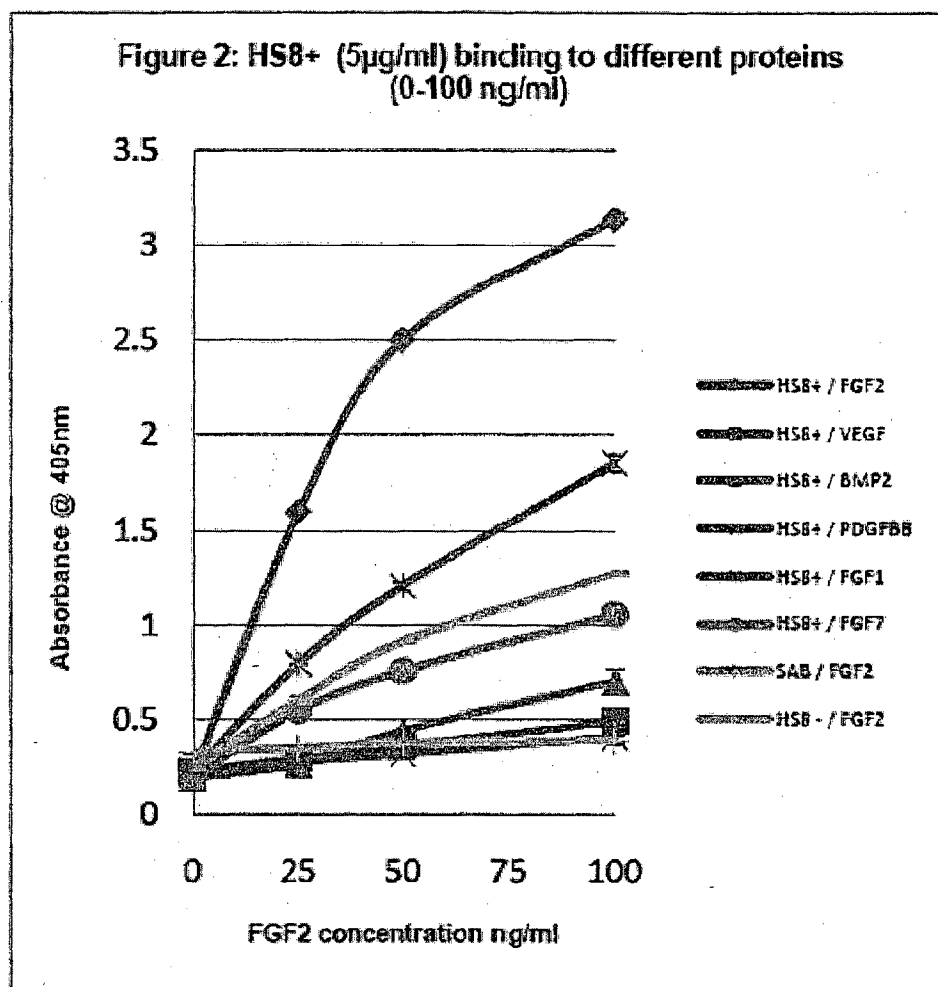


Figure 2

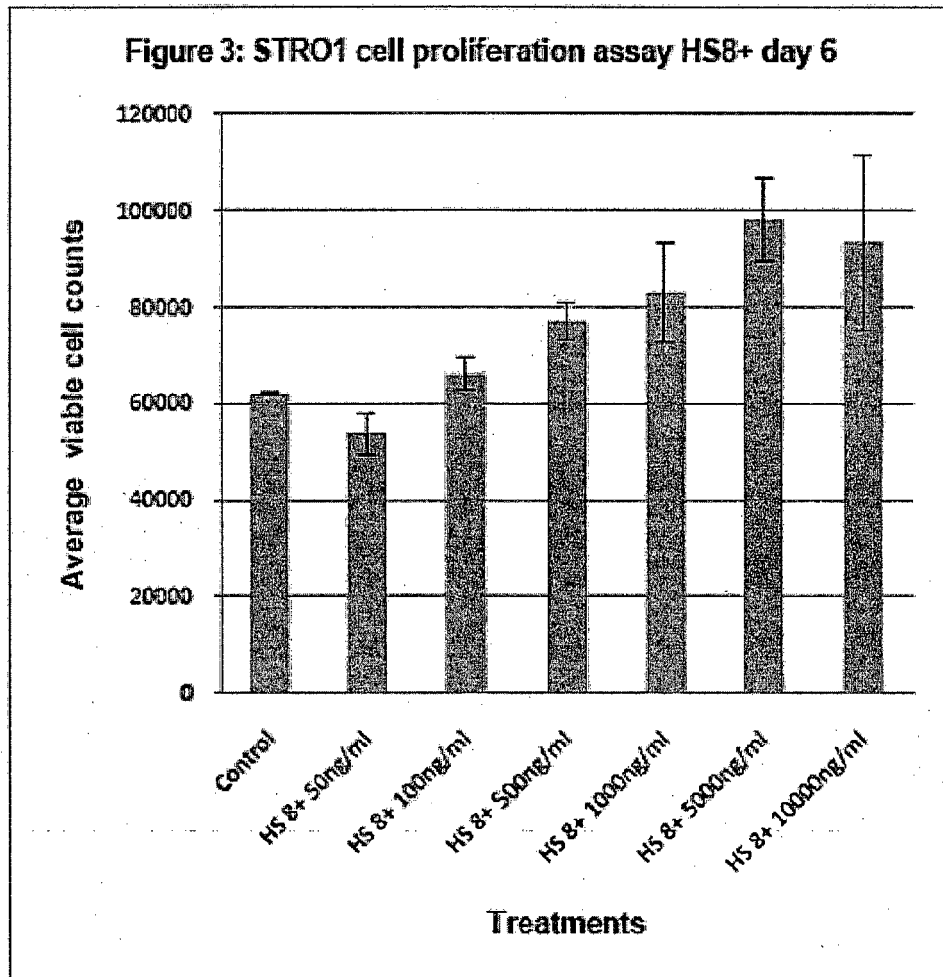


Figure 3

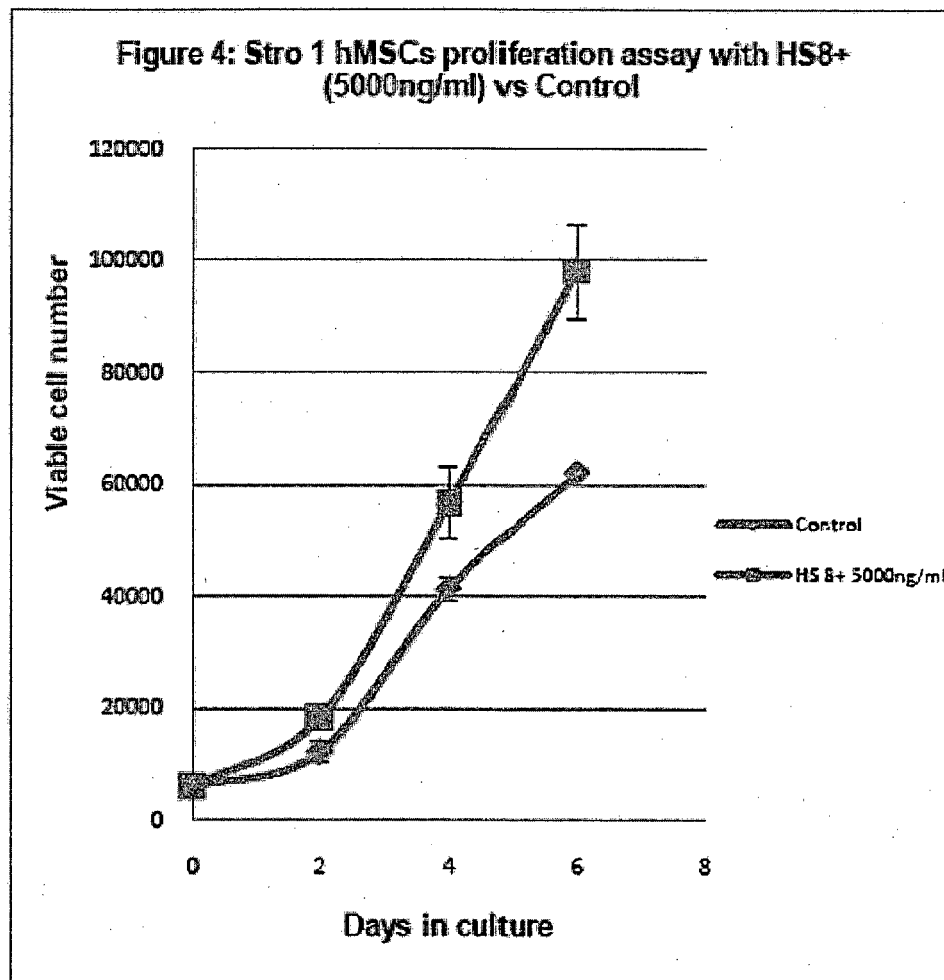


Figure 4

	Residue/ Size	Sequence	Reference
1	248-254/ 7aa	²⁴⁸ YKRSRYT ²⁵⁴ -paper Have to be ²⁴⁸ YRSRKYT ²⁵⁴	Lee <i>et al</i> , 2007
2	261-277/17aa	²⁶¹ KRTGQYKLGSKTGPQGK ²⁷⁷	
3	260-277aa/18aa	²⁶⁰ LKRTGQYKLGSKTGPQGK ²⁷⁷	Hileman <i>et al</i> , 1998
			Baird <i>et al</i> , 1998
5	235-262/ 28aa	²³⁵ FFFERLESNNYNTYRSRKYTSWYVALKR ²⁶¹	Gandhi <i>et al</i> , 2008
6	157-172/ 16aa	¹⁵⁷ GHEKDPKRLYCKNGGF ¹⁷²	
8	185-194/ 10aa	¹⁸⁵ VREKSDPHIK ¹⁹⁴	Kinsella, <i>et al</i> , 1998
9	250-259/ 10aa	²⁵⁰ SRKYTSWYVA ²⁵⁹	
10	260-273/14aa	²⁶⁰ LKRTGQYKLGSKTG ²⁷³	
11	260-280/21aa	²⁶⁰ LKRTGQYKLGSKTGPQGKAIL ²⁸⁰	Ashikari-Hada <i>et al</i> , 2004
13	168-169,223,261-277-20aa	¹⁶⁸ KN ¹⁶⁹ ²²³ R ²⁶¹ KRTGQYKLGSKTGPQGK ²⁷⁷	Ori <i>et al</i> , 2009, Faham <i>et al</i> , 1996, Thomson <i>et al</i> , 1985 and Baird <i>et al</i> , 1998
14	235-262/28aa	²³⁵ FFFERLESNNYNTYRSRKYTSWYVALKR ²⁶¹	
15	216-225/10aa	²¹⁶ LAMKEDGRLL ²²⁵	

