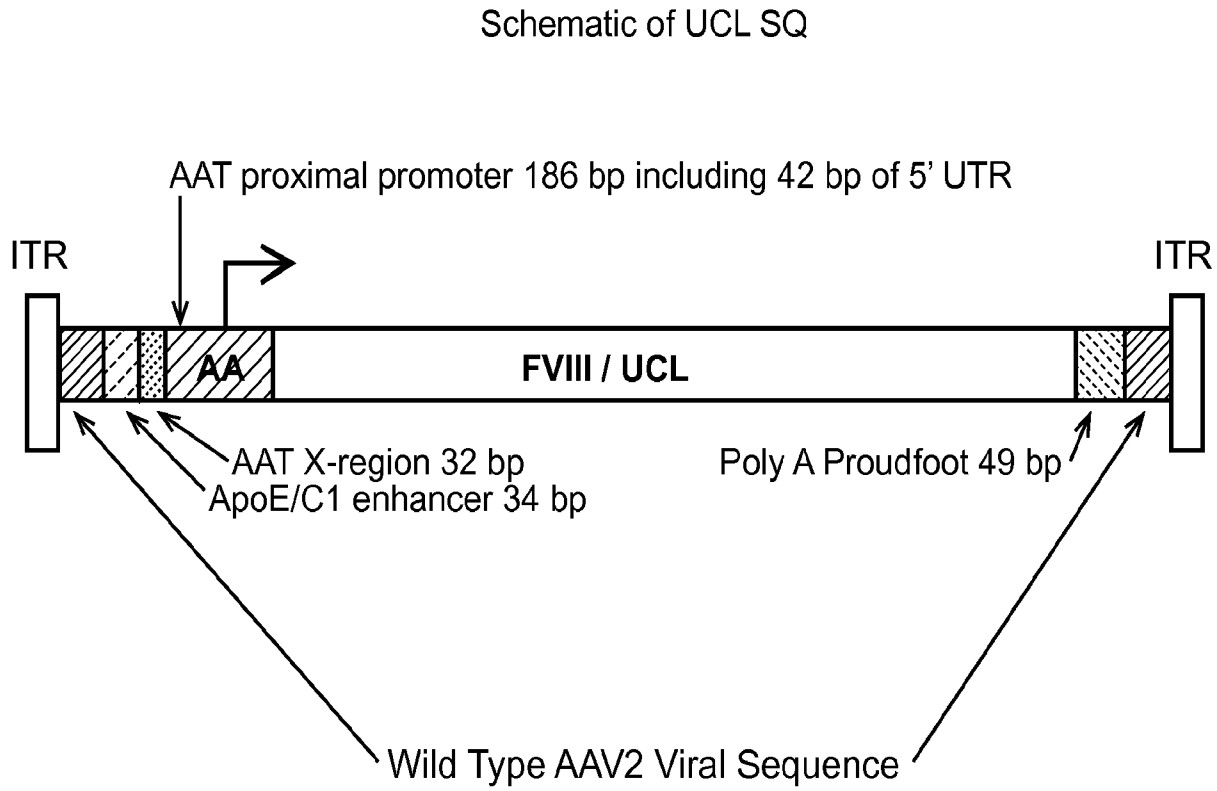

Schematic of UCL SQ
AAT proximal promoter 186 bp including 42 bp of 5' UTR
ITR
ITR
AA
FVIII / UCL
AAT X-region 32 bp
ApoE/C1 enhancer 34 bp
Poly A Proudfoot 49 bp
Wild Type AAV2 Viral Sequence

