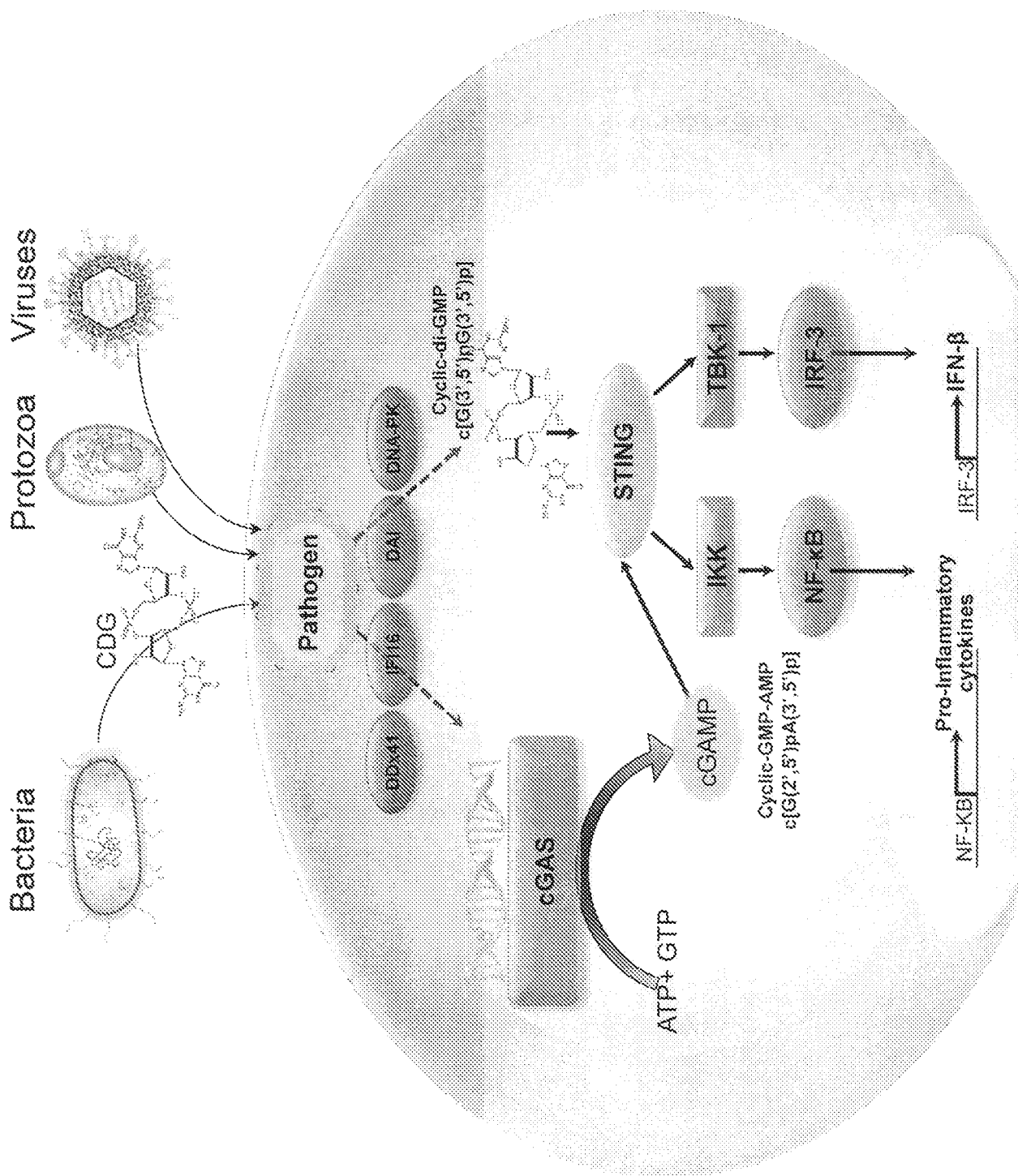


FIG. 1



Chemical reaction scheme for the synthesis of a DNA-based dendritic phosphonate dendron. The scheme shows the iterative phosphorylation of a DNA strand starting from a 5'-DMT-protected nucleotide. The reaction involves the use of various reagents (a, b, c, d, e, f, g, h, i, j, k, l, m, n) to introduce different phosphonate groups (X₁, X₂) and protecting groups (TBS, DMT). The final product is a DNA strand with a complex dendritic structure, including a 3'-phosphonate group and a 5'-phosphonate group. The scheme also includes a list of reagents and their corresponding X₁ and X₂ groups.