Figure 5

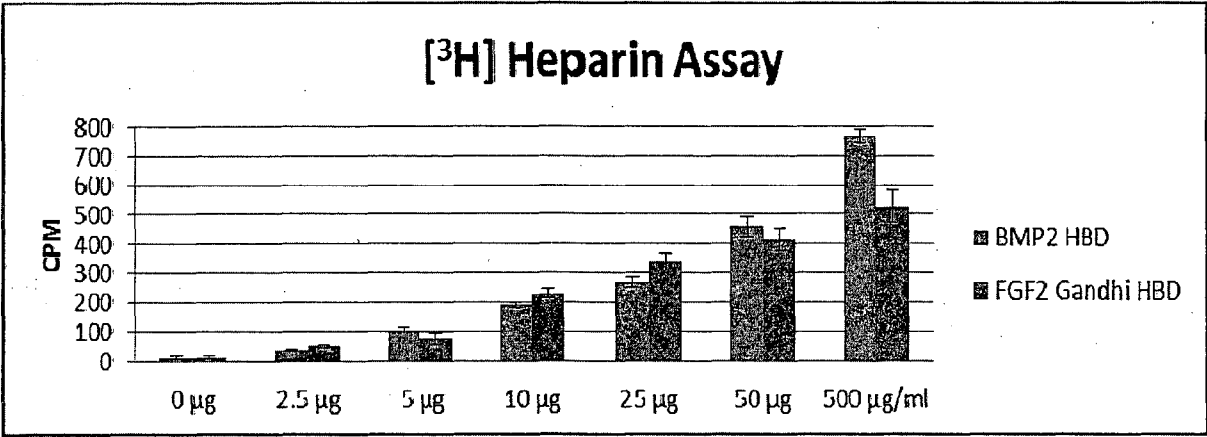


Figure 6A

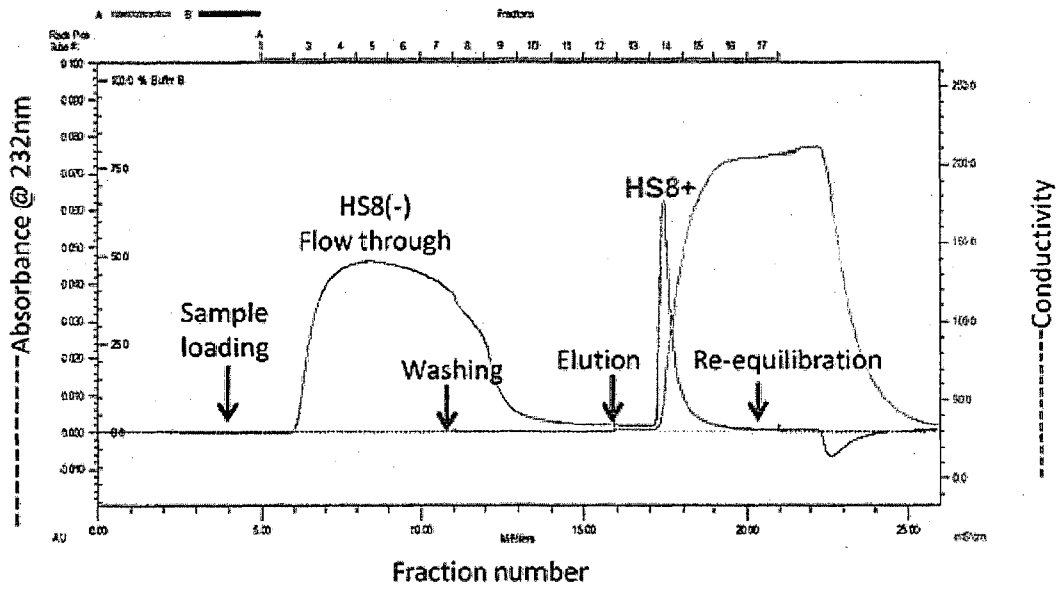


Figure 6B

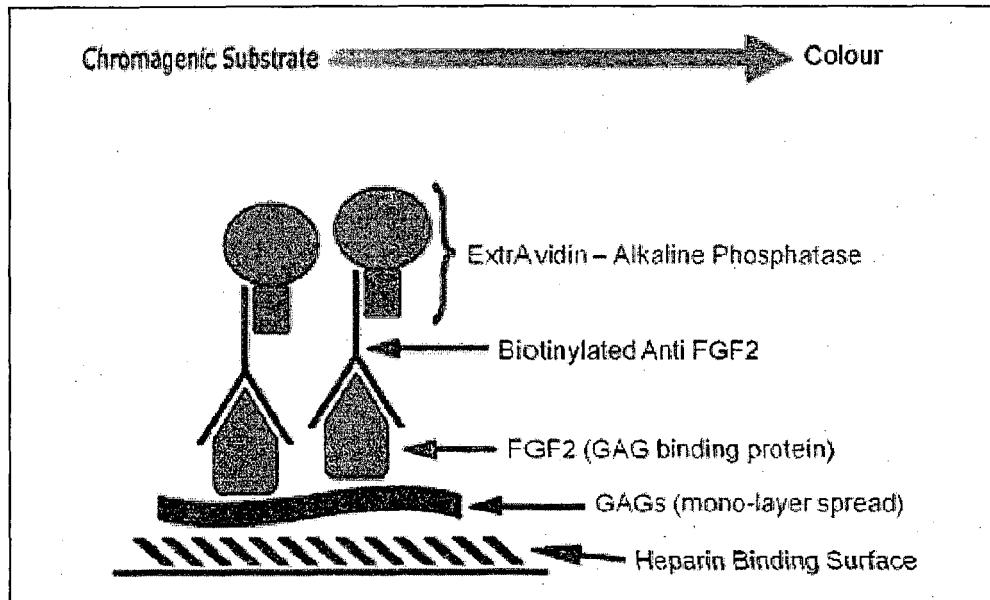


Figure 7

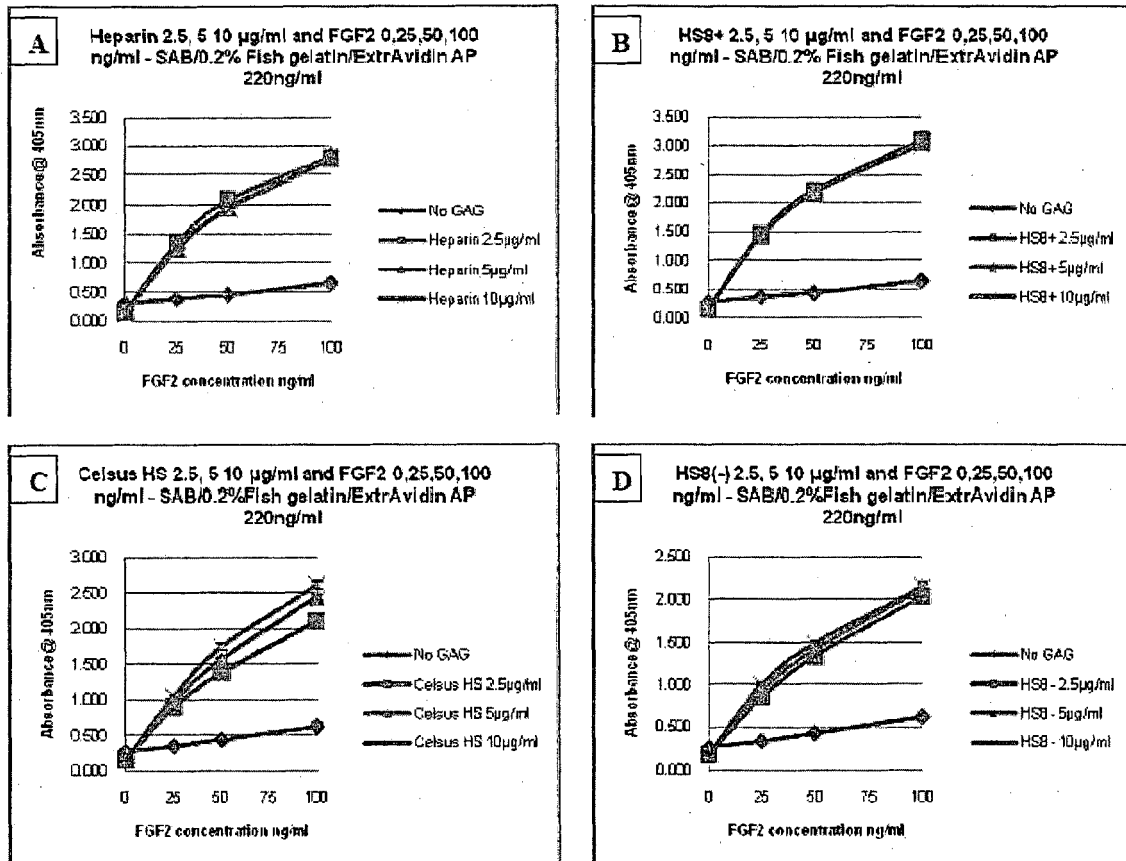


Figure 8

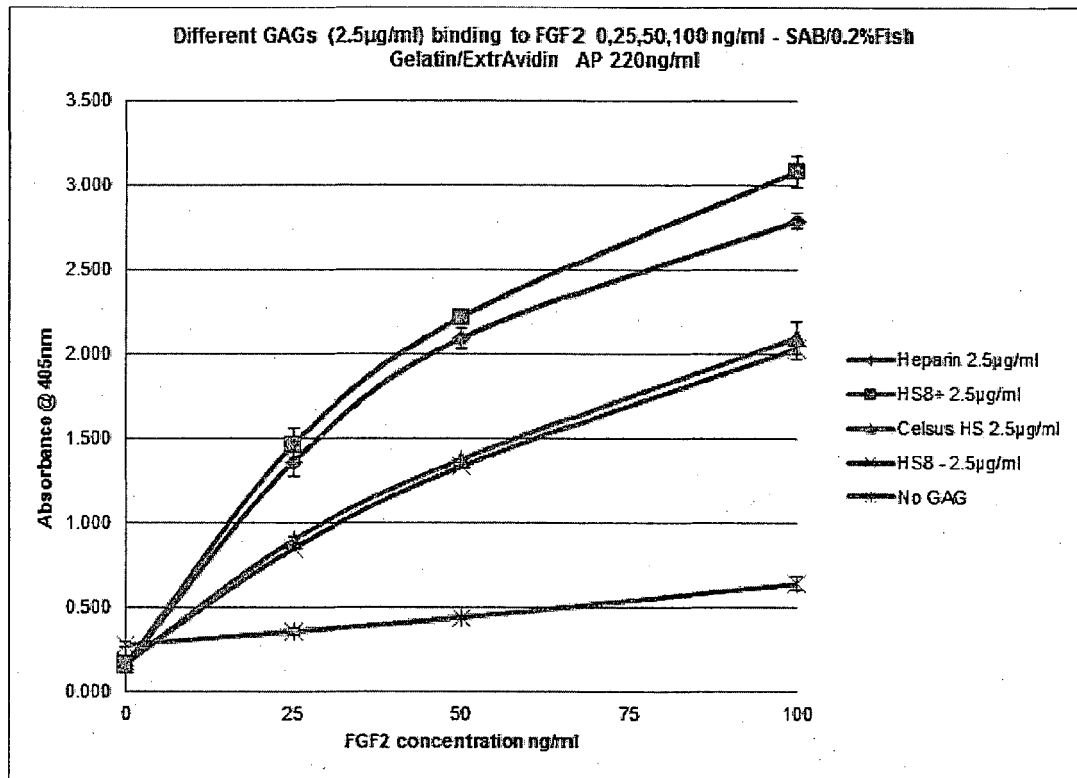


Figure 9

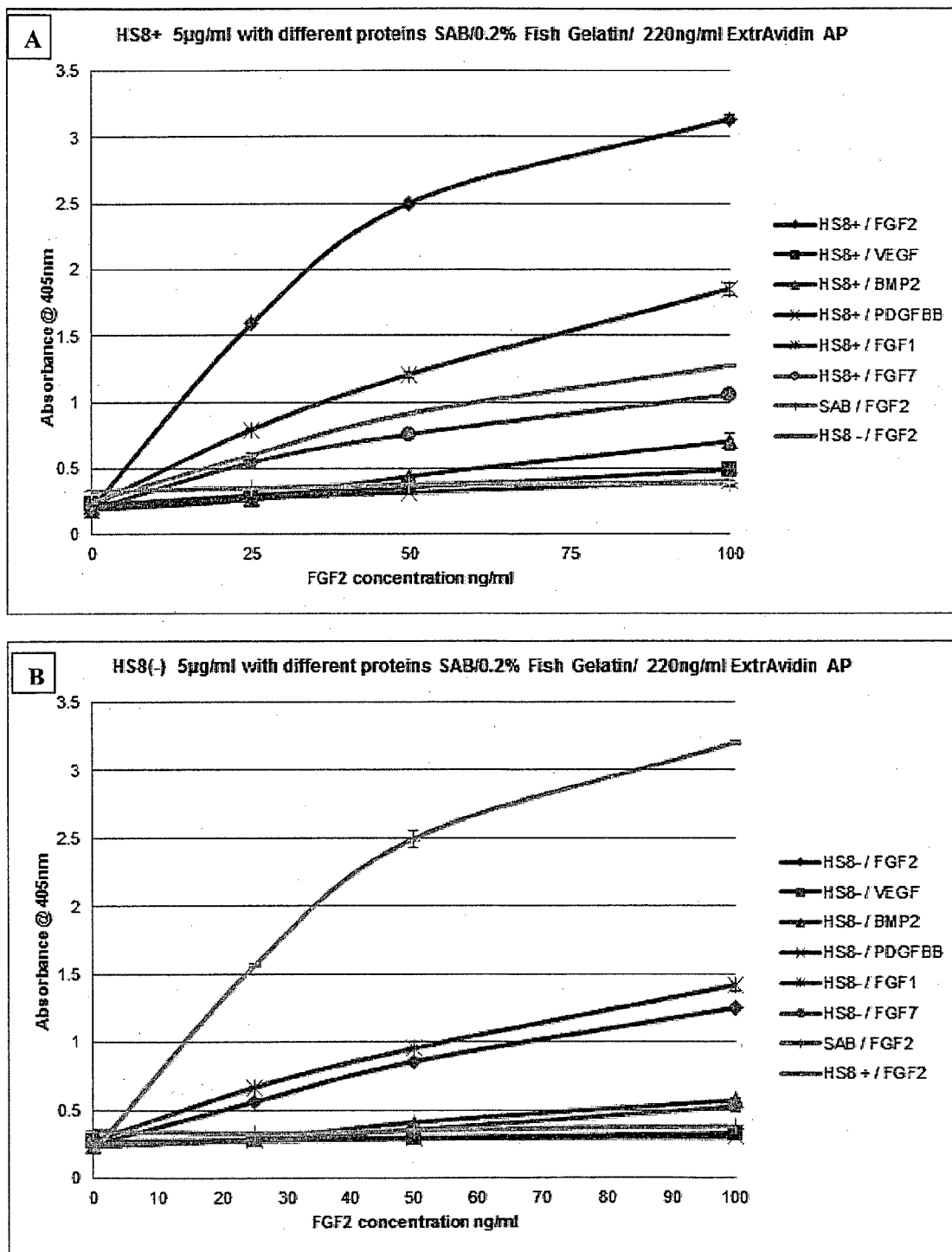


Figure 10

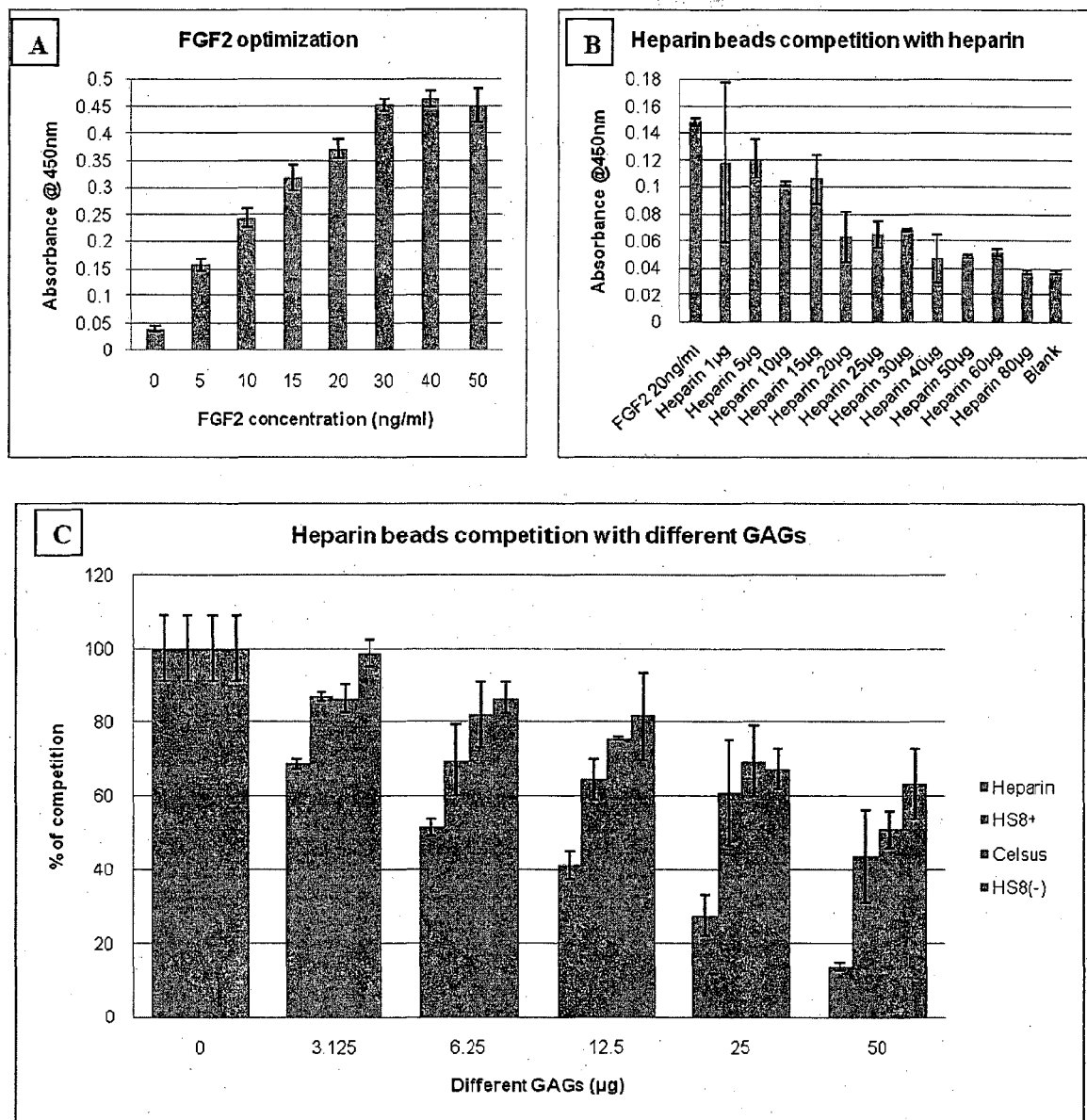


Figure 11

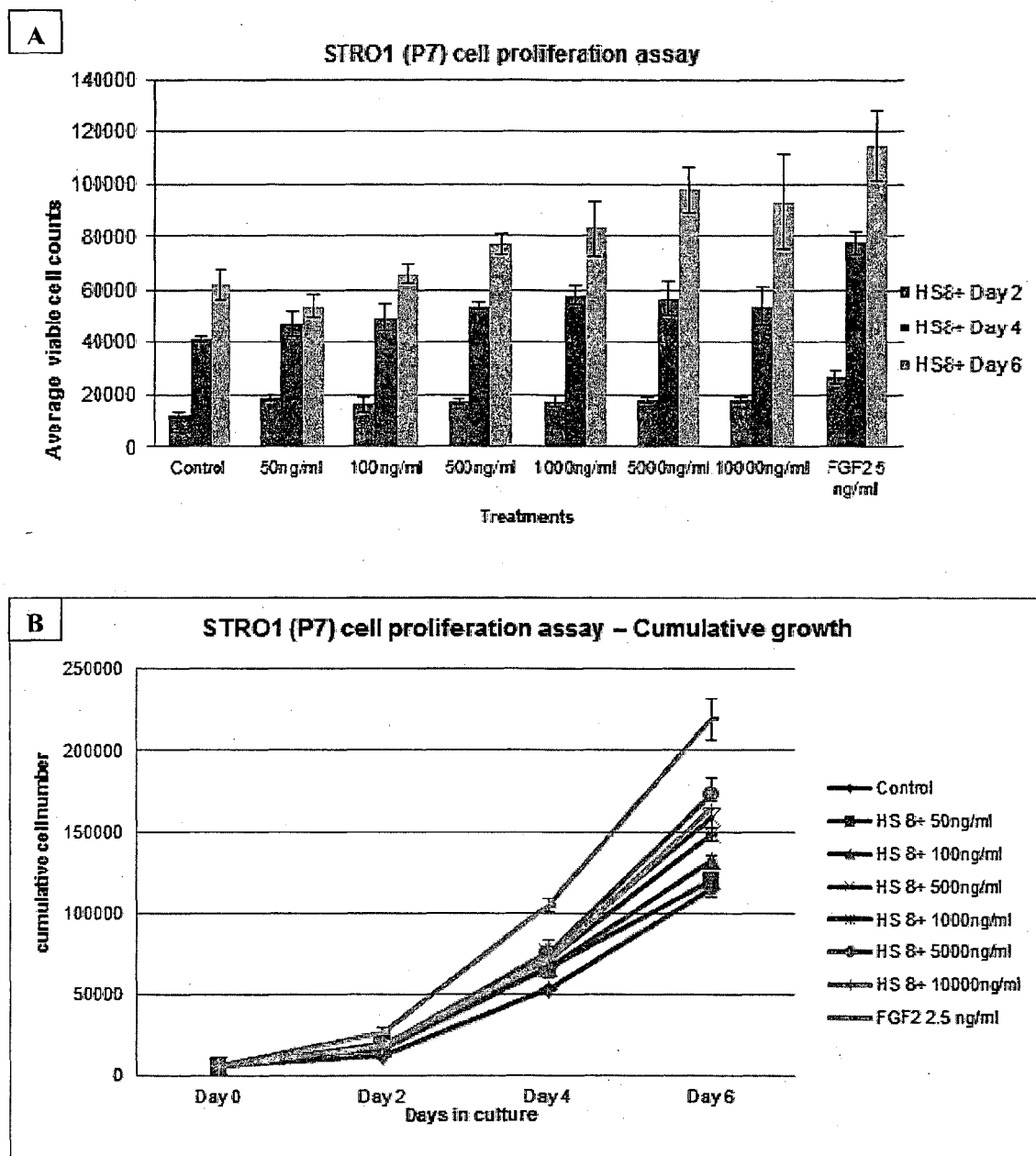


Figure 12

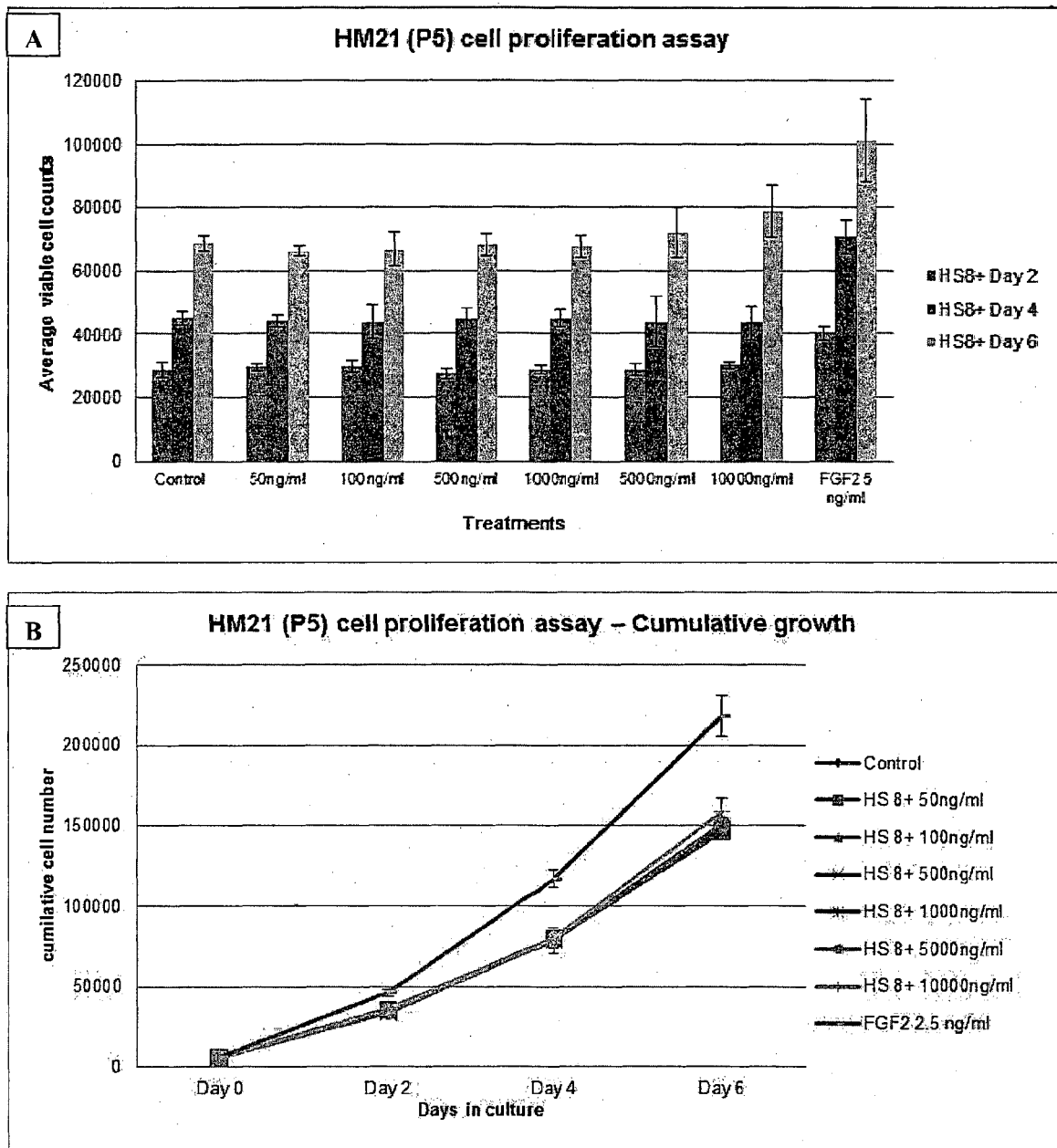
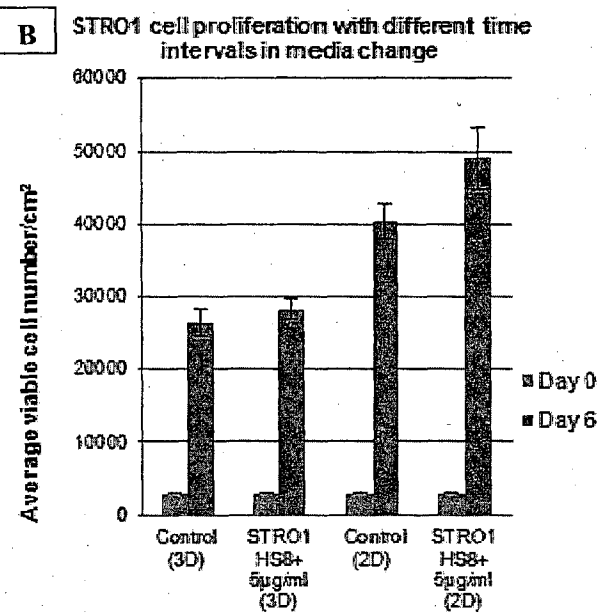
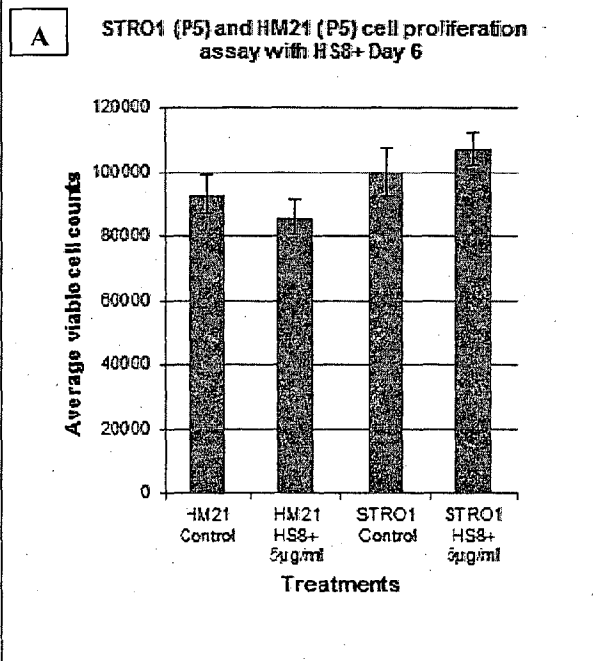


