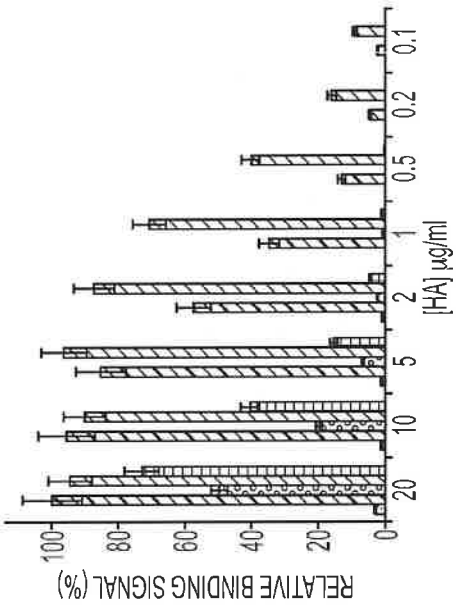


FIG. 1B

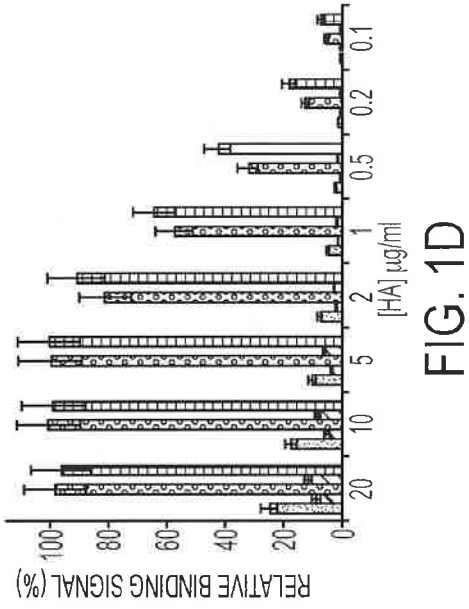


FIG. 1D

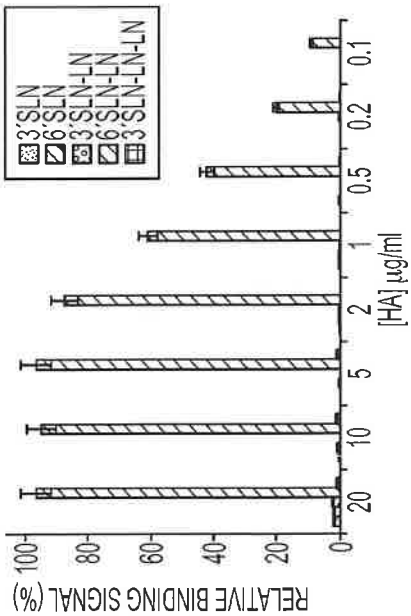


FIG. 1A

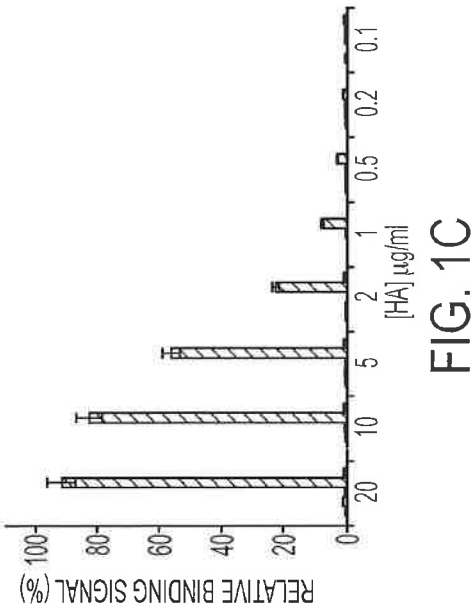


FIG. 1C

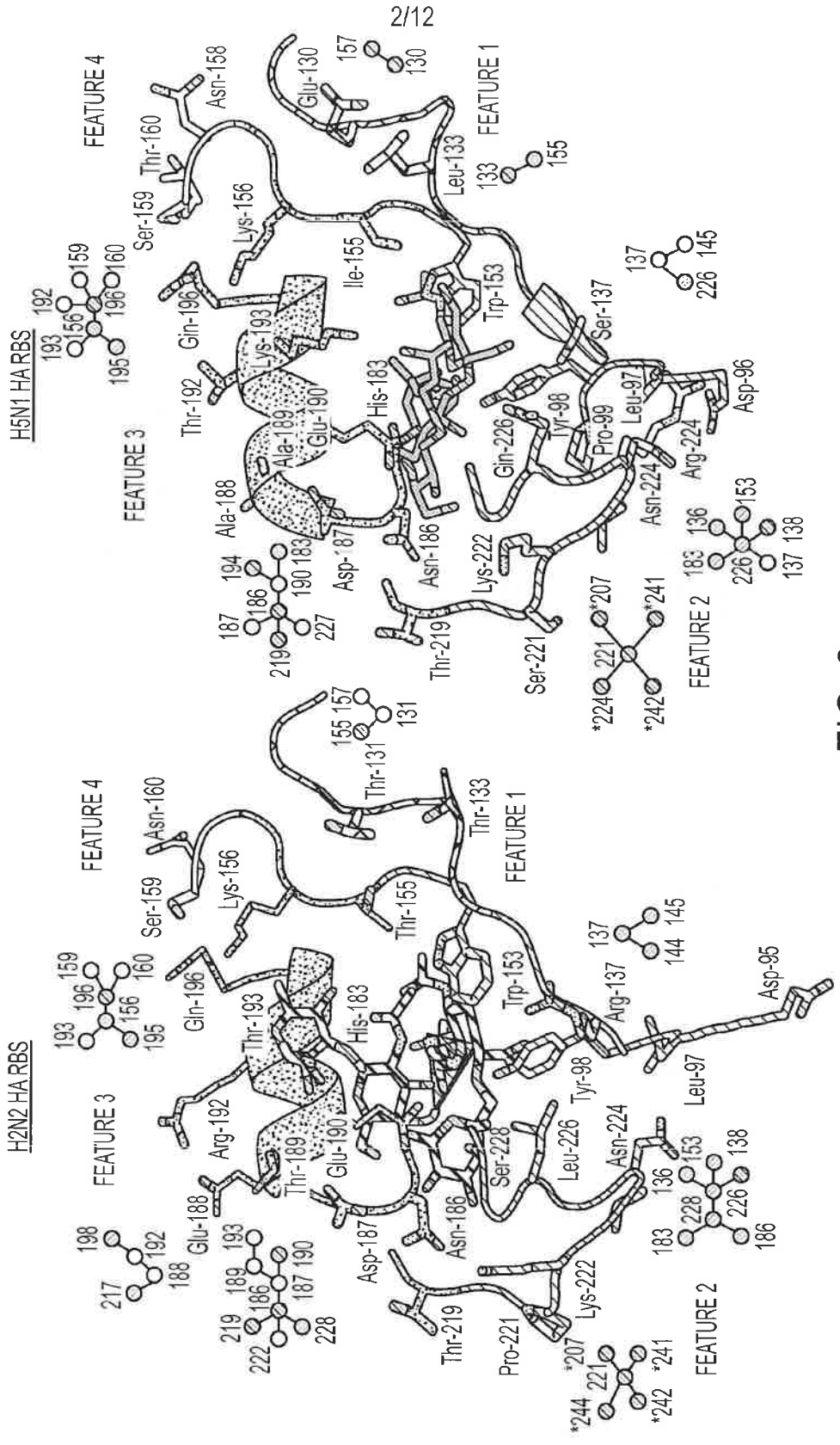

H5N1 HA RBS
FEATURE 4
FEATURE 3
FEATURE 1
FEATURE 2
H2N2 HA RBS