Reagents and corresponding X₁ and X₂ groups:

- 9a: X₁=X₂=O
- 9b: X₁=X₂=S [Rp, Rp]
- 9c: X₁=X₂=S [Rp, Sp]
- 9d: X₁=O; X₂=S [Rp]
- 9e: X₁=S [Rp]; X₂=O
- 9f: X₁=S [Sp]; X₂=O

Reagents and corresponding X₁ and X₂ groups:

- 7a: X₁=X₂=O
- 7b: X₁=X₂=S [Rp, Rp]
- 7c: X₁=X₂=S [Rp, Sp]
- 7d: X₁=O; X₂=S [Rp]
- 7e: X₁=S [Rp]; X₂=O
- 7f: X₁=S [Sp]; X₂=O

Reagents and corresponding X₁ and X₂ groups:

- 8a: X₁=X₂=O
- 8b: X₁=X₂=S [Rp, Rp]
- 8c: X₁=X₂=S [Rp, Sp]
- 8d: X₁=O; X₂=S [Rp]
- 8e: X₁=S [Rp]; X₂=O
- 8f: X₁=S [Sp]; X₂=O

Reagents and corresponding X₁ and X₂ groups:

- 5a: X₁=O
- 5b: X₁=S

Reagents and corresponding X₁ and X₂ groups:

- 4a: X₁=O
- 4b: X₁=S

Reagents and corresponding X₁ and X₂ groups:

- 3a: X₁=O
- 3b: X₁=S

Reagents and corresponding X₁ and X₂ groups:

- 2a: X₁=O
- 2b: X₁=S

Reagents and corresponding X₁ and X₂ groups:

- 1a: X₁=O
- 1b: X₁=S

Reagents and corresponding X₁ and X₂ groups:

- 0a: X₁=O
- 0b: X₁=S

FIG. 2B

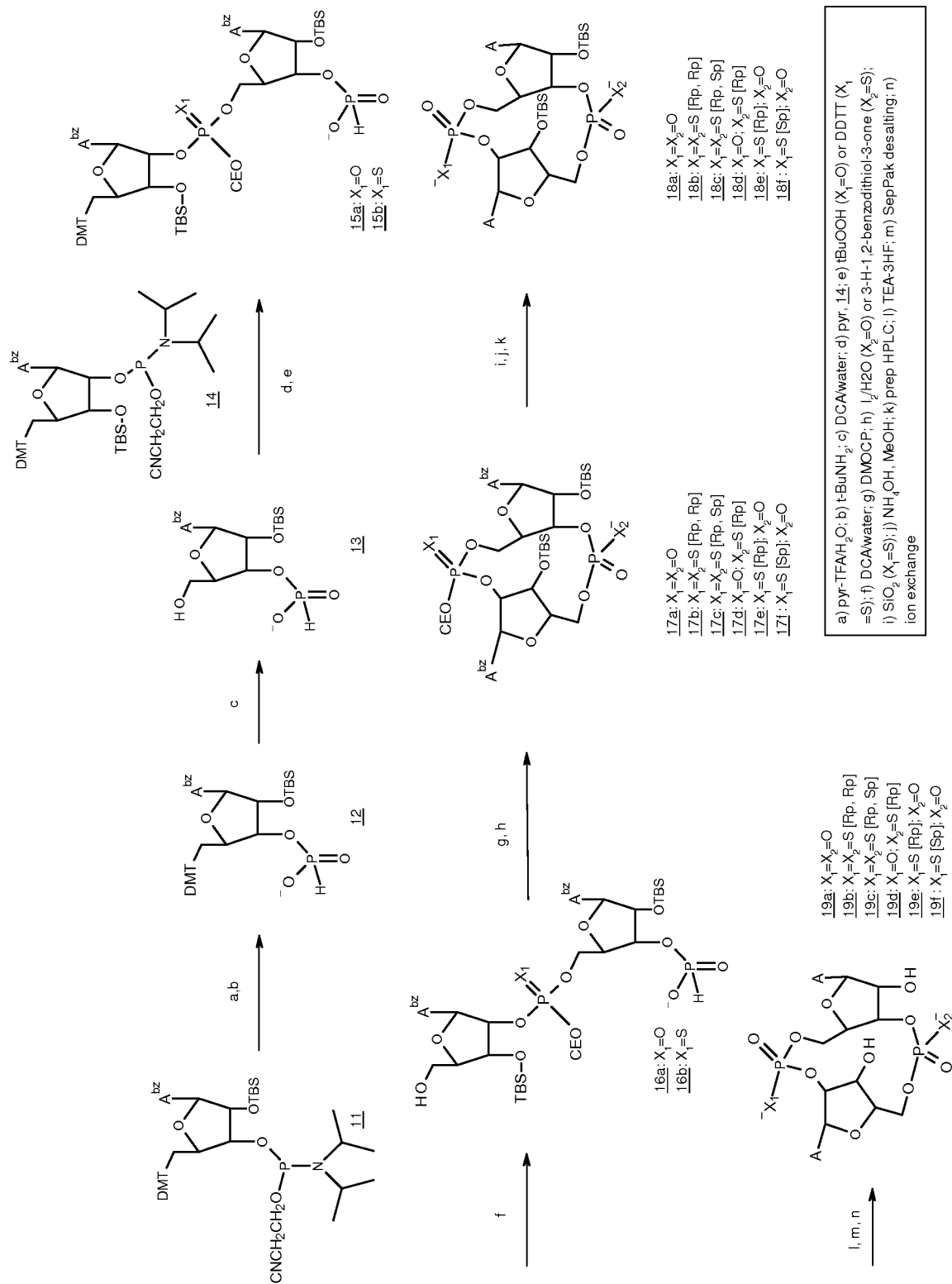
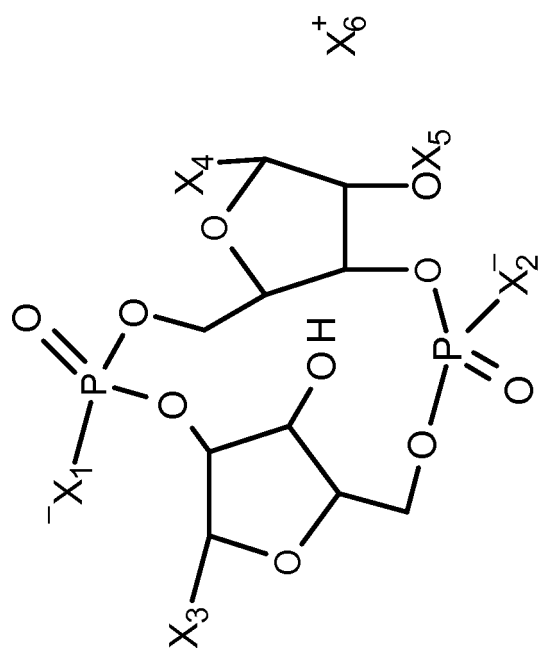


FIG. 2C



- 10) $X_1 = X_2 = O$; $X_3 = G$; $X_4 = G$; $X_5 = CO(CH_2)_{12}CH_3$; $X_6 = 2TEAH$
 20) $X_1 = X_2 = S$ [Rp, Rp]; $X_3 = G$; $X_4 = A$; $X_5 = H$; $X_6 = 2TEAH$
 21) $X_1 = X_2 = S$ [Rp, Rp]; $X_3 = A$; $X_4 = A$; $X_5 = H$; $X_6 = 2Na$
 22) $X_1 = X_2 = S$ [Rp, Rp]; $X_3 = A$; $X_4 = A$; $X_5 = H$; $X_6 = 2NH_4$
 23) $X_1 = X_2 = O$; $X_3 = G$; $X_4 = A$; $X_5 = H$; $X_6 = 2TEAH$

