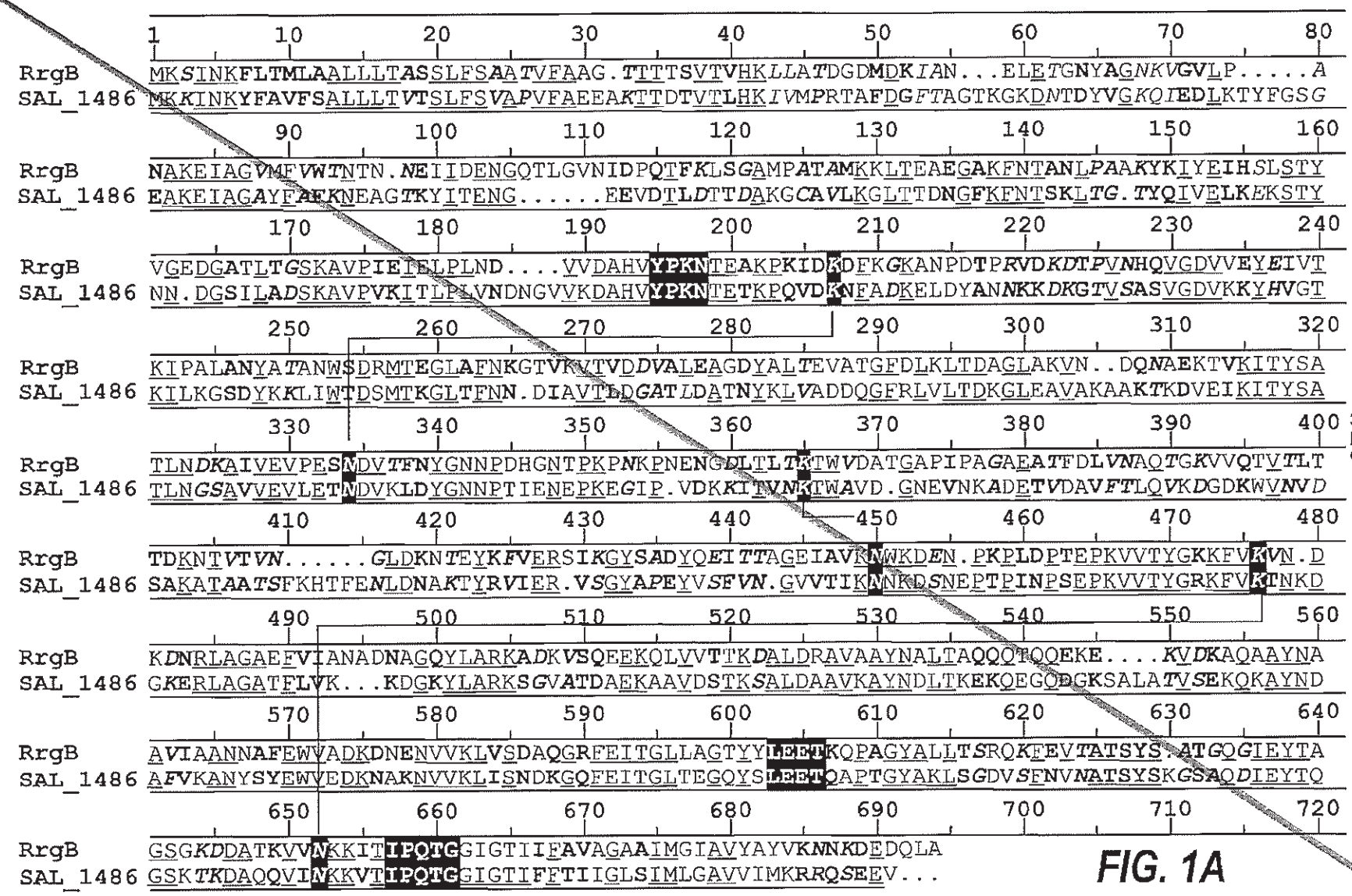

1 10 20 30 40 50 60 70 80
RrgB MKSINKFLTMLAALLLTASSLFSAATVFAAG.TTTTSVTVHKLLATDGDMDKIAN...ELETGNYAGNKVGVLP.....A
SAL_1486 MKKINKYFAVFSALLLTVTSLFSVAPVFAEEAKTTDTVTLHKIVMPRTAFDGFTAGTKGKDNTDYVGKQIEDLKTYFGSG
90 100 110 120 130 140 150 160
RrgB NAKEIAGVMFVWTNTN.NEIIDENGQTLGVNIDPQTFKLSGAMPATAMKKLTEAEGAKFNTANLPAAKYKIYEIHSLSTY
SAL_1486 EAKEIAGAYFAFKNEAGTKYITENG.....EEVDTLDTTDAKGCAVLKGLTTDNGFKFNTSKLTG.TYQIVELKEKSTY
170 180 190 200 210 220 230 240
RrgB VGEDGATLTGSKAVPIEIELPLND....VVDAHVYPKNTEAKPKIDKDFKGKANPDTPRVDKDTPVNHQVGDVVEYEIVT
SAL_1486 NN.DGSILADSKAVPVKITLPLVNDNGVVKDAHVYPKNTETKPQVDKNFADKELDYANNKKDKGTVSASVGDVKKYHVGT
250 260 270 280 290 300 310 320
RrgB KIPALANYATANWSDRMTEGLAFNKGTVKVTVDDVALEAGDYALTEVATGFDLKLTDAGLAKVN..DQNAEKTVKITYSA
SAL_1486 KILKGSDYKKLIWTDSMTKGLTFNN.DIAVTLDGATLDATNYKLVADDQGFRLVLTDKGLEAVAKAAKTKDVEIKITYSA
330 340 350 360 370 380 390 400
RrgB TLNDKAIVEVPESMDVTFNYGNNPDHGNTPKPNKPNENGDLTLTKTWVDATGAPIPAGAEATFDLVNAQTGKVVQTVTLT
SAL_1486 TLNGSAVVEVLETMDVKLDYGNNPTIENEPKEGIP.VDKKITVNKTWAVD.GNEVNKADETVDAVFTLQVKDGDKWVNVD
410 420 430 440 450 460 470 480
RrgB TDKNTVTVN.....GLDKNTEYKFVERSIKGYSADYQEITTAGEIAVKNWKDEN.PKPLDPTEPKVVTYGKKFVKVN.D
SAL_1486 SAKATAATSFKHTFENLDNAKTYRVIER.VSGYAPEYVSFVN.GVVTIKNNKDSNEPTPINPSEPKVVTYGRKFVKTNKD
490 500 510 520 530 540 550 560
RrgB KDNRLAGAEFVIANADNAGQYLARKADKVSQEEKQLVVTTKDALDRAVAAYNALTAQQQTQQEKE....KVDKAQAAYNA
SAL_1486 GKERLAGATFLVK...KDGKYLARKSGVATDAEKAAVDSTKSALDAAVKAYNDLTKEKQEGQDGKSALATVSEKQKAYND
570 580 590 600 610 620 630 640
RrgB AVIAANNAFEWVADKDNENVVKLVSDAQGRFEITGLLAGTYYLEETKQPAGYALLTSRQKFEVTATSYS.ATGQGIEYTA
SAL_1486 AFVKANYSYEWVEDKNAKNVVKLISNDKGQFEITGLTEGQYSLEETQAPTGYAKLSGDVSFNVNATSYSKGSAQDIEYTQ
650 660 670 680 690 700 710 720
RrgB GSGKDDATKVVNKKITIPQTGGIGTIIFAVAGAAIMGIAVYAYVKNNKDEDQLA
SAL_1486 GSKTKDAQQVINKKVTIPQTGGIGTIFFTIIGLSIMLGAVVIMKRRQSEEV...

FIG. 1A

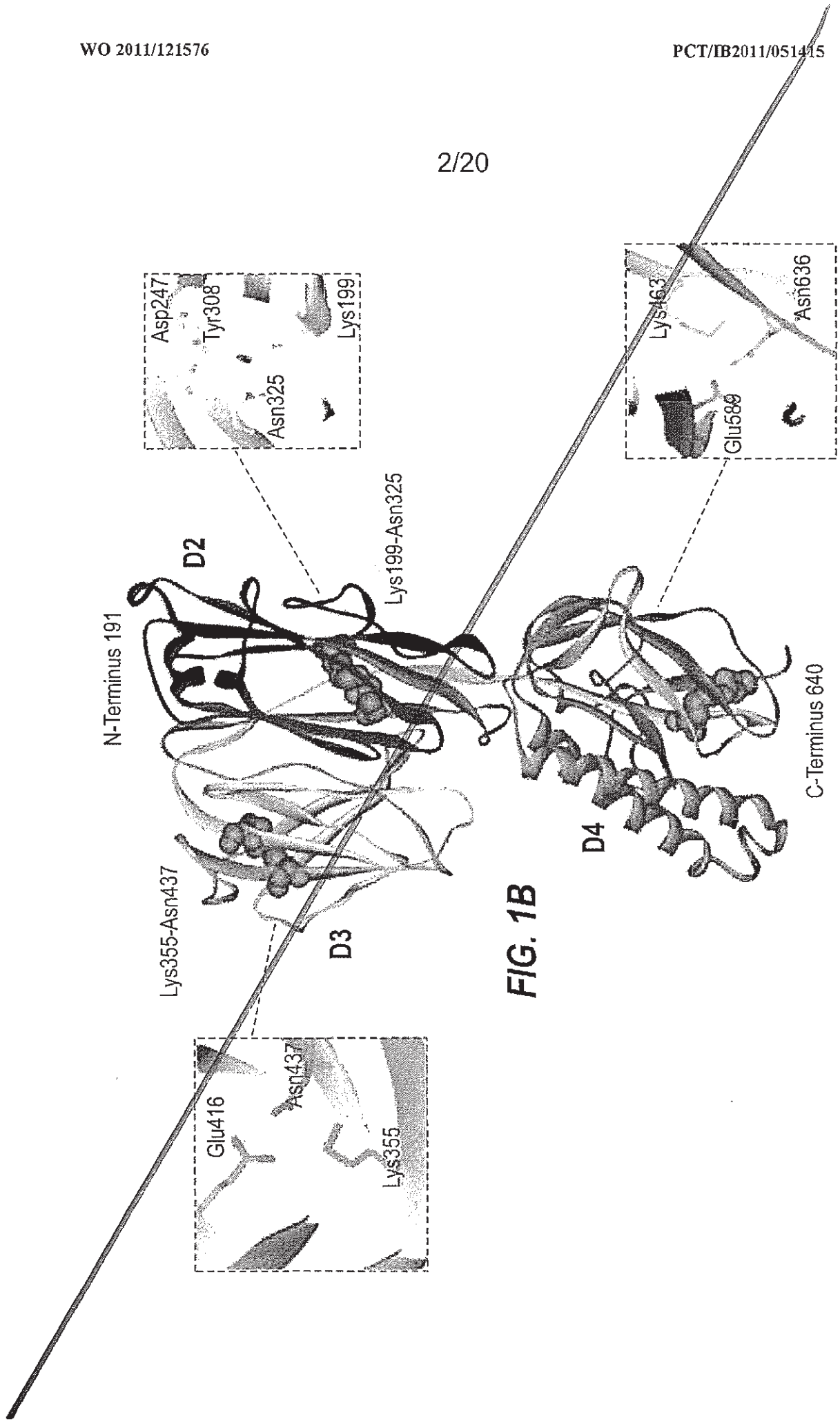

N-Terminus 191
D2
Lys199-Asn325
Asp247
Tyr308
Asn325
Lys199
Lys355-Asn437
D3
Glu416
Asn437
Lys355
D4
Lys463
Asn636
Glu580
C-Terminus 640

FIG. 1B

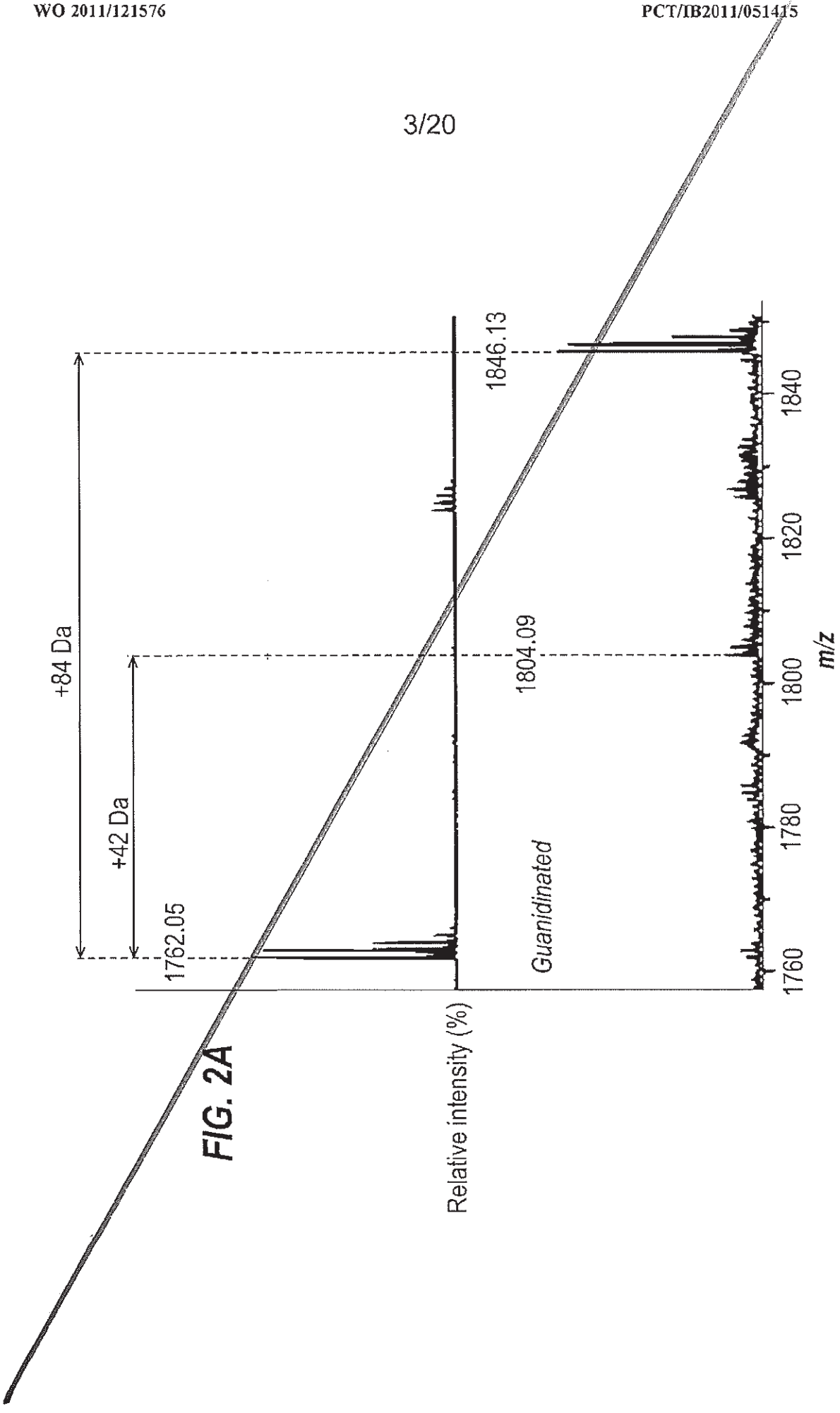

+84 Da
+42 Da
1762.05
1804.09
1846.13
Guanidinated
Relative intensity (%)
1760
1780
1800
1820
1840
m/z