Figure 13



3D - Media change every 3 days,
2D - Media change every 2 days

Figure 14

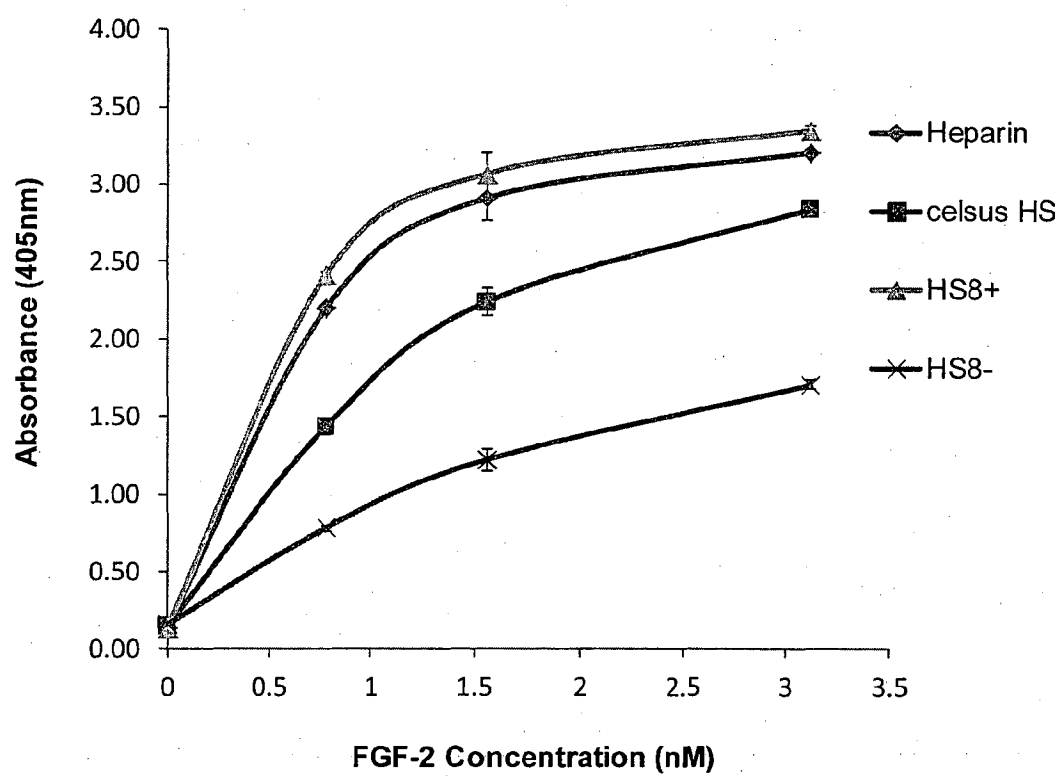


Figure 15

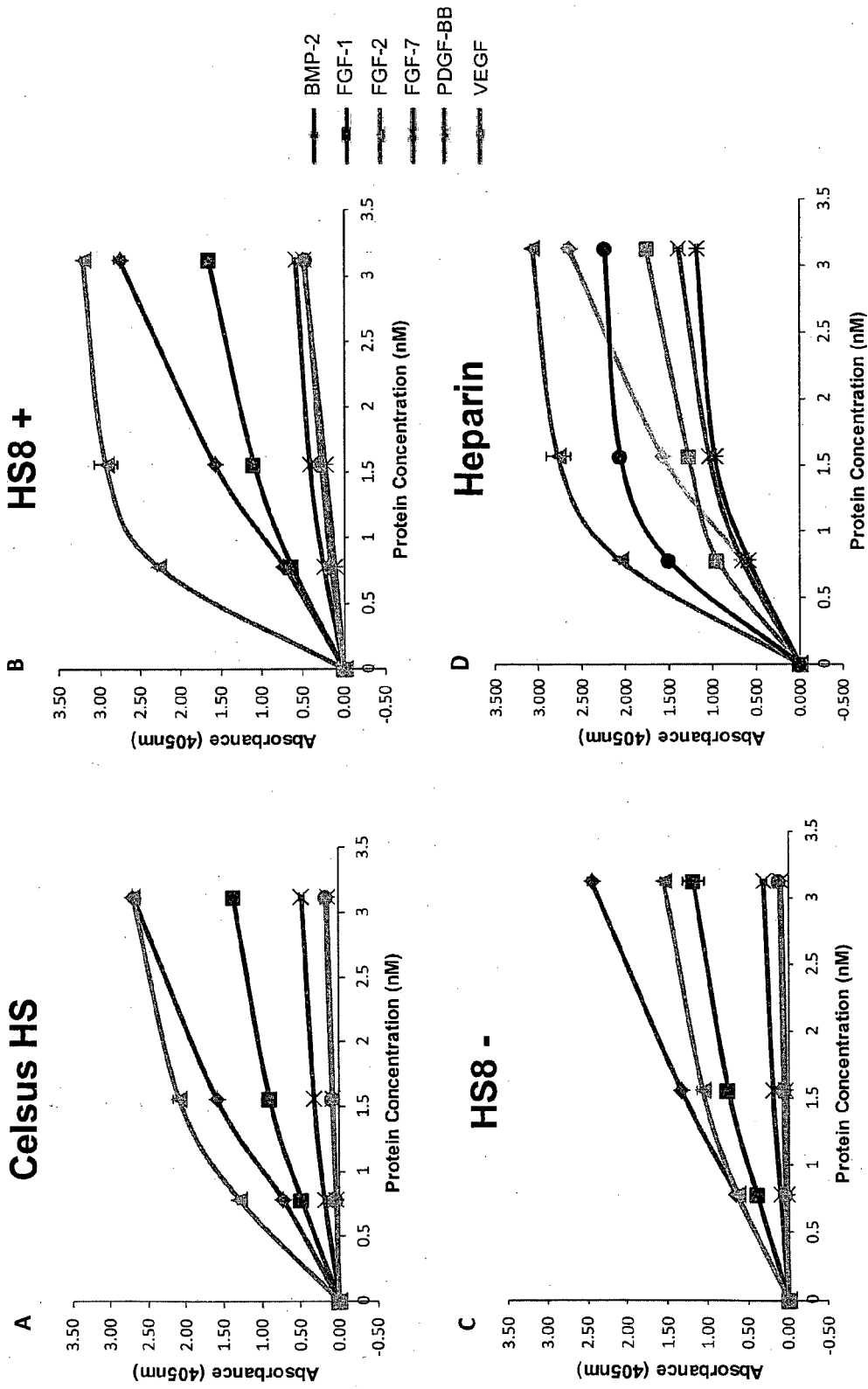


Figure 16

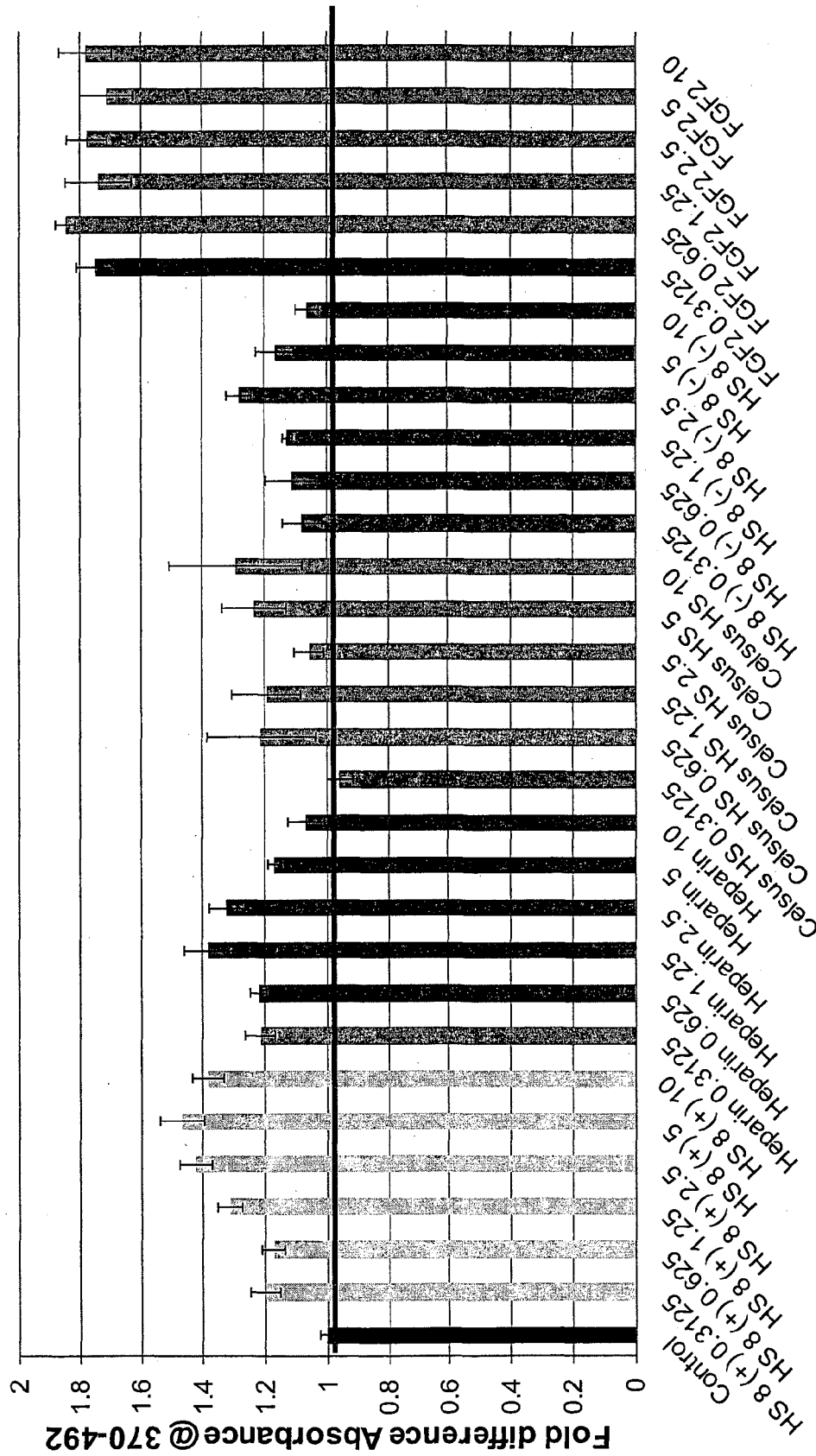


Figure 17

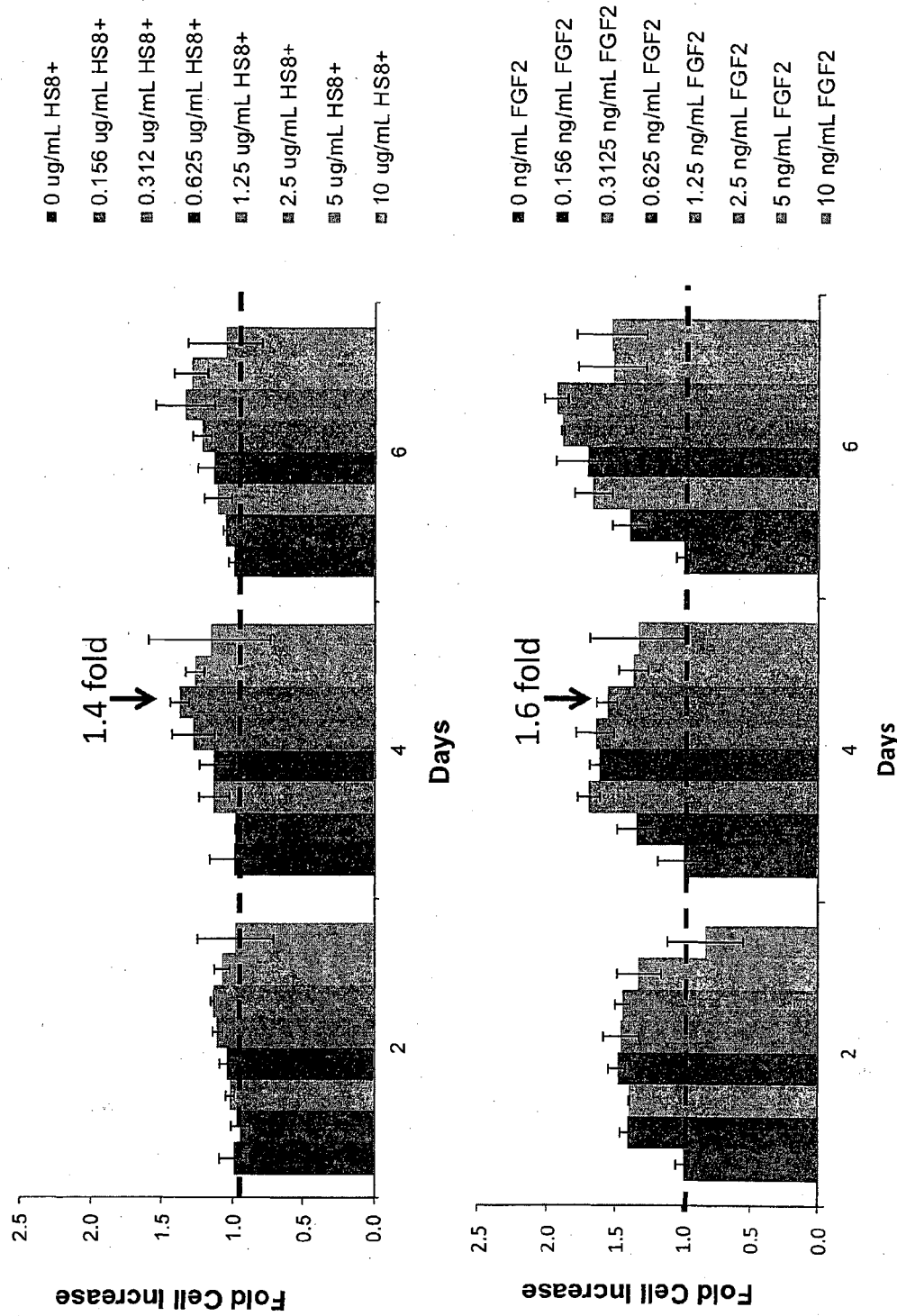


Figure 18

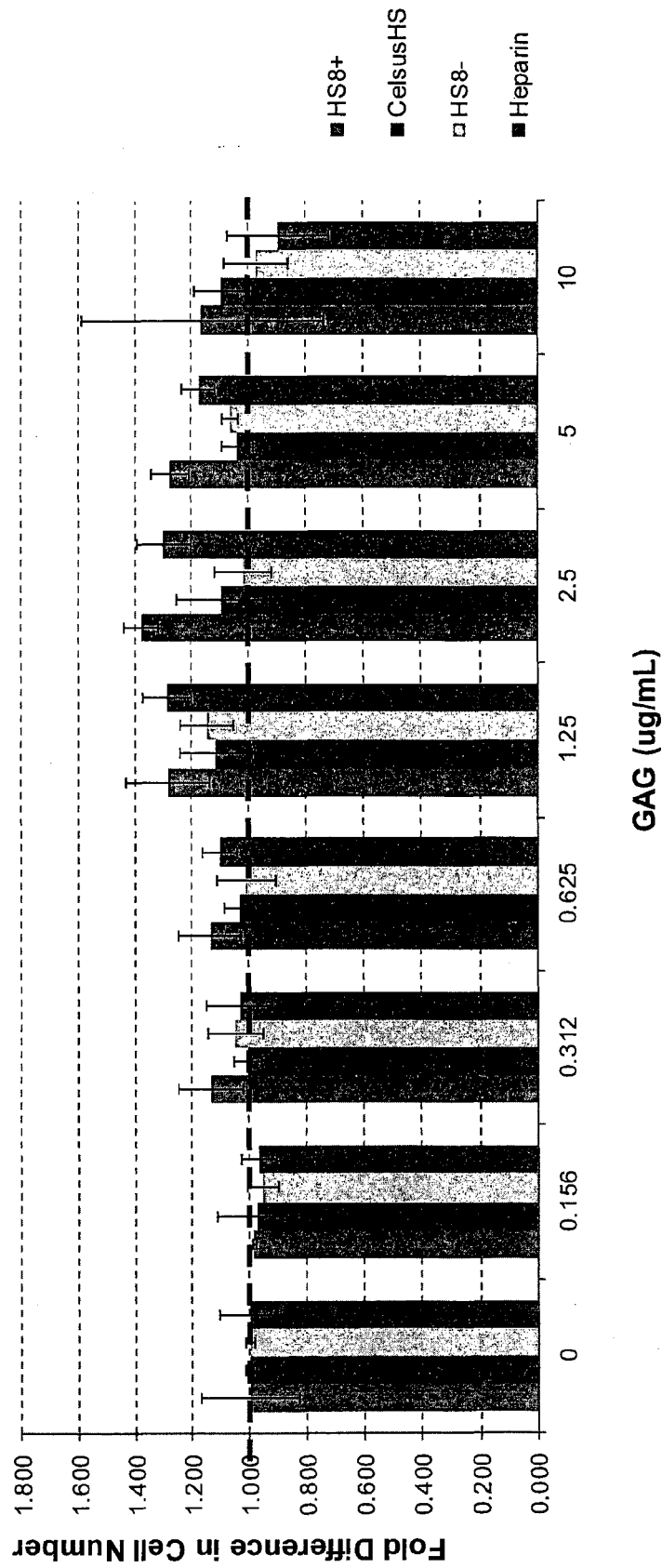


Figure 19

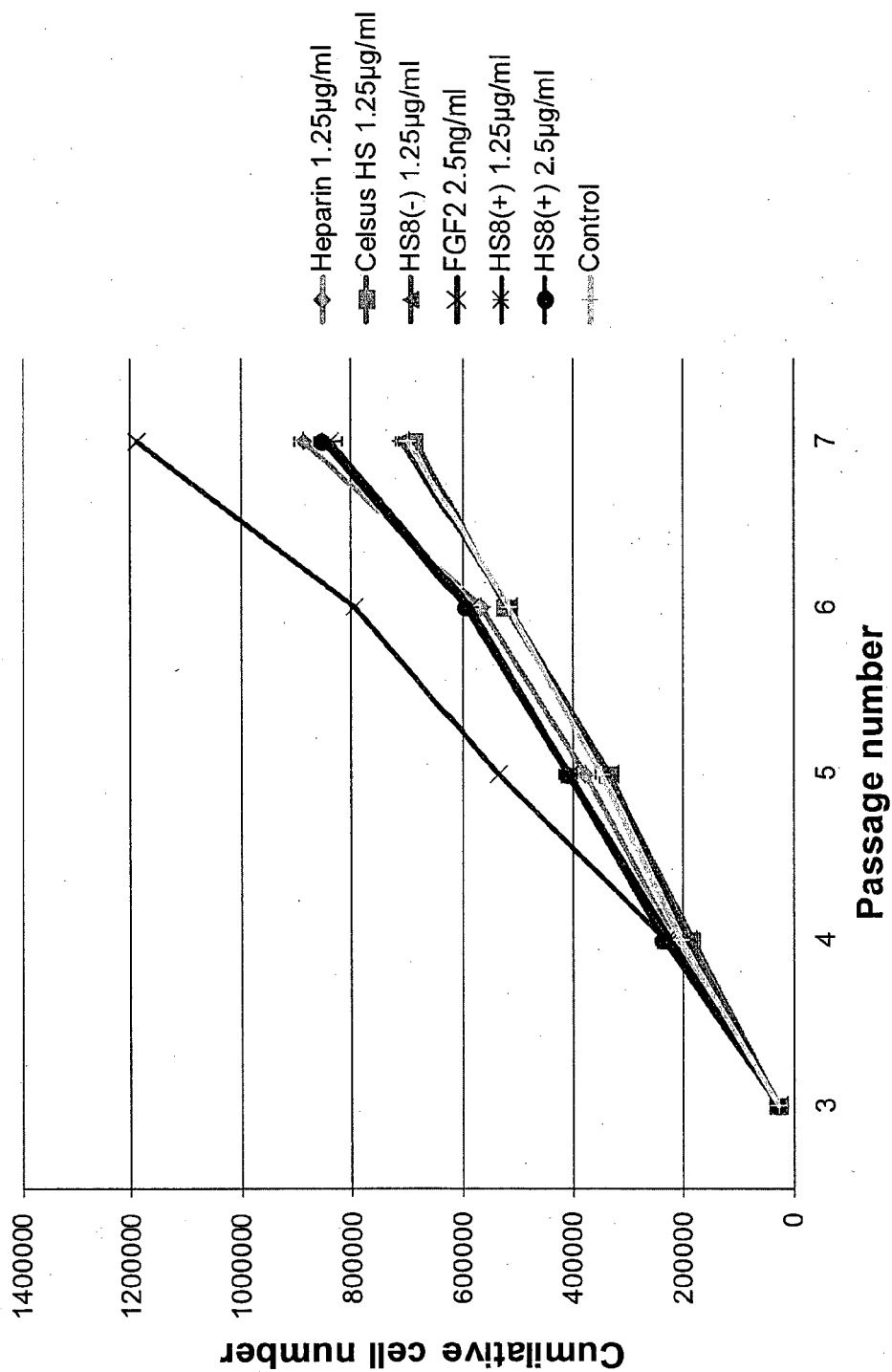


Figure 20

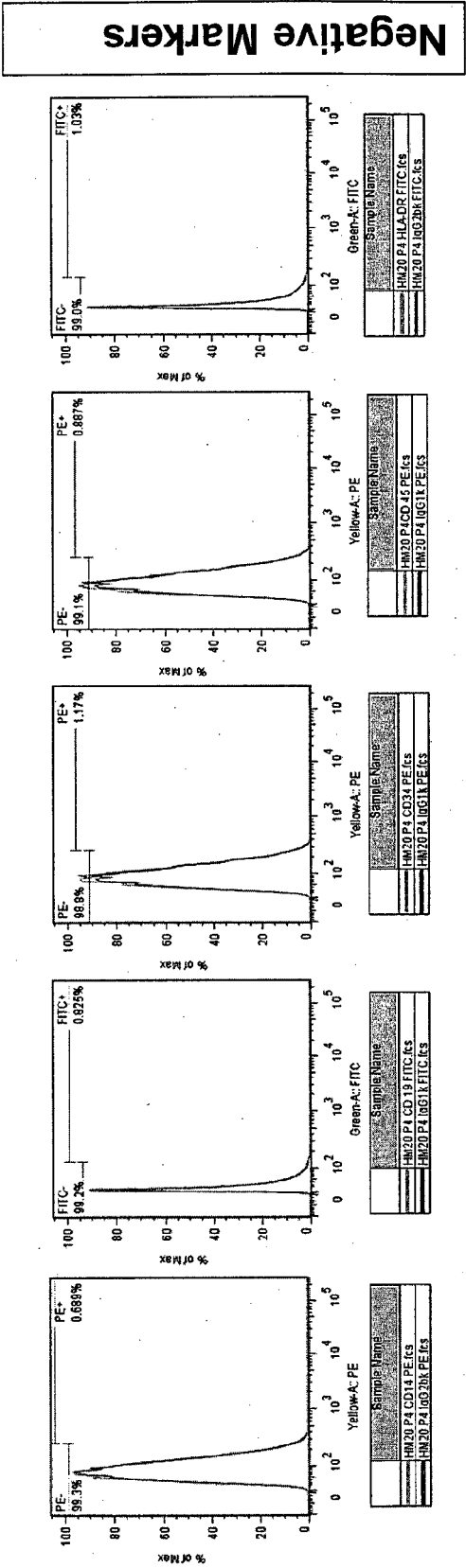


Figure 21A

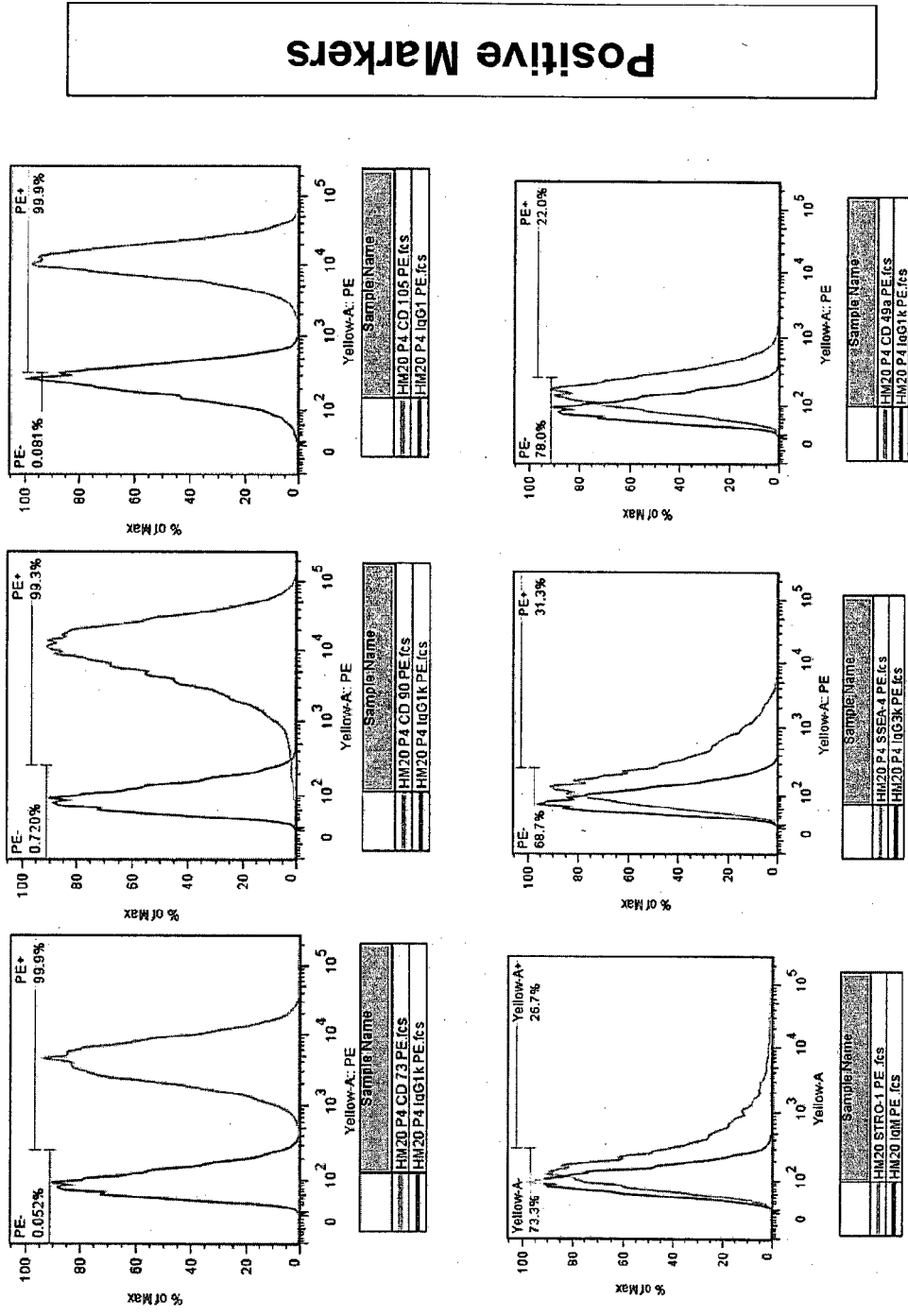


Figure 21B

Cell surface marker	P4 Control	P7 Control	P7* HS8(+)	P7** HS8(+)	P7* HS8(-)	P7* CHS	P7* Heparin	P7 # FGF-2
CD 14	0.784	0.74	0.502	0.82	4.19	0.813	0.503	0.961
CD 19	0.9725	0.718	1.05	0.825	1.36	1.43	0.937	0.815
CD 34	1.0225	0.625	0.899	0.554	1.04	0.859	0.867	1.05