FIGURE 1

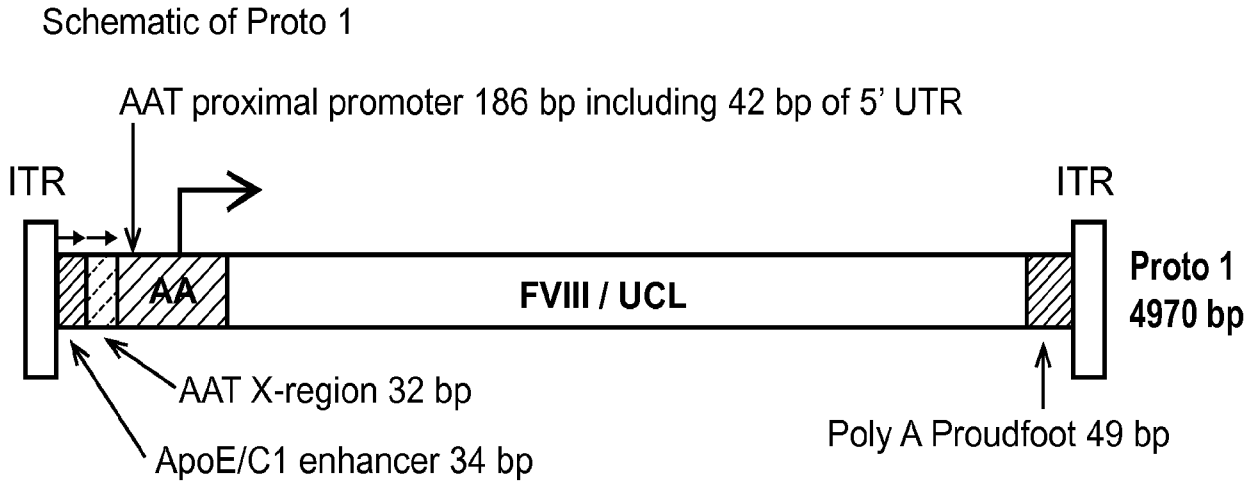


FIGURE 2A

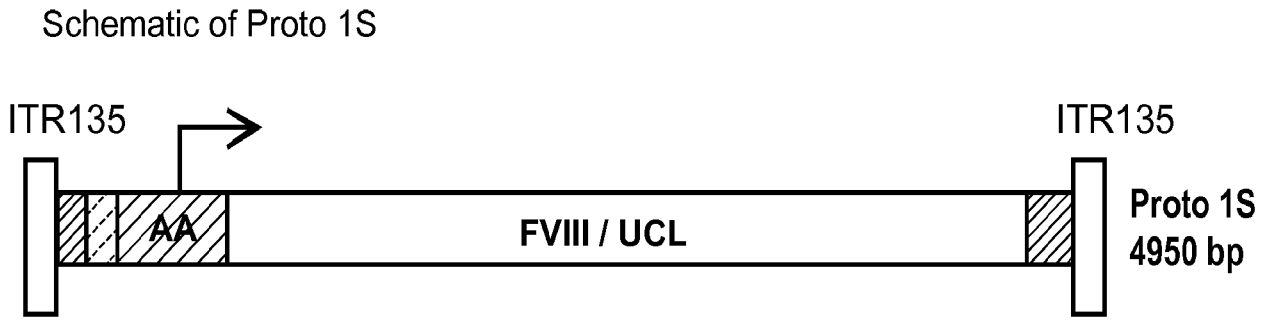


FIGURE 2B

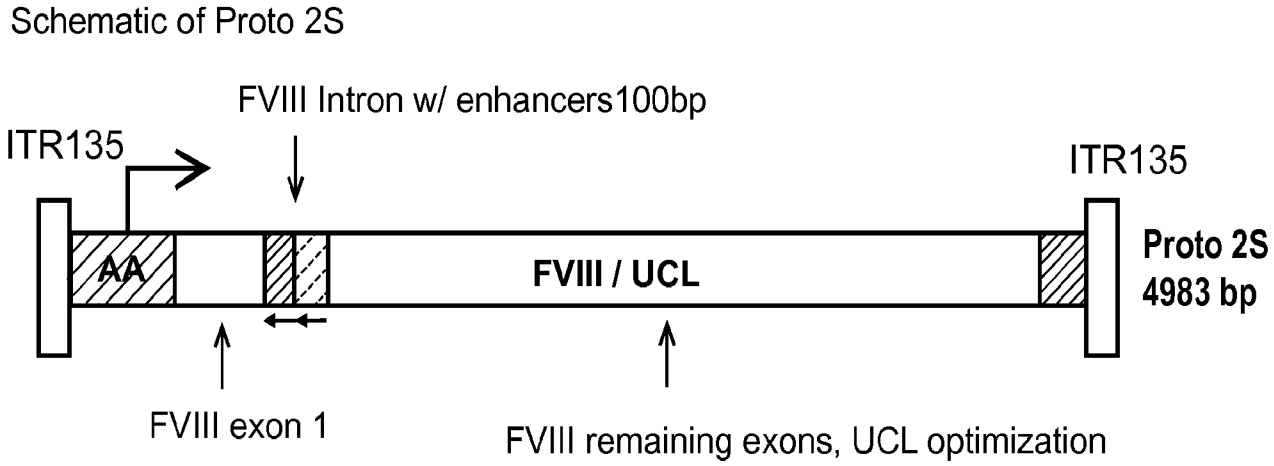


FIGURE 2C

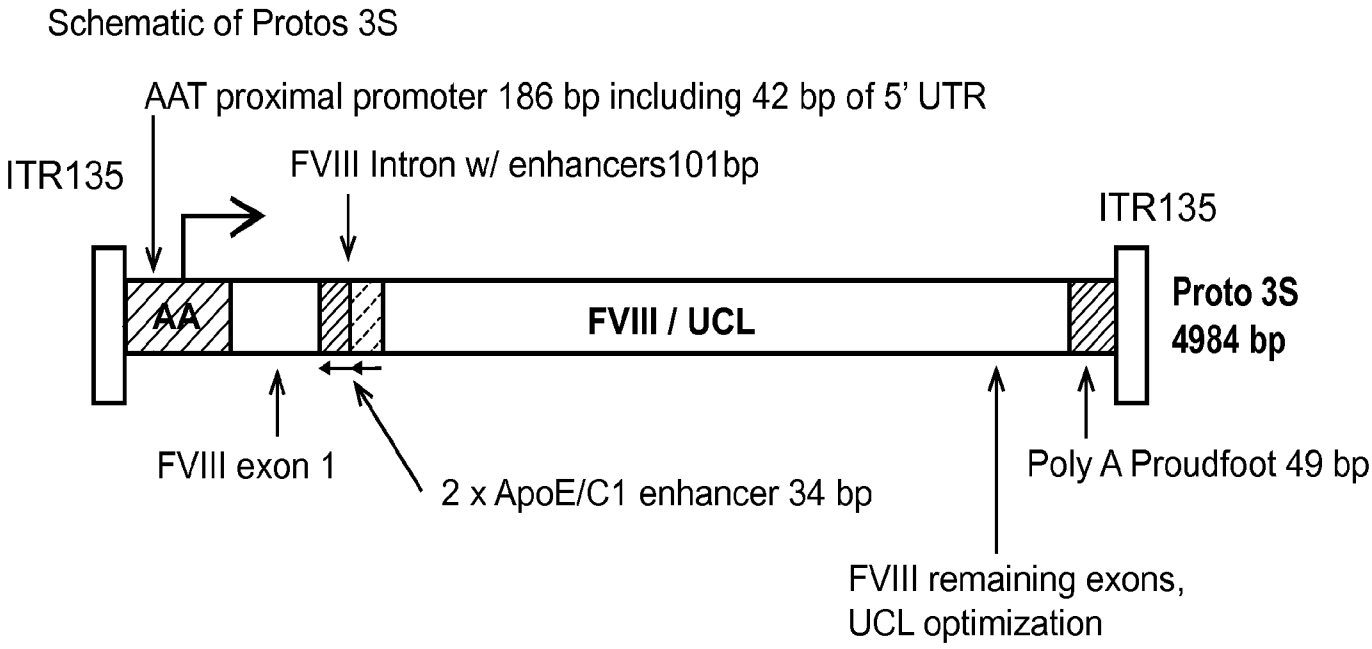


FIGURE 2D

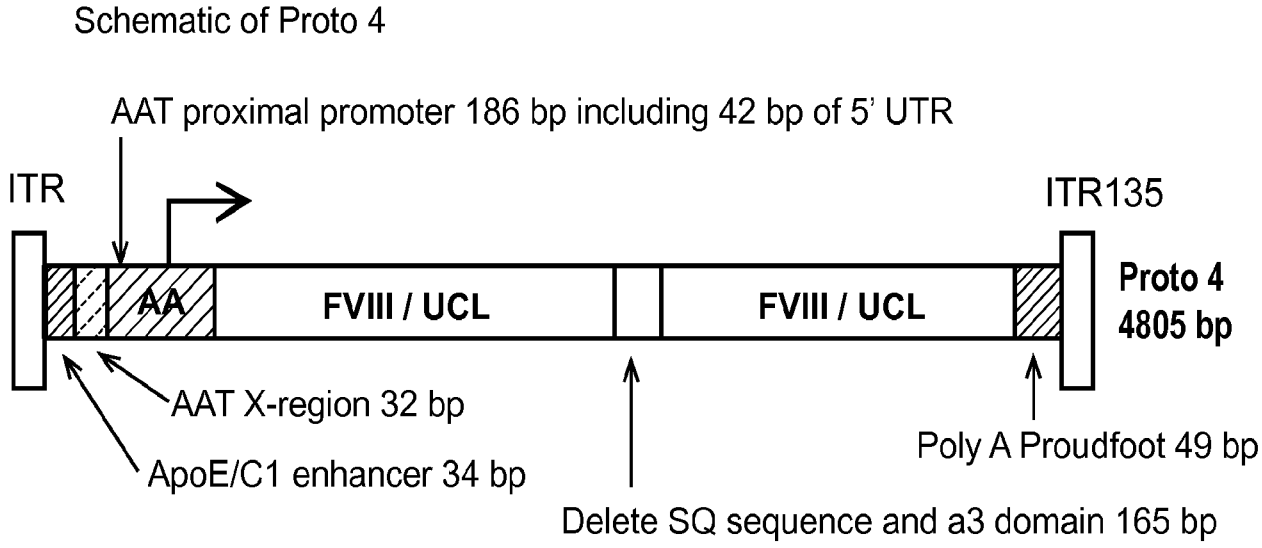


FIGURE 3A

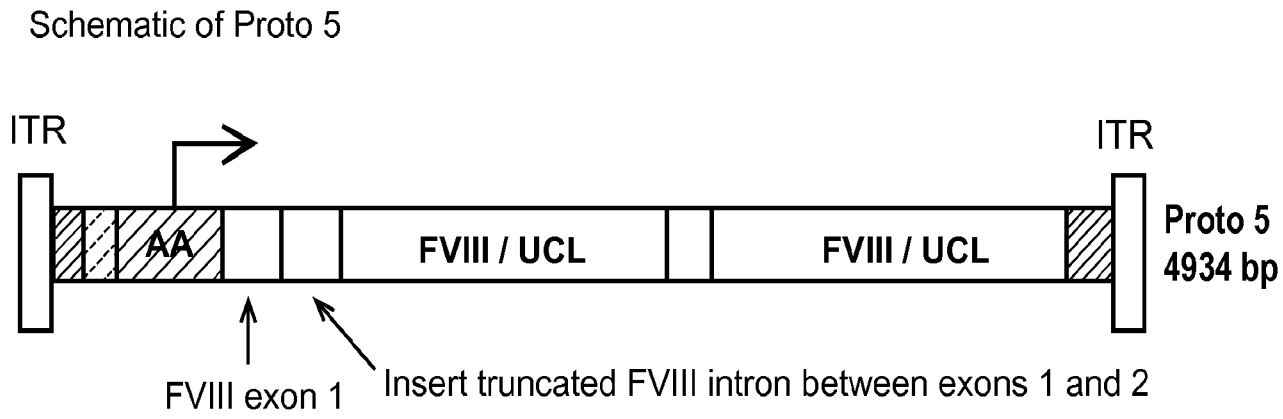


FIGURE 3B

Schematic of Proto 6

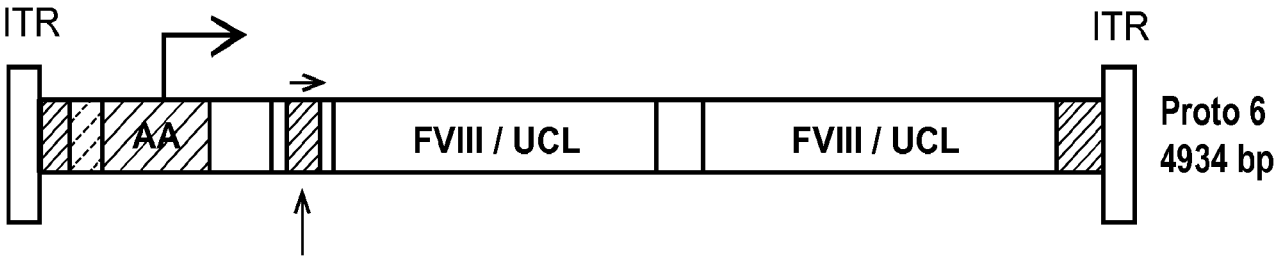


FIGURE 3C

Schematic of Proto 7

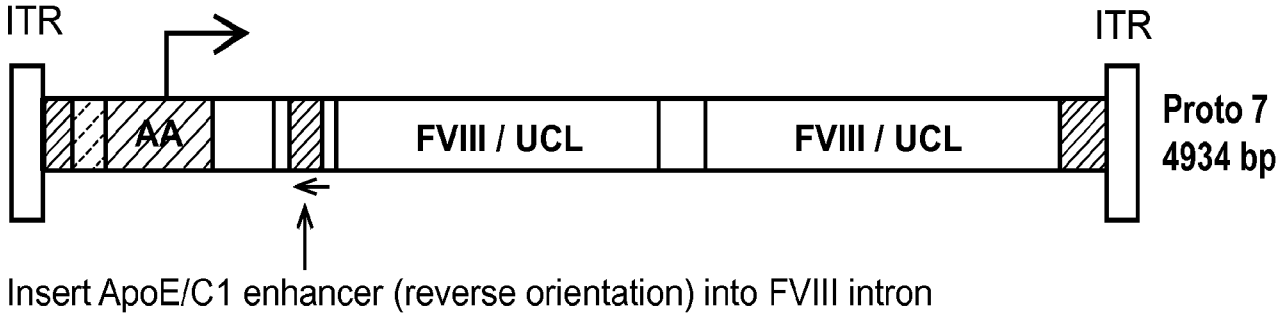


FIGURE 3D

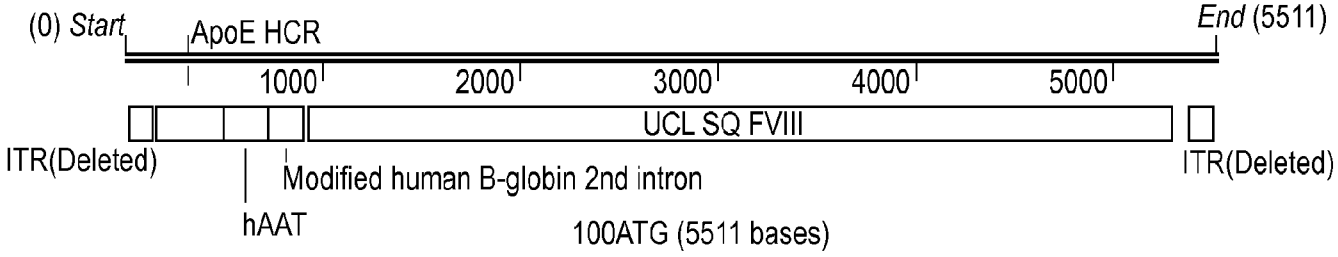


FIGURE 4A

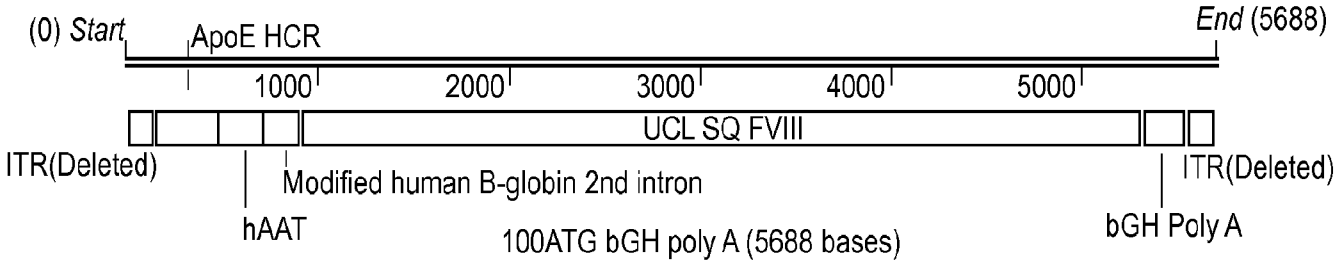


FIGURE 4B

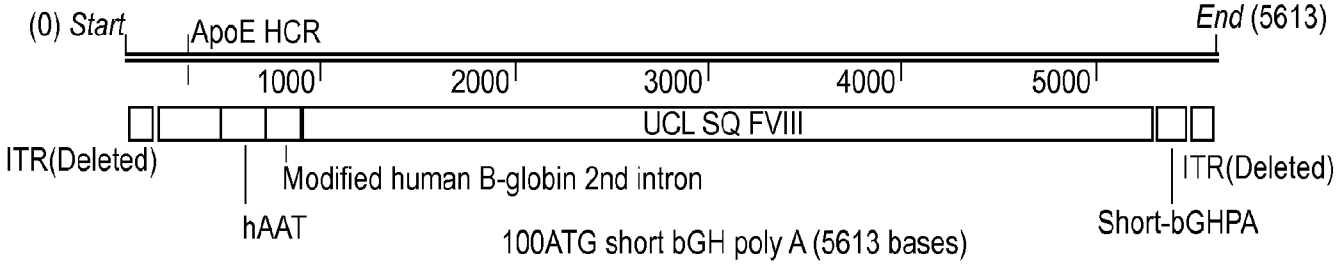