FIG. 2A

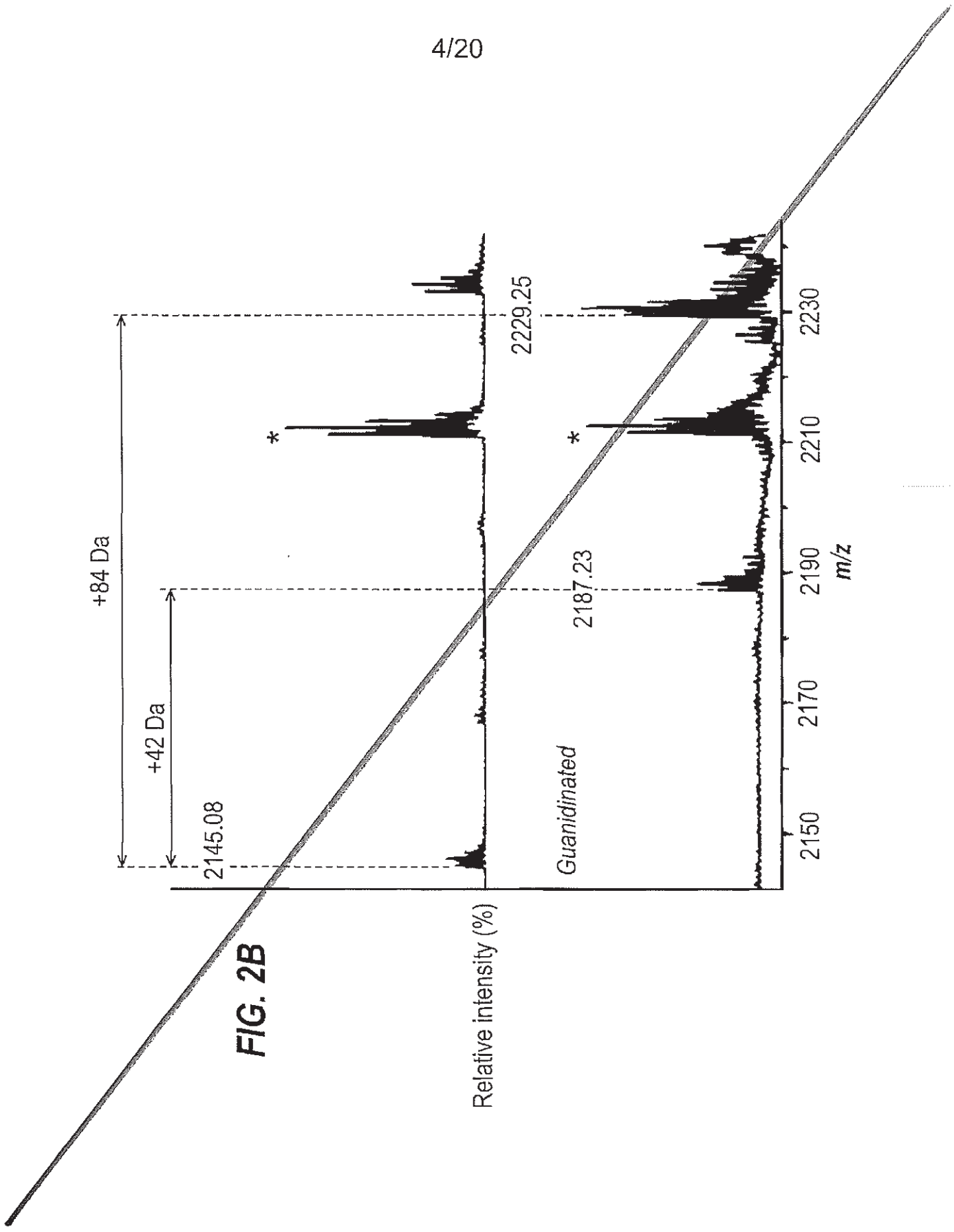

+84 Da
+42 Da
2145.08
2187.23
2229.25
*
*
Guanidinated
Relative intensity (%)
2150
2170
2190
2210
2230
m/z

FIG. 2B

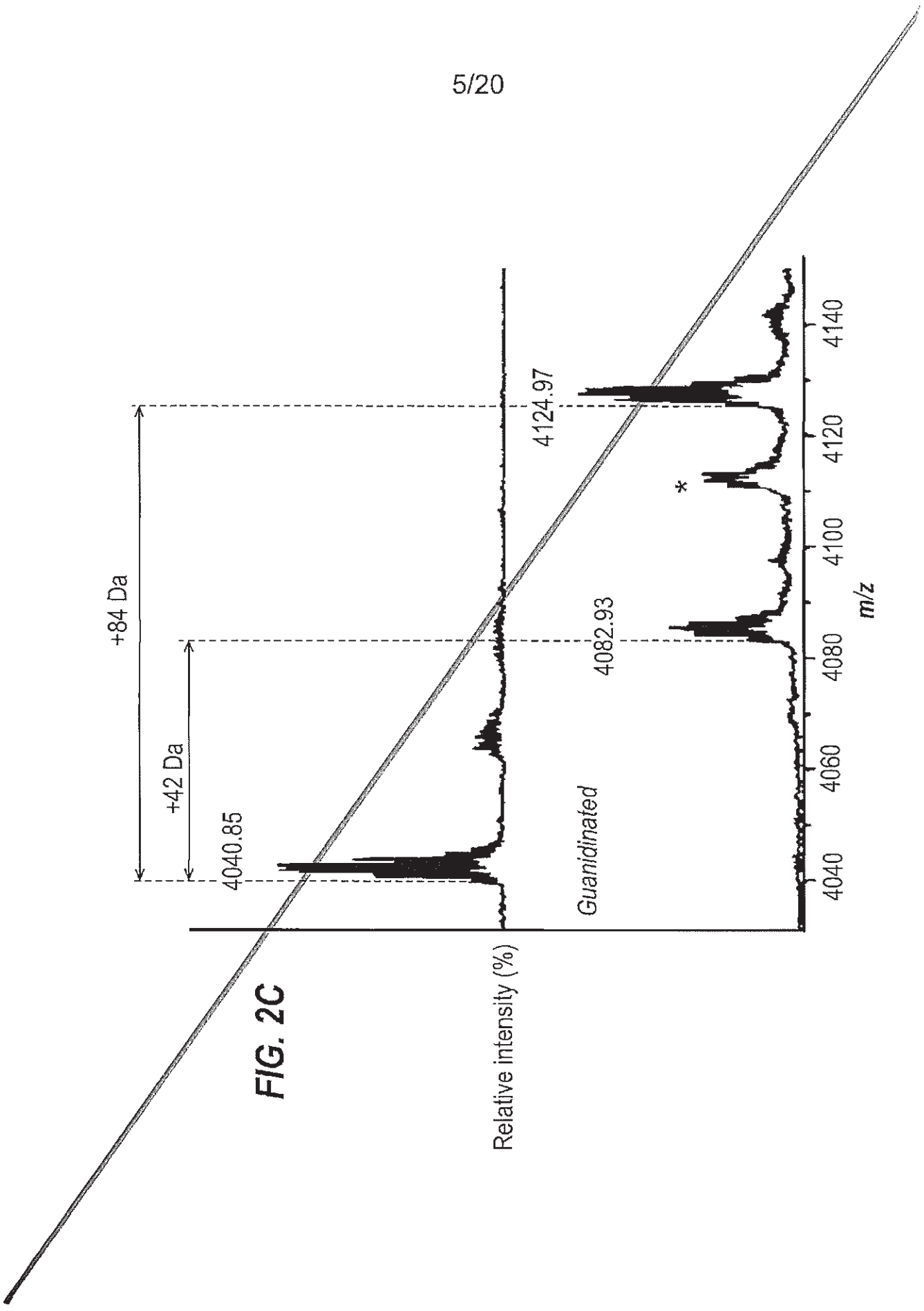

+84 Da
+42 Da
4040.85
4124.97
4082.93
Guanidinated
*
Relative intensity (%)
4040
4060
4080
4100
4120
4140
m/z

FIG. 2C

KDa
98
62
49
WT
ΔIB

FIG. 3A

Log CFU (To -T1)
3.0
2.5
2.0
1.50
1.0
0.5
0.0
-0.5
-1.0
-1.5
BP-2aWT
BP-2aΔIB
preimmune
immune

FIG. 3B

FIG. 4A

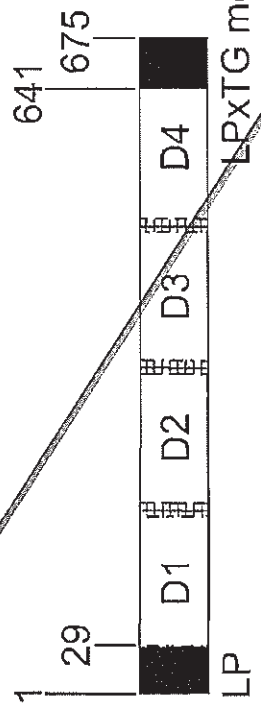


FIG. 4B

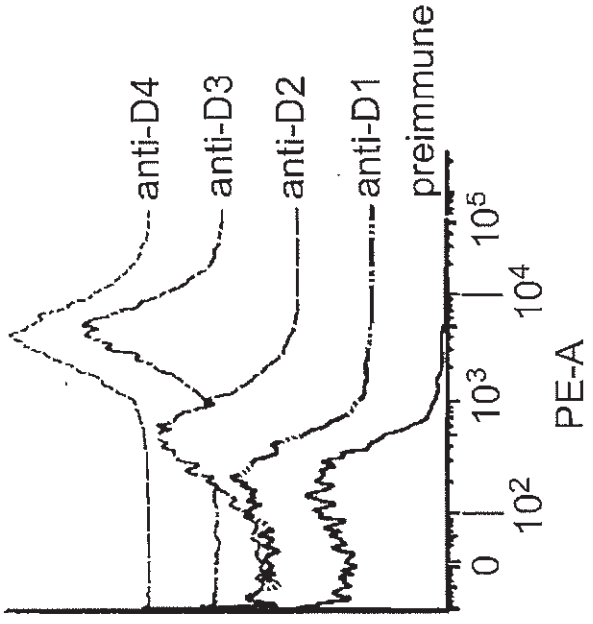


FIG. 4C

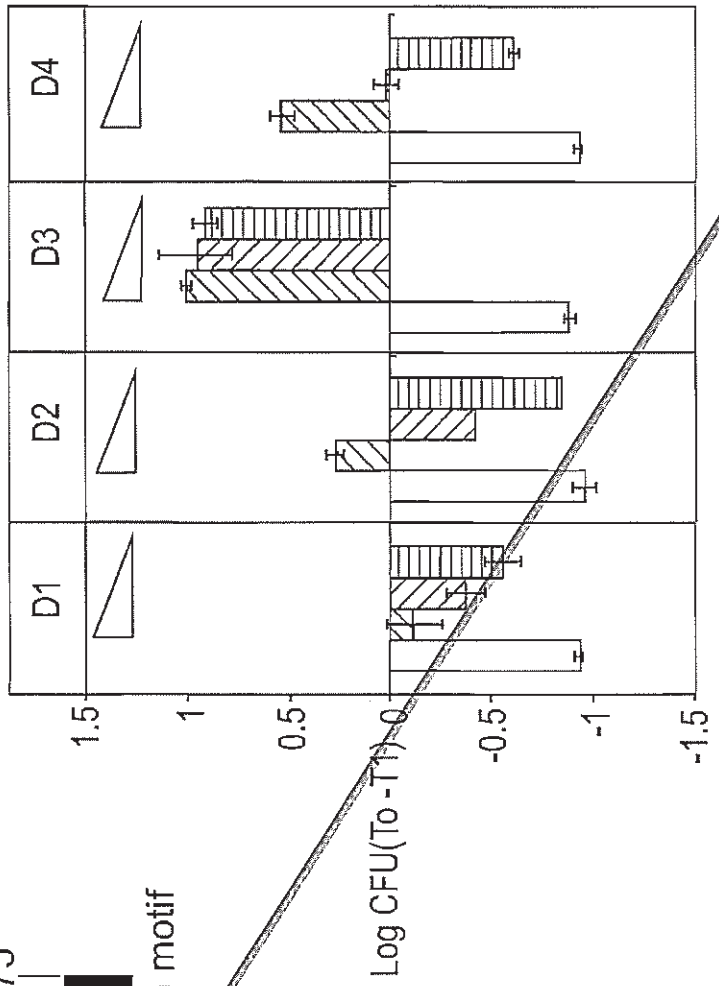
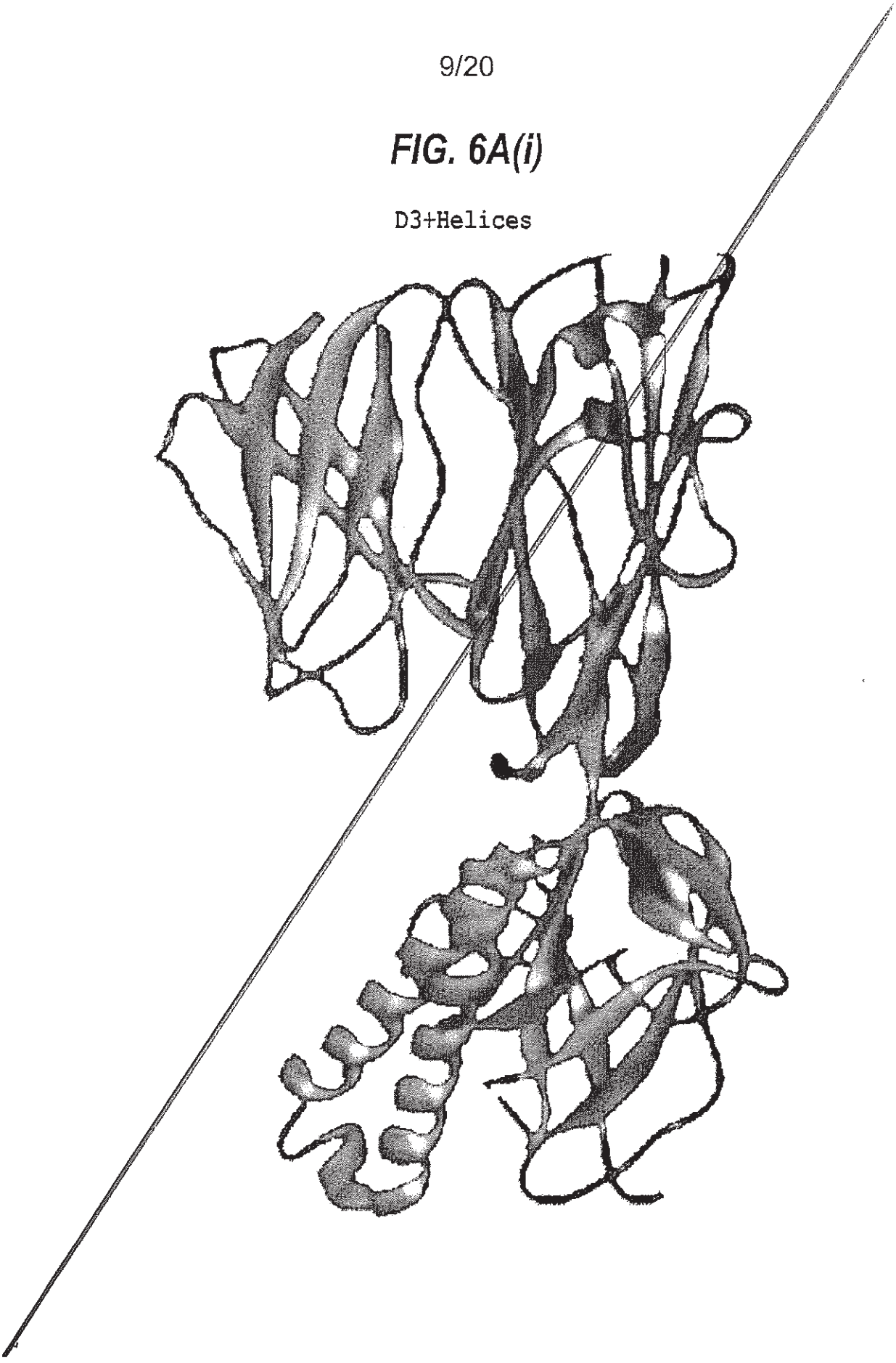


FIG. 5A

FIG. 5B

FIG. 6A(i)

D3+Helices



D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_090
D3and2H_H36B
D3and2H_2603
D3
D3

FIG. 6A(ii)

D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_O90
D3and2H_H36B
D3and2H_2603
Helices
Helices

FIG. 6A(iii)