FEATURE 4
FEATURE 3
FEATURE 1
FEATURE 2

FIG. 2

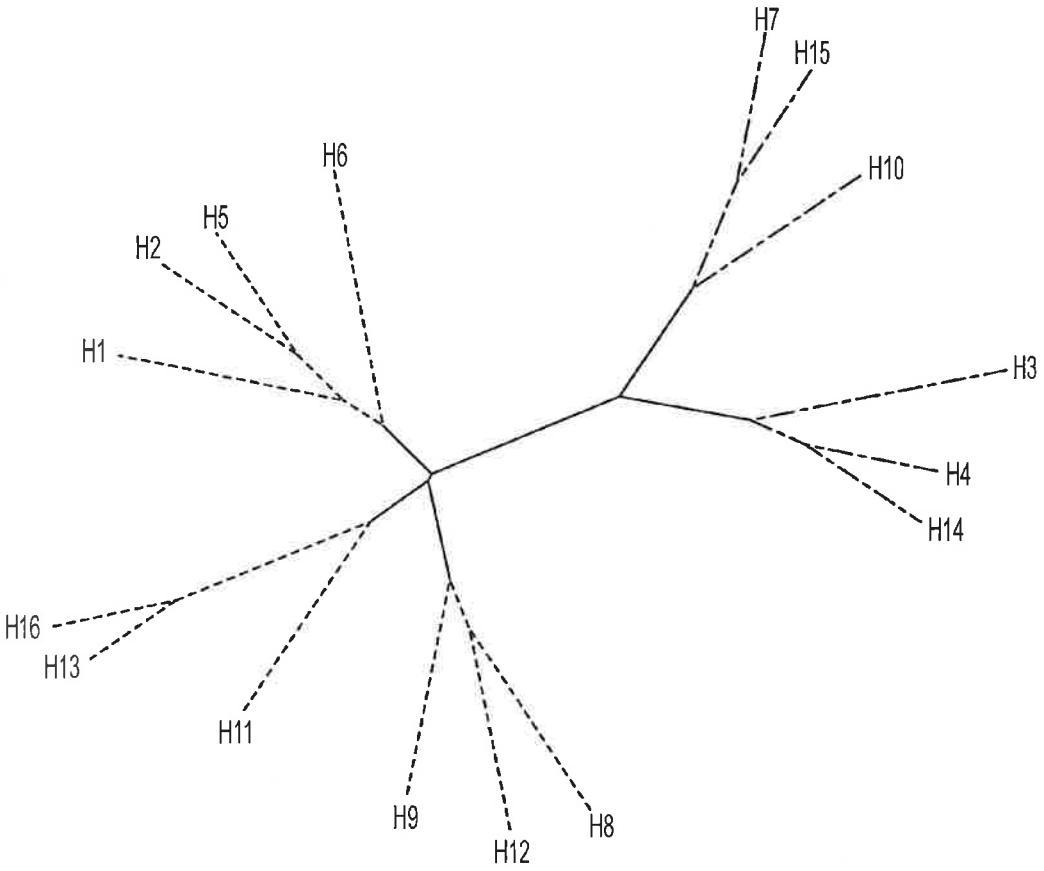


FIG. 3

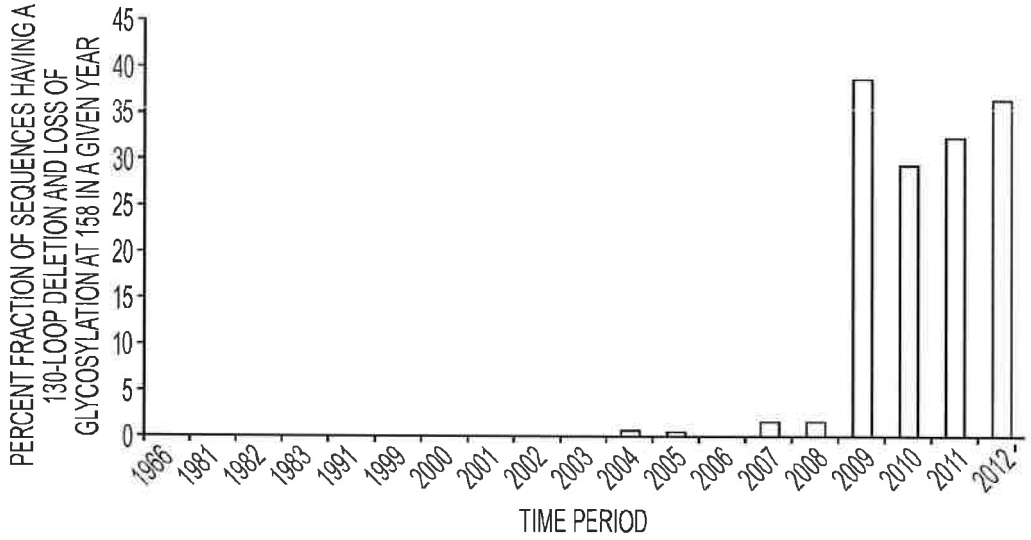

PERCENT FRACTION OF SEQUENCES HAVING A 130-LOOP DELETION AND LOSS OF GLYCOSYLATION AT 158 IN A GIVEN YEAR
45
40
35
30
25
20
15
10
5
0
1966
1981
1982
1983
1991