CD 45	0.9235	0.745	0.797	0.817	1.15	0.914	0.728	1.1
HLA-DR	1.045	0.981	1.16	1.27	0.924	1.13	0.971	1.3
CD 73	99.95	99.9	99.9	99.9	100	100	99.8	99.8
CD 90	99.6	99.9	100	100	100	100	99.5	90.8
CD 105	99.95	99.9	99.9	99.9	100	99.9	99.4	99.9
CD49a	34	51.1	50.7	61.4	67.5	84.1	52.5	28
SSEA-4	33.65	57.5	66.1	71	12.9	63.2	73.4	83.7
STRO-1	24.1	33.7	25.3	34.9	28	26.2	34.5	3.58

P= Passage, * with a dose of 1.25µg/ml, ** with a dose of 2.5µg/ml and # with a dose of 2.5ng/ml

Figure 22

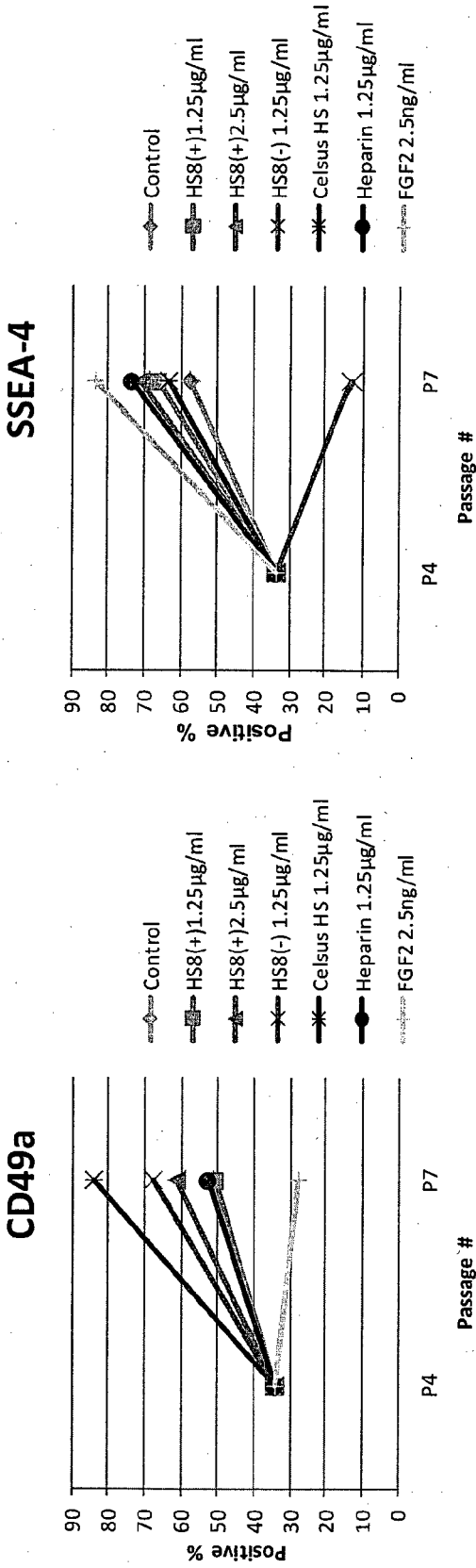


Figure 23B

Figure 23A

STRO-1

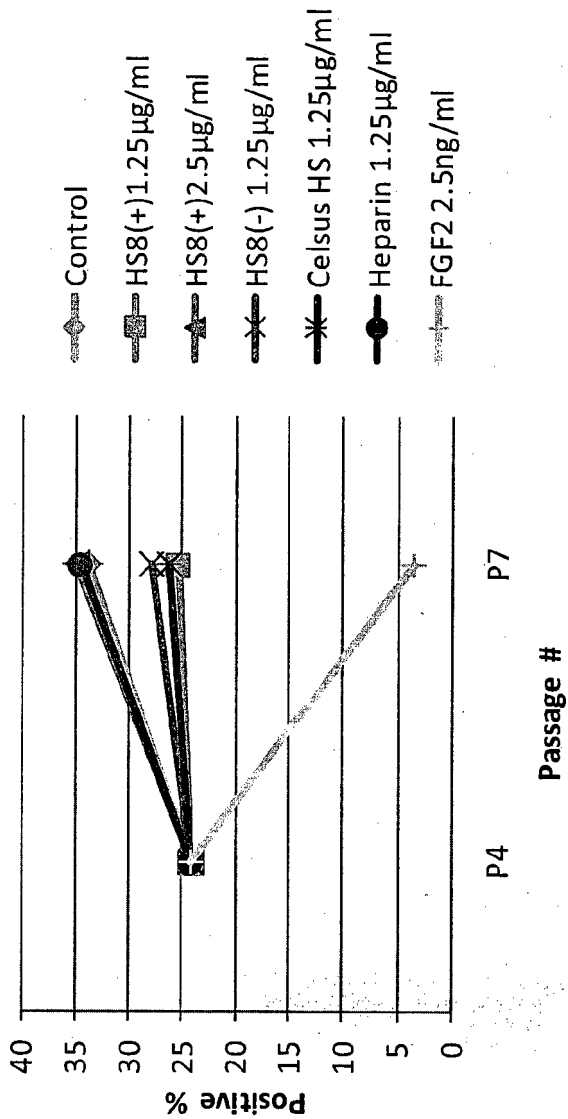


Figure 23C

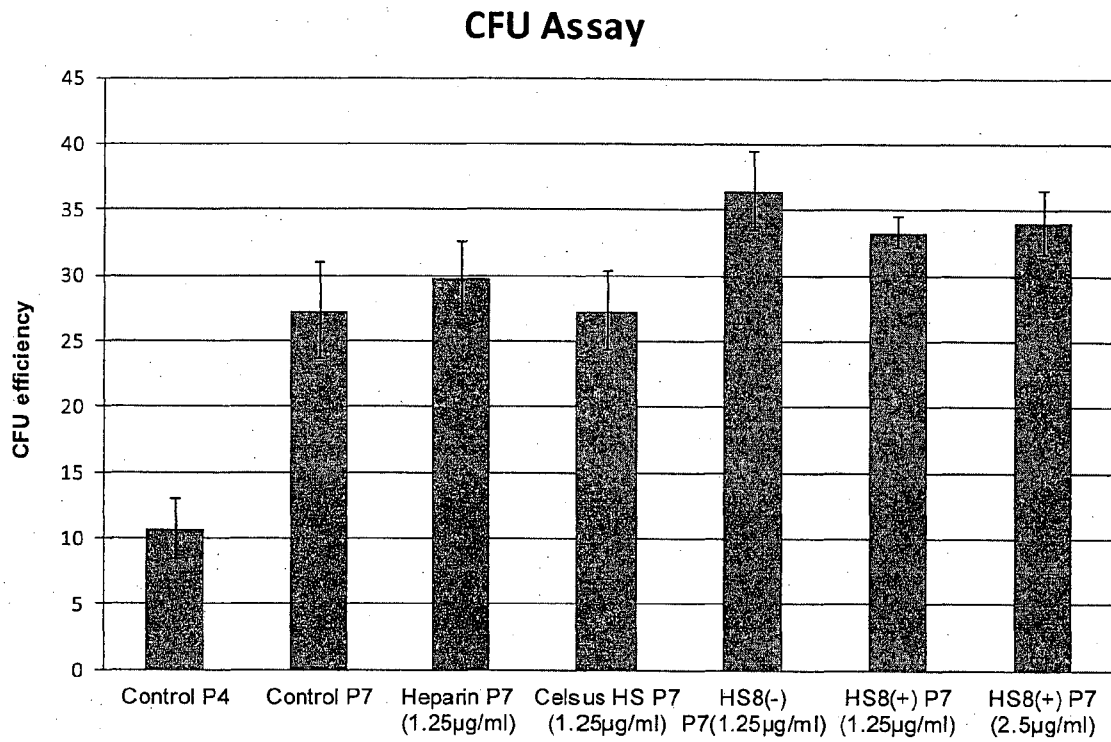


Figure 24A

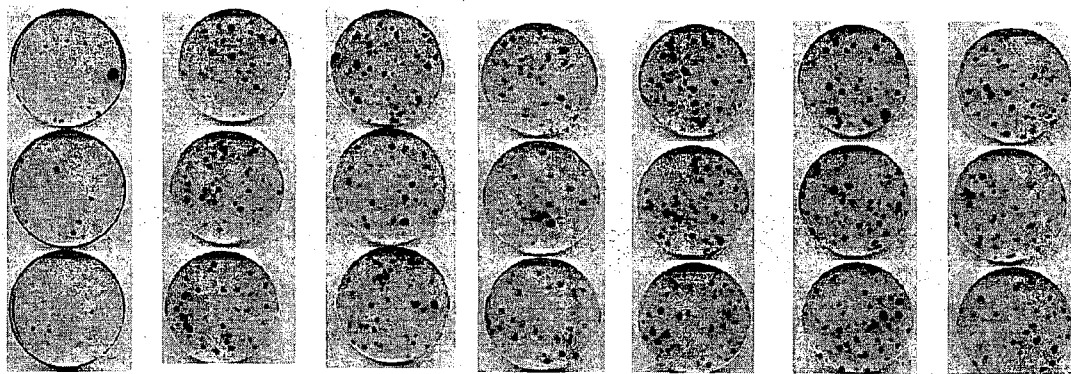
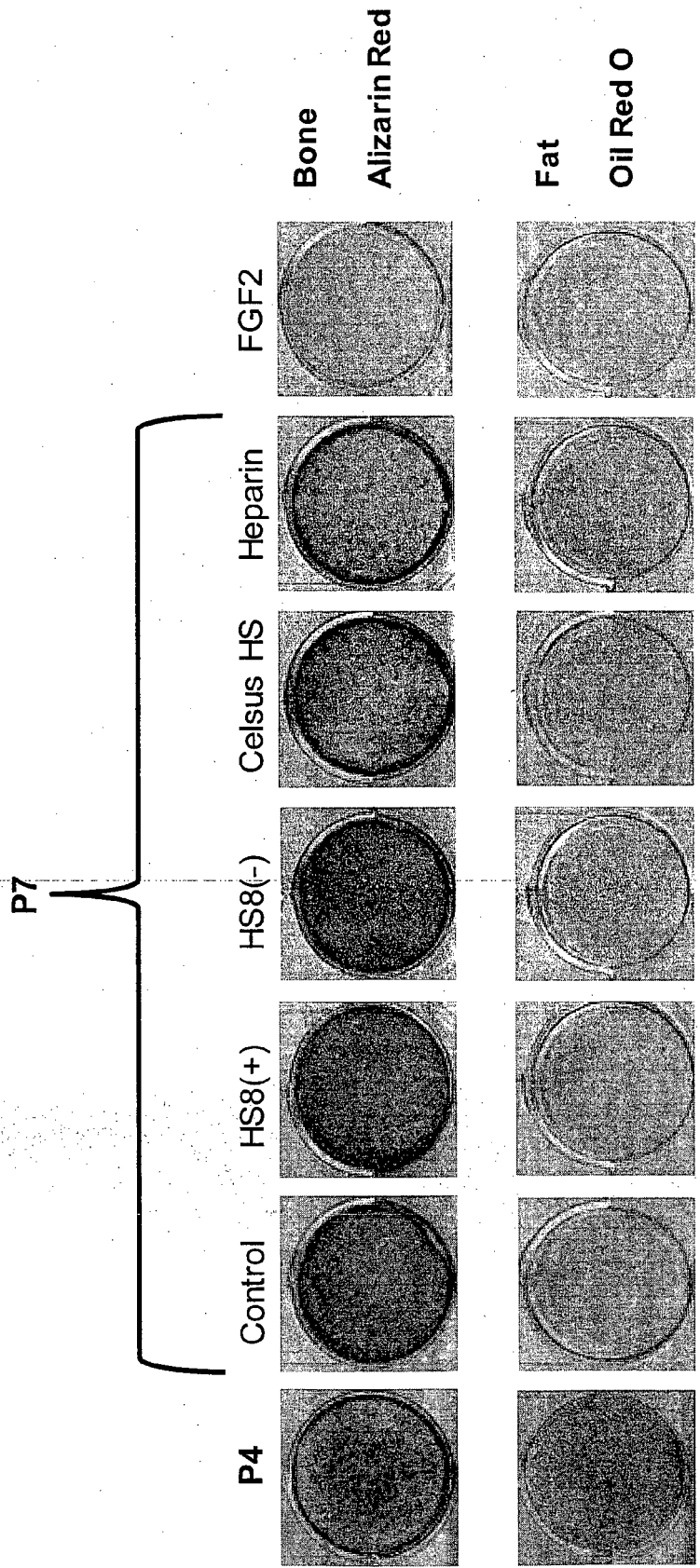