FIG. 6B

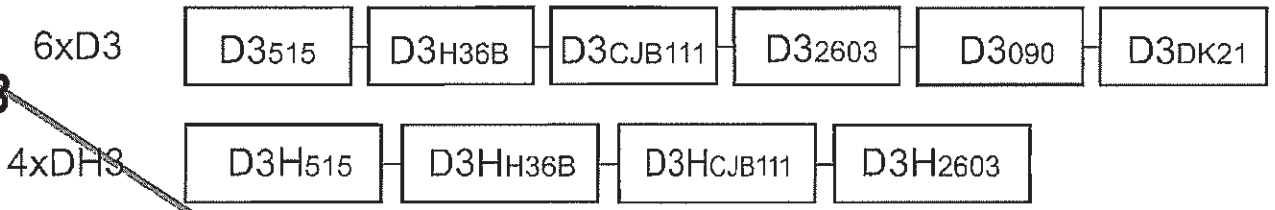


FIG. 6C

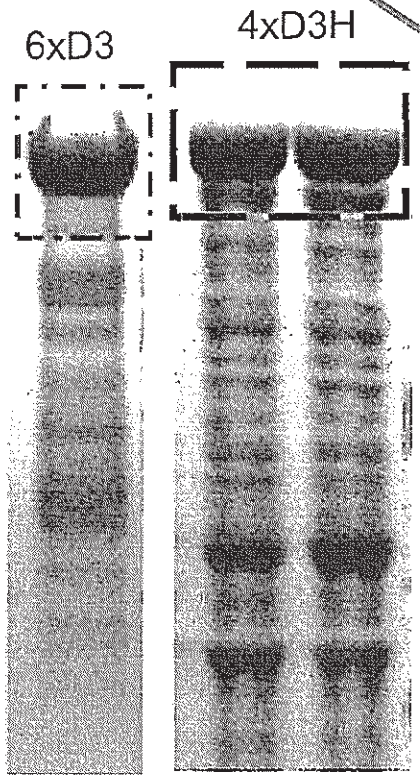


FIG. 6D

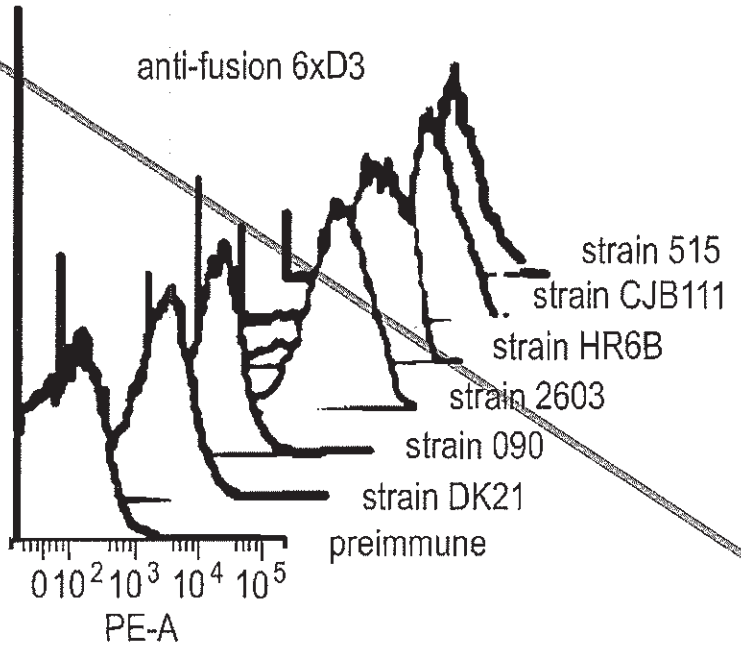
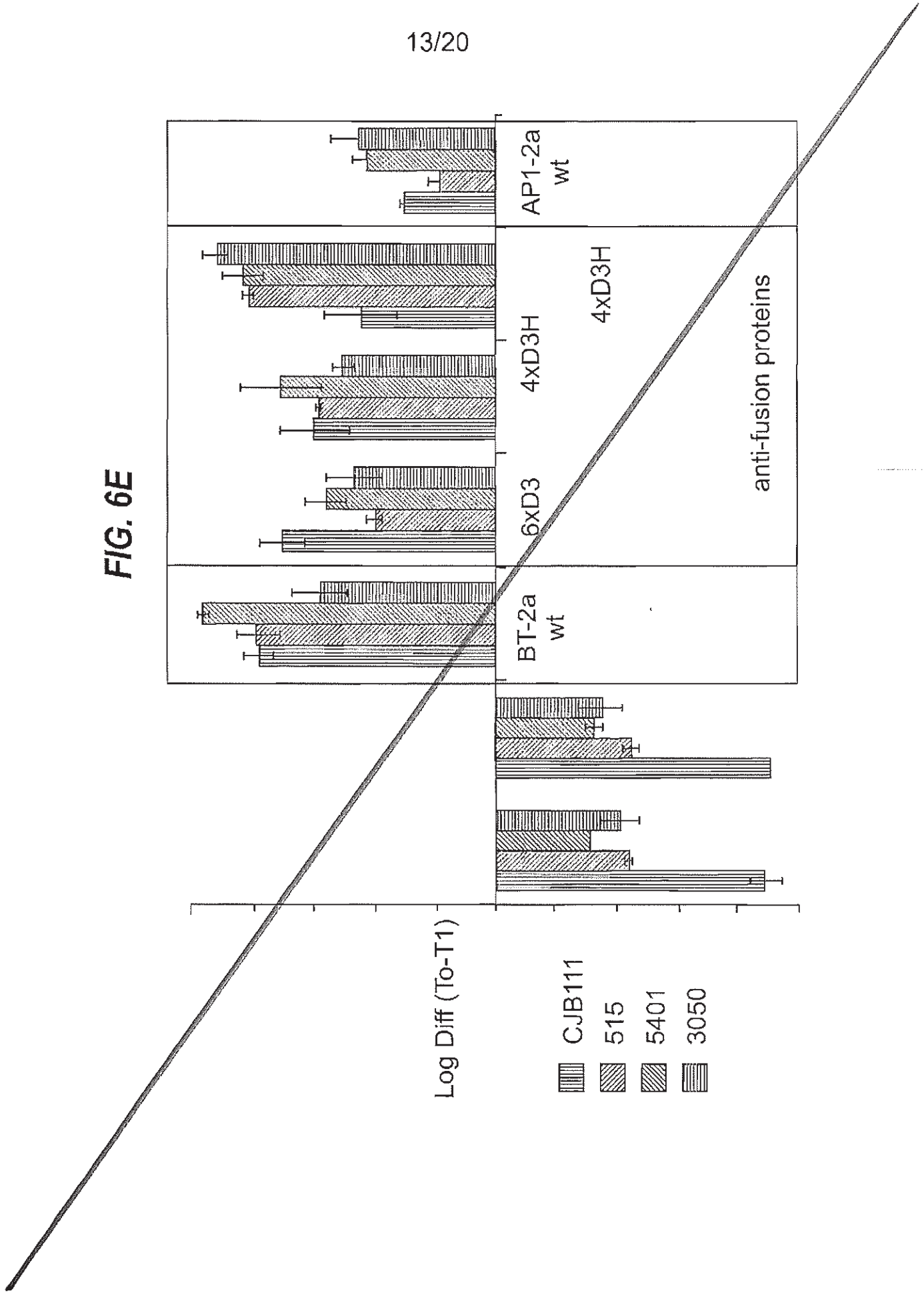


FIG. 6E


Log Diff (To-T1)
CJB111
515
5401
3050
BT-2a wt
6xD3
4xD3H
4xD3H
AP1-2a wt
anti-fusion proteins

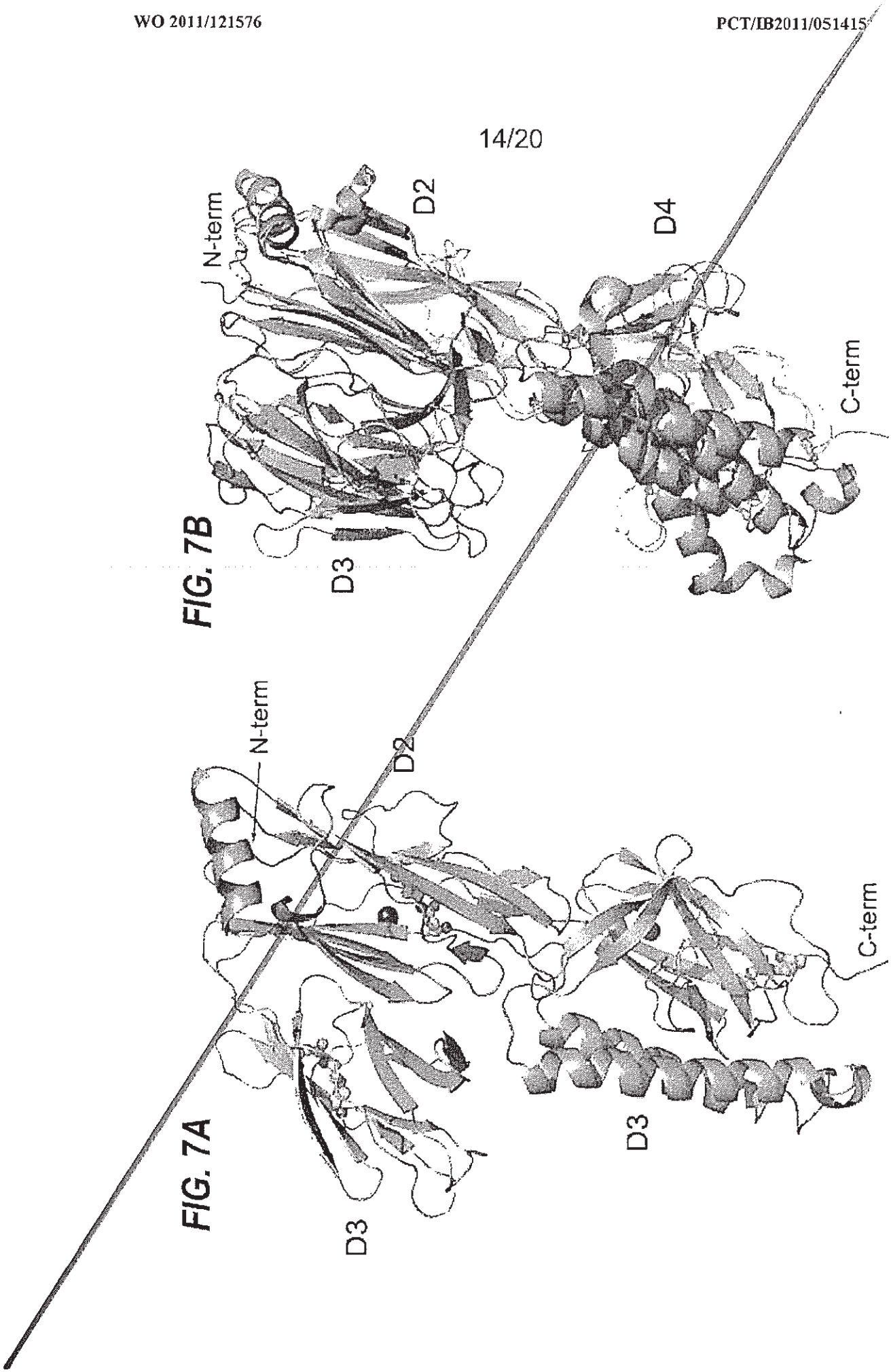


FIG. 7B

FIG. 7A

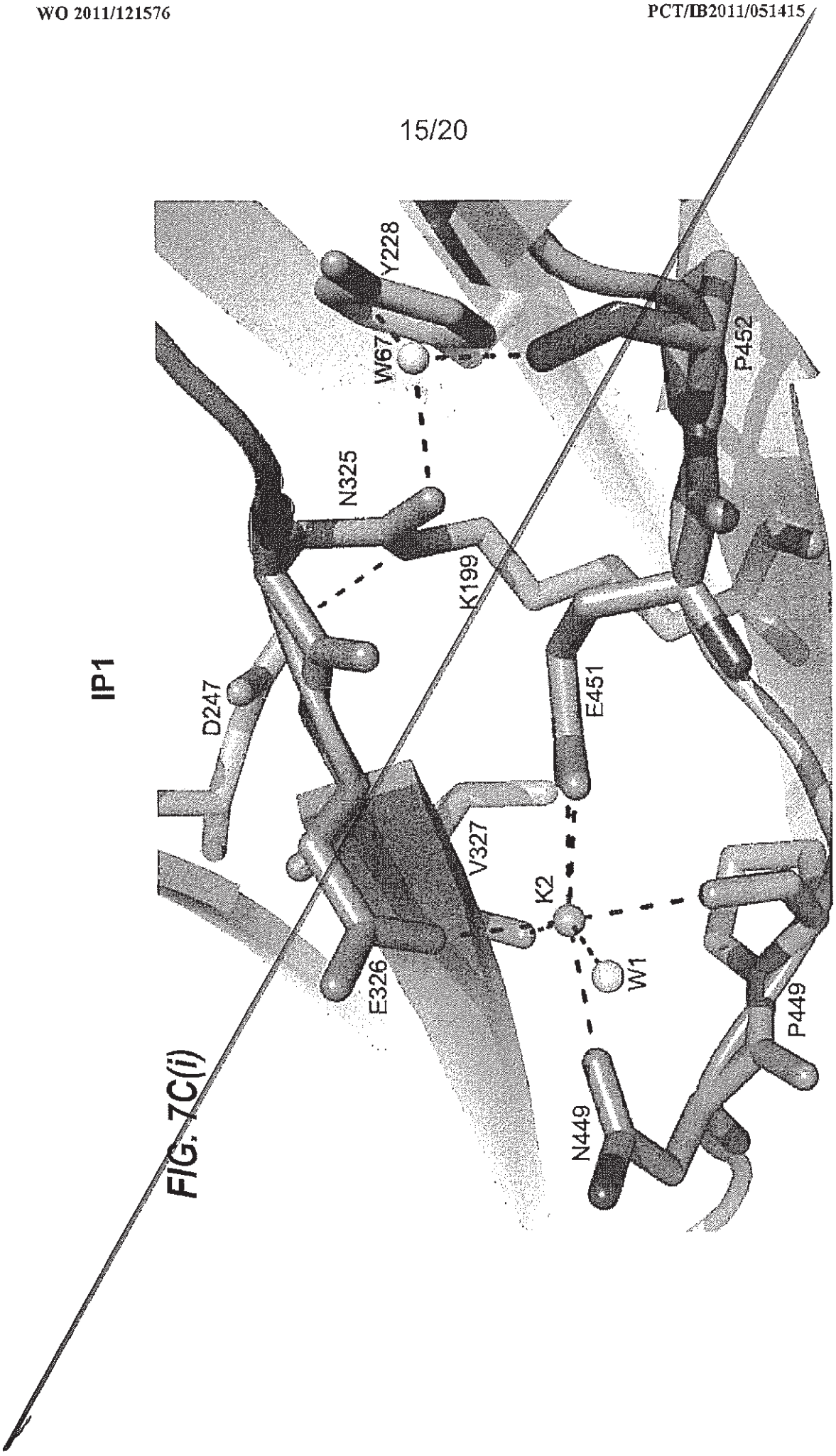

IP1
Y228
W67
P452
N325
K199
D247
E451
V327
K2
W1
E326
P449
N449

FIG. 7C(i)