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
TIME PERIOD

FIG. 4A

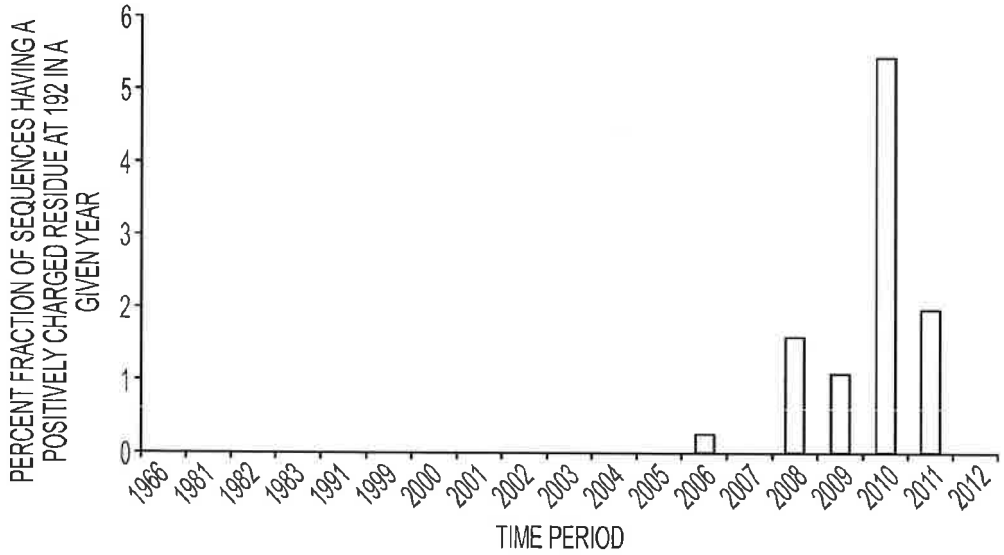

PERCENT FRACTION OF SEQUENCES HAVING A POSITIVELY CHARGED RESIDUE AT 192 IN A GIVEN YEAR
6
5
4
3
2
1
0
1966
1981
1982
1983
1991
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
TIME PERIOD