FIGURE 4C

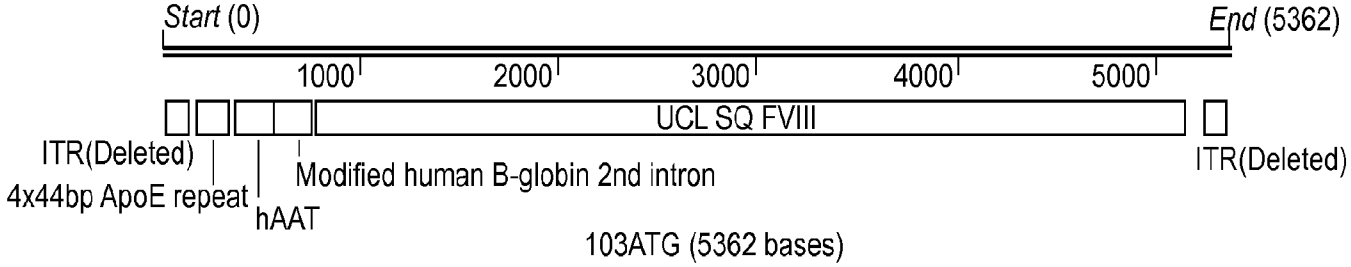


FIGURE 4D

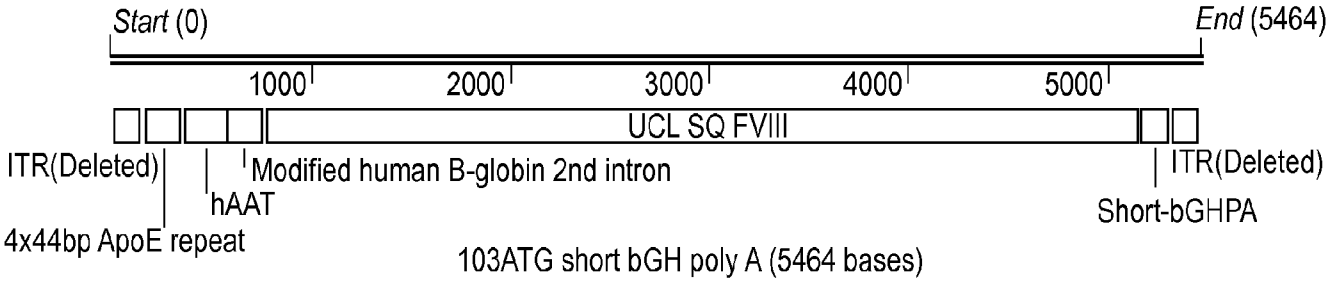


FIGURE 4E

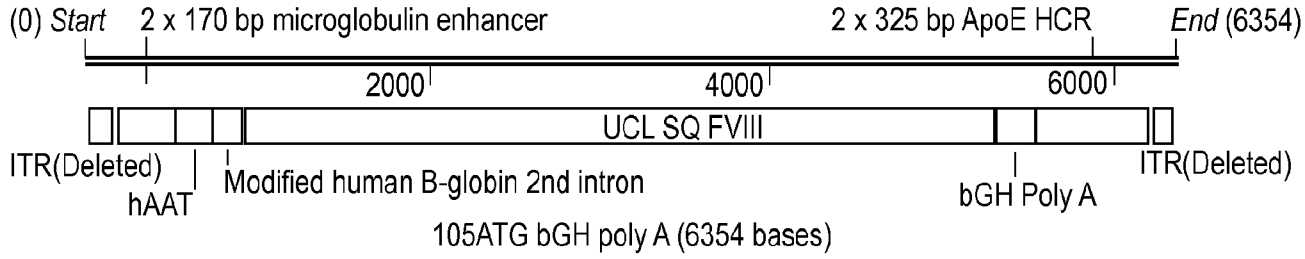


FIGURE 4F

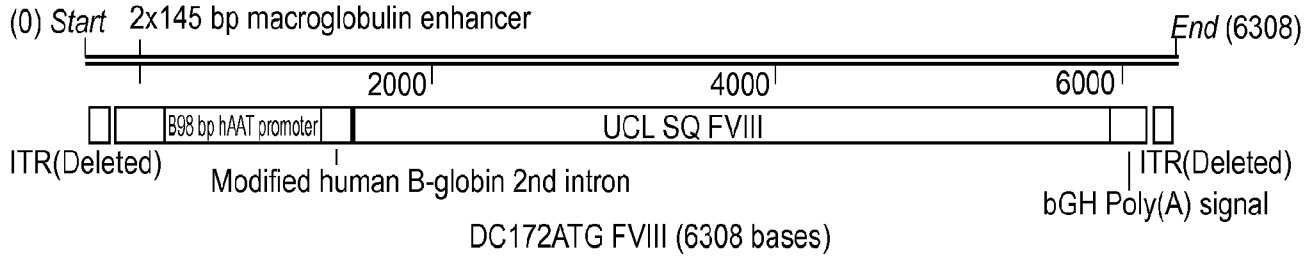


FIGURE 4G

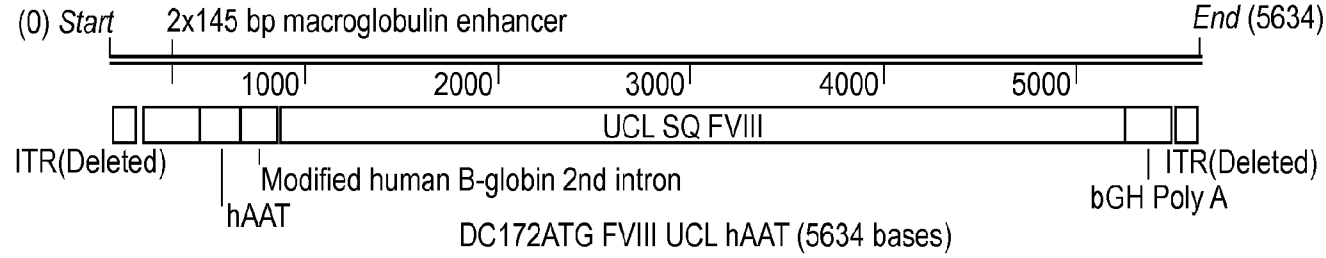


FIGURE 4H

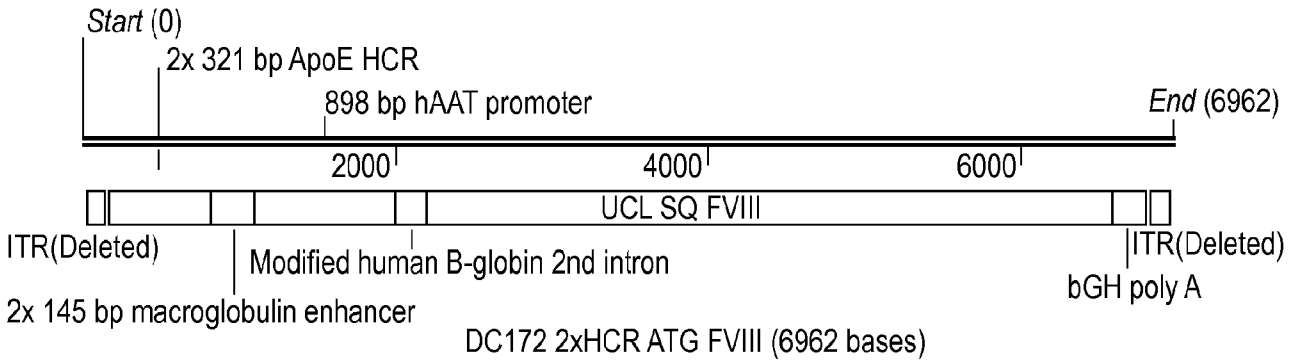


FIGURE 4I

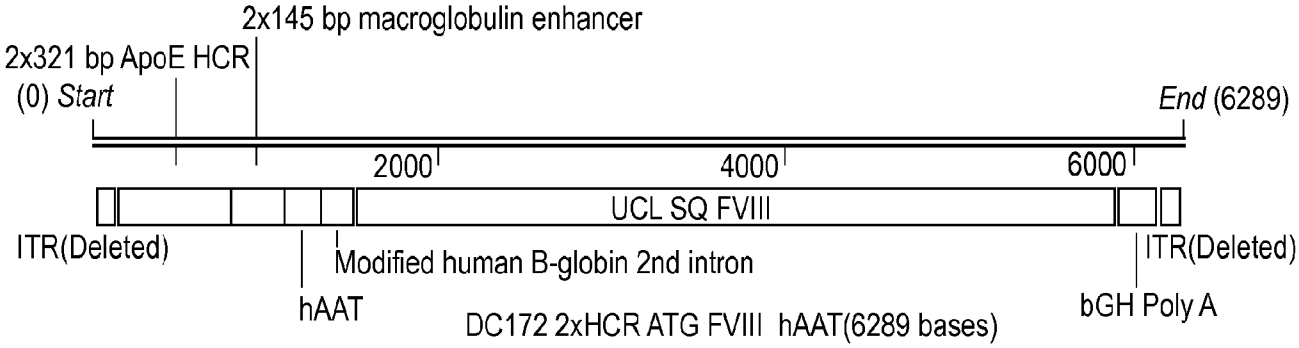


FIGURE 4J

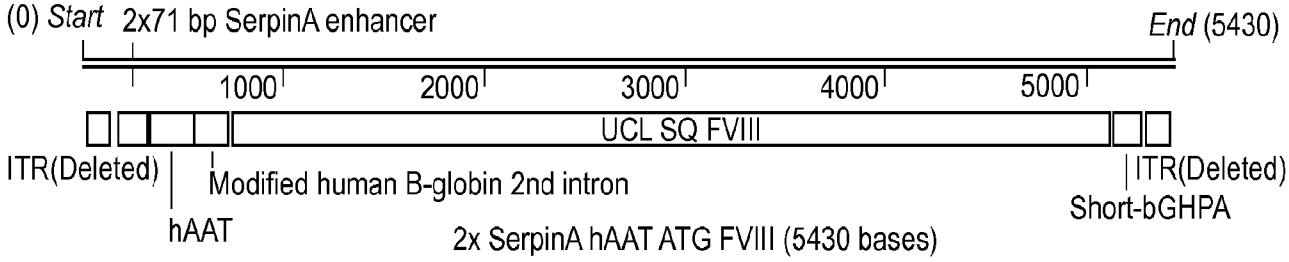


FIGURE 4K

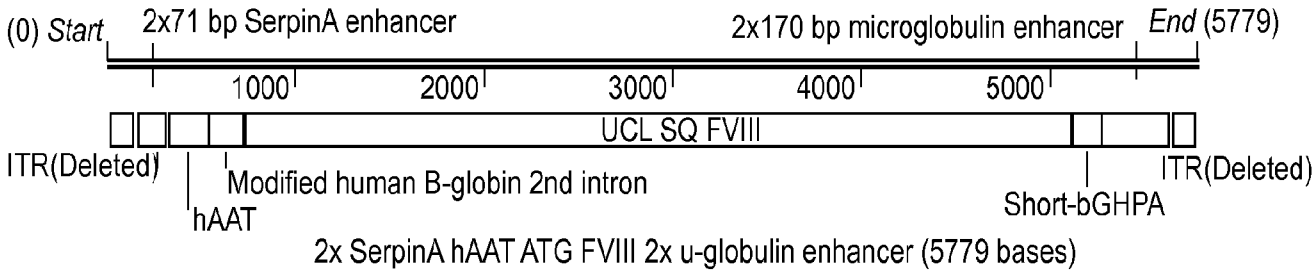


FIGURE 4L

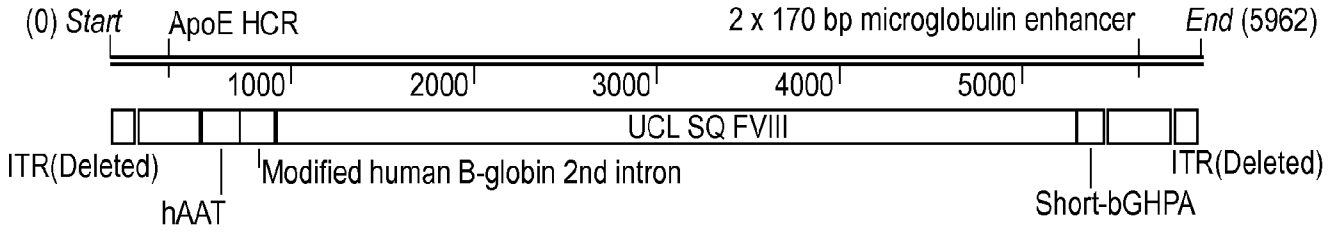


FIGURE 4M

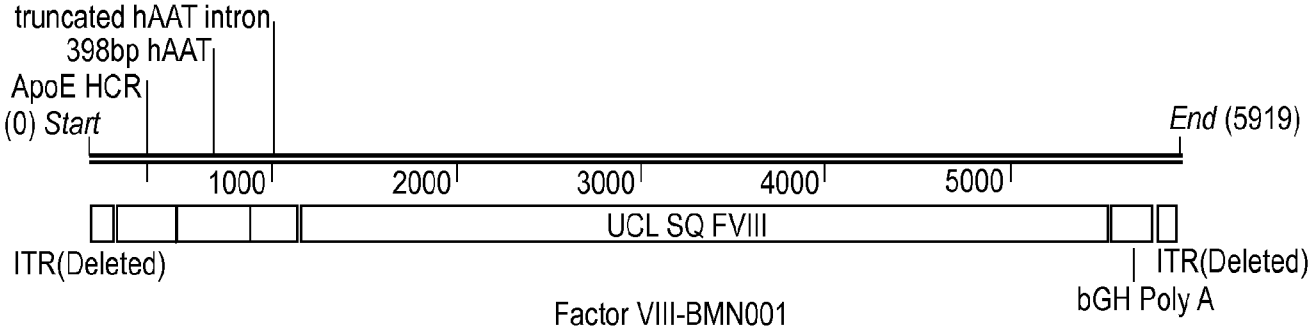


FIGURE 4N