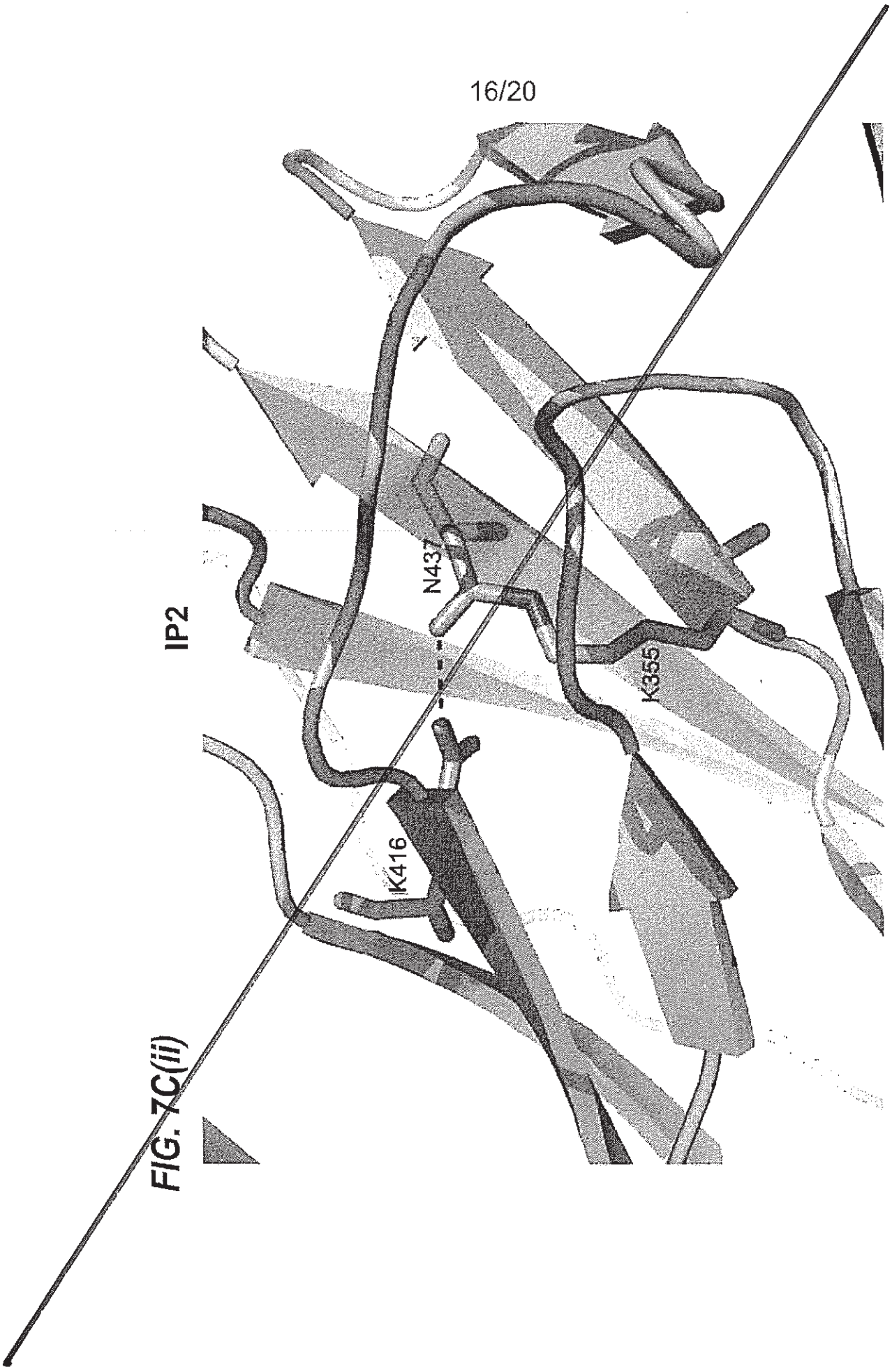


FIG. 7C(ii)

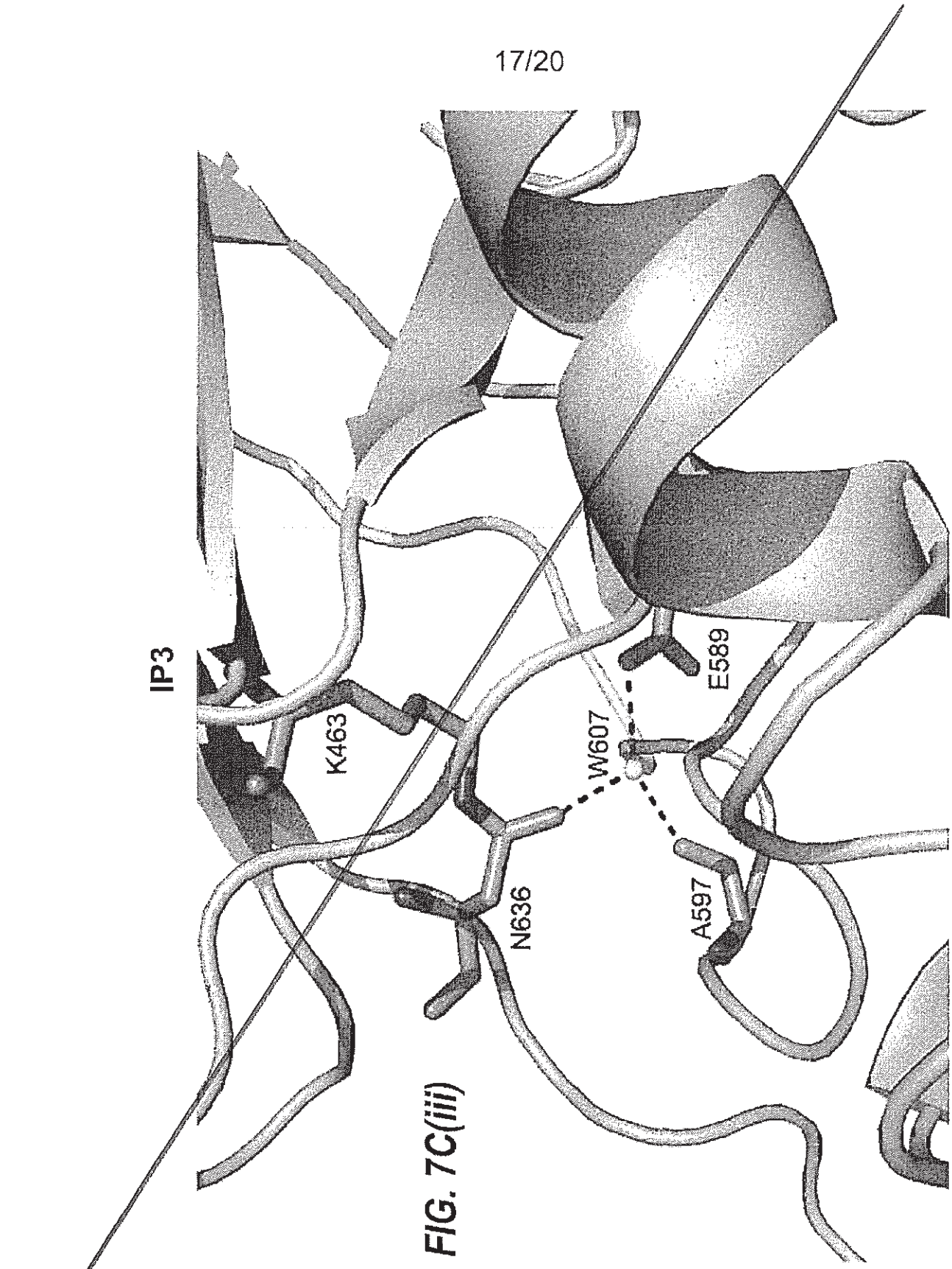


FIG. 7C(iii)

190NTETKPQVDKNFADK204
307ITYSATLNGSAVVEVLETNDVK328
+84 Da
+42 Da
4040.85
4124.97
Guanidinated
4082.93
Relative Intensity (%)
4040
4060
4080
4100
4120
4040
m/z

FIG. 7D(i)

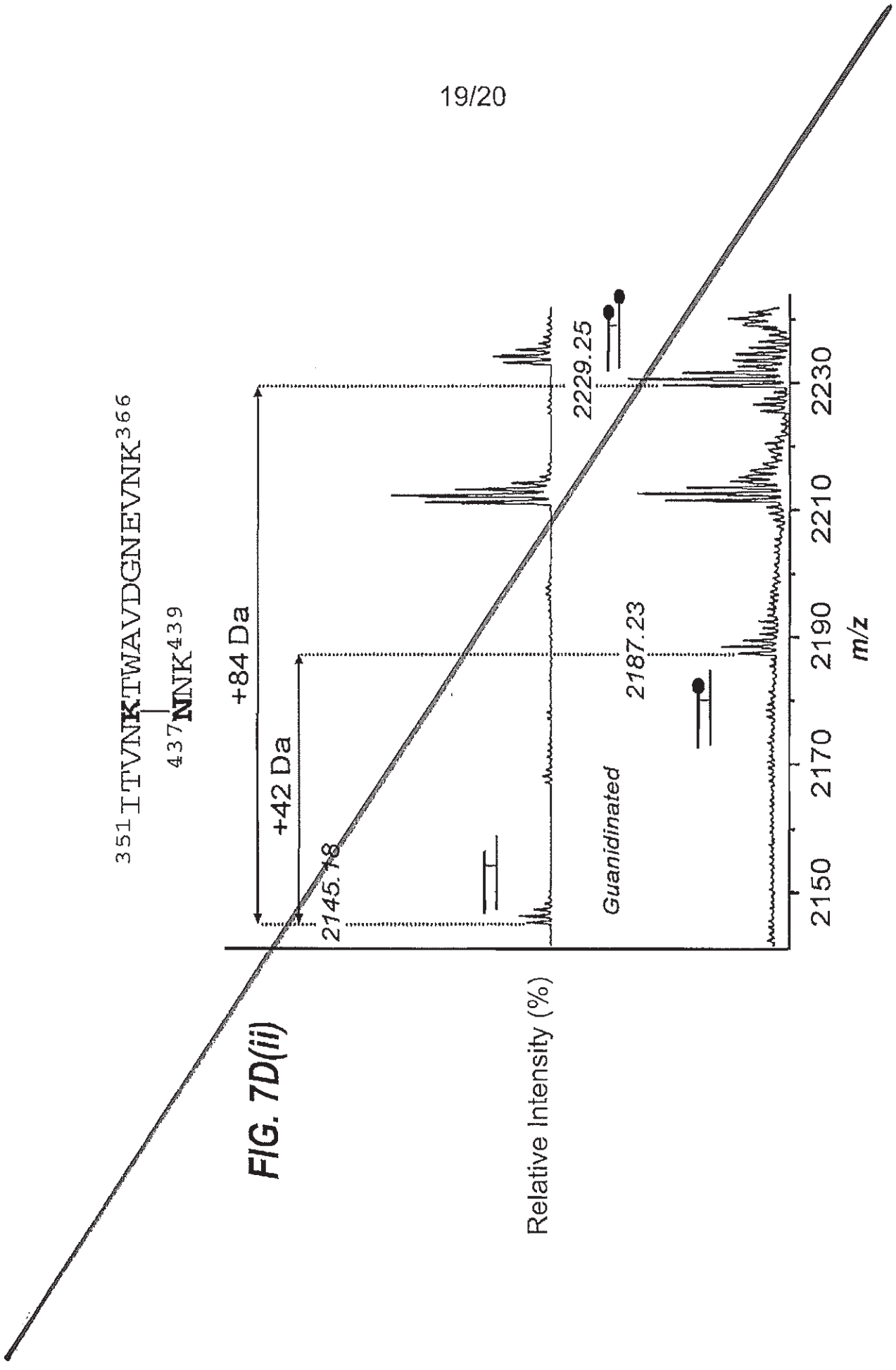

351 ITVNKTWAVDGNEVNK366
437NNK439
+84 Da
+42 Da
2145.18
2229.25
2187.23
Guanidinated
Relative Intensity (%)
2150
2170
2190
2210
2230
m/z

FIG. 7D(ii)

FIG. 7D(iii)
461FVKTNK466
630DAQQVINKK638
+42 Da
+84 Da
1762.05
1804.09
1846.13
Guanidinated
Relative Intensity (%)
m/z
1760
1780
1800
1820
1840