FIG. 4B

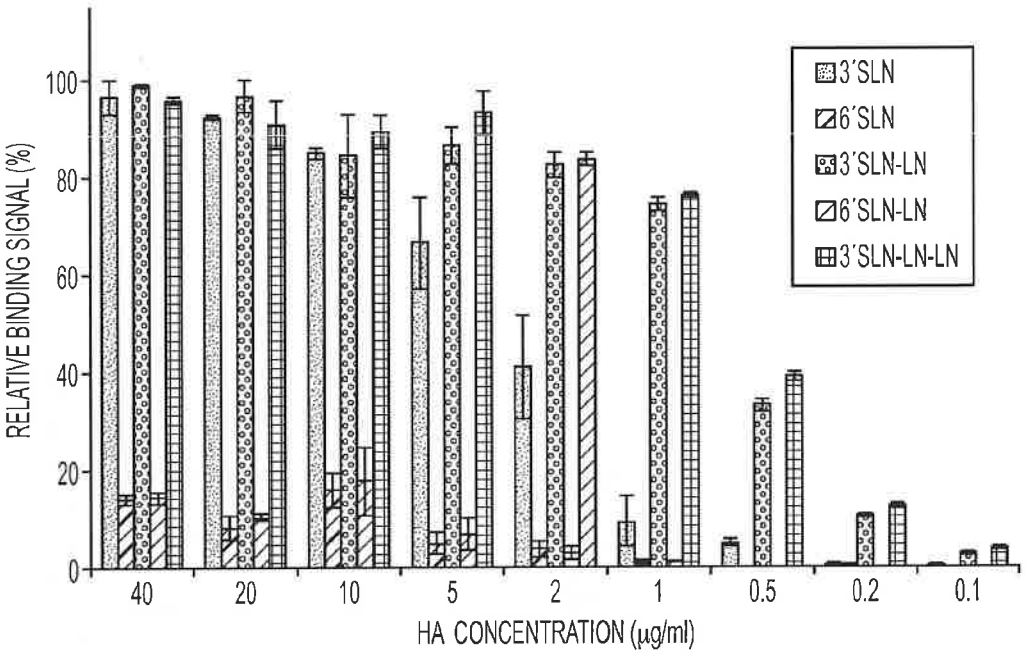

RELATIVE BINDING SIGNAL (%)
100
80
60
40
20
0
40
20
10
5
2
1
0.5
0.2
0.1
HA CONCENTRATION (µg/ml)
3'SLN
6'SLN
3'SLN-LN
6'SLN-LN
3'SLN-LN-LN

FIG. 5A

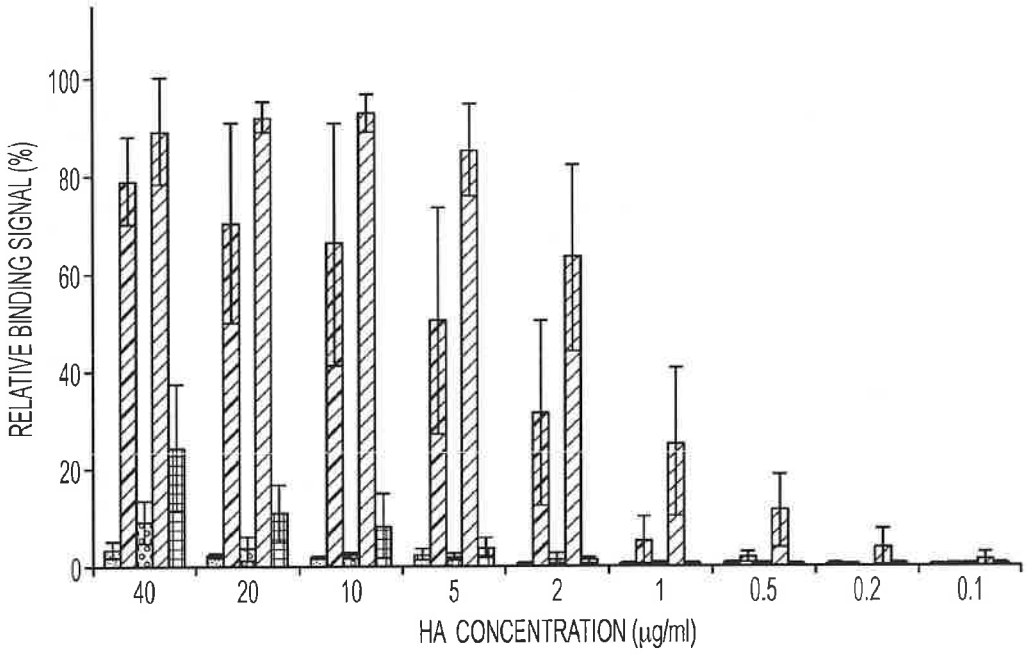

RELATIVE BINDING SIGNAL (%)
100
80
60
40
20
0
40
20
10
5
2
1
0.5
0.2
0.1
HA CONCENTRATION (µg/ml)