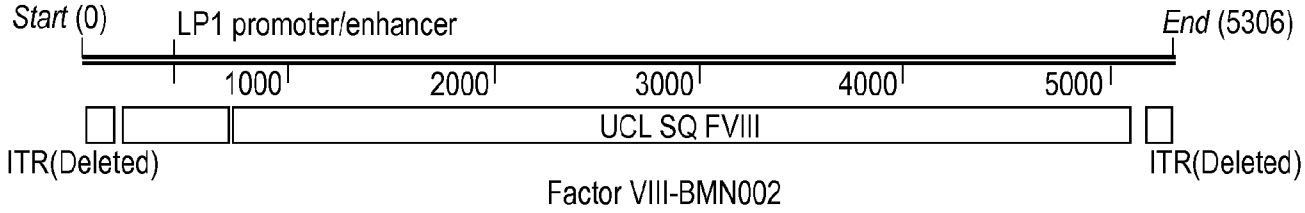


FIGURE 4O

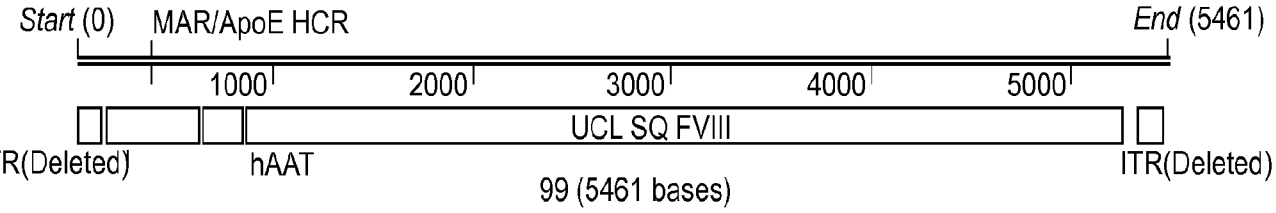


FIGURE 4P

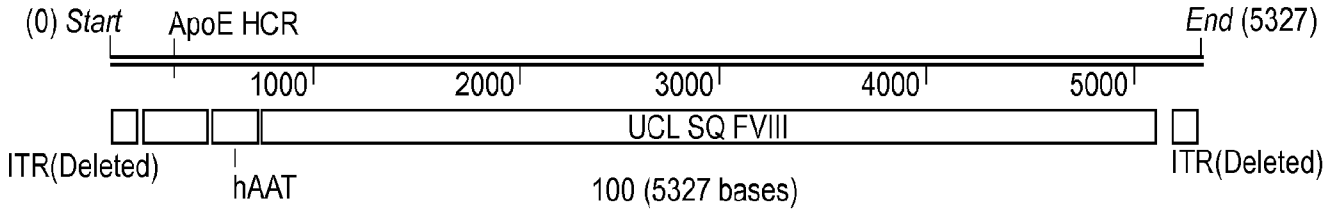


FIGURE 4Q

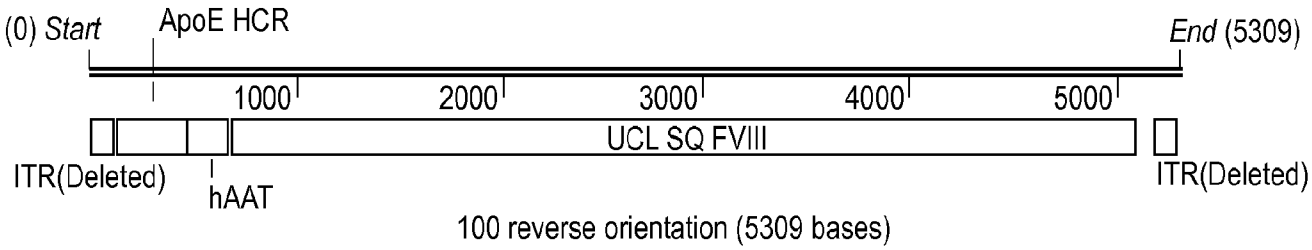


FIGURE 4R

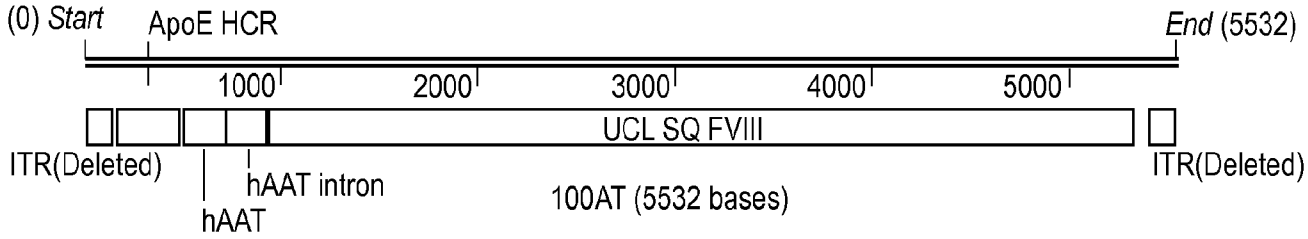


FIGURE 4S

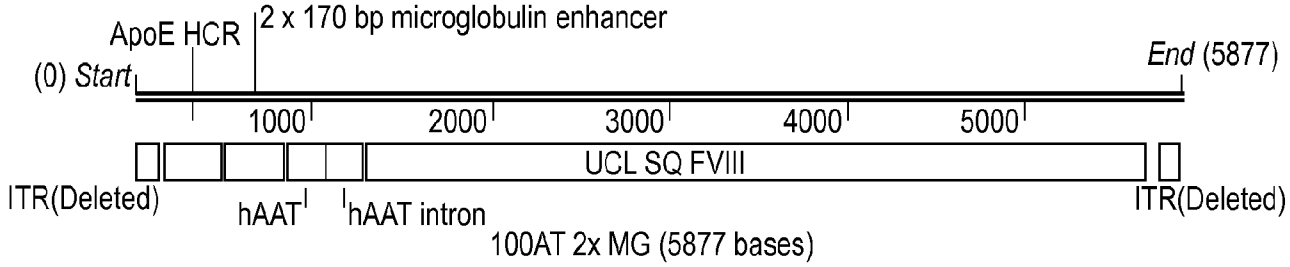


FIGURE 4T

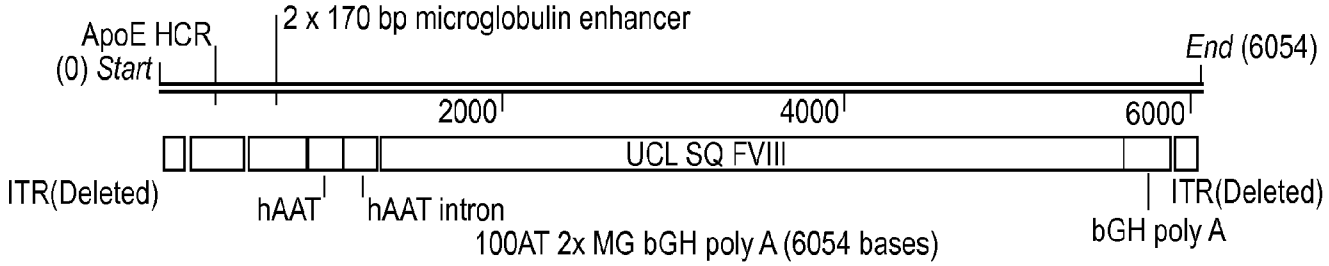


FIGURE 4U

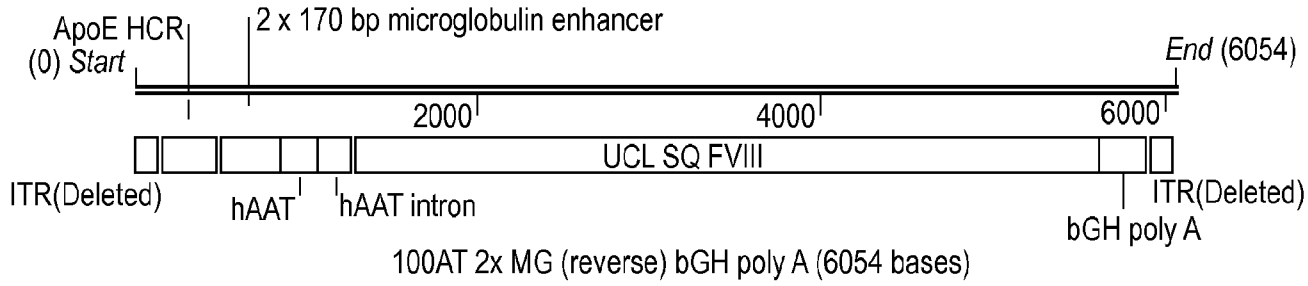


FIGURE 4V

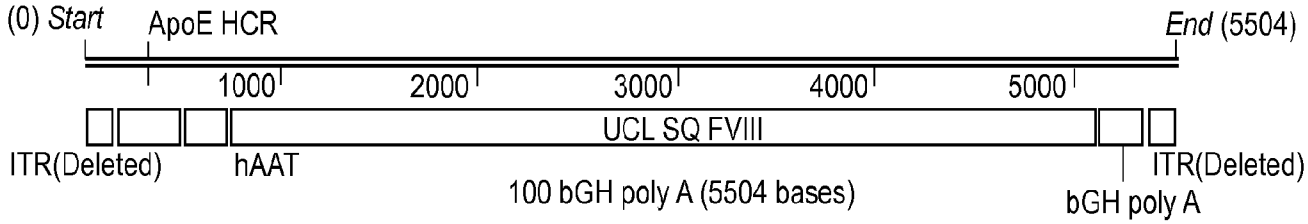


FIGURE 4W

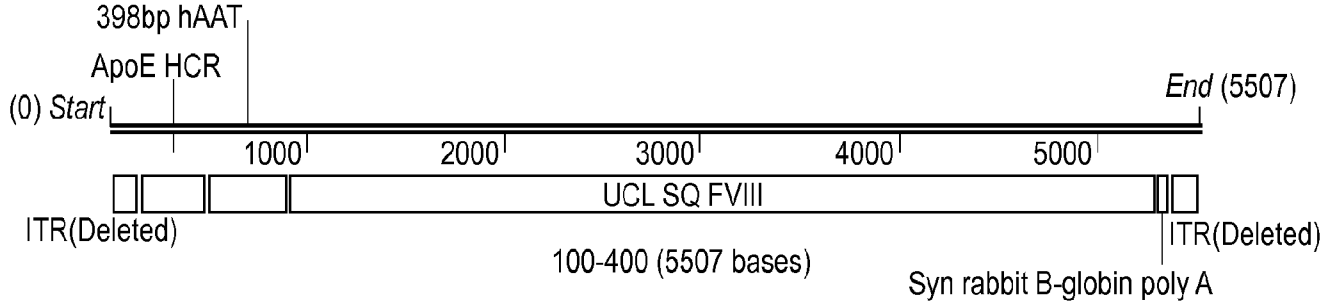


FIGURE 4X

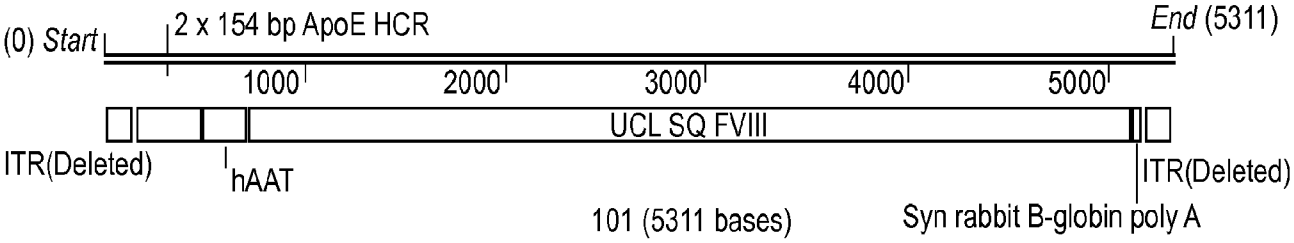


FIGURE 4Y

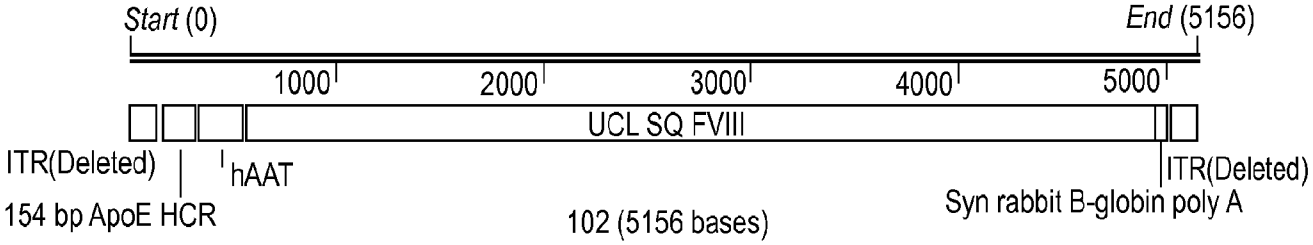


FIGURE 4Z