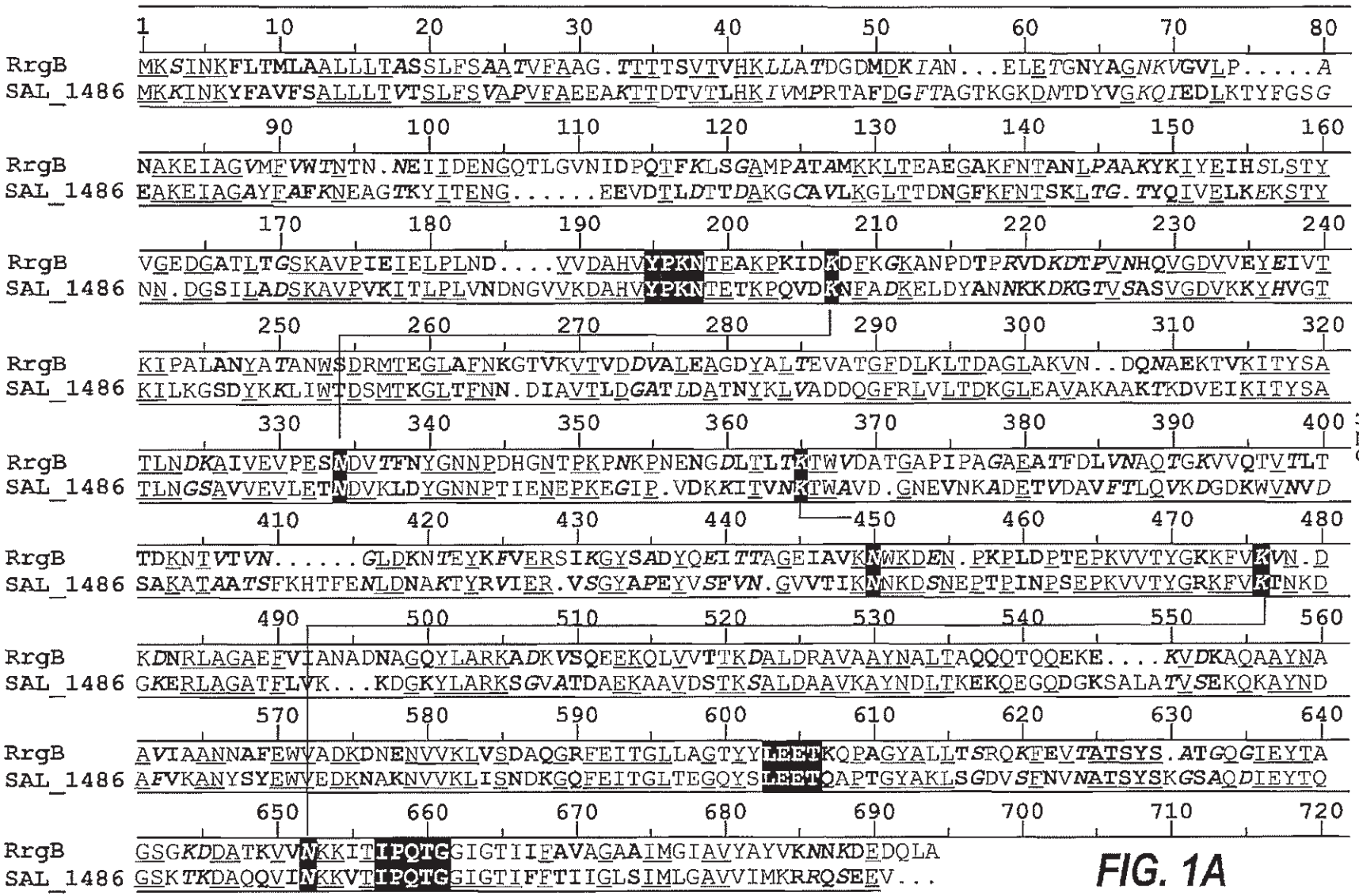


FIG. 1A

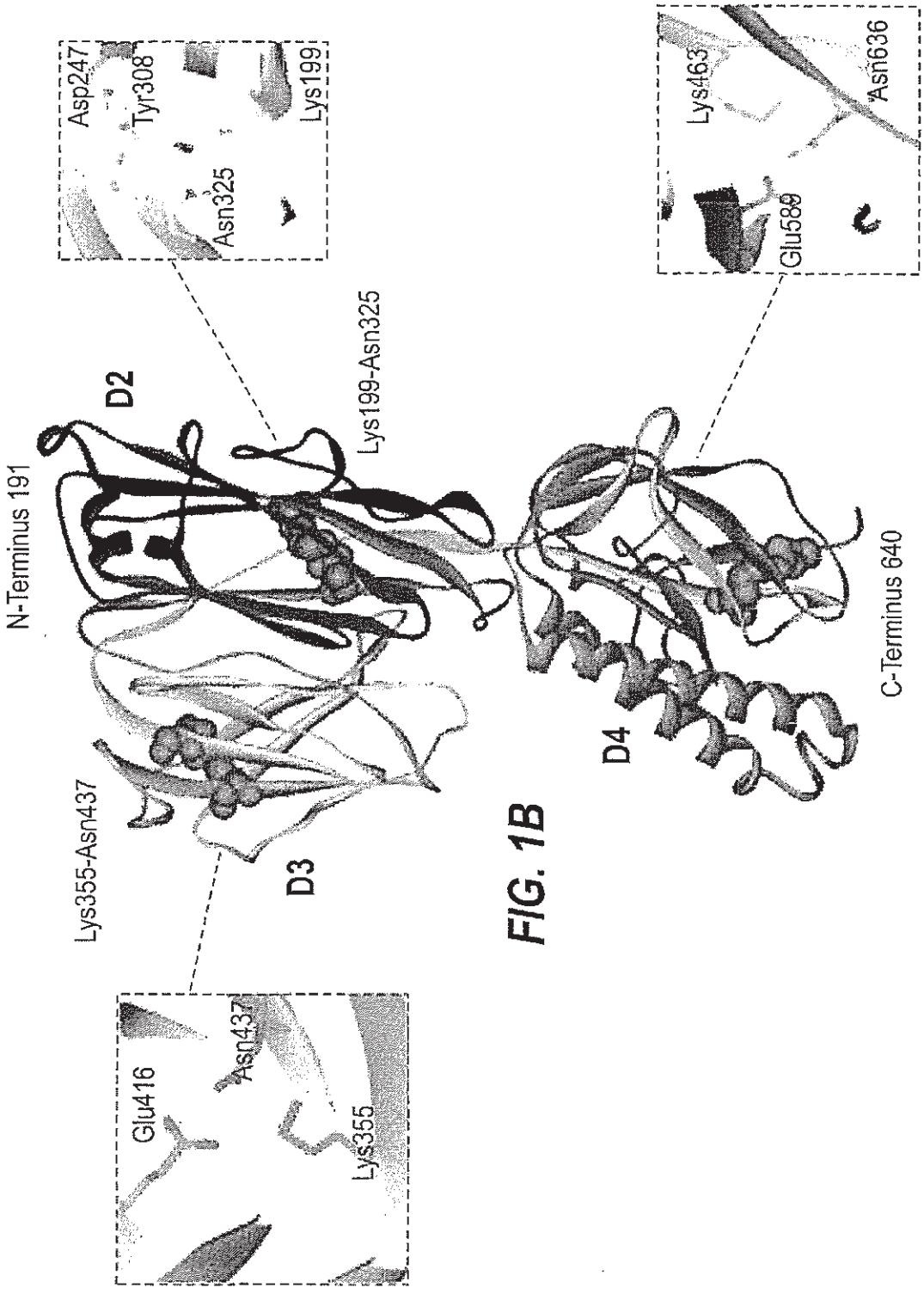

Asp247
Tyr308
Asn325
Lys199
Lys463
Asn636
Glu589
N-Terminus 191
D2
Lys199-Asn325
Lys355-Asn437
D3
D4
C-Terminus 640
Glu416
Asn437
Lys355

FIG. 1B

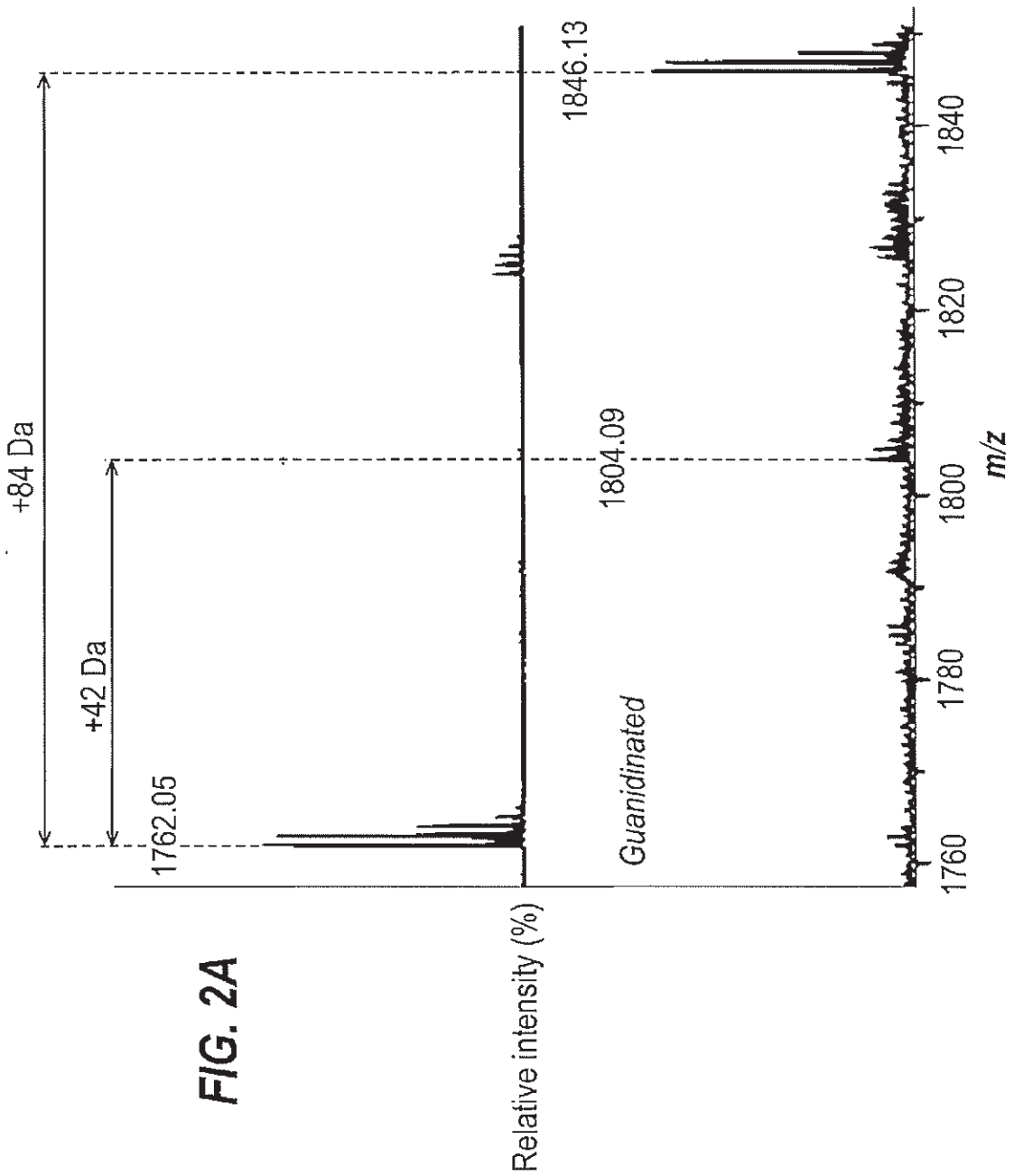

+84 Da
+42 Da
1762.05
1804.09
1846.13
Guanidinated
Relative intensity (%)
1760
1780
1800
1820
1840
m/z

FIG. 2A

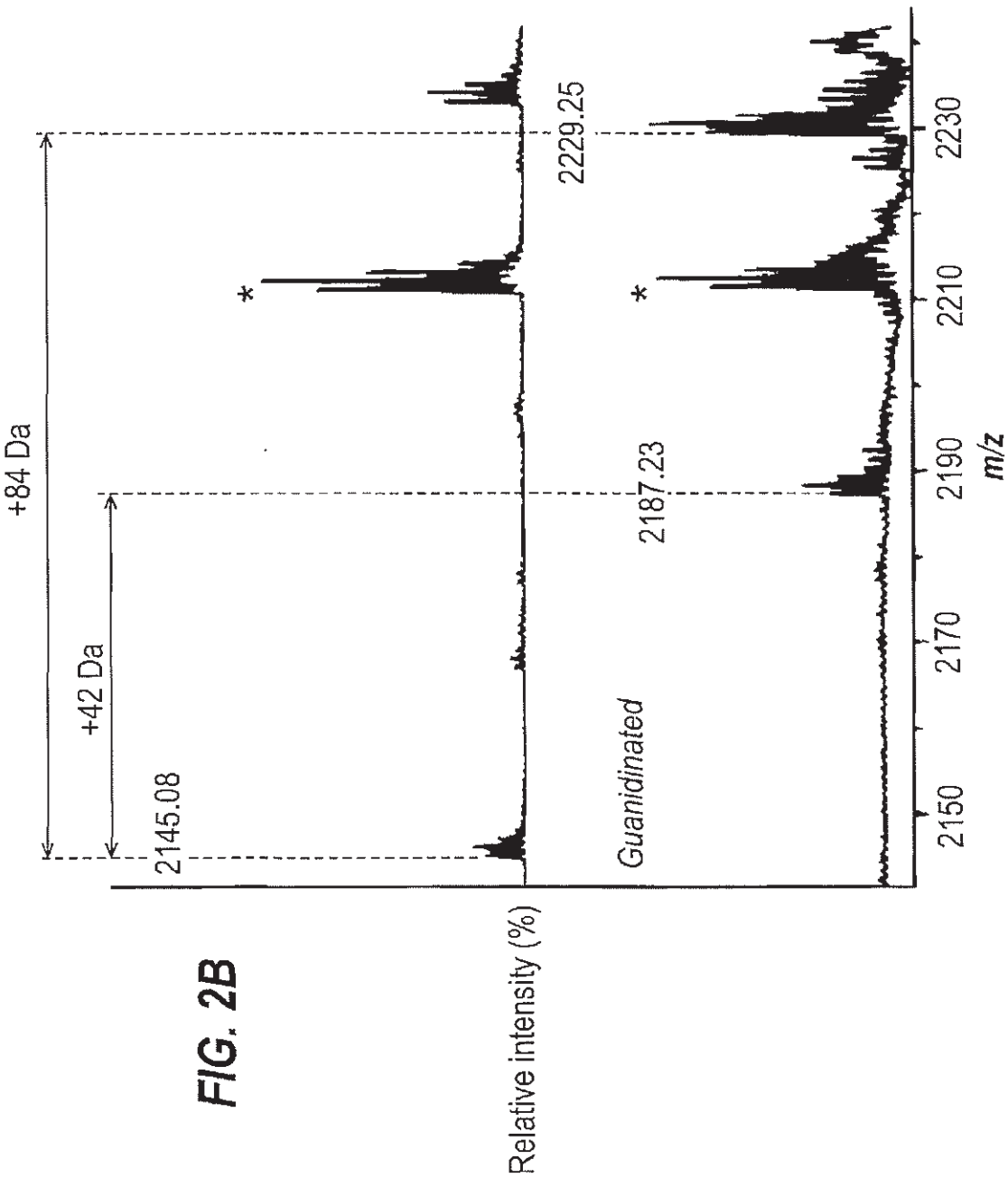

+84 Da
+42 Da
2145.08
2229.25
2187.23
*
*
Guanidinated
Relative intensity (%)
2150
2170
2190
2210
2230
m/z

FIG. 2B

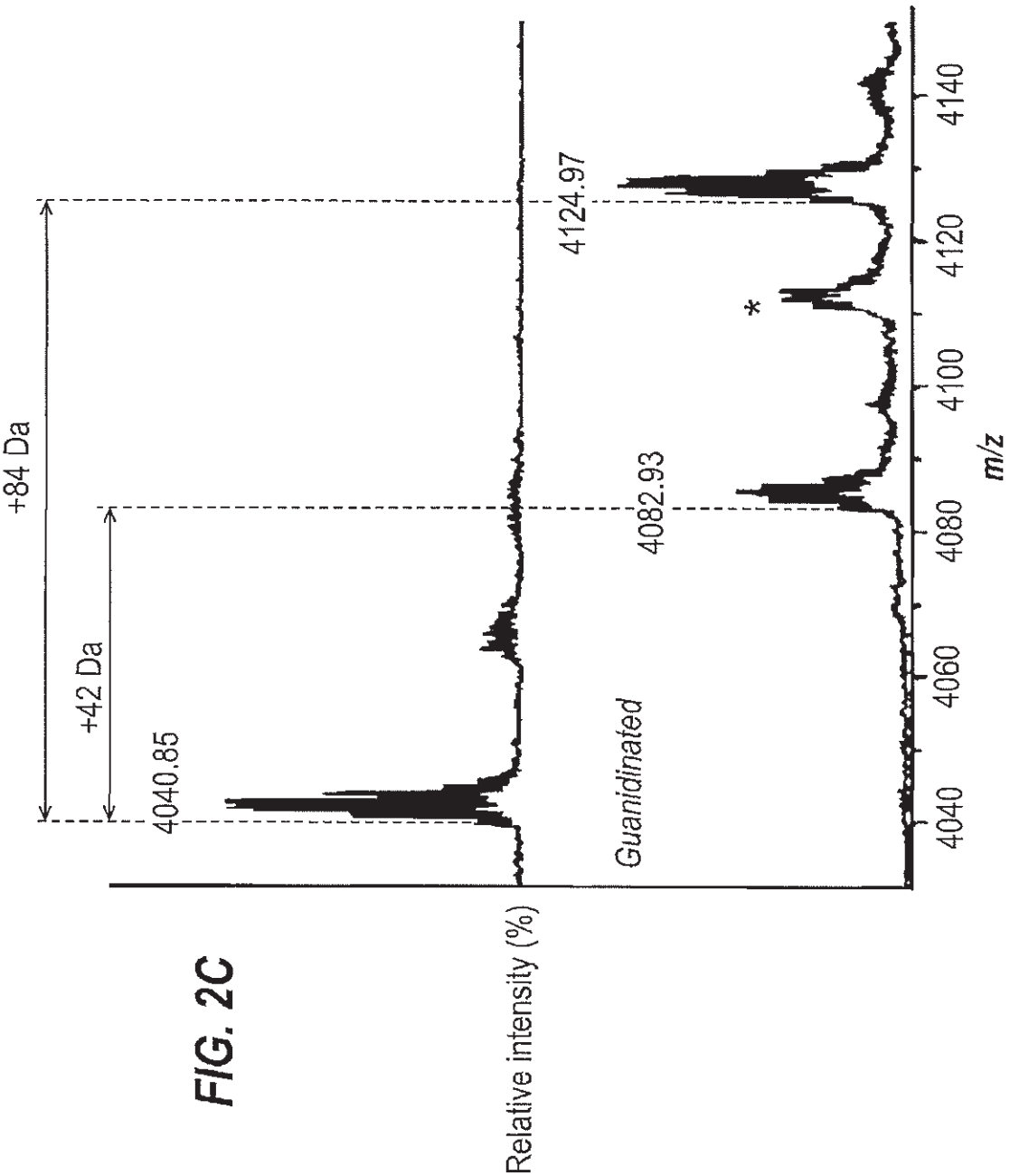

+84 Da
+42 Da
4040.85
4124.97
4082.93
Guanidinated
*
Relative intensity (%)
4040
4060
4080
4100
4120
4140
m/z