FIG. 5B

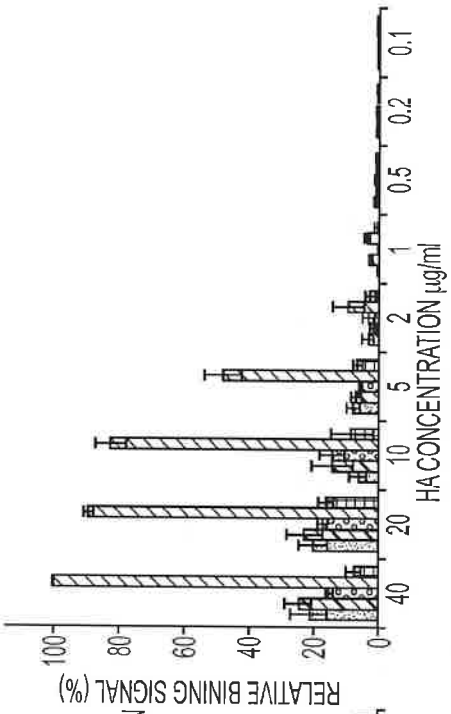


FIG. 6A

FIG. 6B

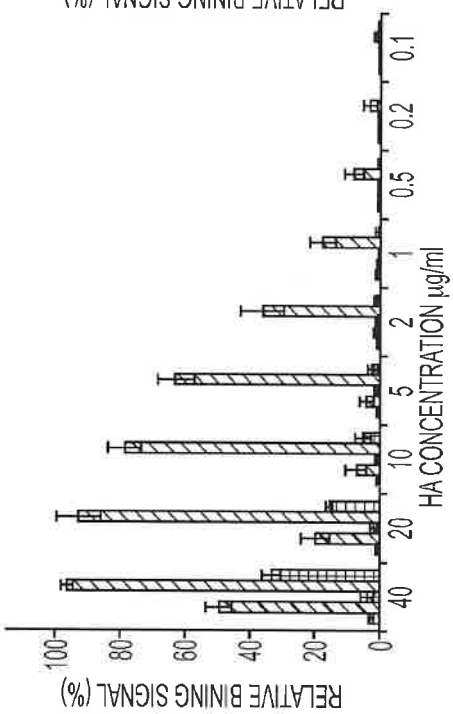


FIG. 6C

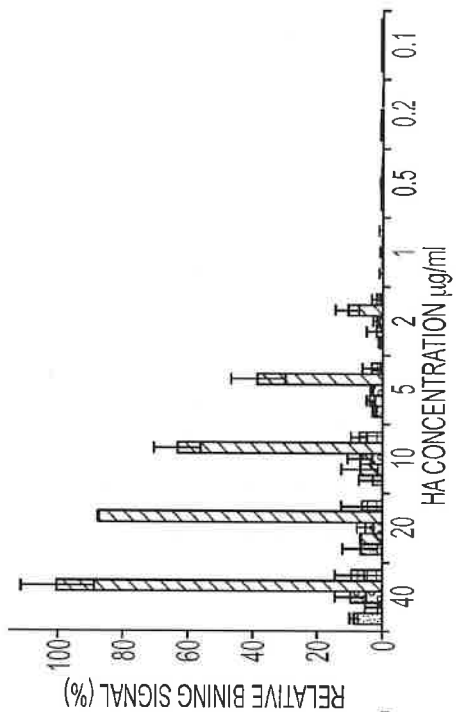


FIG. 6D

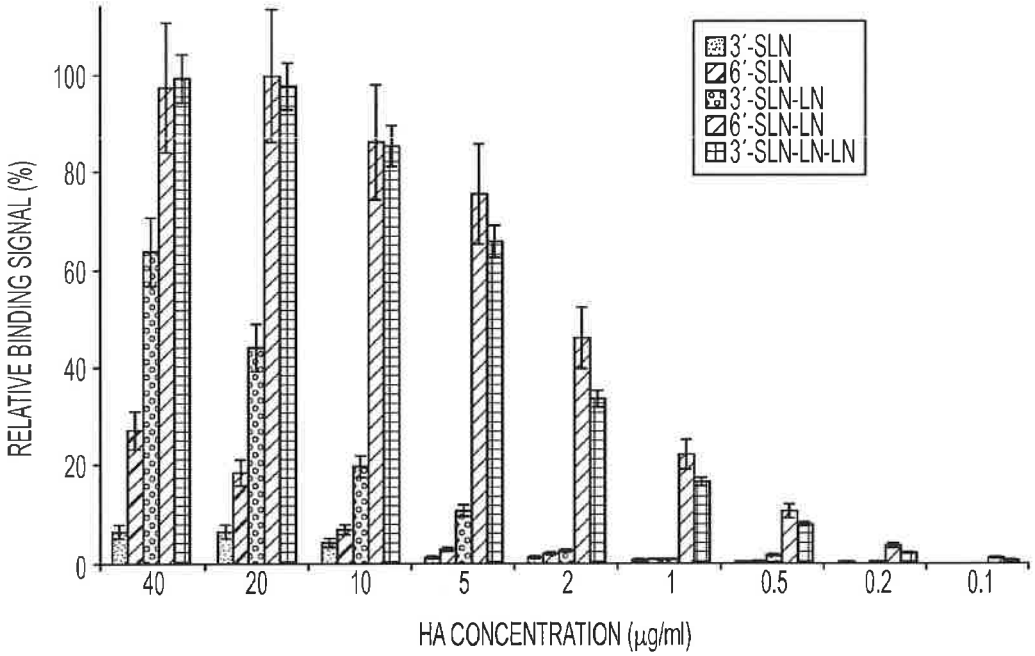

3'-SLN
6'-SLN
3'-SLN-LN
6'-SLN-LN
3'-SLN-LN-LN
RELATIVE BINDING SIGNAL (%)
0
20
40
60
80
100
40
20
10
5
2
1
0.5
0.2
0.1
HA CONCENTRATION (µg/ml)

FIG. 7A

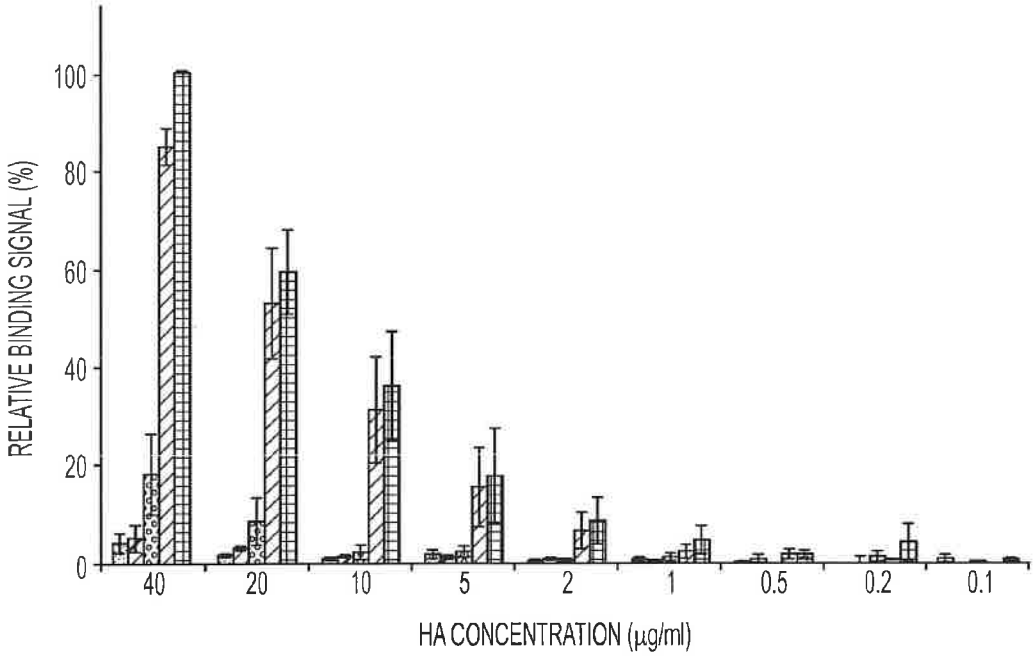

RELATIVE BINDING SIGNAL (%)
0
20
40
60
80
100
40
20
10
5
2
1
0.5
0.2
0.1
HA CONCENTRATION (µg/ml)