Figure 24B



Human Mesenchymal Stem Cells

Figure 25

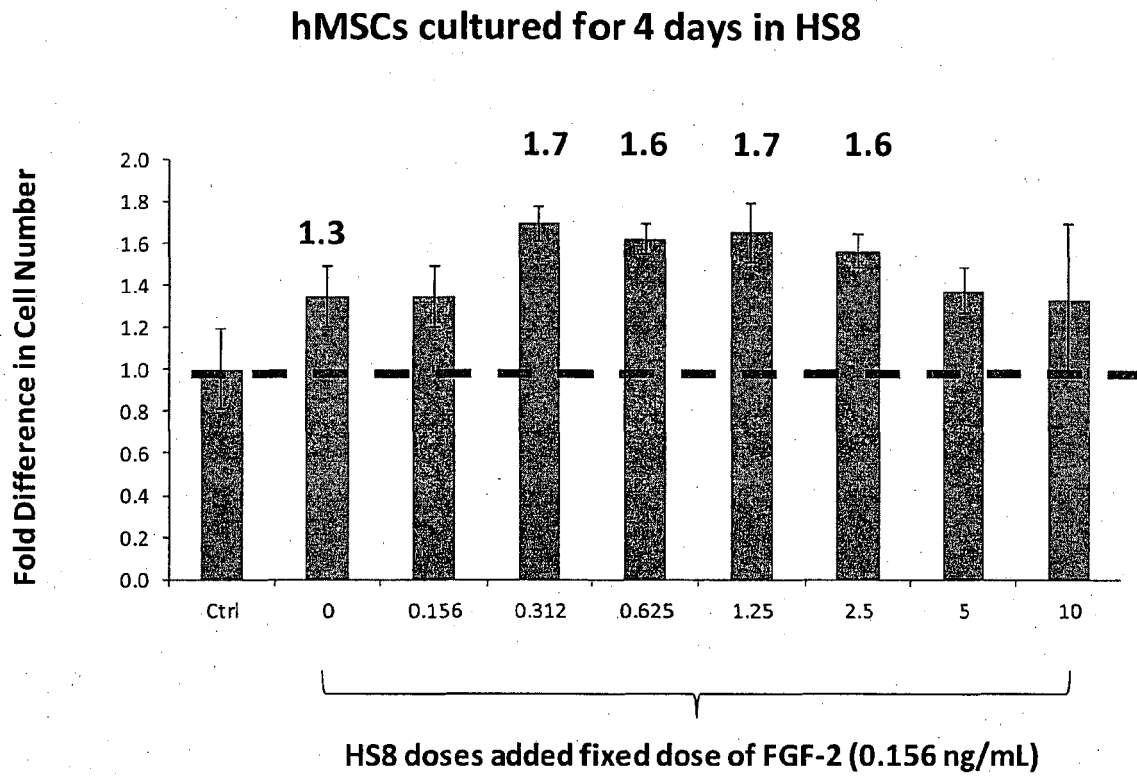


Figure 26

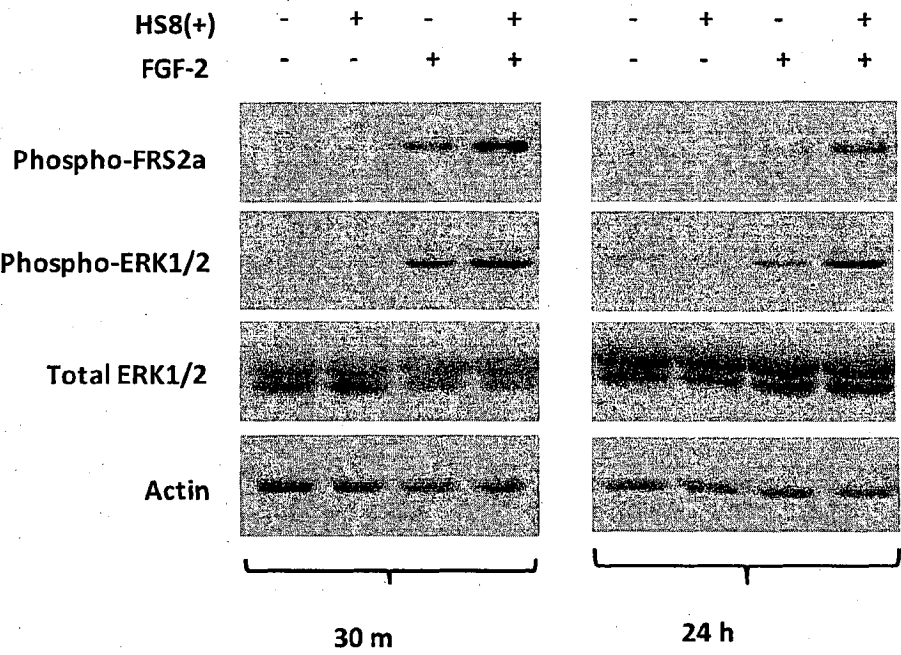


Figure 27

MVGVGGGDVE DVTPRPGGCQ ISGRGARGCN GIPGAAWEA ALPRRRPRRH PSVNPRSRAA
GSPRTRGRRT EERPSGSRLG DRGRGRALPG GRLGGRGRGR APERVGGRGR GRGTAAPRAA
PAARGSRPGP AGTMAAGSIT TLPALPEDGG SGAFPPGHFK DPKRLYCKNG GFFLRIHPDG
RVDGVREKSD PHIQLQLQAE ERGVVSIKGV CANRYLAMKE DGRLLASKCV TDECFFFERL
ESNNYNTYRS RKYTSWYVAL KRTGQYKLGs KTGPgQKAIL FLPMsAKS

Figure 28

	%E10 GAG
DISACCHARIDE	
IdoA/GlcA-AMann _R	12.9
IdoA(2S)-AMann _R	53.4
GlcA-AMann _R (6S)	10.25
IdoA-AMann _R (6S)	3.4
IdoA(2S)-AMann _R (6S)	18.7
GlcA(2S)-AMann _R	1.0
GlcA-AMann _R (3S)	0.30
GlcA-AMann _R (3,6S)	0.15
UNKNOWN	0.0

Figure 29

PEAK NUMBER	DISACCHARIDE	% in E10 GAG
1	Δ HexUA- GlcNAc	44.8
3	Δ HexUA- GlcNSO ₃	21.5
2	Δ HexUA- GlcNAc(6S)	8.0
7	Δ HexUA(2S)- GlcNAc	2.4
4	Δ HexUA- GlcNSO ₃ (6S)	4.0
5	Δ HexUA(2S)- GlcNSO ₃	12.4
8	Δ HexUA(2S)- GlcNAc(6S)	0.2
6	Δ HexUA(2S)- GlcNSO ₃ (6S)	4.1
9	unknown	2.4