FIG. 2C

FIG. 3B

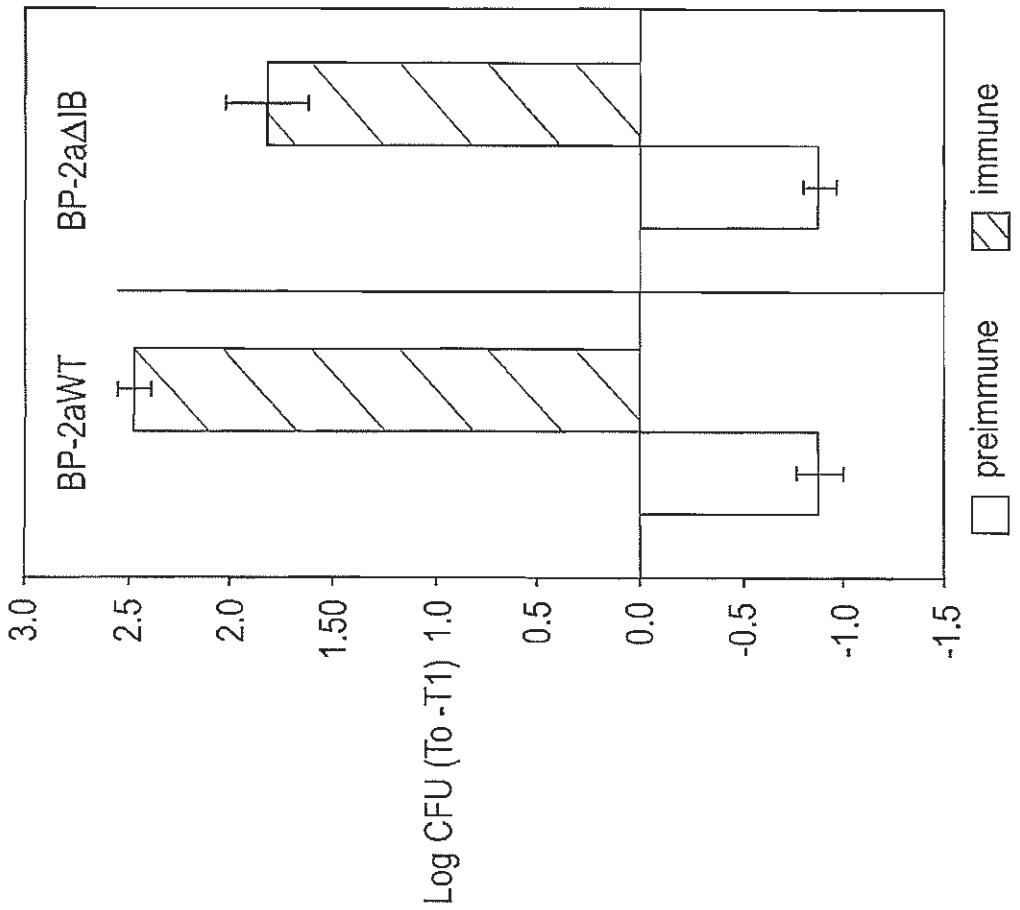

BP-2aWT
BP-2aΔIB
Log CFU (To -T1)
3.0
2.5
2.0
1.50
1.0
0.5
0.0
-0.5
-1.0
-1.5
preimmune
immune

FIG. 3A

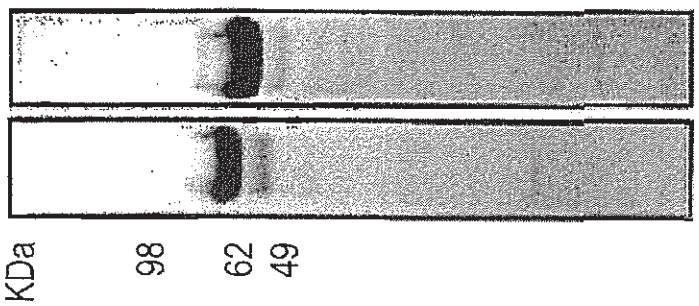

WT
ΔIB
KDa
98
62
49

FIG. 4A

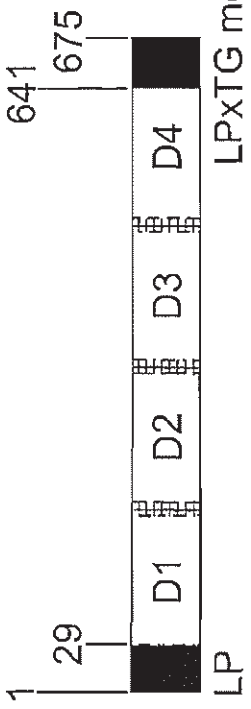


FIG. 4B

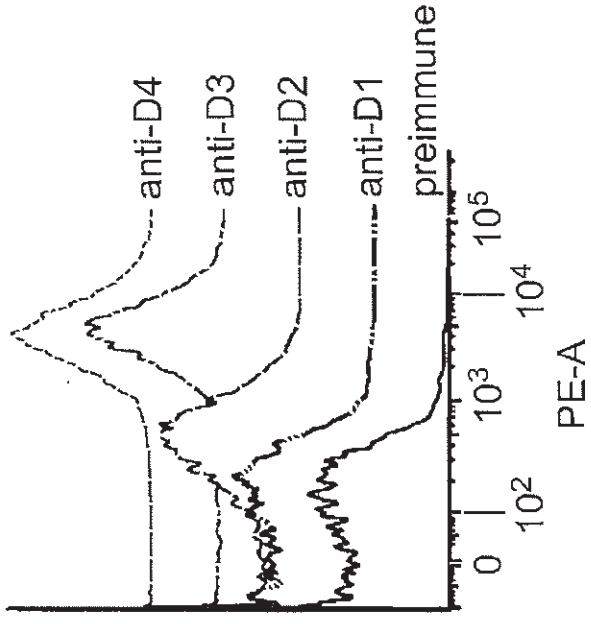


FIG. 4C

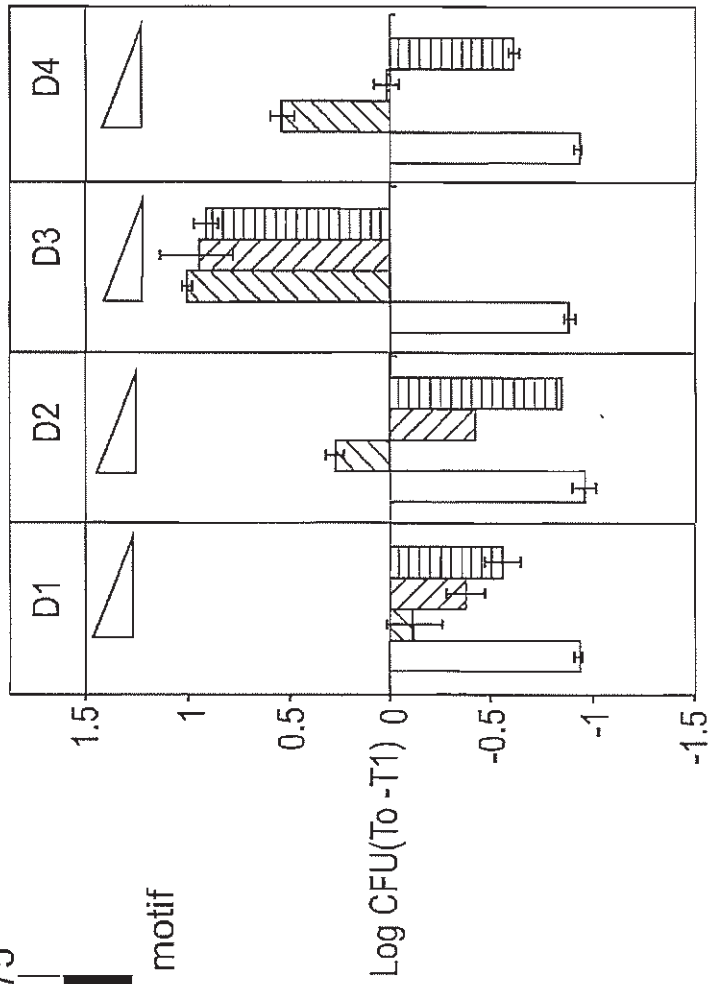


FIG. 5A

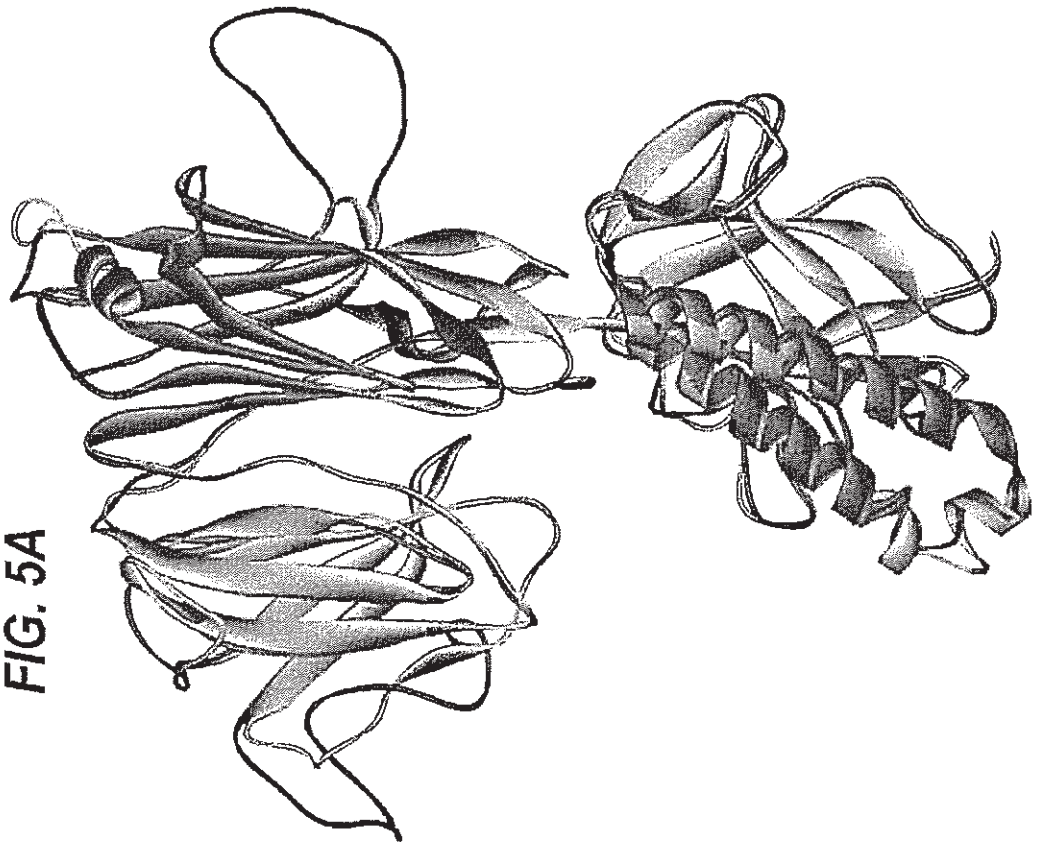


FIG. 5B

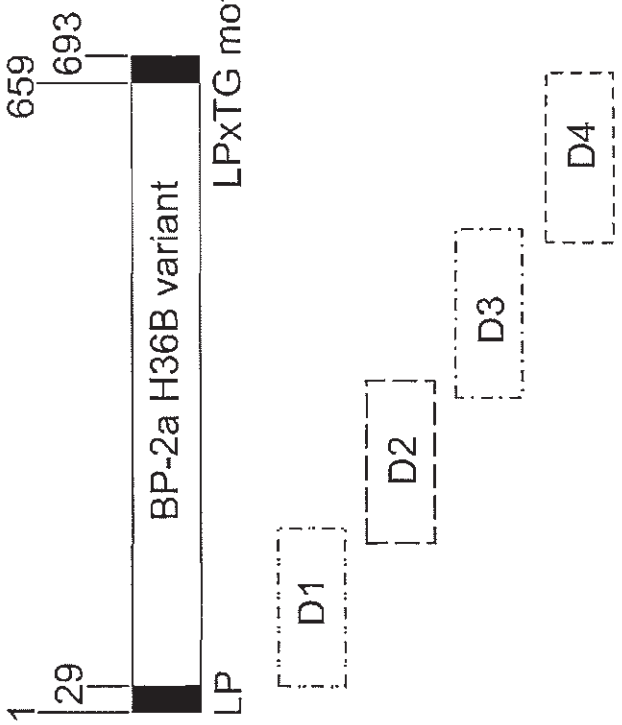


FIG. 6A(i)

D3+Helices



D3
D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_090
D3and2H_H36B
D3and2H_2603
D3
D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_090
D3and2H_H36B
D3and2H_2603

FIG. 6A(ii)

Helices
Helices
D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_O9O
D3and2H_H36B
D3and2H_2603
D3and2H_515
D3and2H_CJB111
D3and2H_DK21
D3and2H_O9O
D3and2H_H36B
D3and2H_2603

FIG. 6A(iii)