FIG. 7B

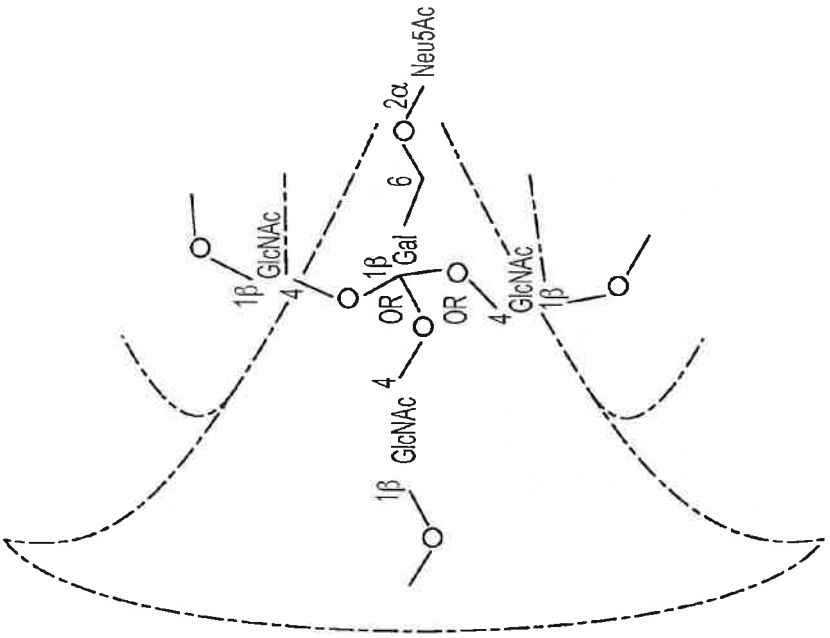

Neu5Ac
2α
6
Gal
1β
GlcNAc
4
OR
OR
4
GlcNAc
1β
4
GlcNAc
1β
1β

FIG. 8B

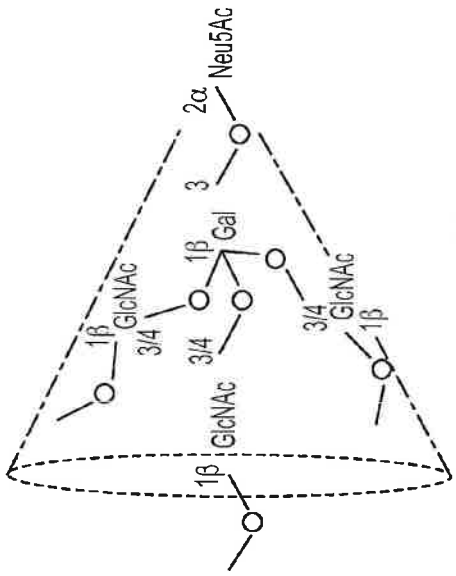
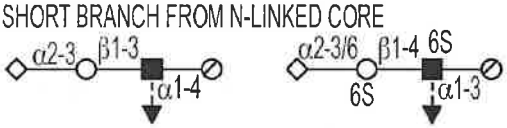

Neu5Ac
2α
3
Gal
1β
GlcNAc
3/4
3/4
3/4
GlcNAc
1β
1β
GlcNAc
1β

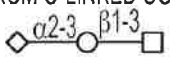
FIG. 8A

α2-3 OR α2-6 MOTIF IN CONE TOPOLOGY

- TYPICAL OF SHORT OLIGOSACCHARIDE OR OLIGOSACCHARIDE BRANCH ATTACHED TO A CORE STRUCTURE
- SHORT BRANCH FROM N-LINKED CORE