Figure 30

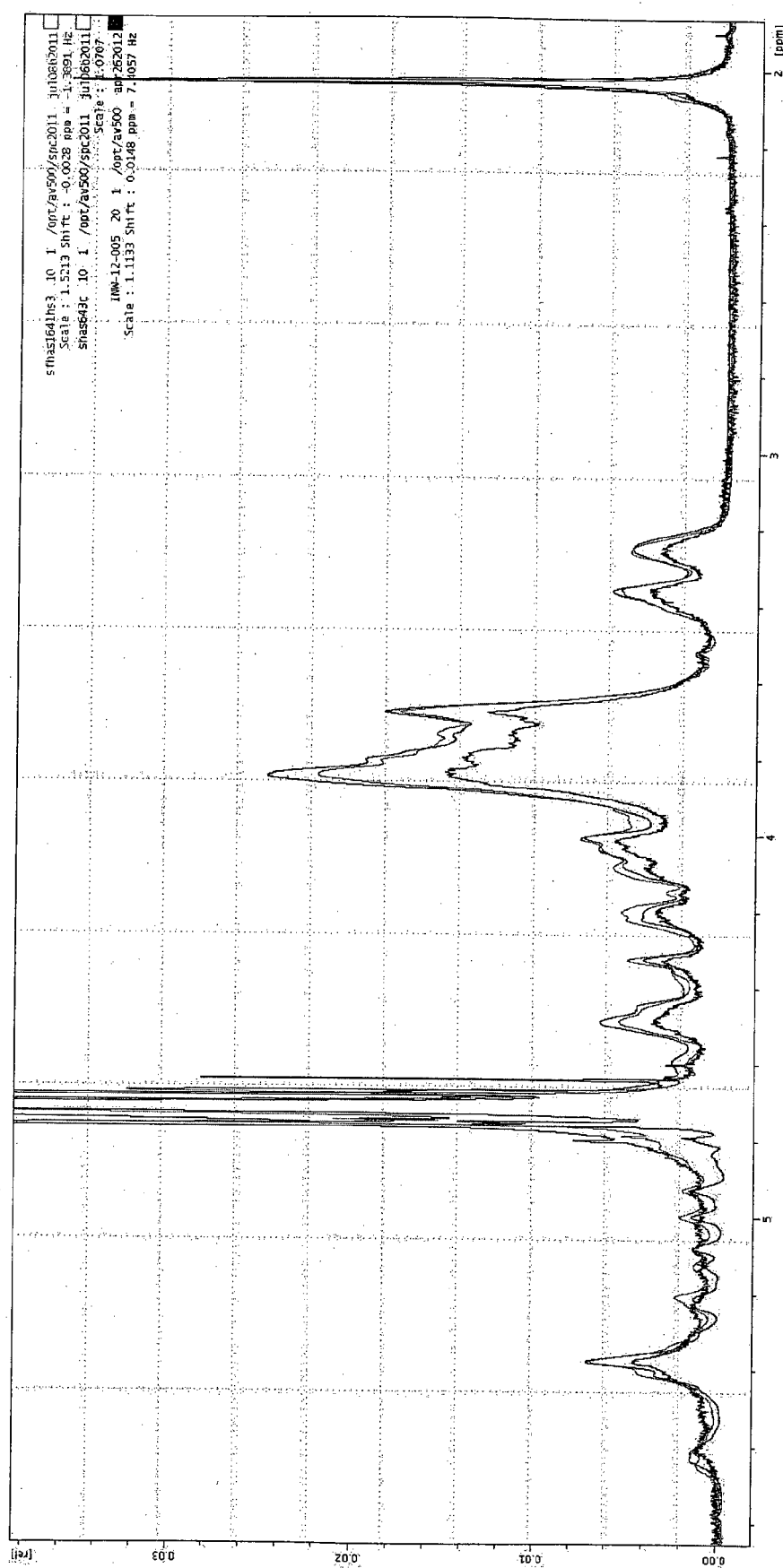


Figure 31

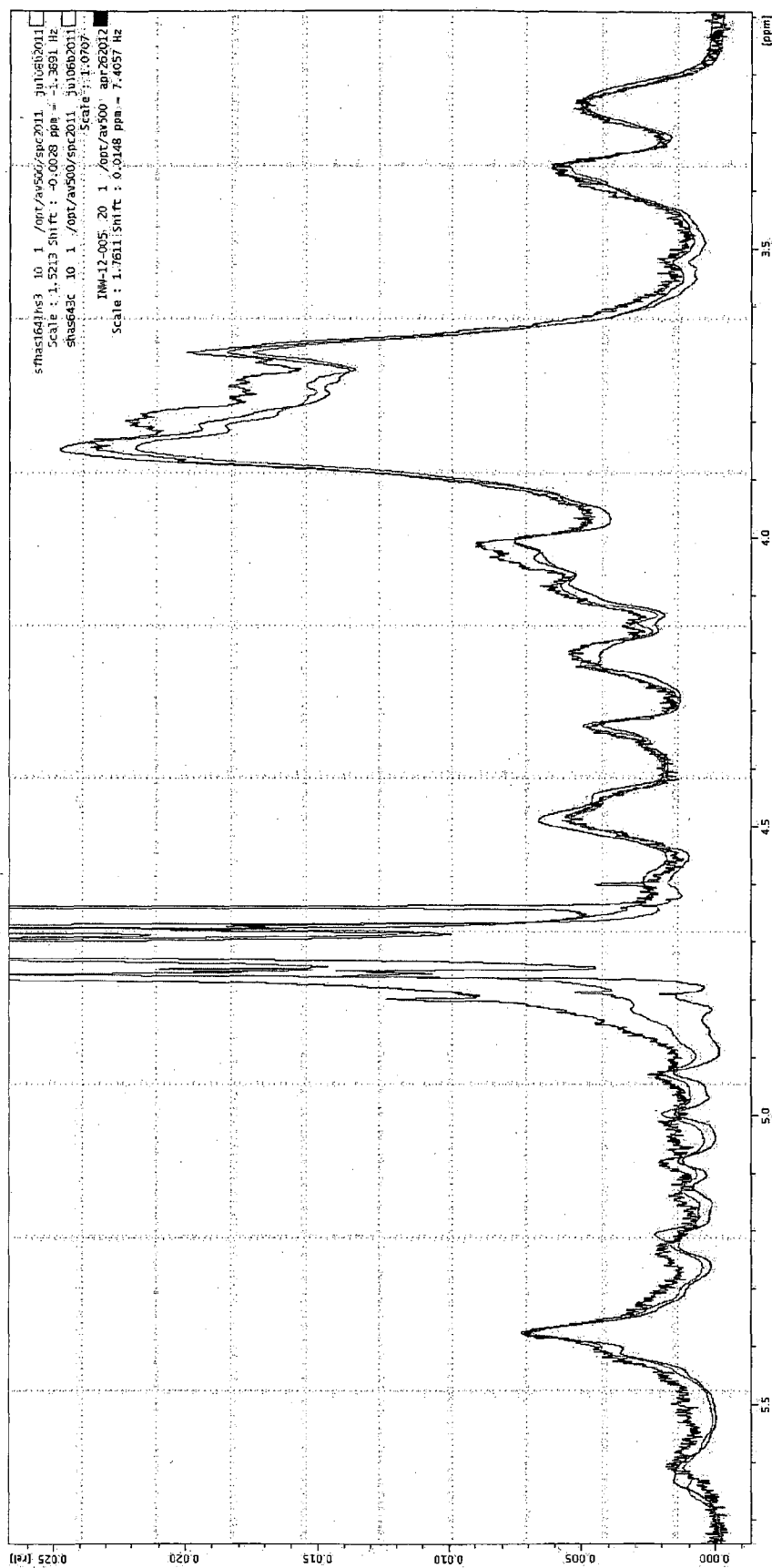


Figure 32

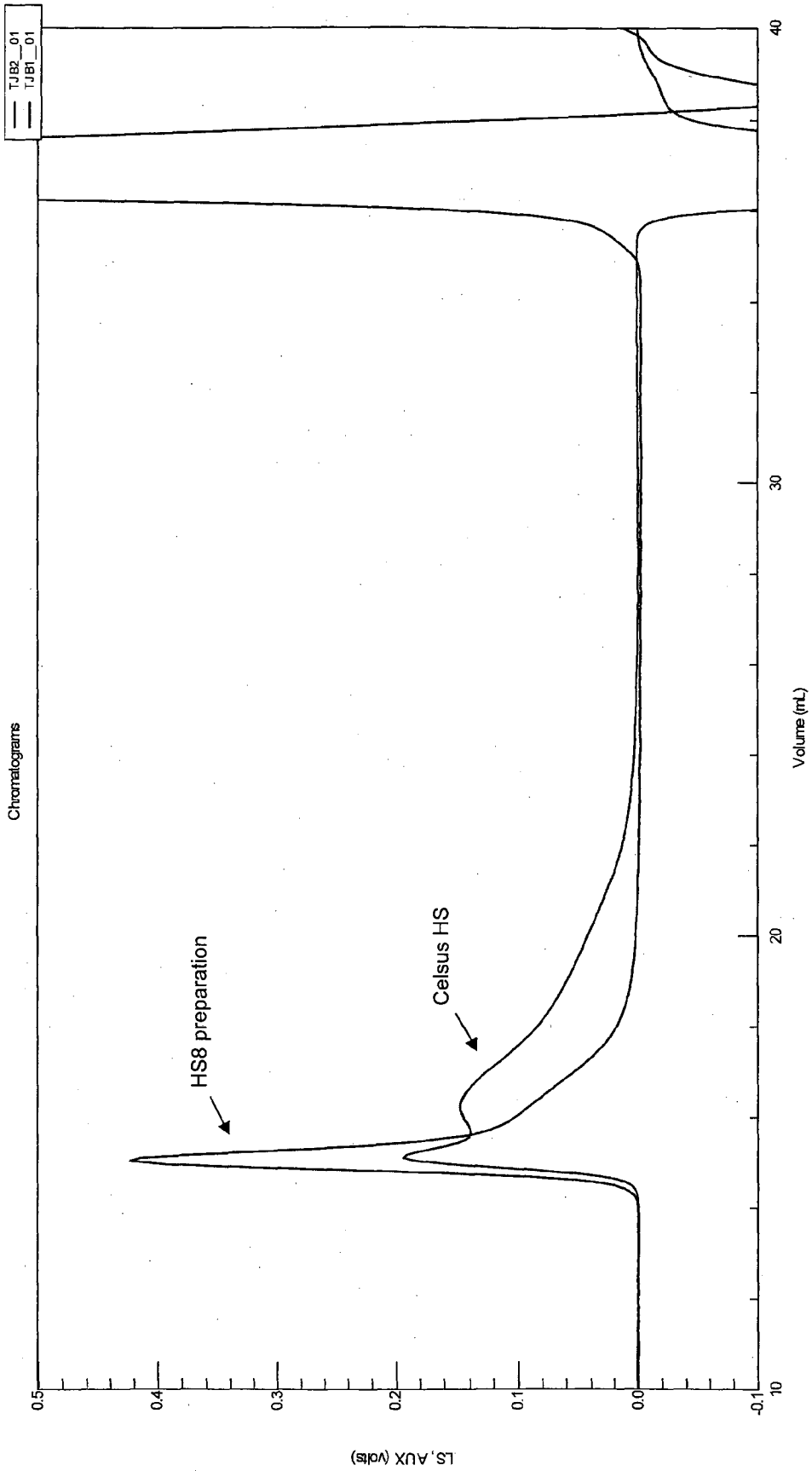


Figure 33

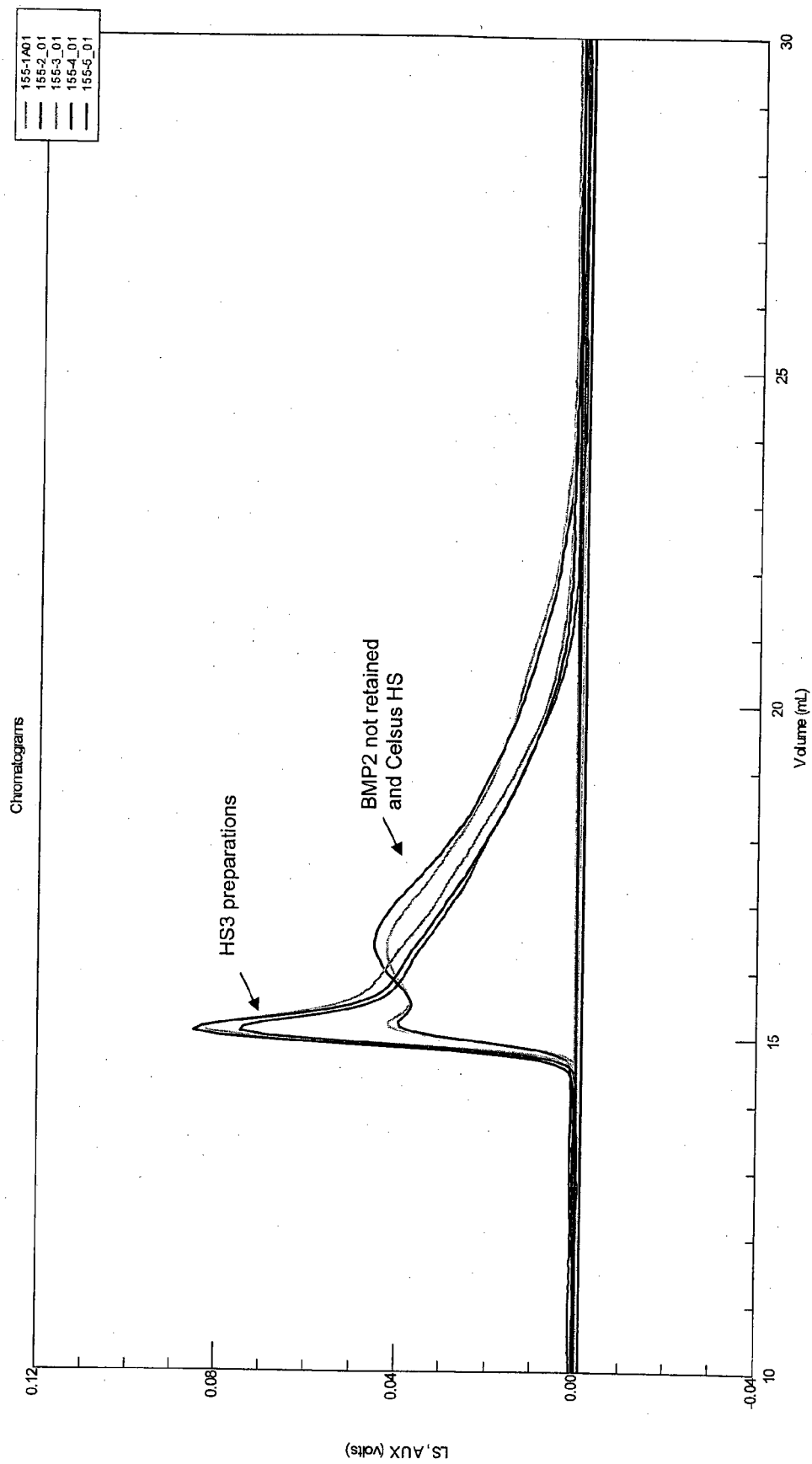


Figure 34

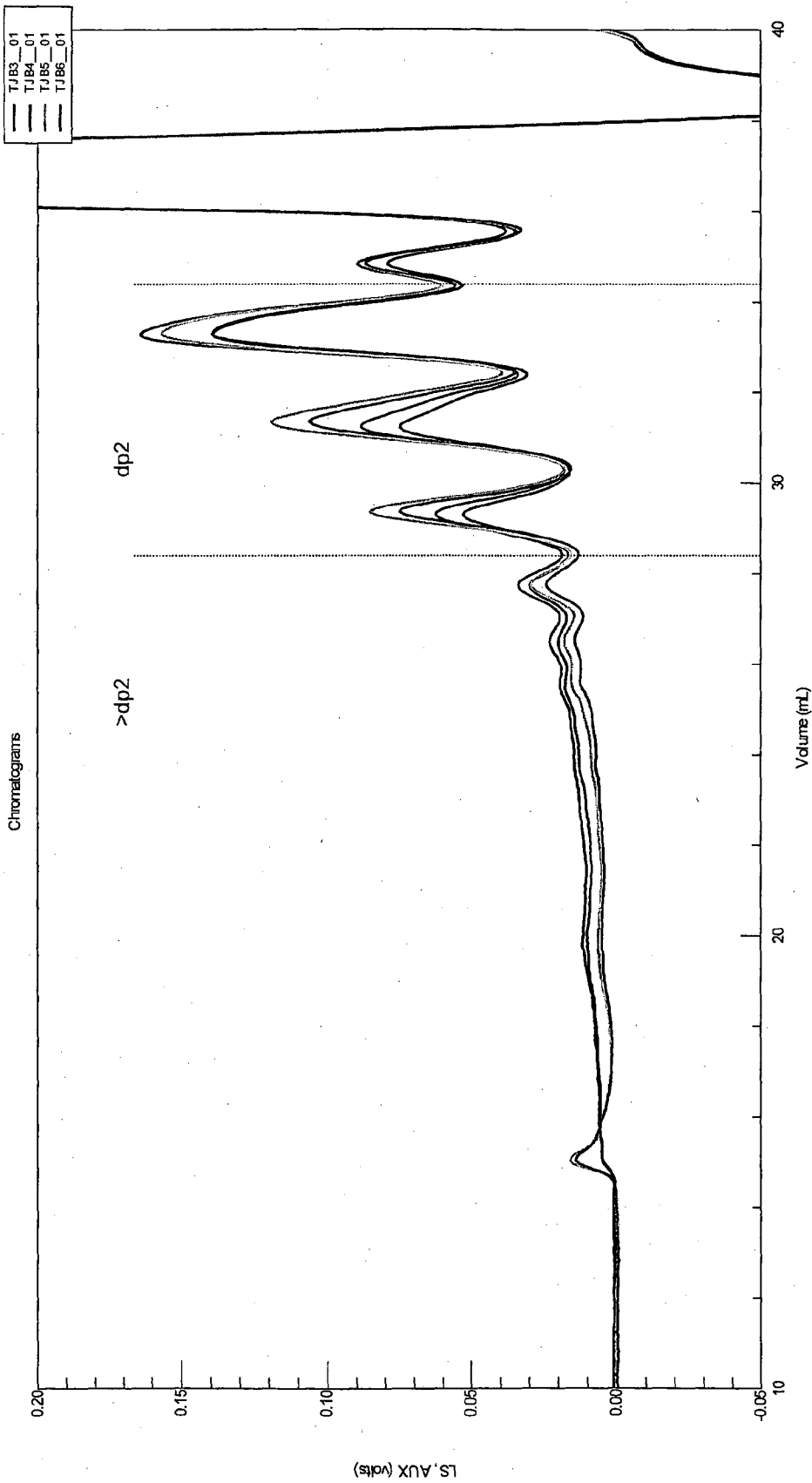


Figure 35

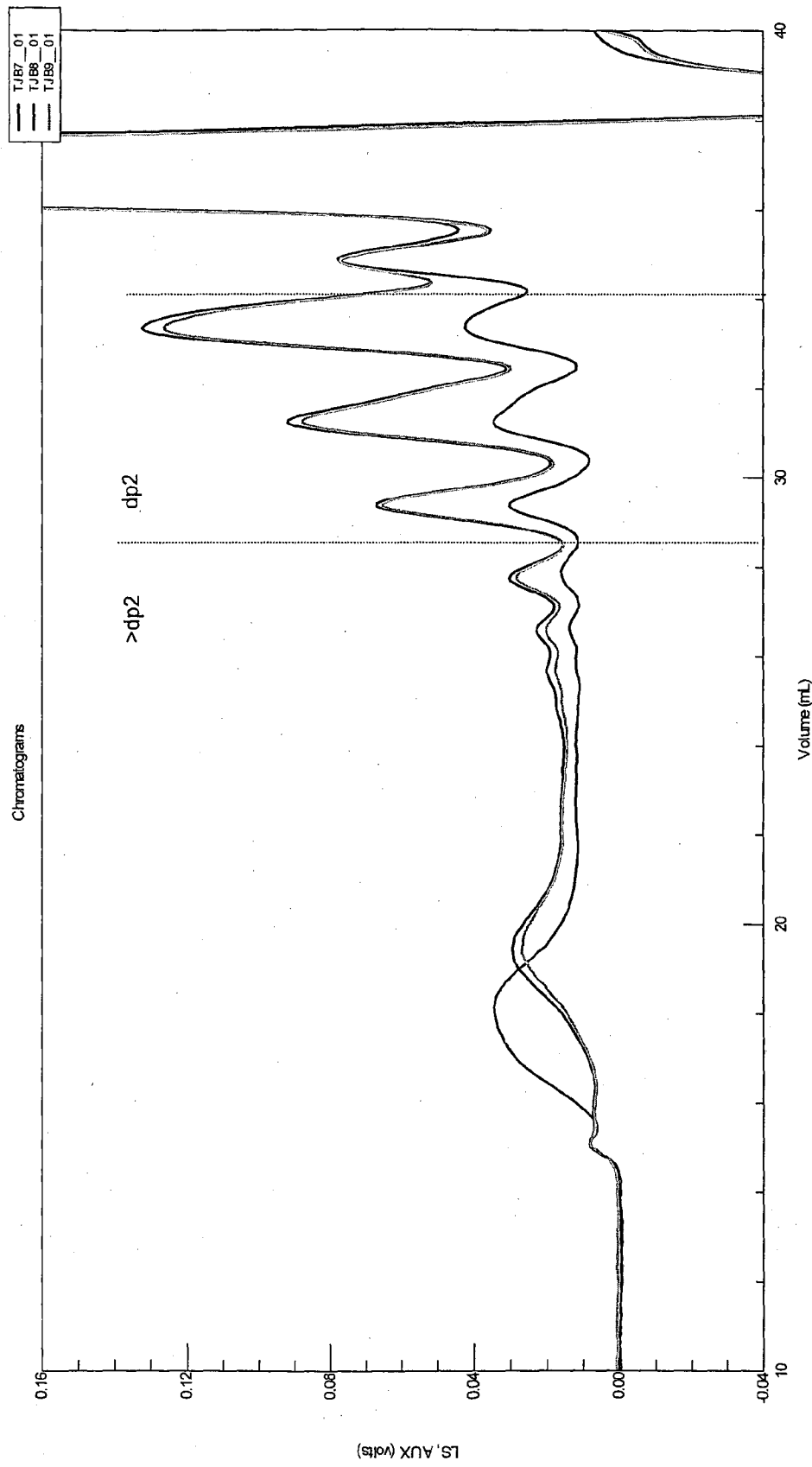


Figure 36

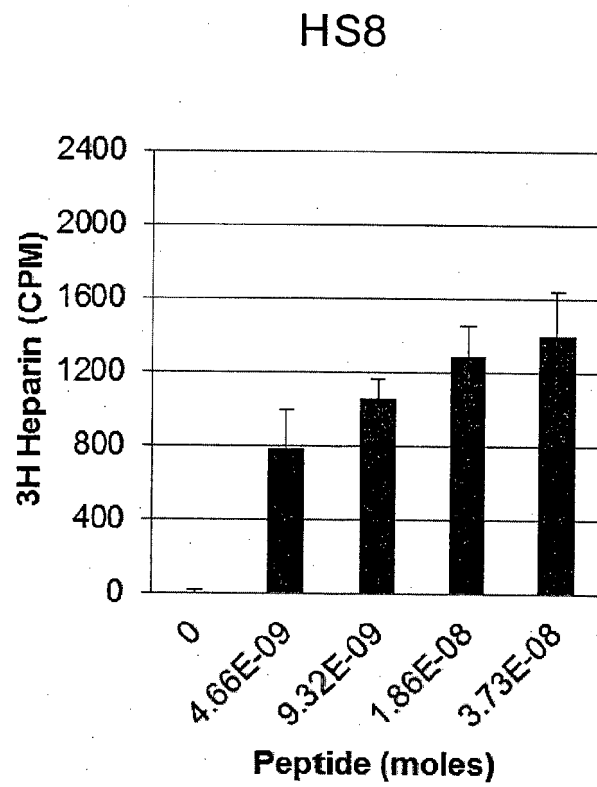


Figure 37

FGF2-HBD peptide affinity to heparin

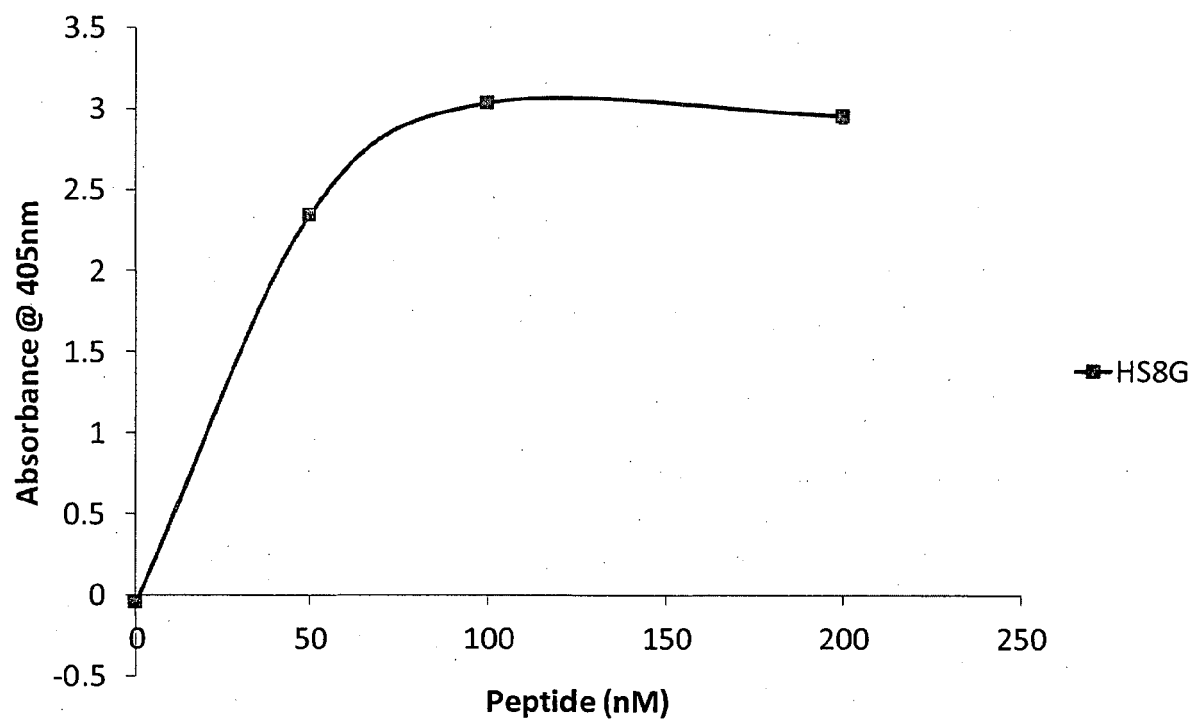


Figure 38

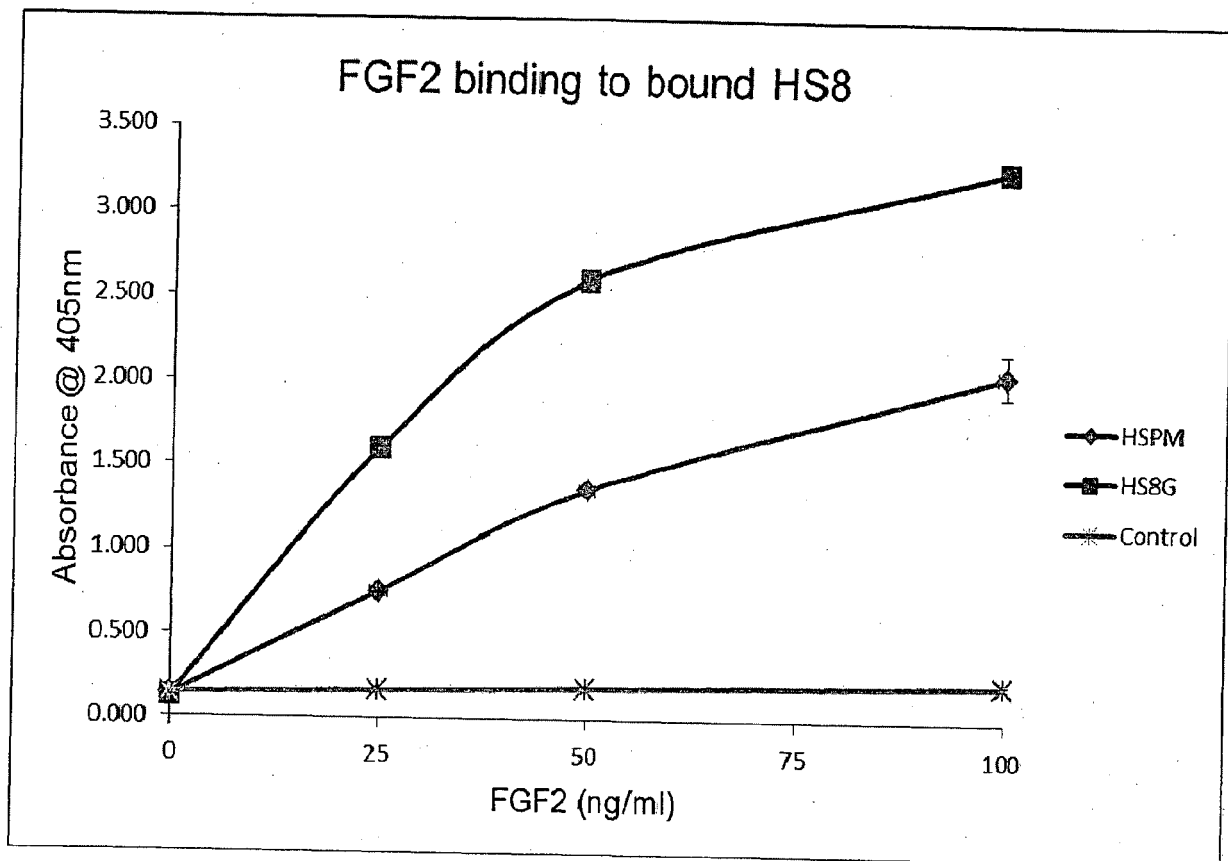


Figure 39

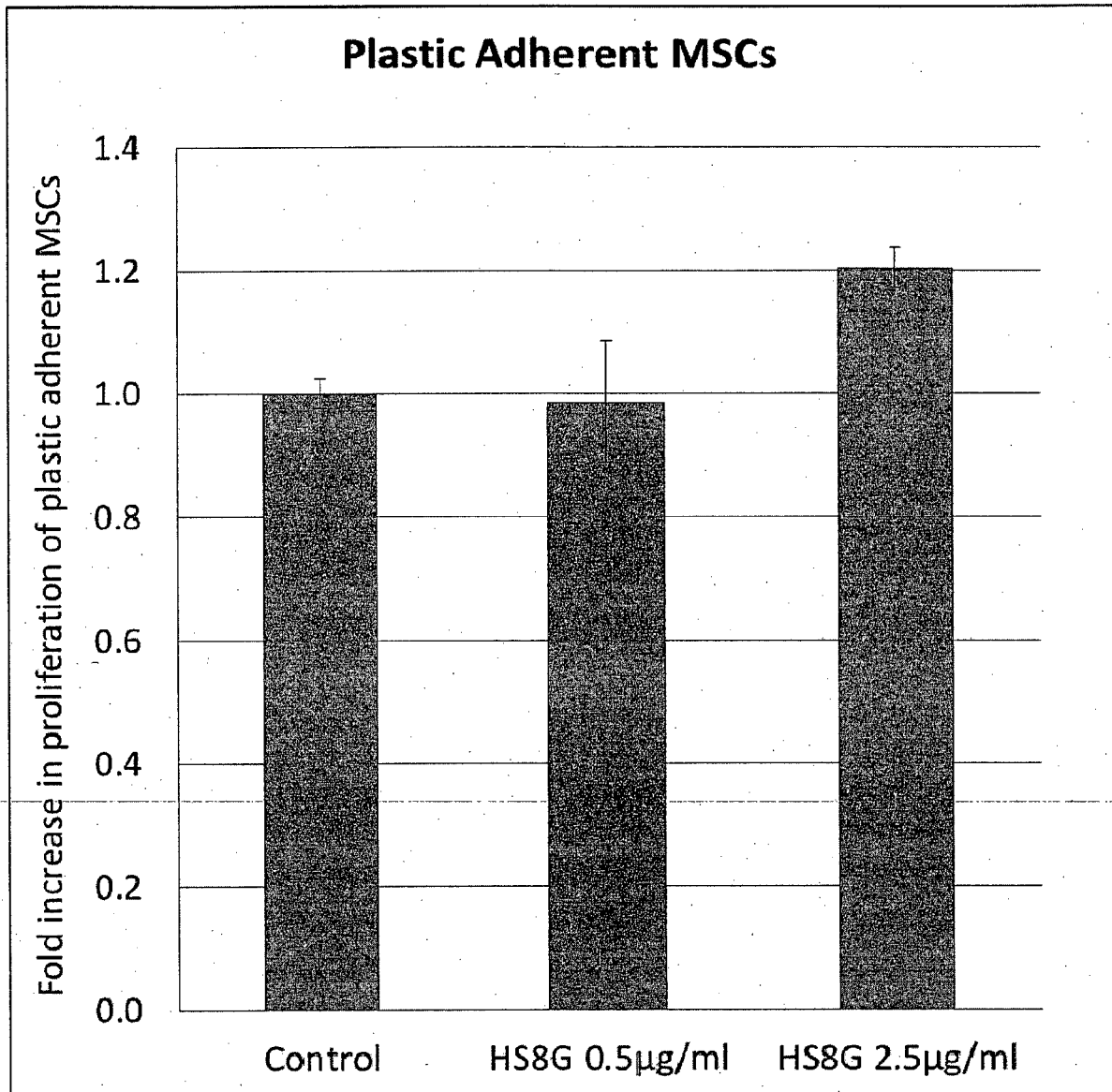


Figure 40

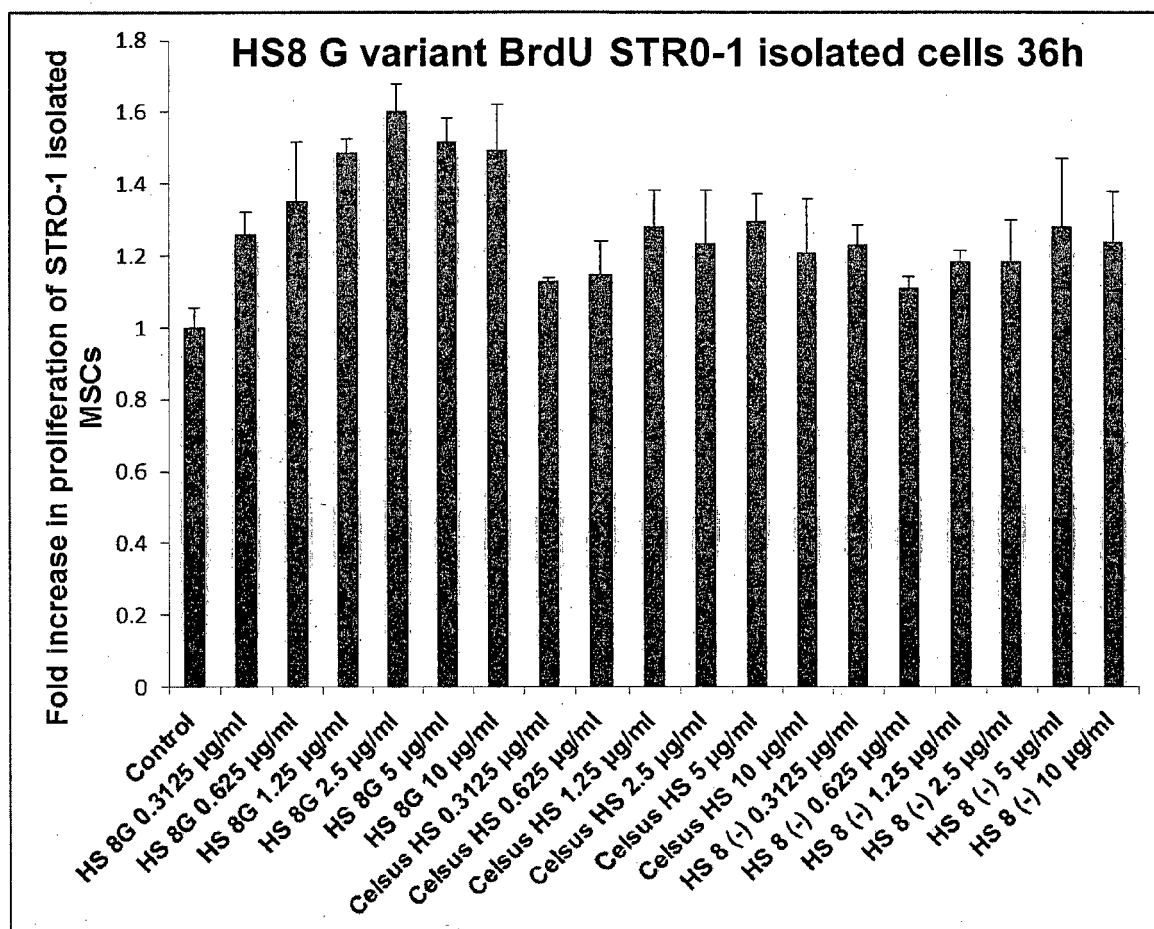


Figure 41

Comparison of the digestion of Celsus HS #10697