FIG. 6B

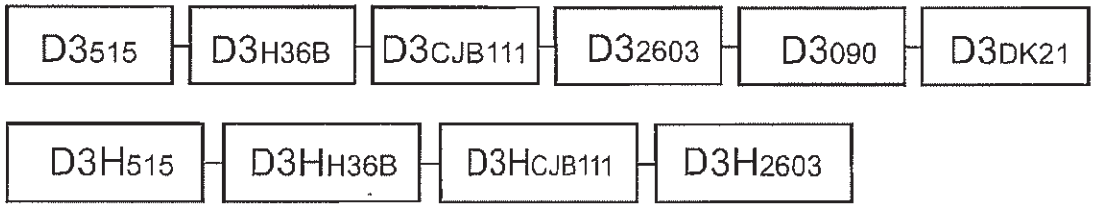


FIG. 6C

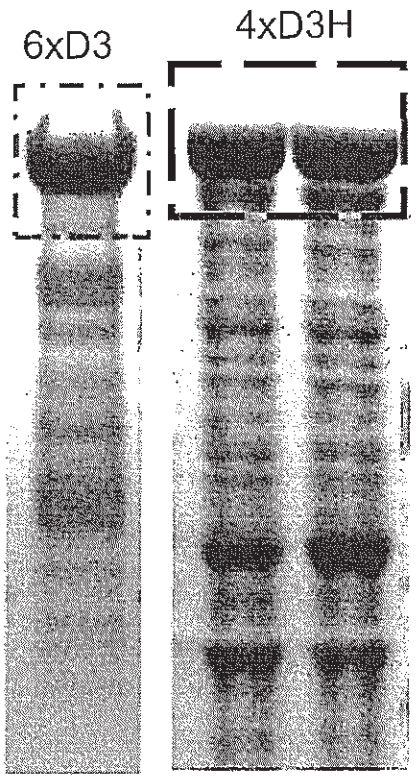


FIG. 6D

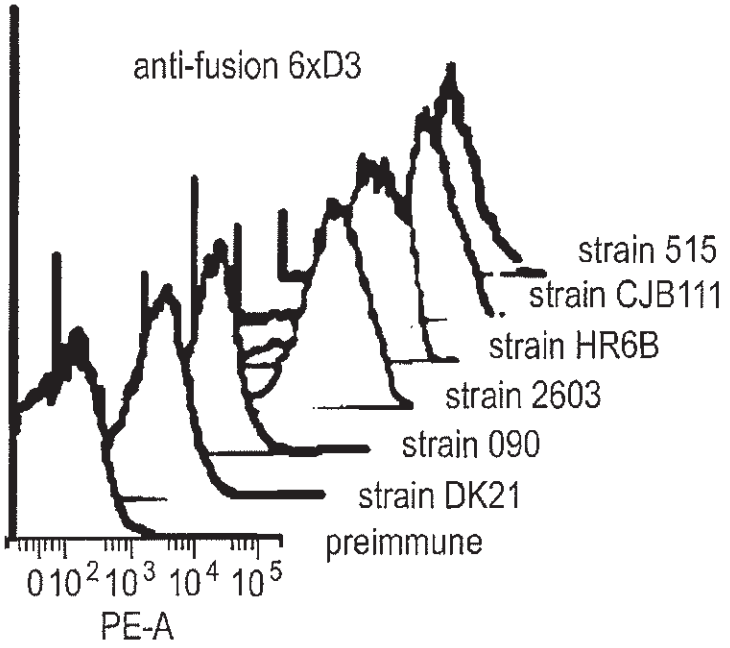
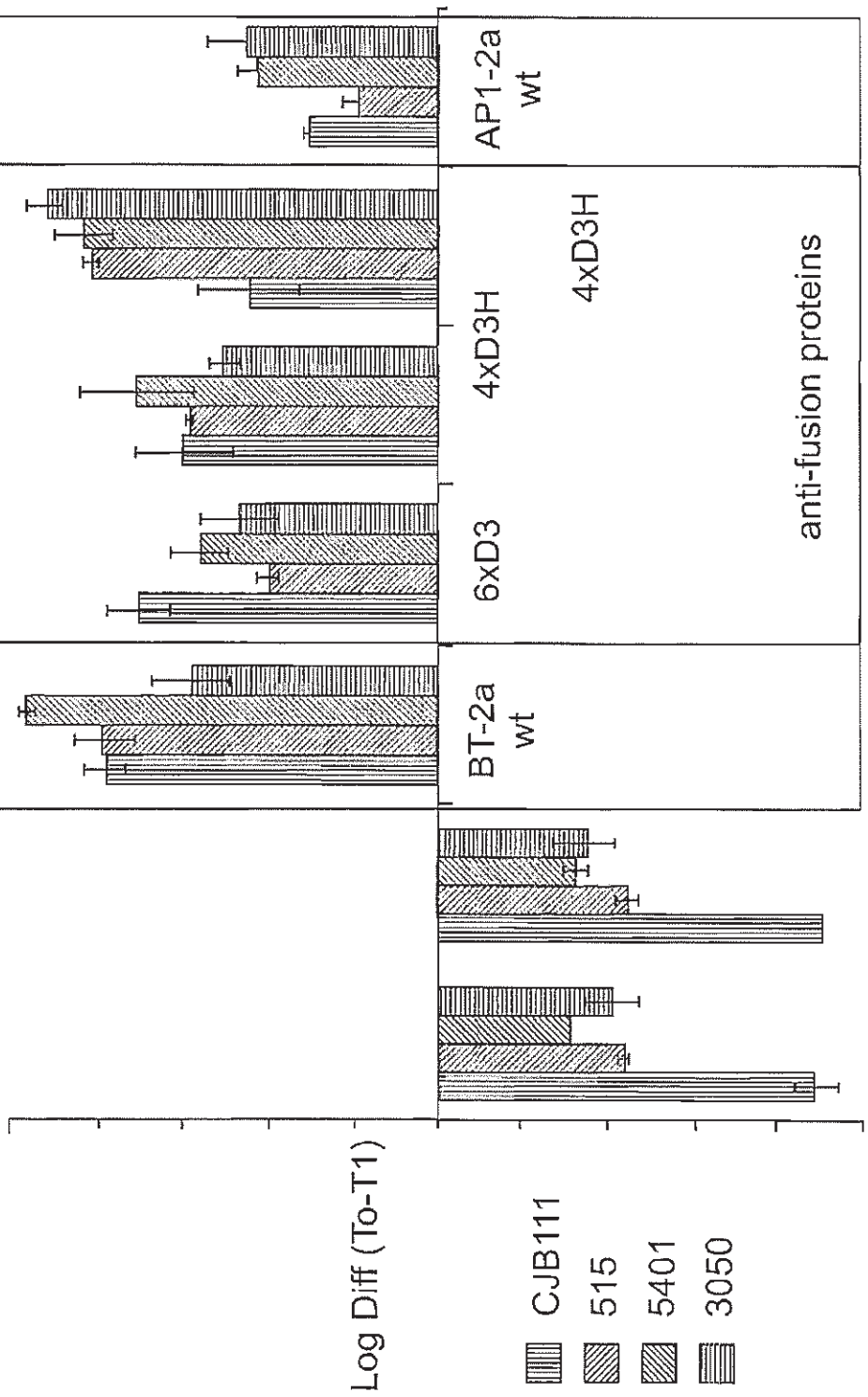


FIG. 6E


Log Diff (To-T1)
CJB111
515
5401
3050
BT-2a wt
6xD3
4xD3H
4xD3H
AP1-2a wt
anti-fusion proteins

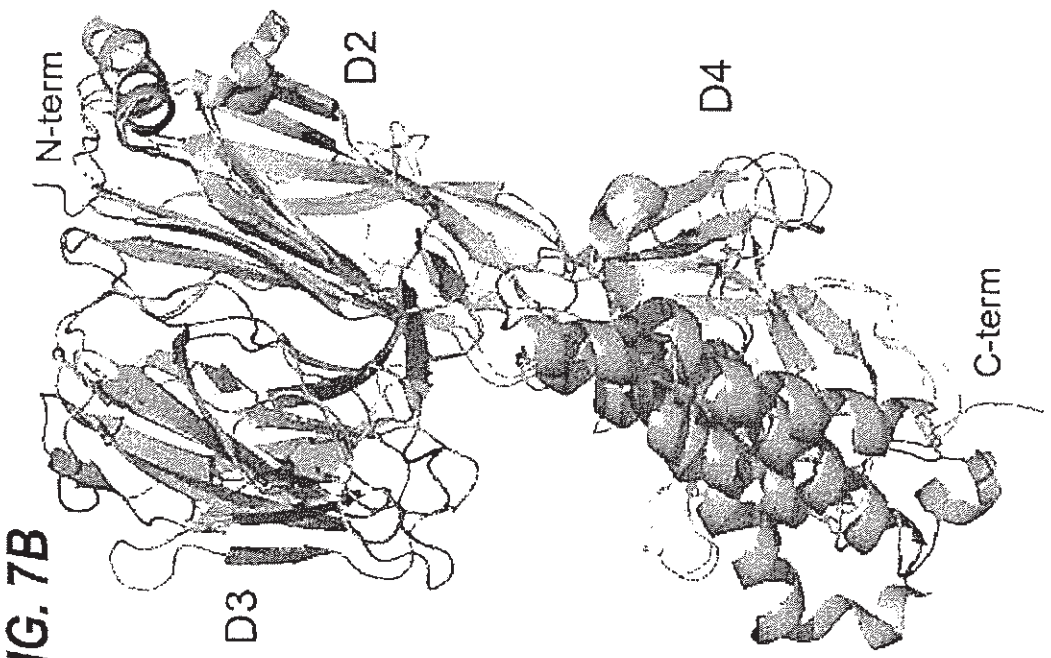


FIG. 7B

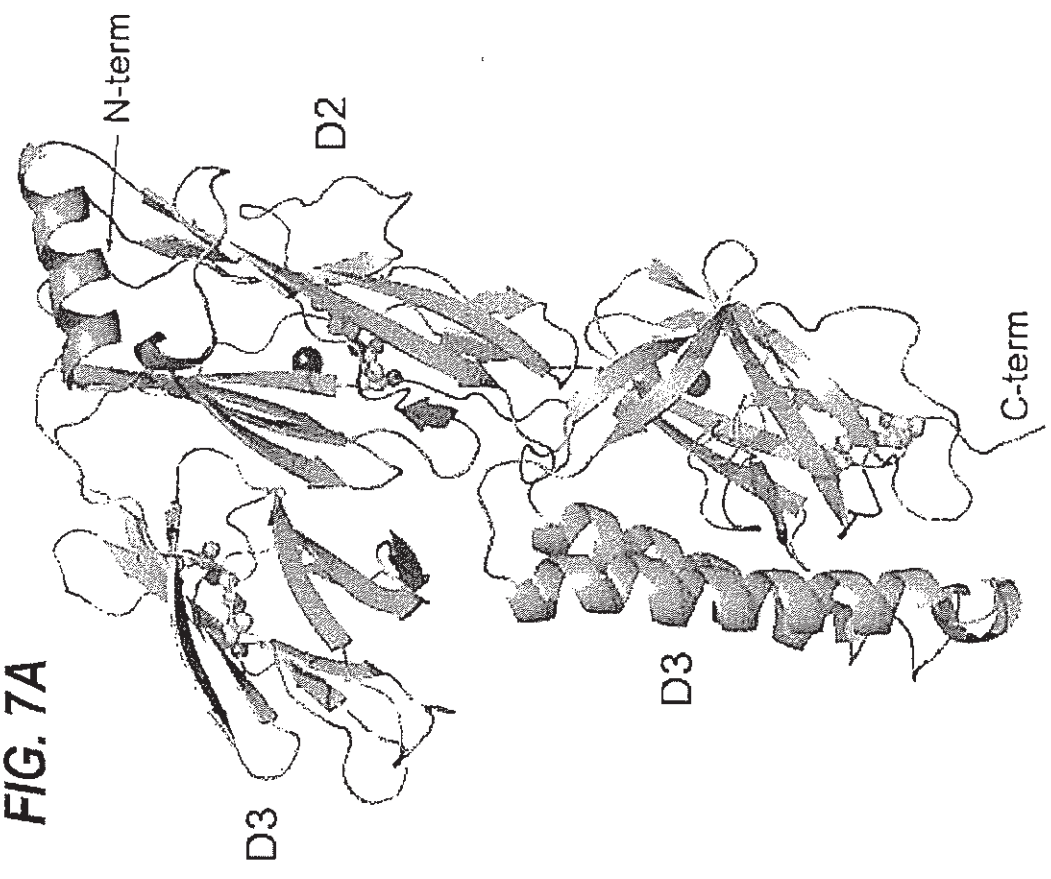


FIG. 7A

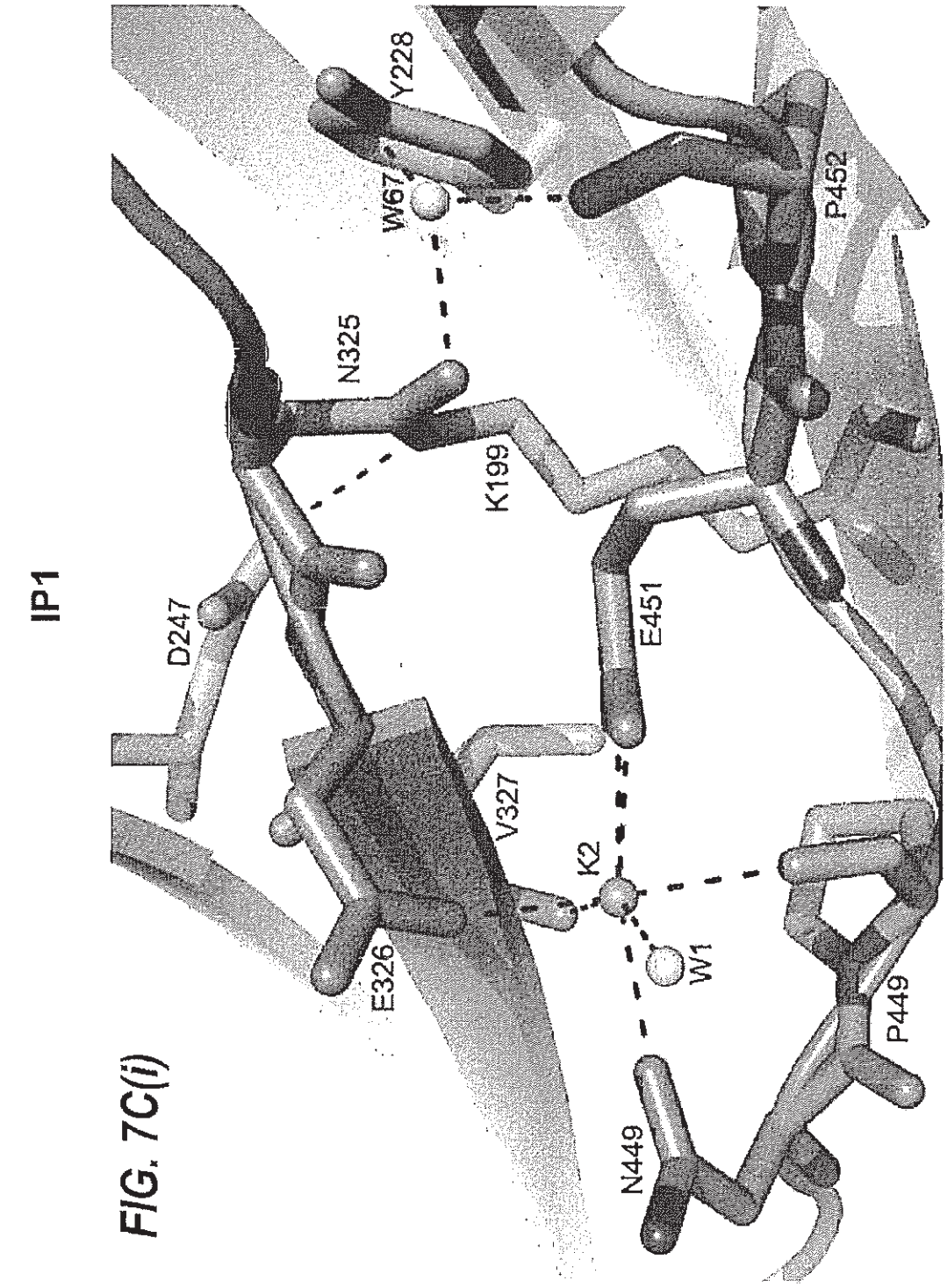

IP1
Y228
W67
P452
N325
K199
D247
E451
V327
K2
E326
W1
P449
N449

FIG. 7C(i)

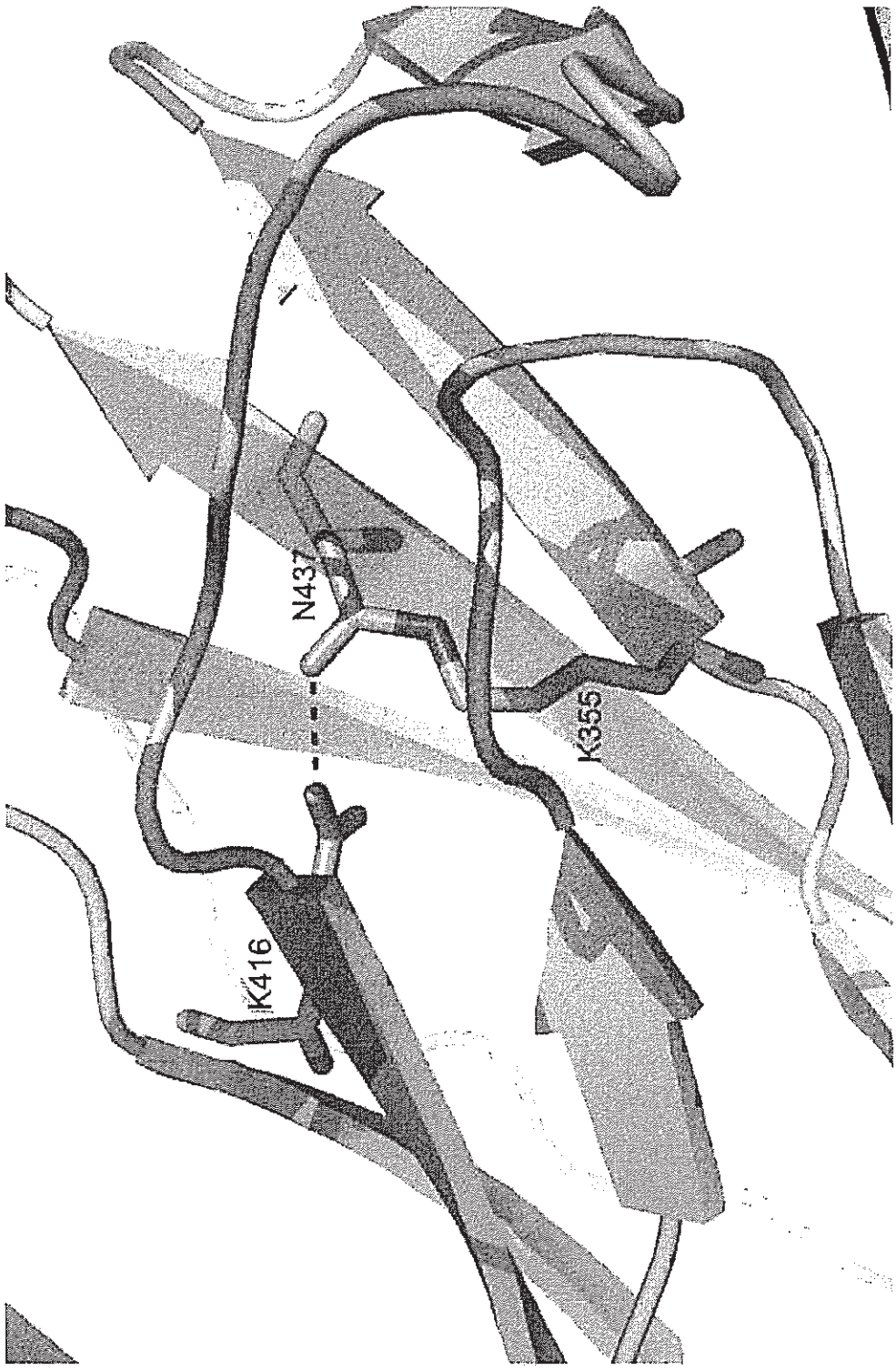


FIG. 7C(ii)