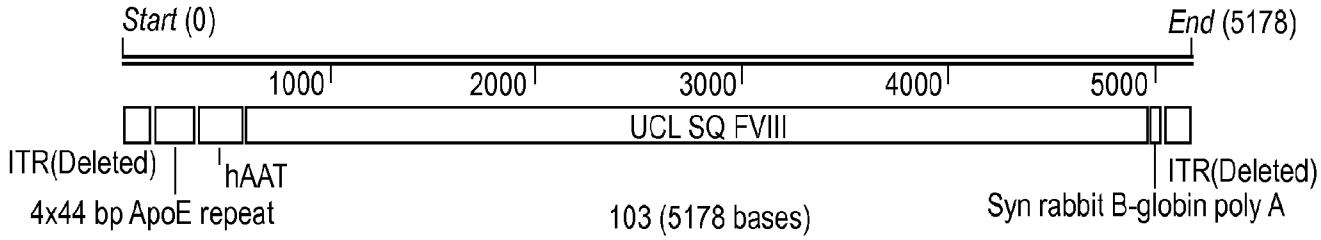


FIGURE 4AA

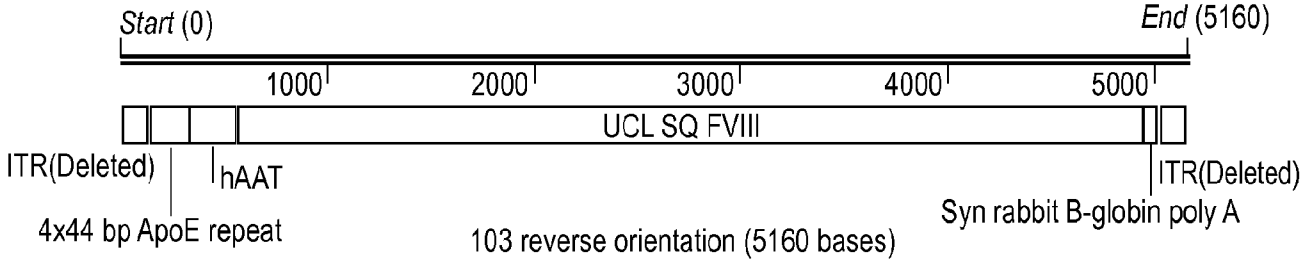


FIGURE 4BB

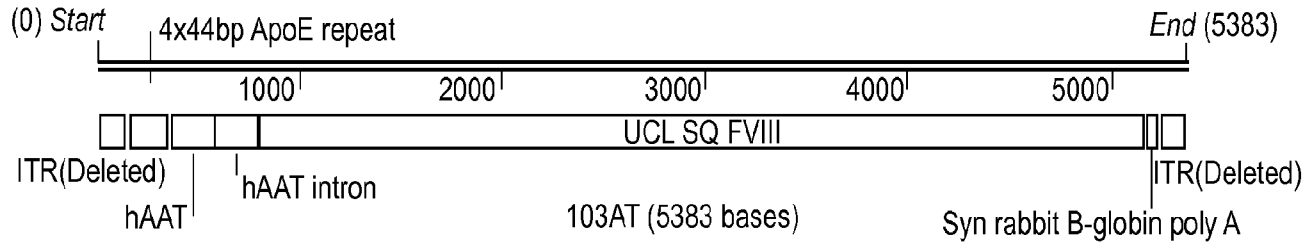


FIGURE 4CC

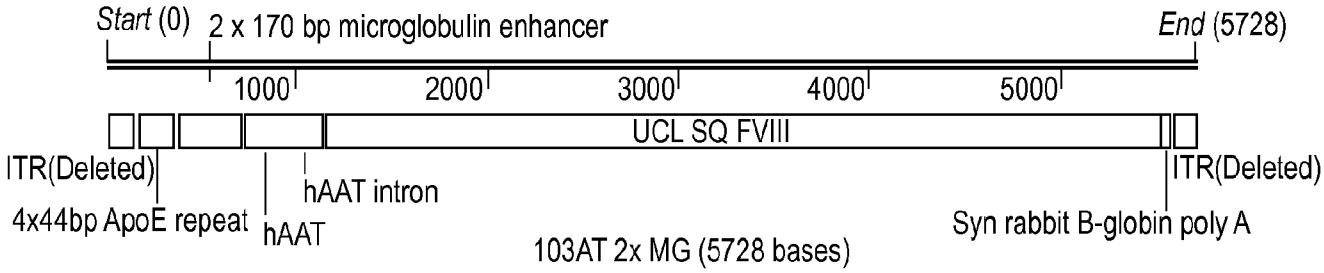


FIGURE 4DD

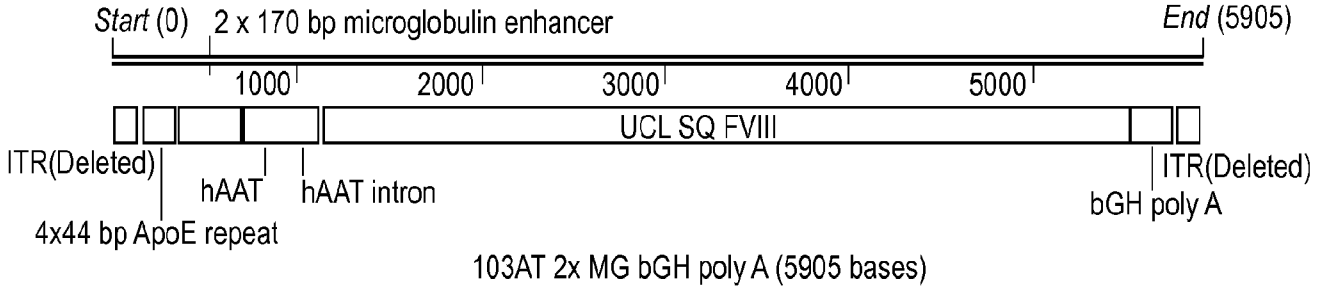


FIGURE 4EE

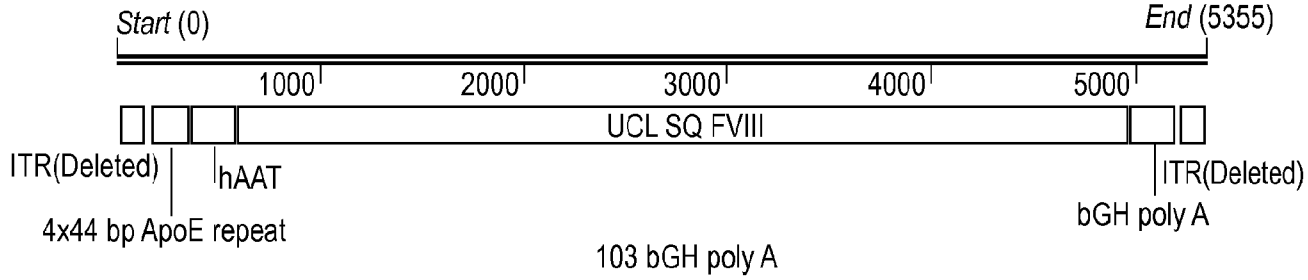


FIGURE 4FF

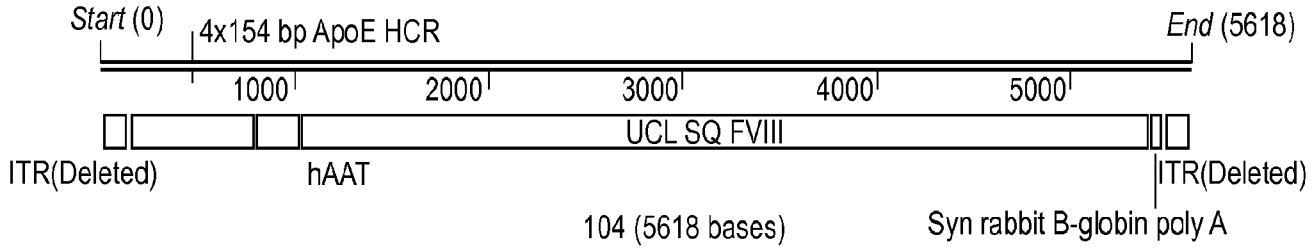


FIGURE 4GG

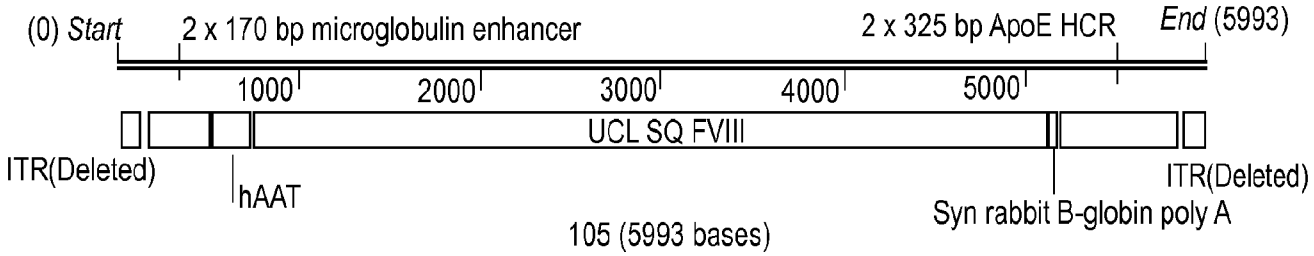


FIGURE 4HH

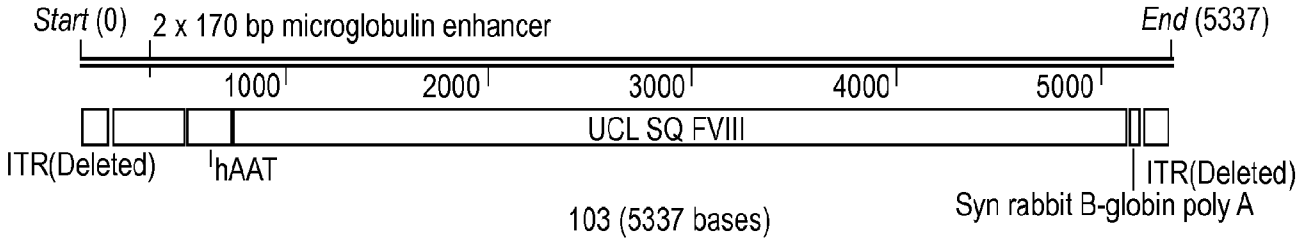


FIGURE 4II

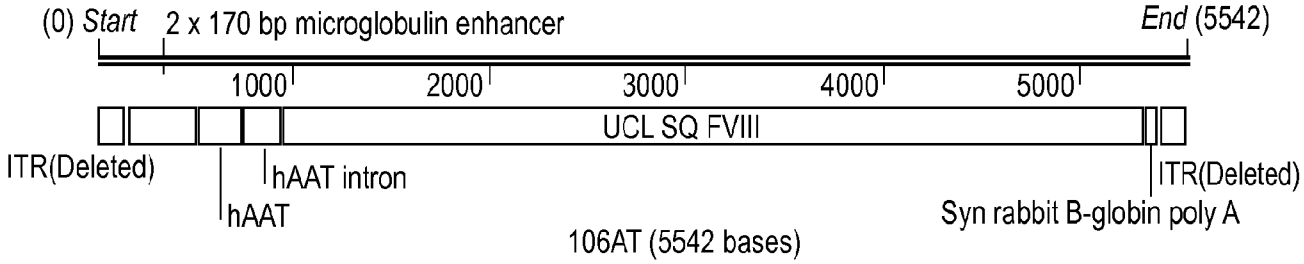


FIGURE 4JJ

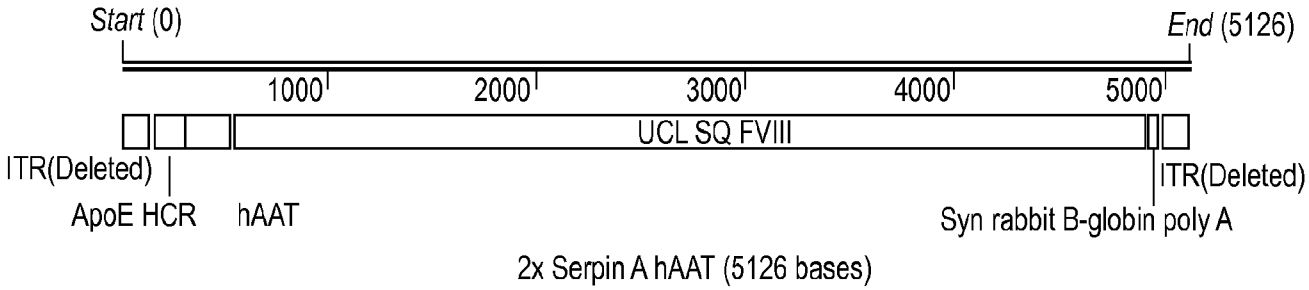

Start (0)
End (5126)
1000
2000
3000
4000