- SHORT BRANCH FROM O-LINKED CORE



- THE CONE TOPOLOGY CAN ALSO BE ADOPTED BY LONGER α2-3 OR α2-6 OLIGOSACCHARIDE BRANCH ATTACHED TO CORE STRUCTURE

◆ Neu5Ac ▼ Fuc

○ Gal ● Glc ⊘ Man

□ GalNAc ■ GlcNAc

DOTTED GRAY LINES, 4S AND 6S INDICATE POTENTIAL SITES FOR FUCOSYLATION AND SULFATION MODIFICATIONS

FIG. 9

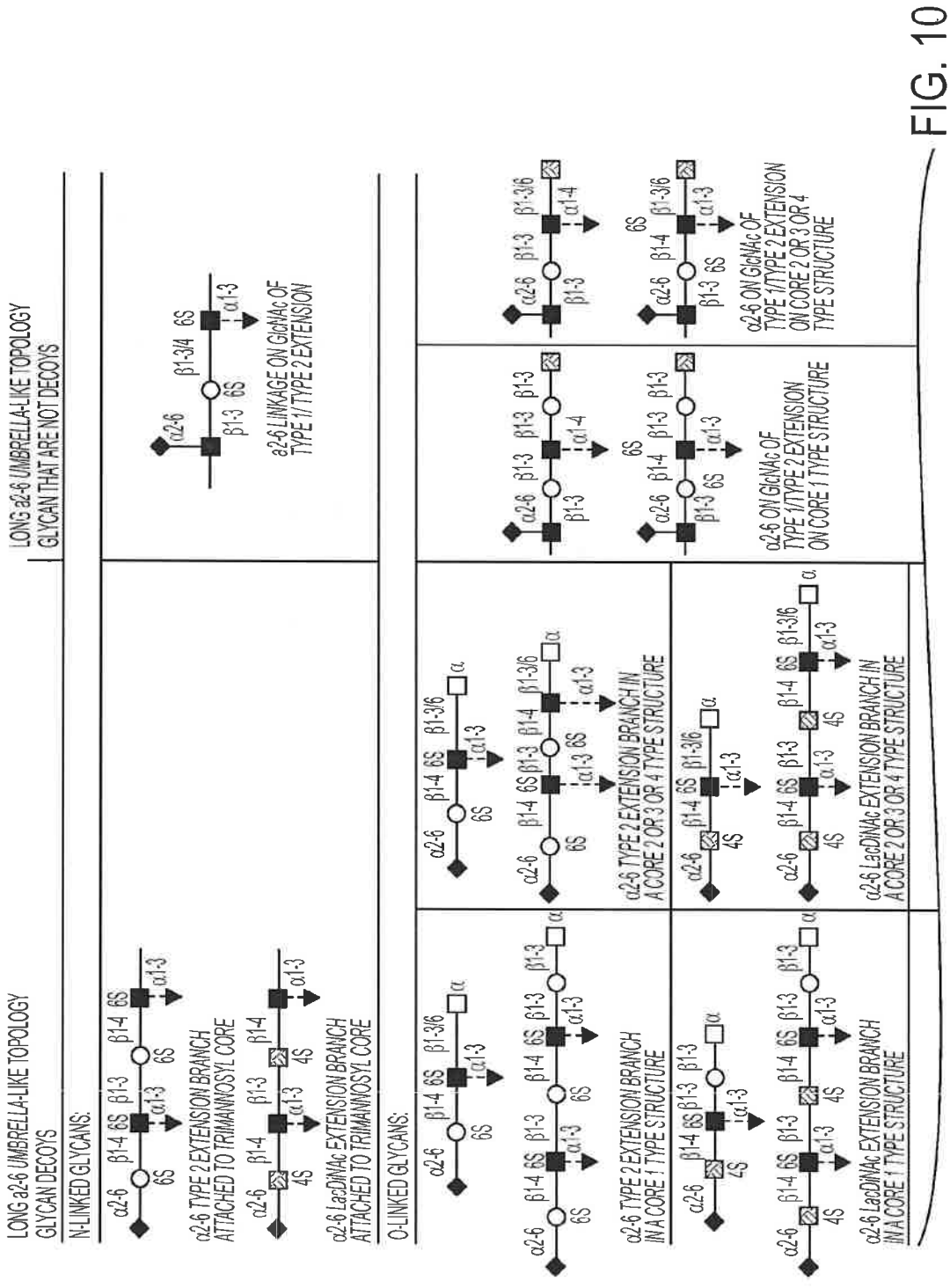

LONG α2-6 UMBRELLA-LIKE TOPOLOGY GLYCAN DECOYS
LONG α2-6 UMBRELLA-LIKE TOPOLOGY GLYCAN THAT ARE NOT DECOYS
N-LINKED GLYCANS:
α2-6 TYPE 2 EXTENSION BRANCH ATTACHED TO TRIMANNOSYL CORE
α2-6 LacDiNAc EXTENSION BRANCH ATTACHED TO TRIMANNOSYL CORE
α2-6 LINKAGE ON GlcNAc OF TYPE 1/ TYPE 2 EXTENSION
O-LINKED GLYCANS:
α2-6 TYPE 2 EXTENSION BRANCH IN A CORE 1 TYPE STRUCTURE
α2-6 TYPE 2 EXTENSION BRANCH IN A CORE 2 OR 3 OR 4 TYPE STRUCTURE
α2-6 LacDiNAc EXTENSION BRANCH IN A CORE 1 TYPE STRUCTURE
α2-6 LacDiNAc EXTENSION BRANCH IN A CORE 2 OR 3 OR 4 TYPE STRUCTURE
α2-6 ON GlcNAc OF TYPE 1/TYPE 2 EXTENSION ON CORE 1 TYPE STRUCTURE
α2-6 ON GlcNAc OF TYPE 1/TYPE 2 EXTENSION ON CORE 2 OR 3 OR 4 TYPE STRUCTURE