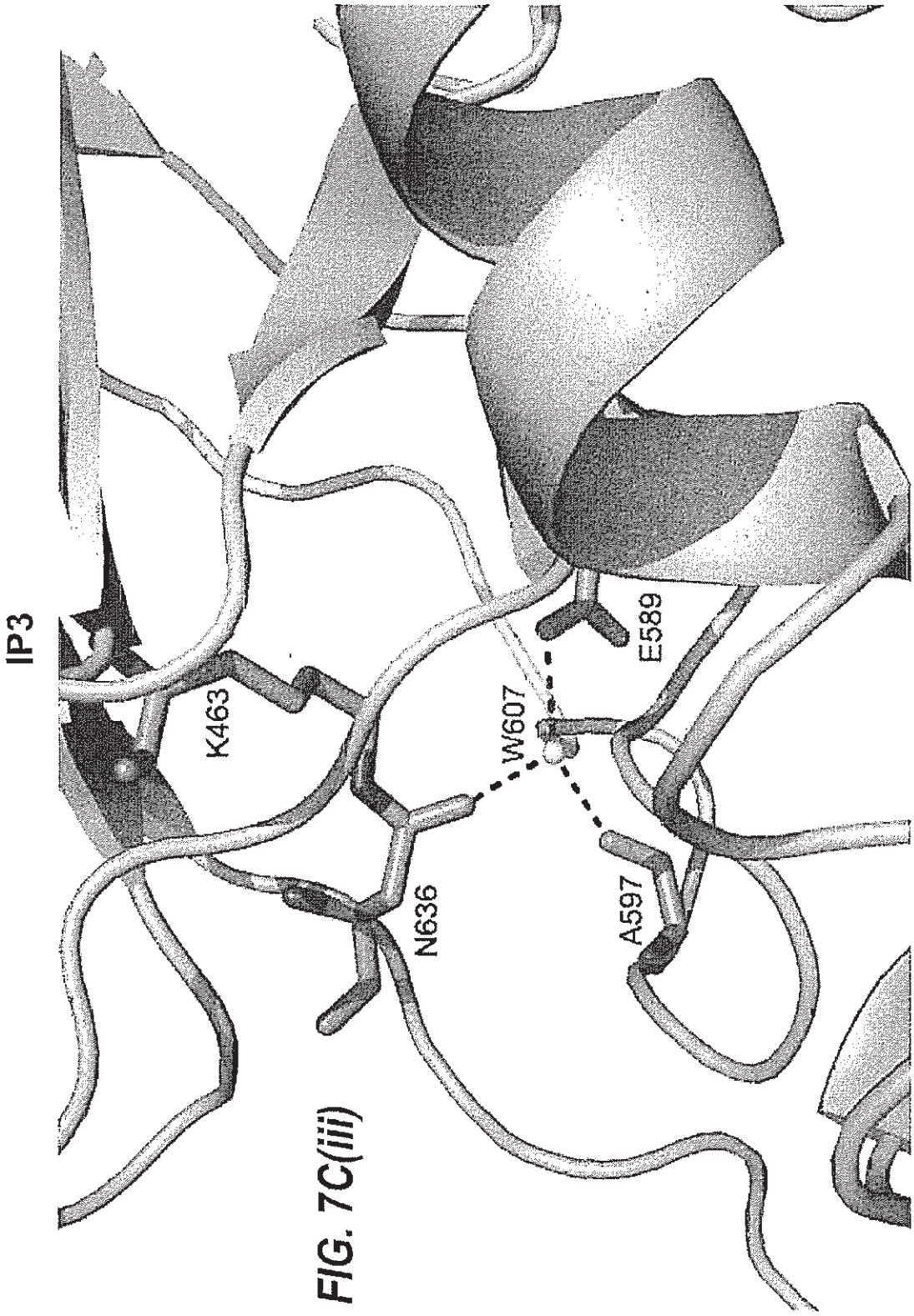


FIG. 7C(iii)

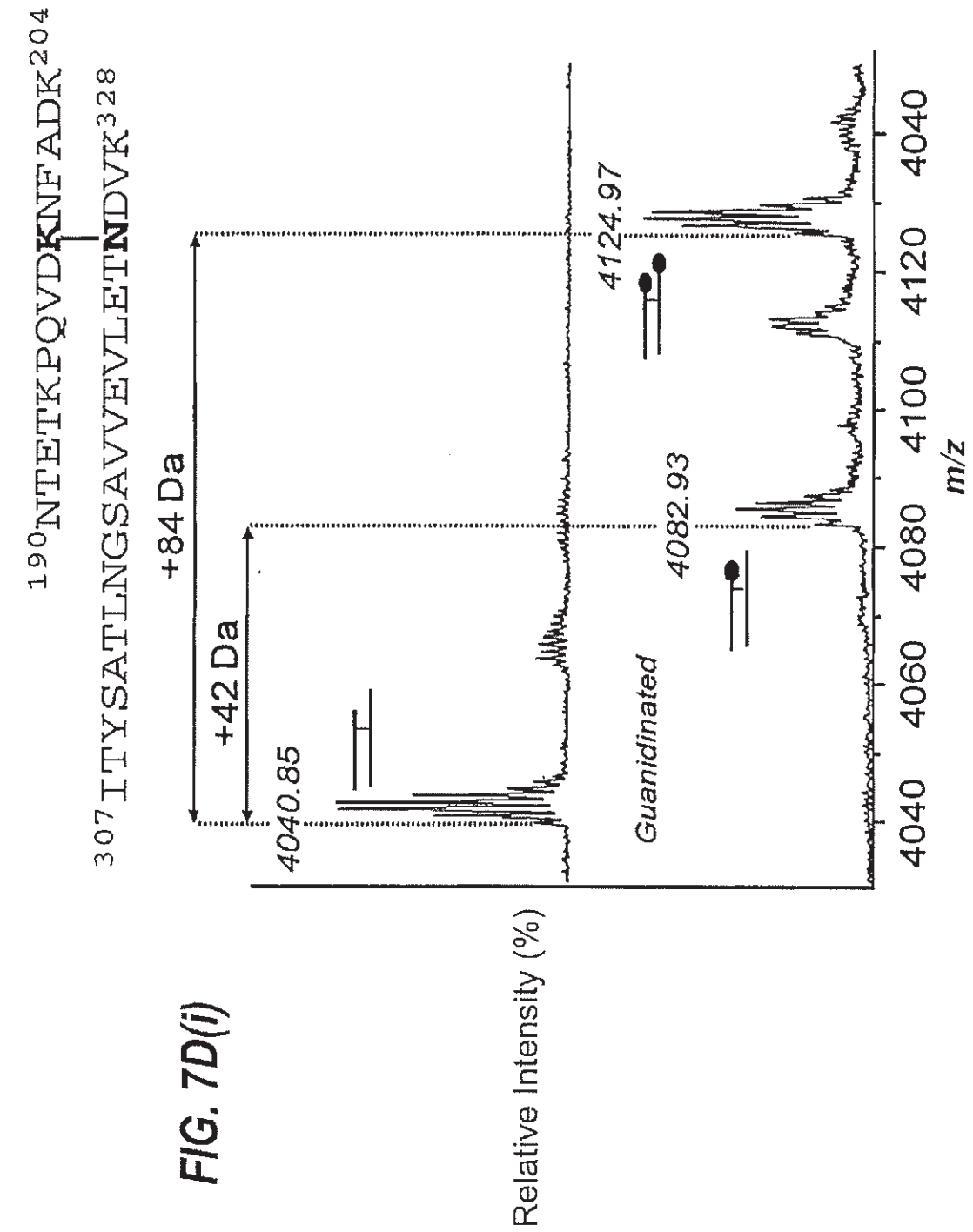

190NTETKPQVDKNFADK204
307ITYSATLNGSAVVEVLETNDVK328
+84 Da
+42 Da
4040.85
4082.93
4124.97
Guanidinated
Relative Intensity (%)
4040
4060
4080
4100
4120
4040
m/z

FIG. 7D(i)

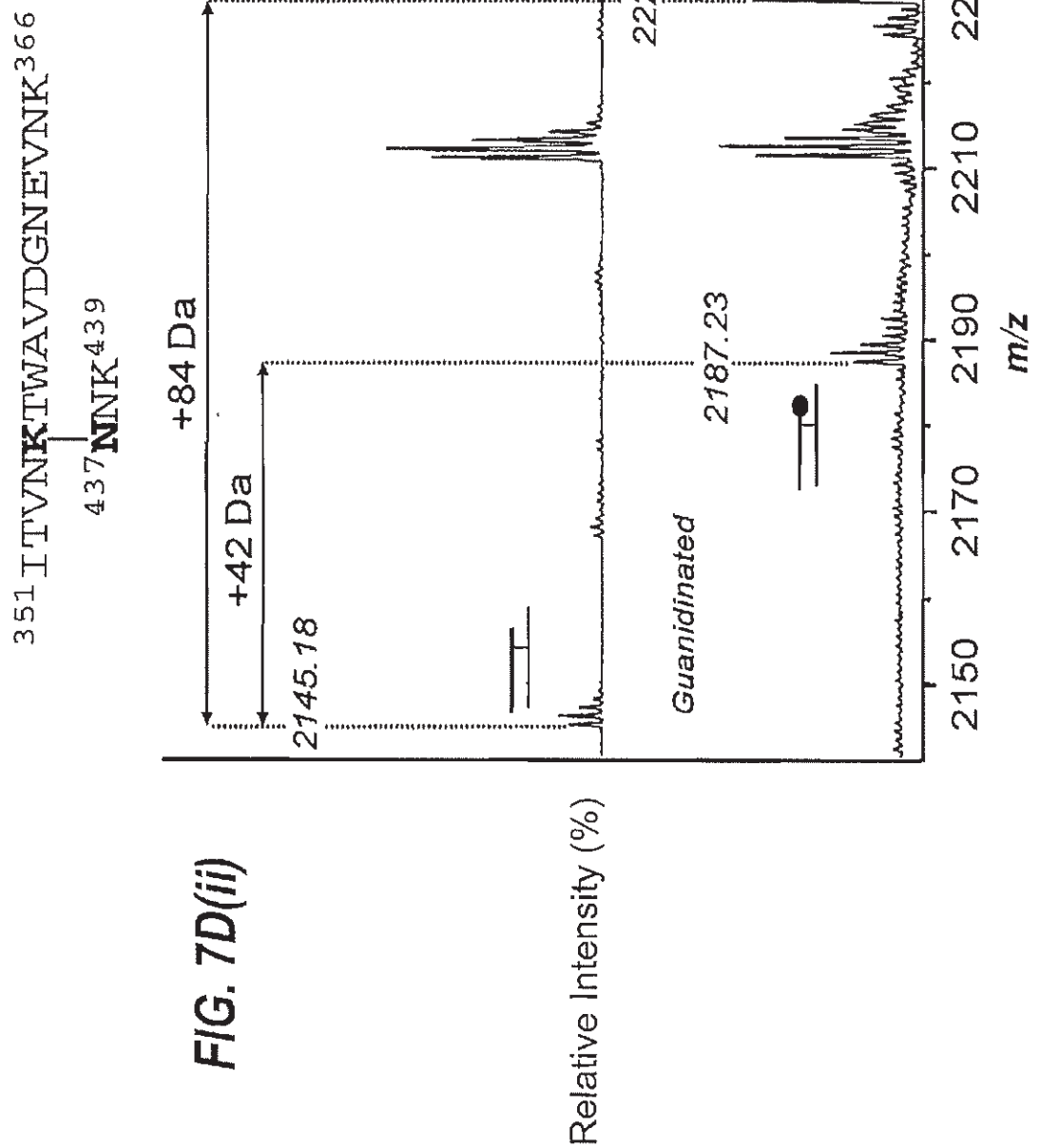

351 ITVNKTWAVDGNEVNK366
437NNK439
+84 Da
+42 Da
2145.18
2187.23
2229.25
Guanidinated
Relative Intensity (%)
2150
2170
2190
2210
2230
m/z

FIG. 7D(ii)

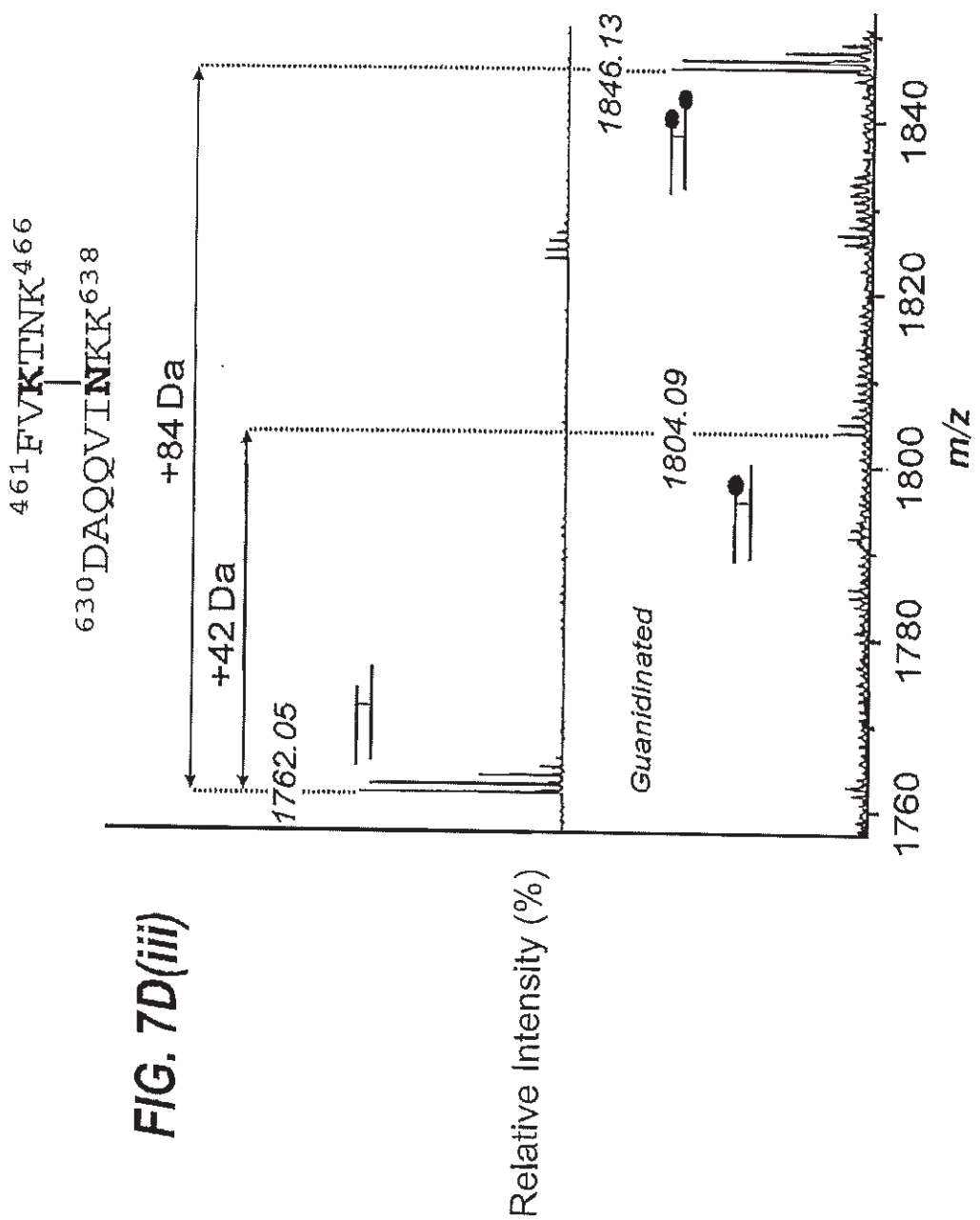

461FVKTNK466
630DAQQVINKK638
+84 Da
+42 Da
1762.05
1804.09
1846.13
Guanidinated
Relative Intensity (%)
1760
1780
1800
1820
1840
m/z

FIG. 7D(iii)