5000
UCL SQ FVIII
ITR(Deleted)
ApoE HCR
hAAT
ITR(Deleted)
Syn rabbit B-globin poly A
2x Serpin A hAAT (5126 bases)

FIGURE 4KK

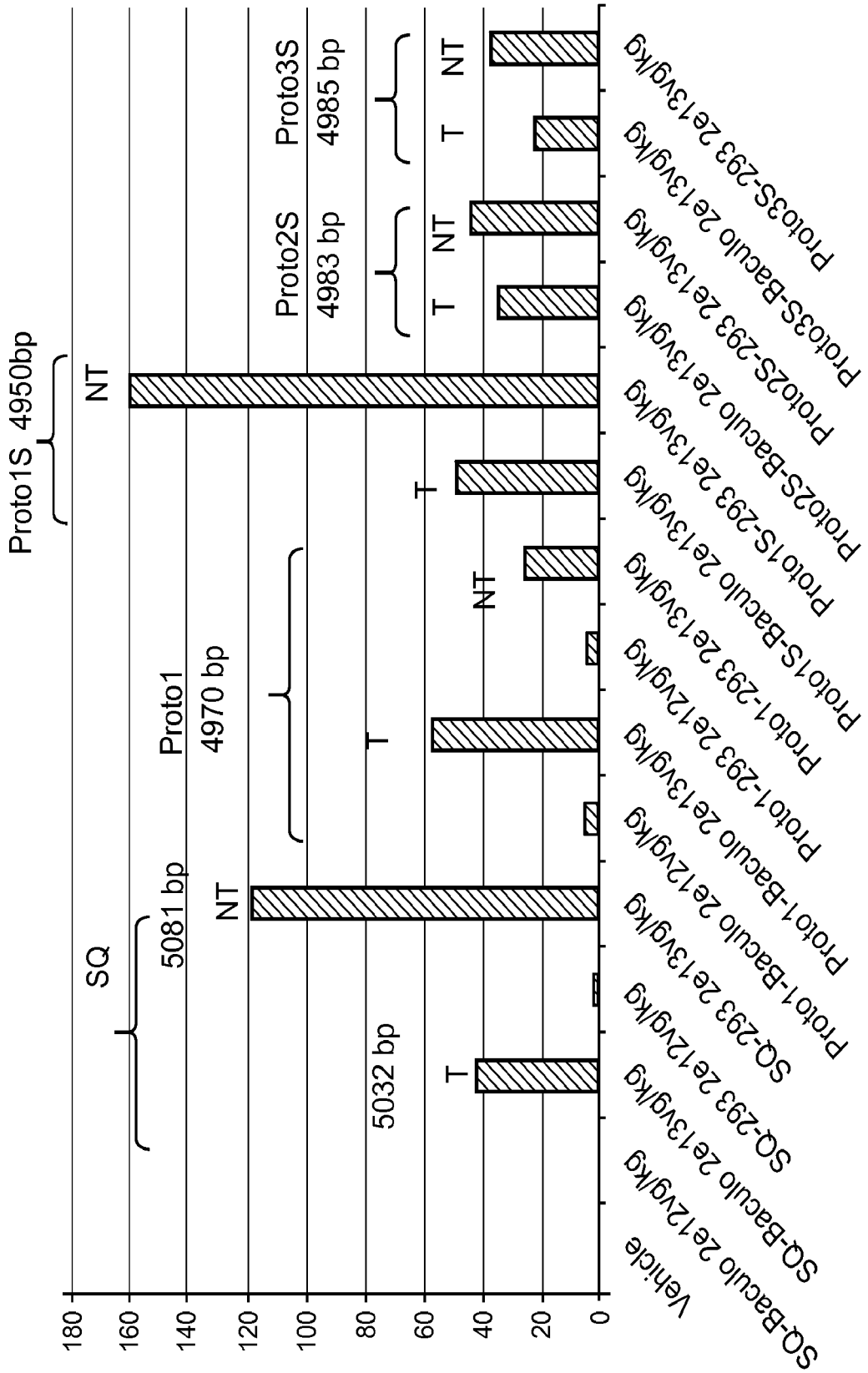

Proto1S 4950bp
NT
SQ
5081 bp
Proto1
4970 bp
NT
Proto2S
4983 bp
Proto3S
4985 bp
T
NT
T
NT
T
NT
T
5032 bp
T
NT
T
Vehicle
SQ-Baculo 2e12vg/kg
SQ-Baculo 2e13vg/kg
SQ-293 2e12vg/kg
SQ-293 2e13vg/kg
Proto1-Baculo 2e12vg/kg
Proto1-Baculo 2e13vg/kg
Proto1-293 2e12vg/kg
Proto1-293 2e13vg/kg
Proto1S-Baculo 2e13vg/kg
Proto1S-293 2e13vg/kg
Proto2S-Baculo 2e13vg/kg
Proto2S-293 2e13vg/kg
Proto3S-Baculo 2e13vg/kg
Proto3S-293 2e13vg/kg
0
20
40
60
80
100
120
140
160
180