FIG. 10

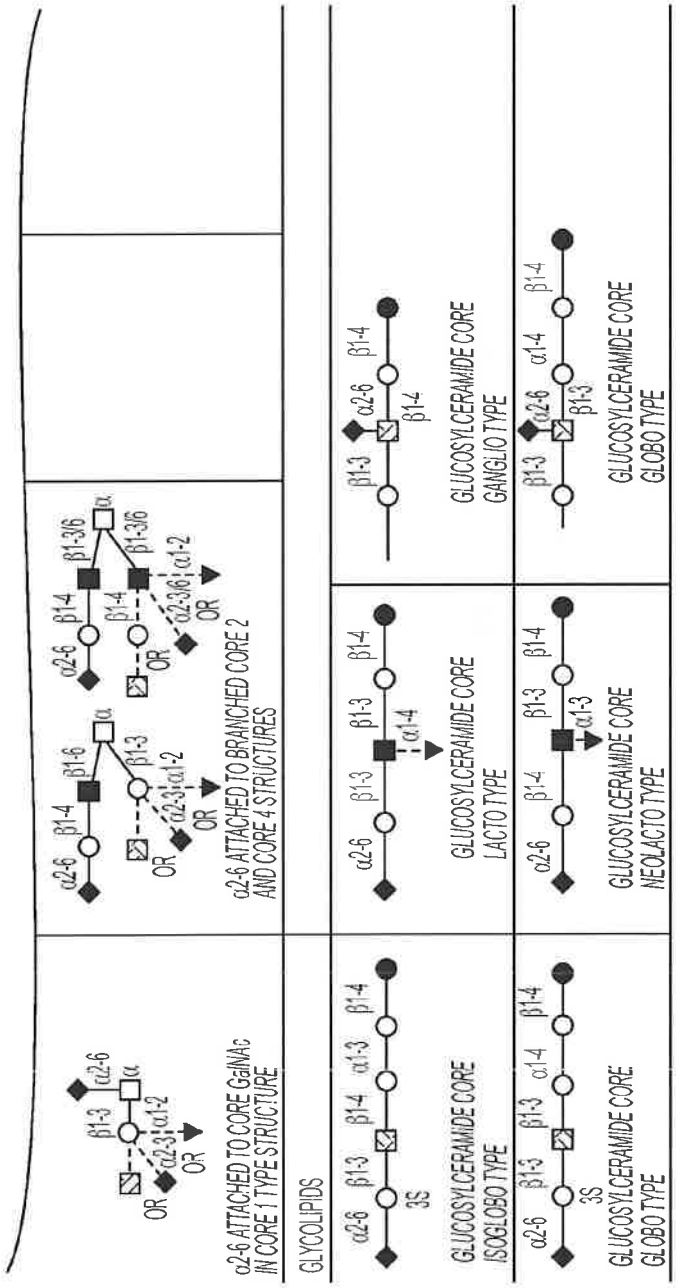


FIG. 10
CONTINUED

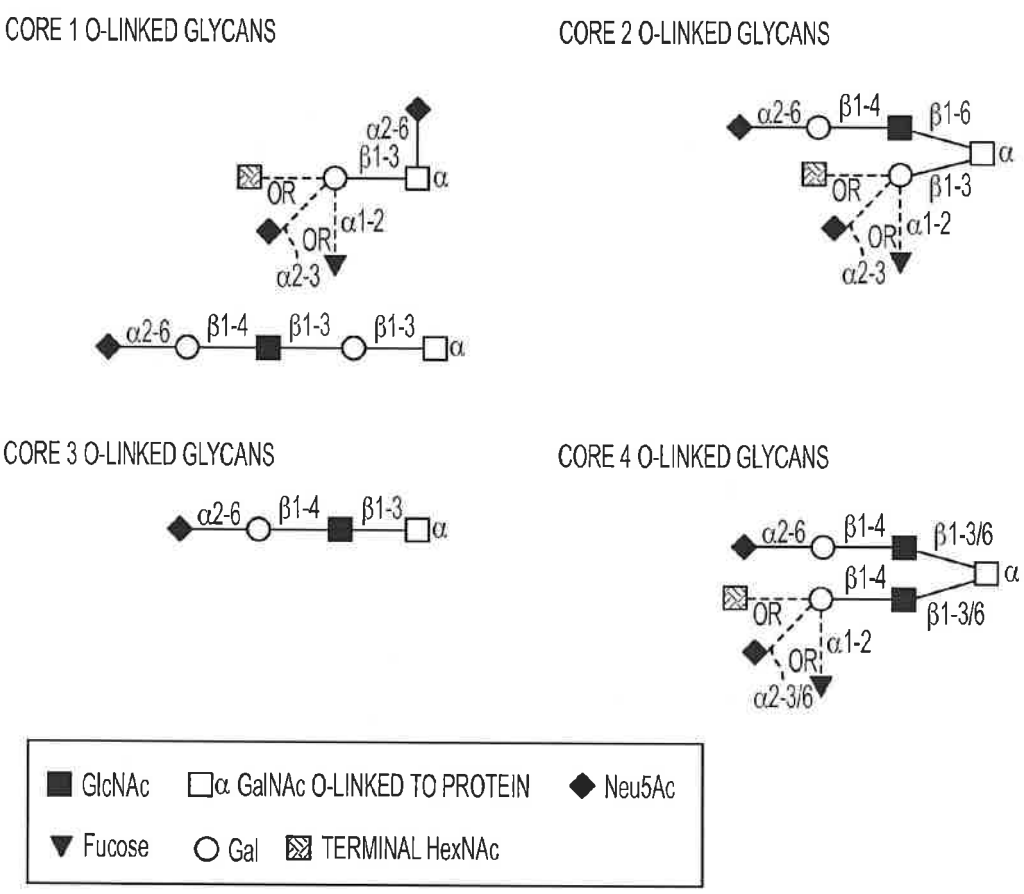

CORE 1 O-LINKED GLYCANS
α2-6
β1-3
α
OR
α1-2
OR
α2-3
α2-6
β1-4
β1-3
β1-3
α
CORE 2 O-LINKED GLYCANS
α2-6
β1-4
β1-6
α
OR
β1-3
α1-2
OR
α2-3
CORE 3 O-LINKED GLYCANS
α2-6
β1-4
β1-3
α
CORE 4 O-LINKED GLYCANS
α2-6
β1-4
β1-3/6
α
β1-4
OR
β1-3/6
α1-2
OR
α2-3/6
GlcNAc
α GalNAc O-LINKED TO PROTEIN
Neu5Ac
Fucose
Gal
TERMINAL HexNAc

FIG. 11