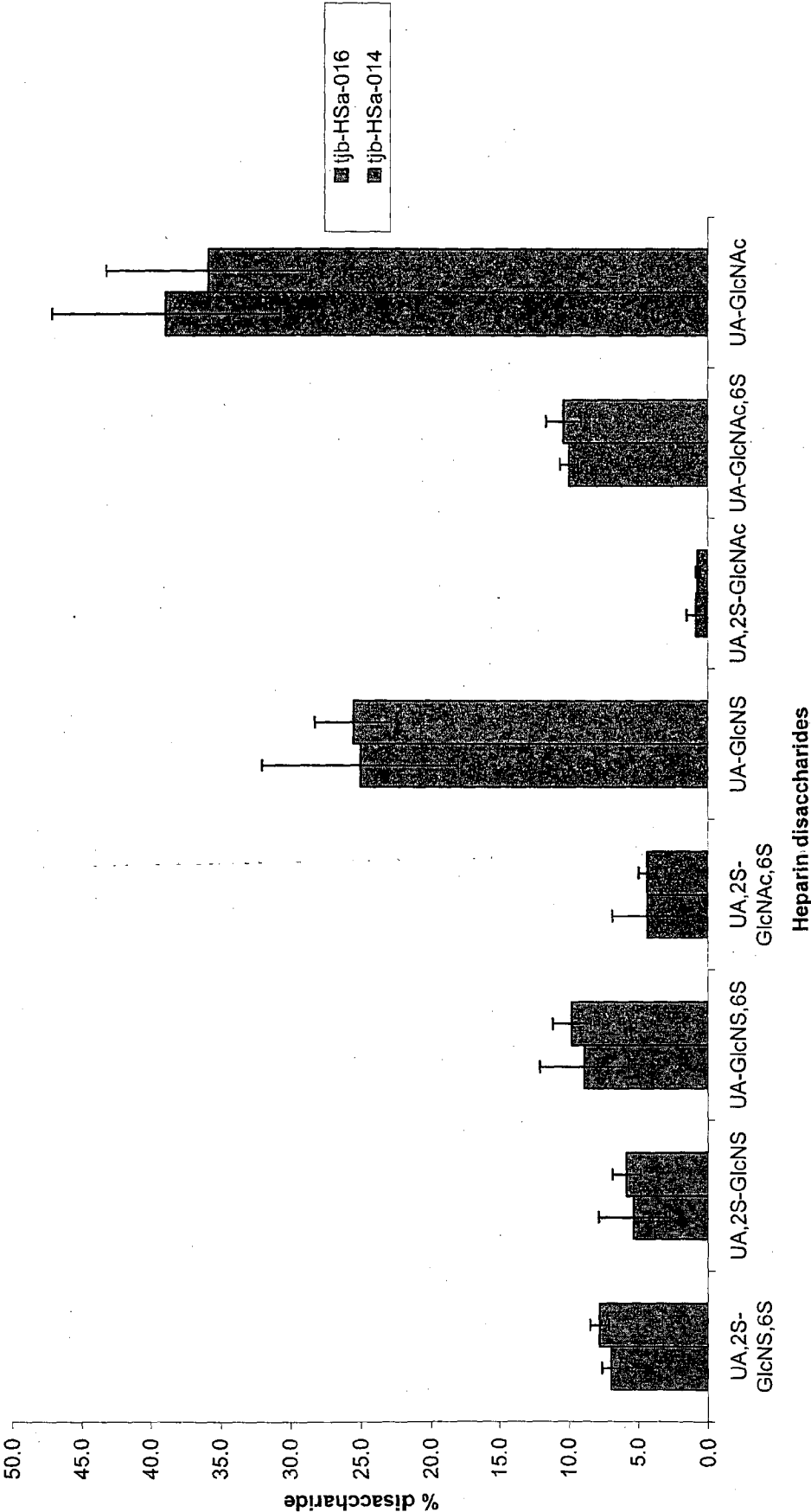
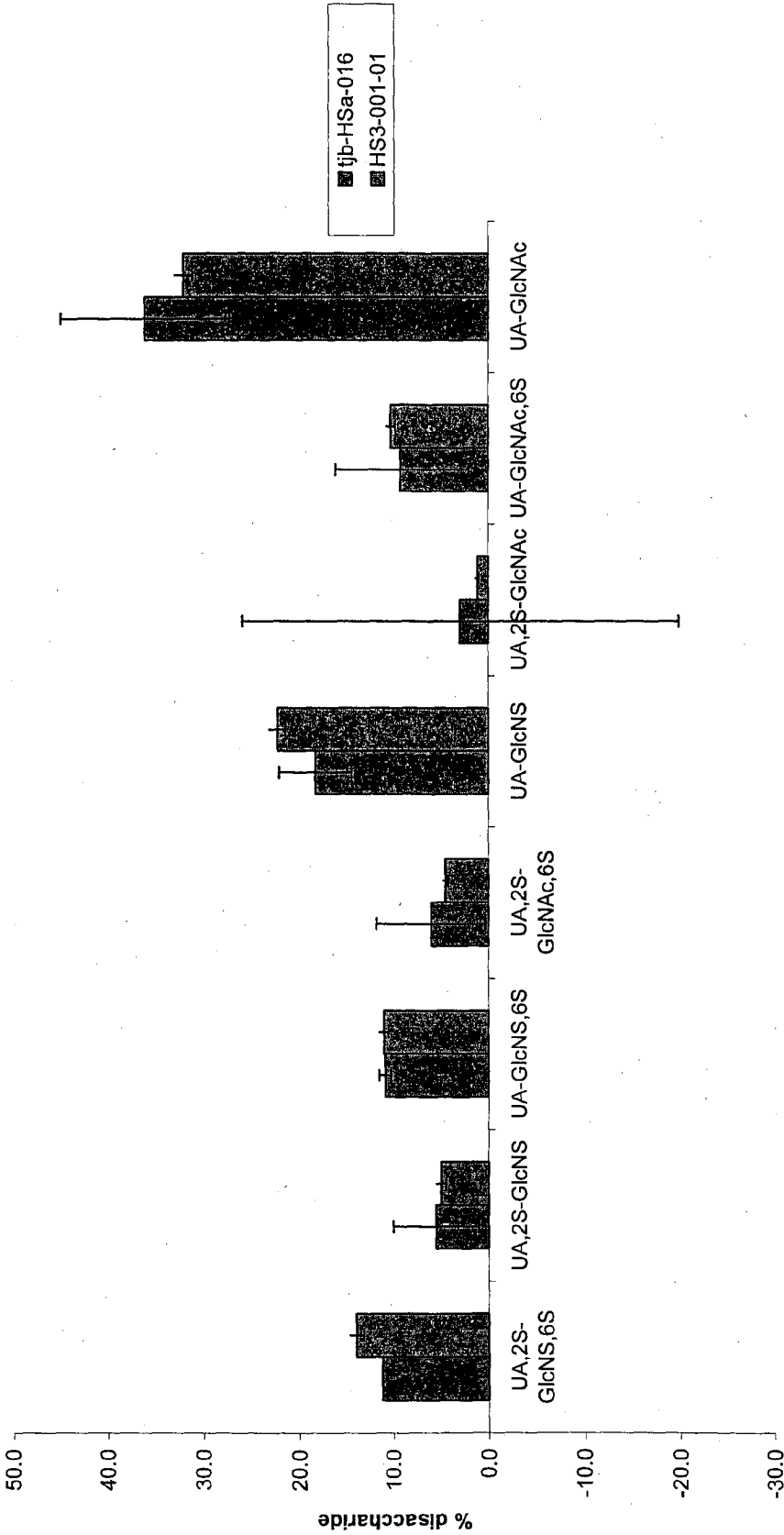


Figure 42

Comparison of the digestion of HS3-001-01



Heparin disaccharides

Figure 43

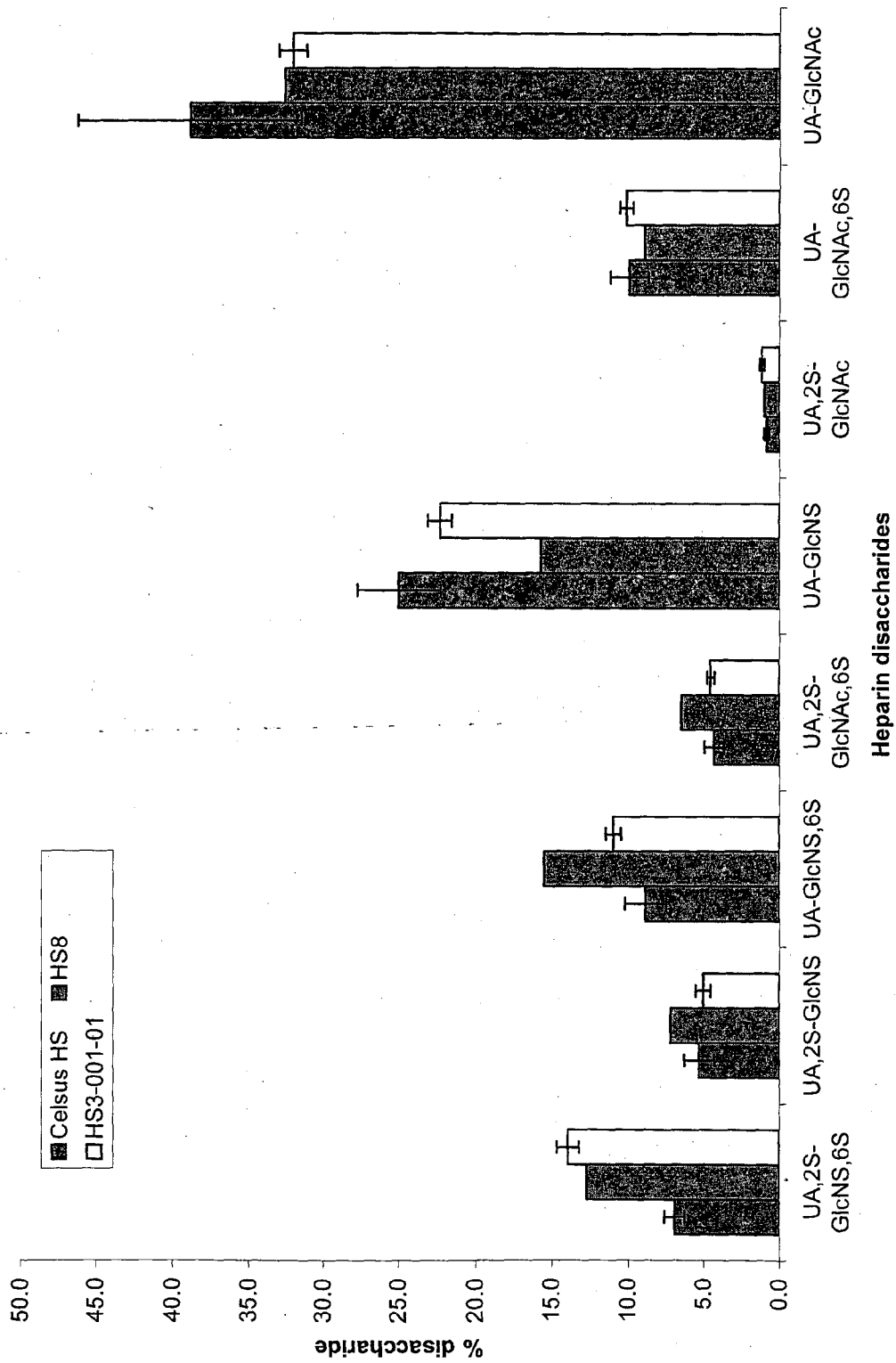


Figure 44

Disaccharide	Celsus HS	HS3 (848/HS3/001)	HS8
Δ HexUA,2S-GlcNS,6S	8.3	14.8	12.7
Δ HexUA,2S-GlcNS	5.1	4.9	7.2
Δ HexUA-GlcNS,6S	9.1	11.1	15.5
Δ HexUA,2S-GlcNAc,6S	3.3	4.8	6.5
Δ HexUA-GlcNS	26.9	22.2	15.7
Δ HexUA,2S-GlcNAc	1.6	1.1	1.0
Δ HexUA-GlcNAc,6S	10.8	10.1	8.9
Δ HexUA-GlcNAc	34.9	31.0	32.5
Total	100.0	100.0	100.0

Mean average of duplicate analyses of duplicate hydrolysates
Normalised weight percentage disaccharide