FIGURE 5

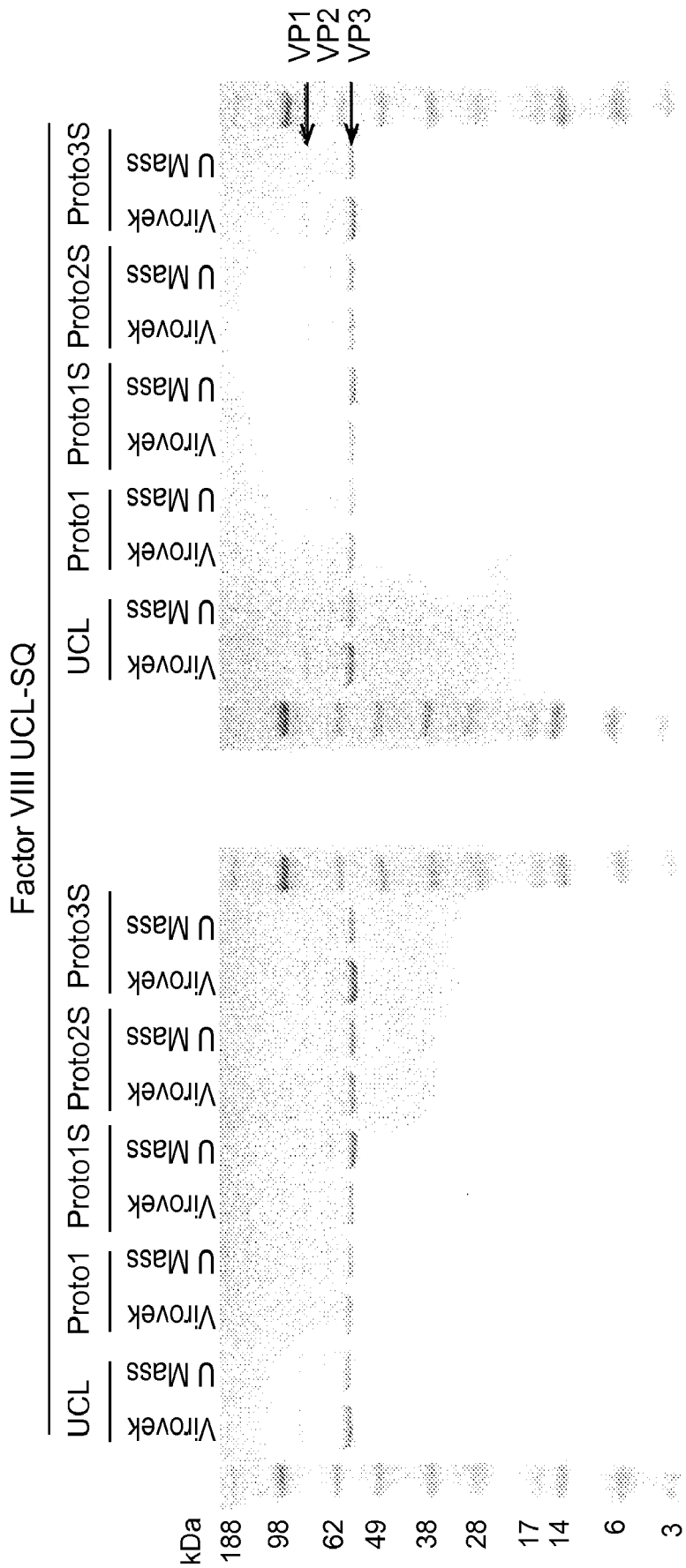

Factor VIII UCL-SQ
UCL
Proto1
Proto1S
Proto2S
Proto3S
Virovek
U Mass
kDa
188
98
62
49
38
28
17
14
6
3
VP1
VP2
VP3

FIGURE 6

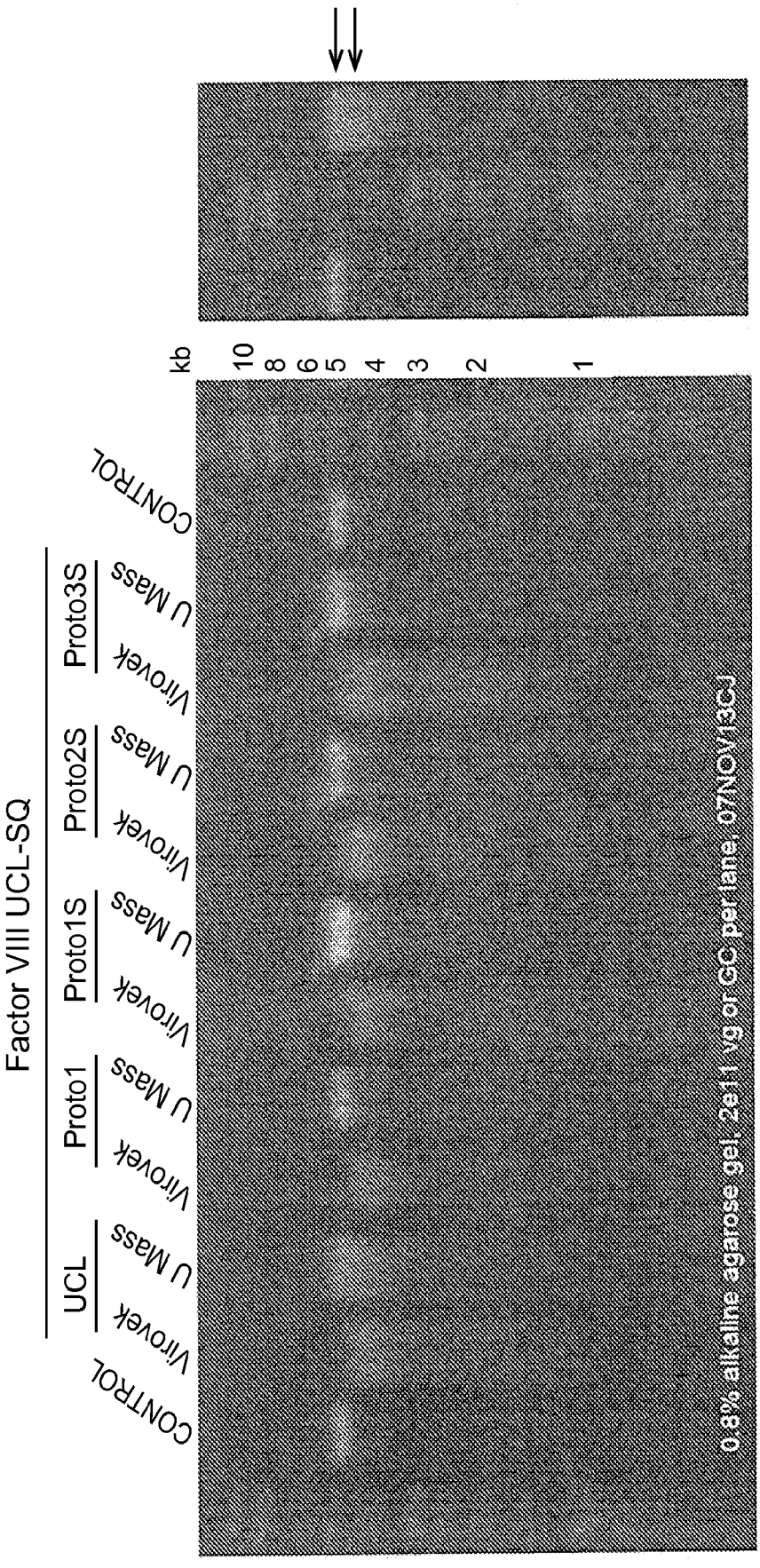

Factor VIII UCL-SQ
UCL
Proto1
Proto1S
Proto2S
Proto3S
U Mass
Virovek
CONTROL
kb
10
8
6
5
4
3
2
1
0.8% alkaline agarose gel, 2e11 vg or gc per lane, 07\OV\13CJ

FIGURE 7

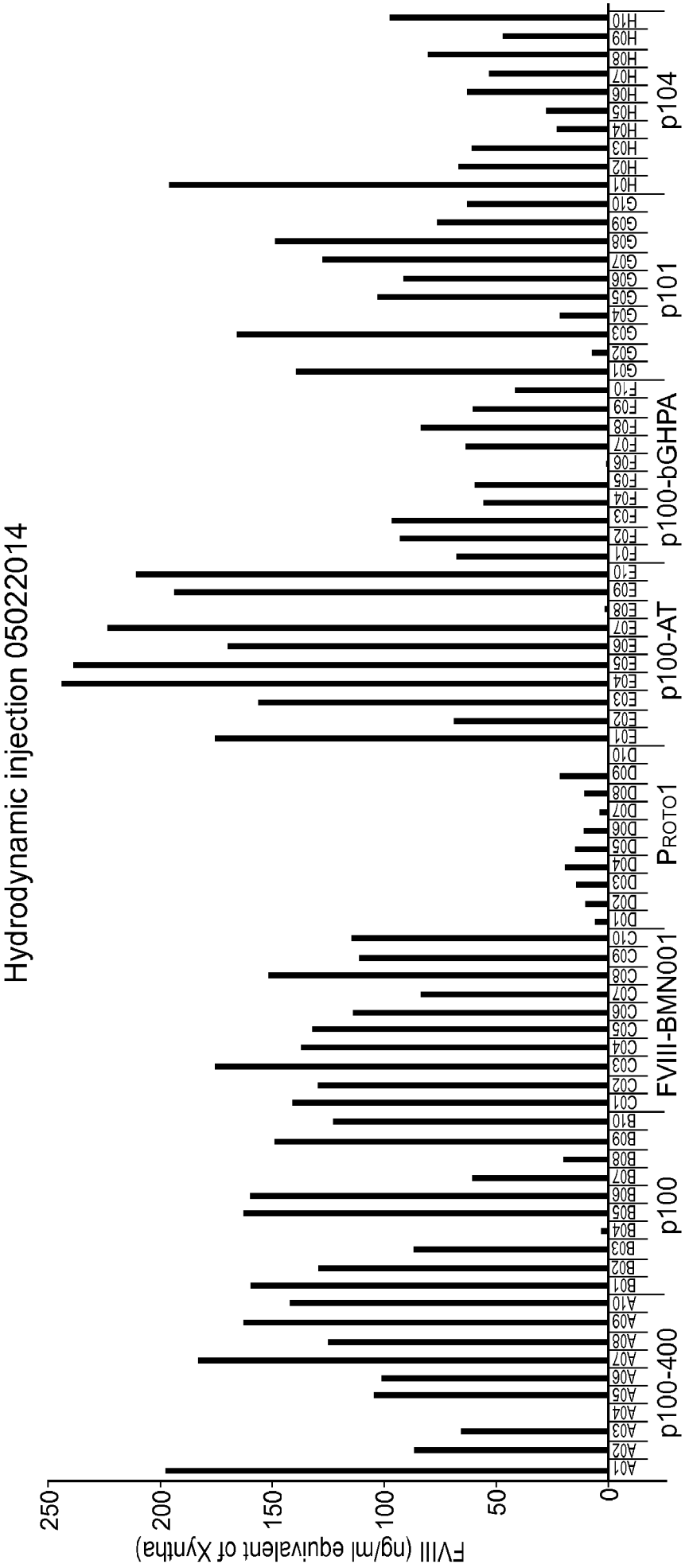

Hydrodynamic injection 05022014
FVIII (ng/ml equivalent of Xyntha)
250
200
150
100
50
0
A01
A02
A03
A04
A05
A06
A07
A08
A09
A10
B01
B02
B03
B04
B05
B06
B07
B08
B09
B10
C01
C02
C03
C04
C05
C06
C07
C08
C09
C10
D01
D02
D03
D04
D05
D06
D07
D08
D09
D10
E01
E02
E03
E04
E05
E06
E07
E08
E09
E10
F01
F02
F03
F04
F05
F06
F07
F08
F09
F10
G01
G02
G03
G04
G05
G06
G07
G08
G09
G10
H01
H02
H03
H04
H05
H06
H07
H08
H09
H10
p100-400
p100
FVIII-BMN001
PROTO1
p100-AT
p100-bGHPA
p101
p104

FIGURE 8

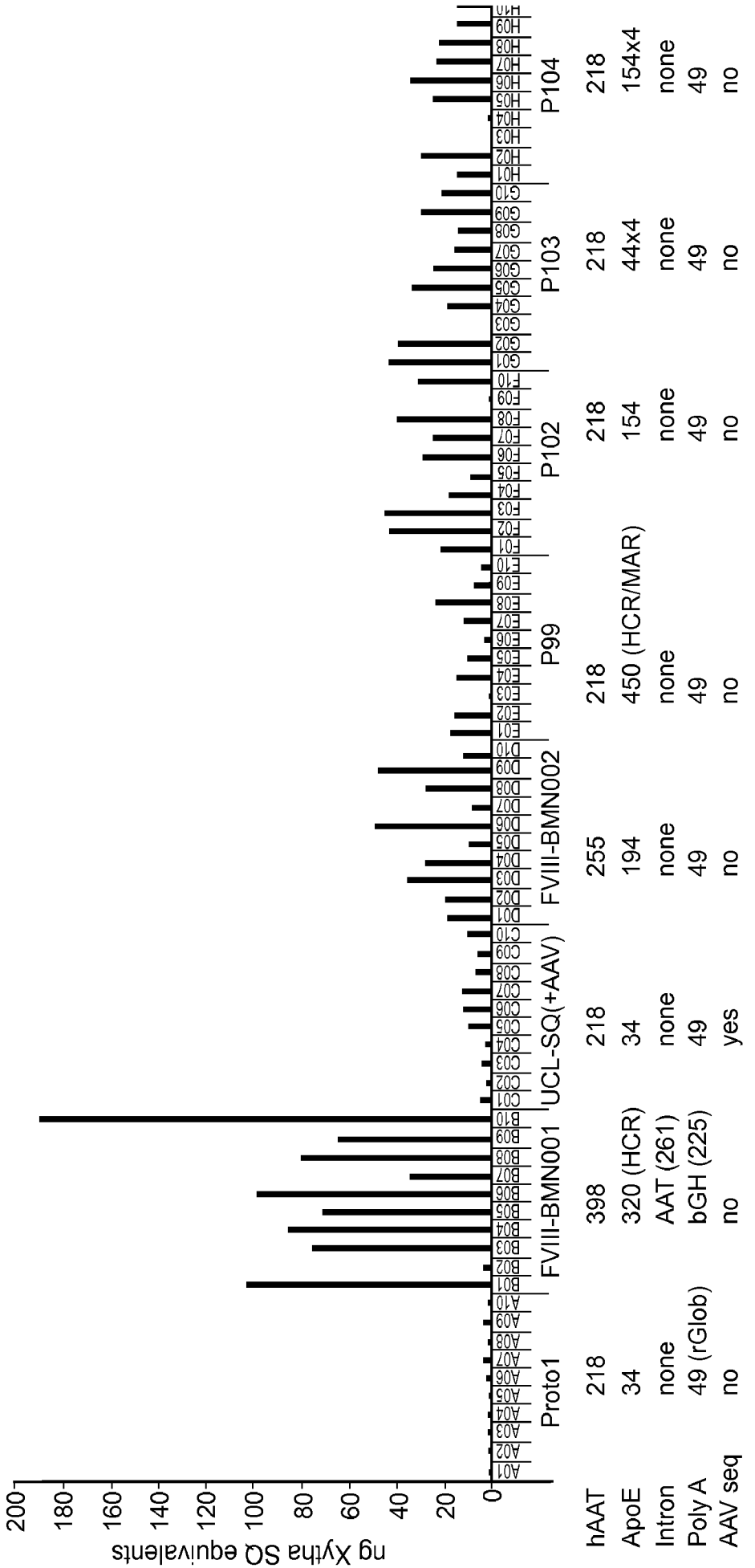

Hydrodynamic injection 05092014
ng Xyltha SQ equivalents
200
180
160
140
120
100
80
60
40
20
0
Proto1
FVIII-BMN001
UCL-SQ(+AAV)
FVIII-BMN002
P99
P102
P103
P104
hAAT 218 398 218 255 218 218 218
ApoE 34 320 (HCR) 34 194 450 (HCR/MAR) 154 44x4 154x4
Intron none AAT (261) none none none none none none
Poly A 49 (rGlob) bGH (225) 49 49 49 49 49 49
AAV seq no no yes no no no no no

FIGURE 9

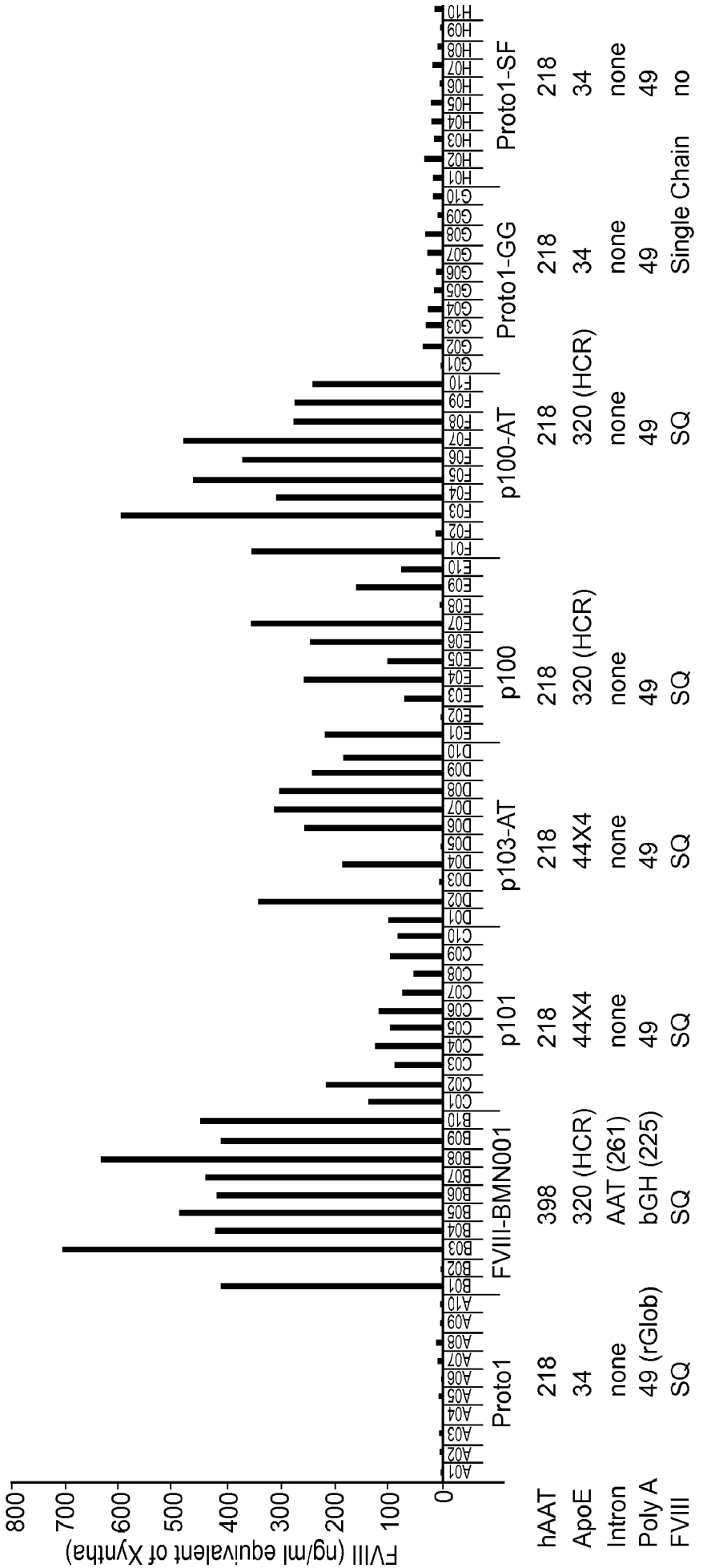

Hydrodynamic injection 05162014
FVIII (ng/ml equivalent of Xyntha)
800
700
600
500
400
300
200
100
0
hAAT
ApoE
Intron
Poly A
FVIII
Proto1
218
34
none
49 (rGlob)
SQ
FVIII-BMN001
398
320 (HCR)
AAT (261)
bGH (225)
SQ
p101
218
44X4
none
49
SQ
p103-AT
218
44X4
none
49
SQ
p100
218
320 (HCR)
none
49
SQ
p100-AT
218
320 (HCR)
none
49
SQ
Proto1-GG
218
34
none
49
Single Chain
Proto1-SF
218
34
none
49
no

FIGURE 10