Figure 45

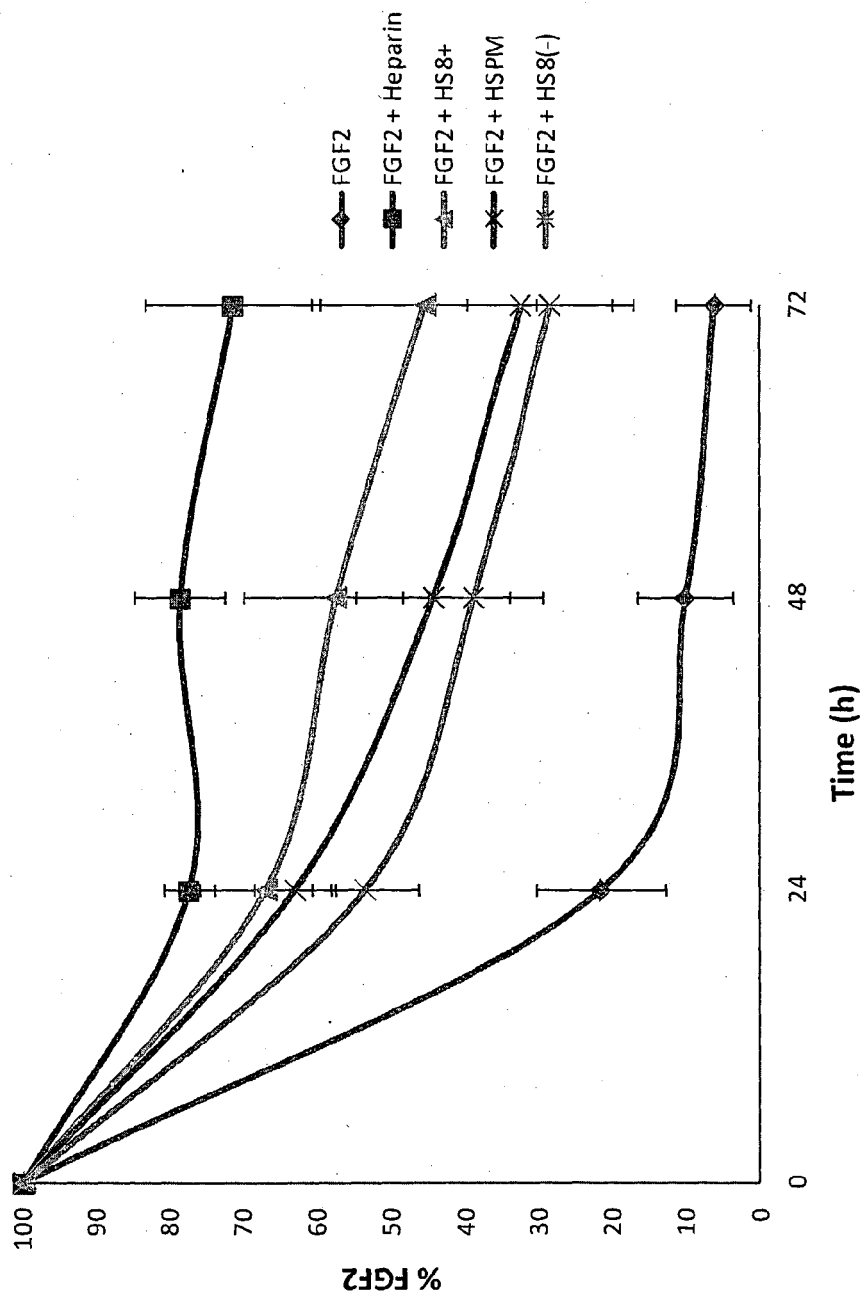


Figure 46

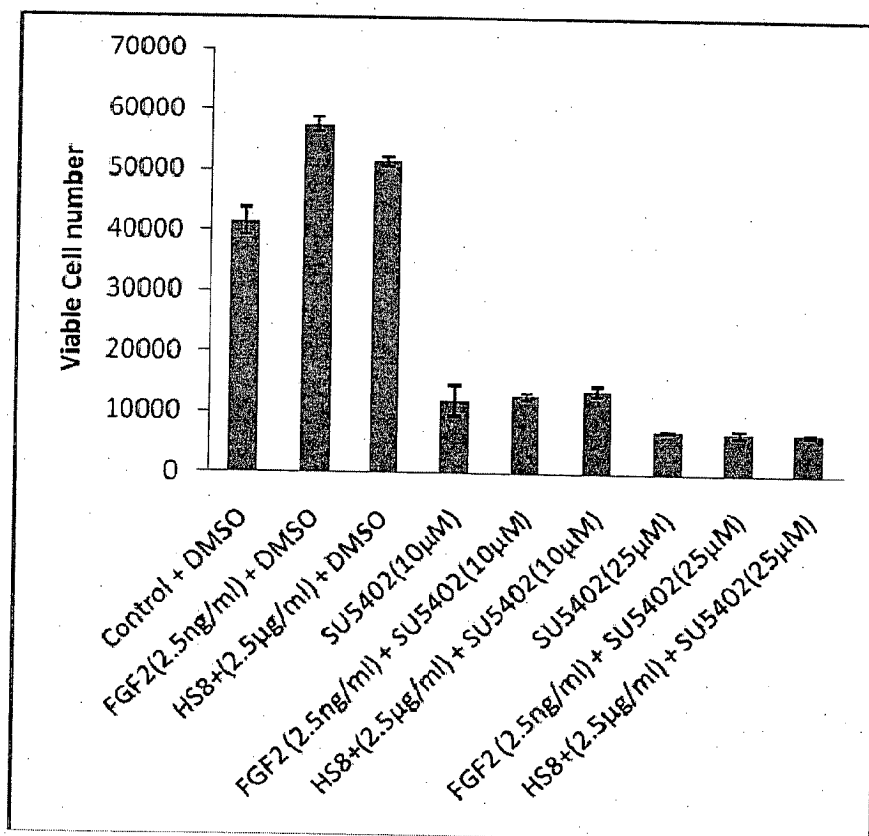


Figure 47

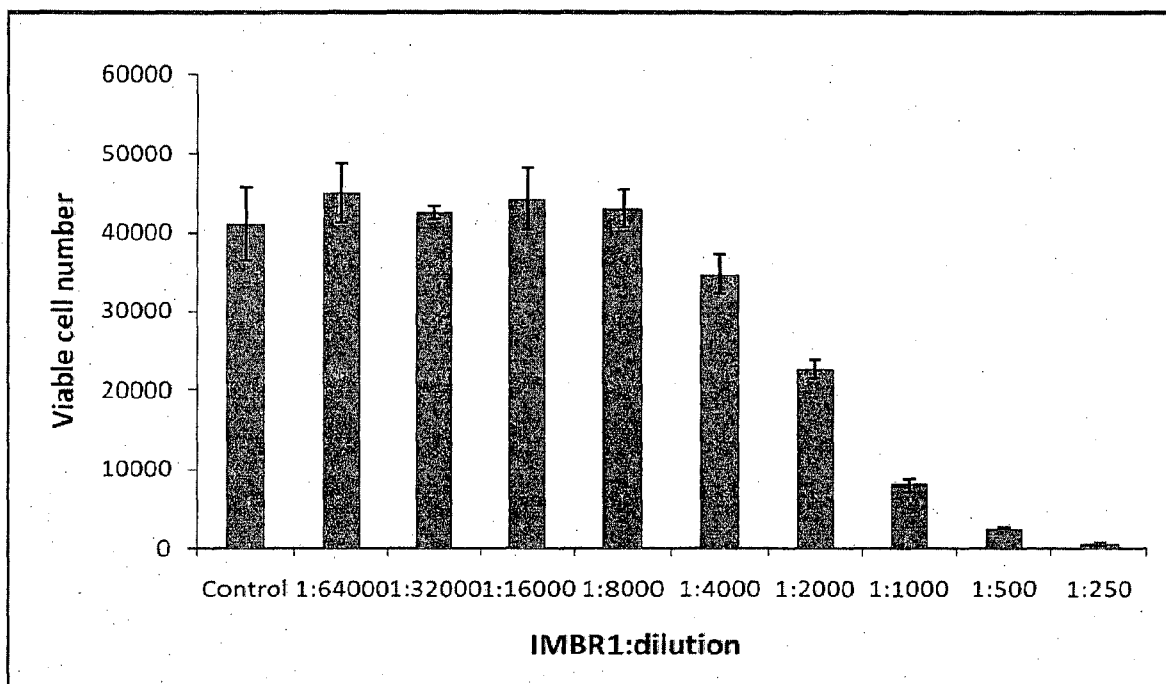


Figure 48

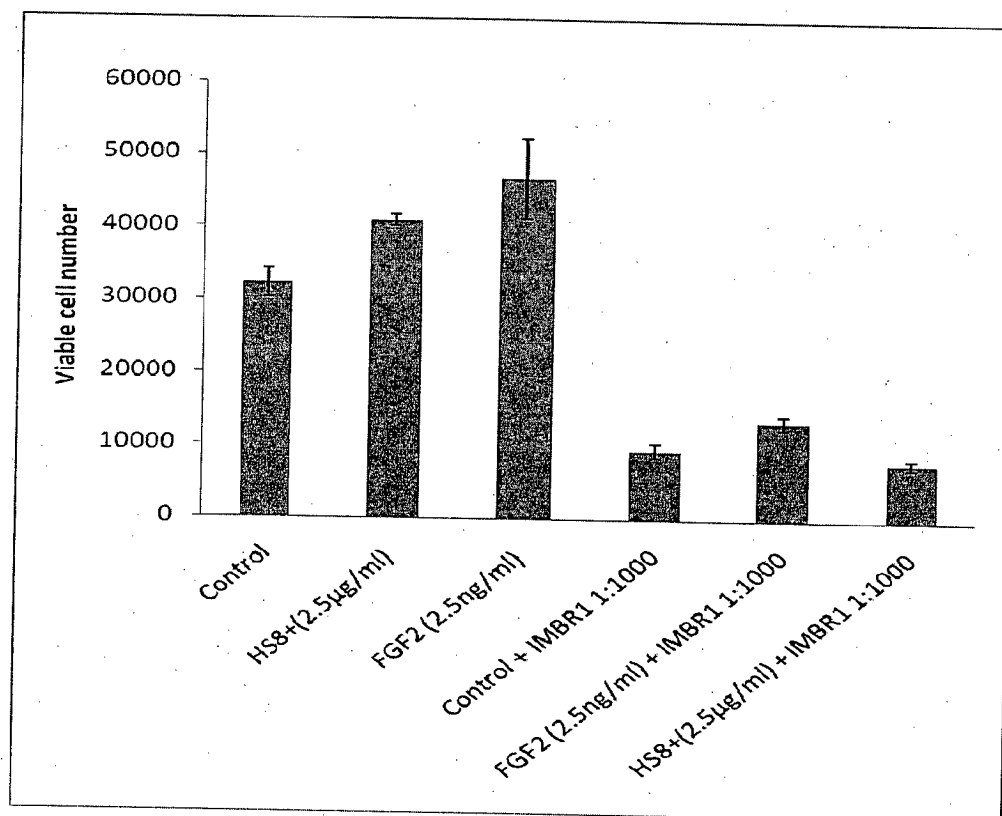


Figure 49

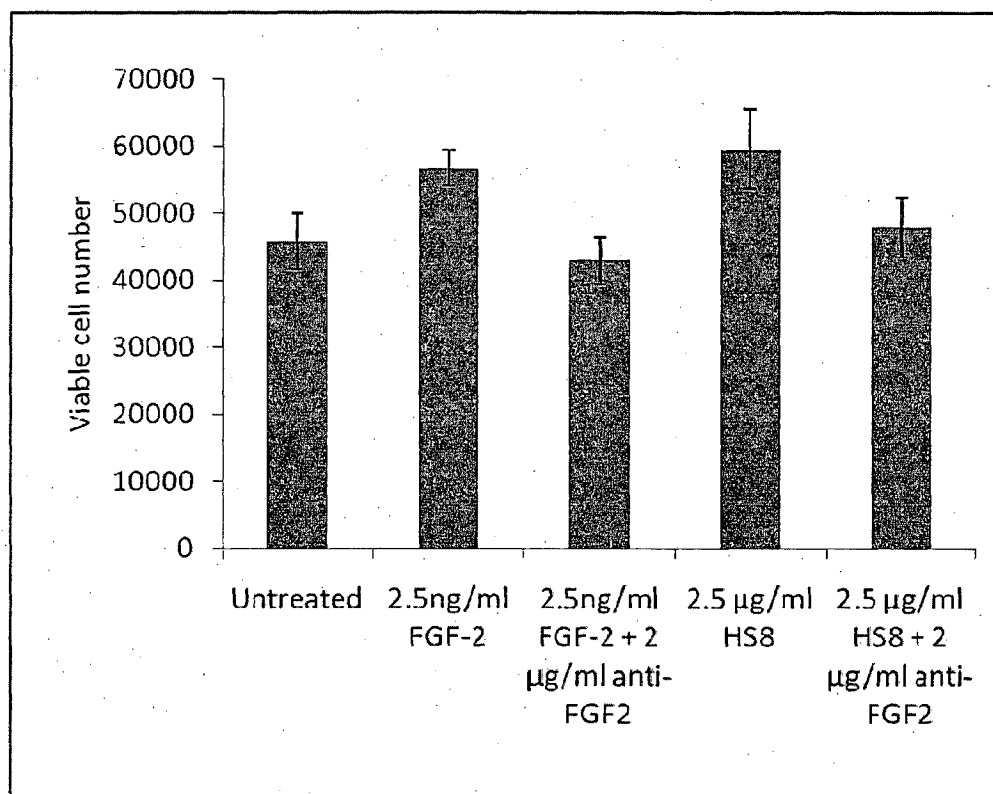


Figure 50

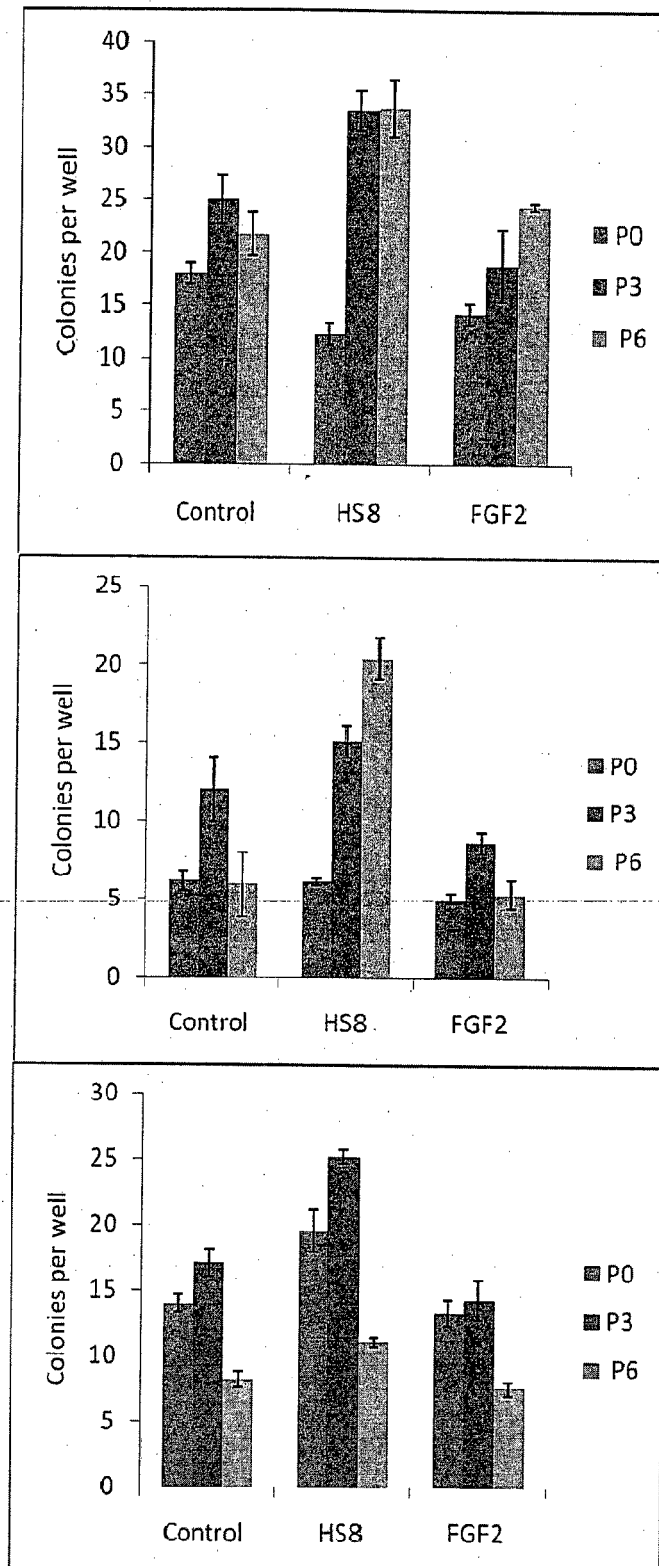


Figure 51

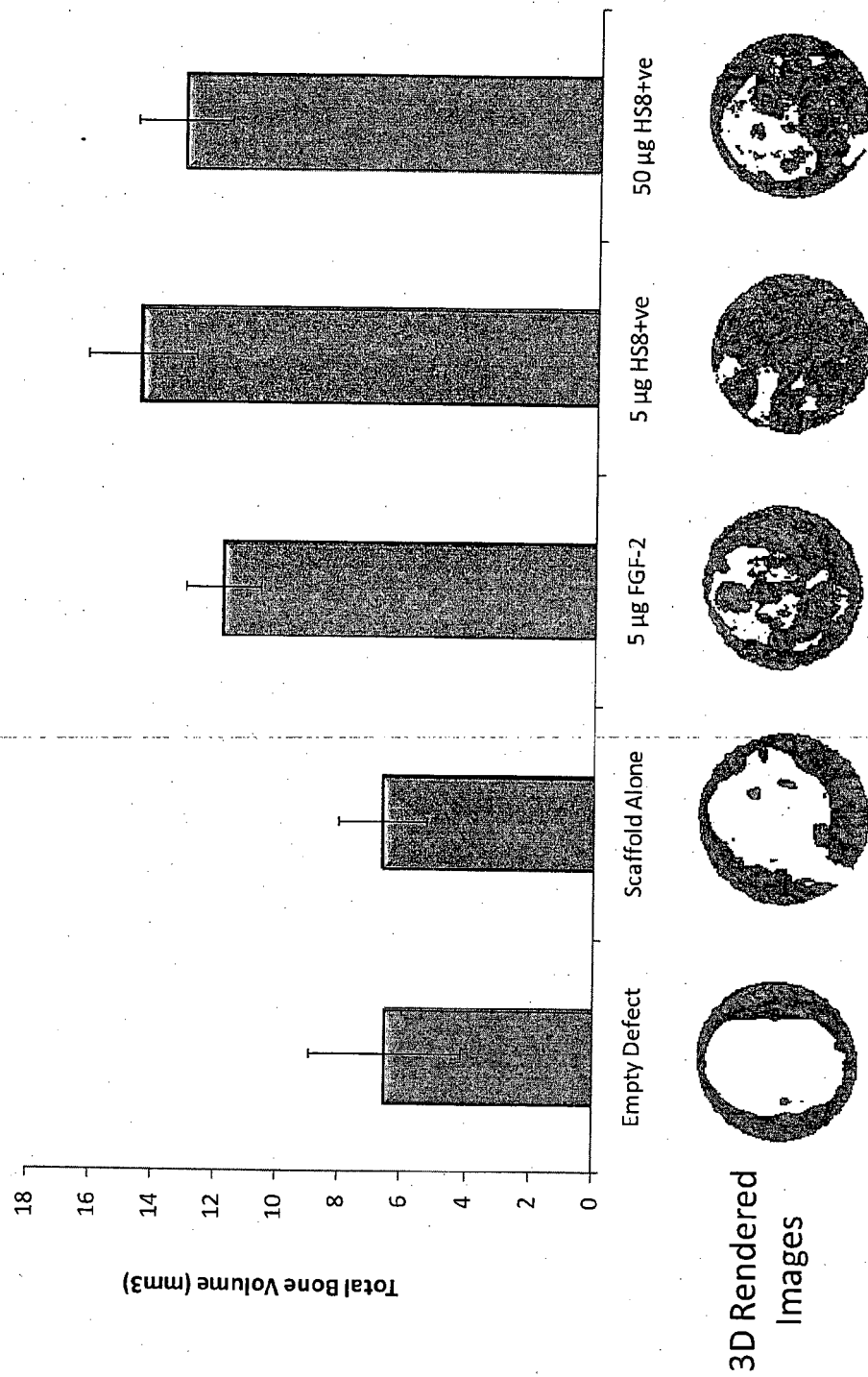


Figure 52