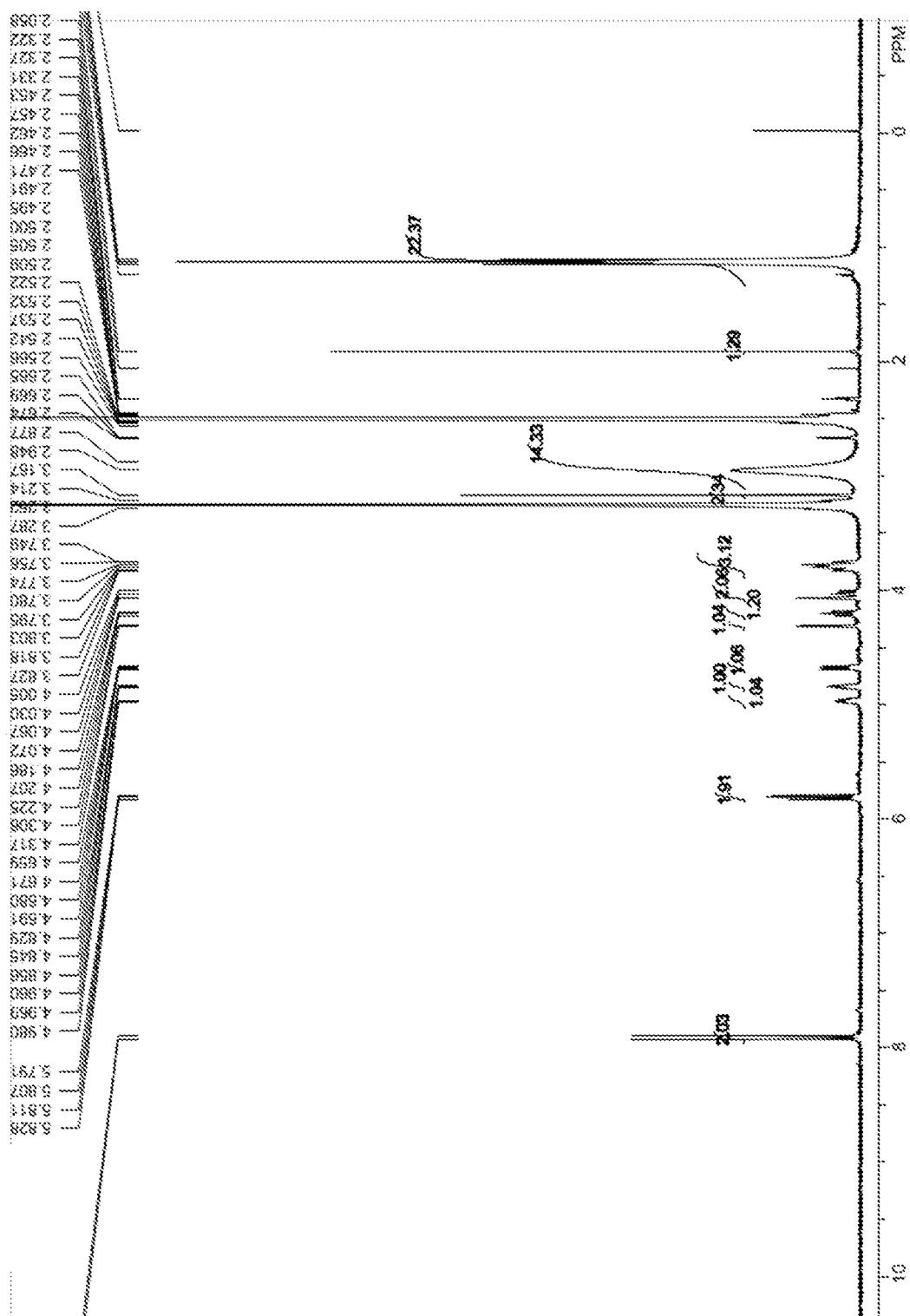


FIG. 3A

FIG. 3B

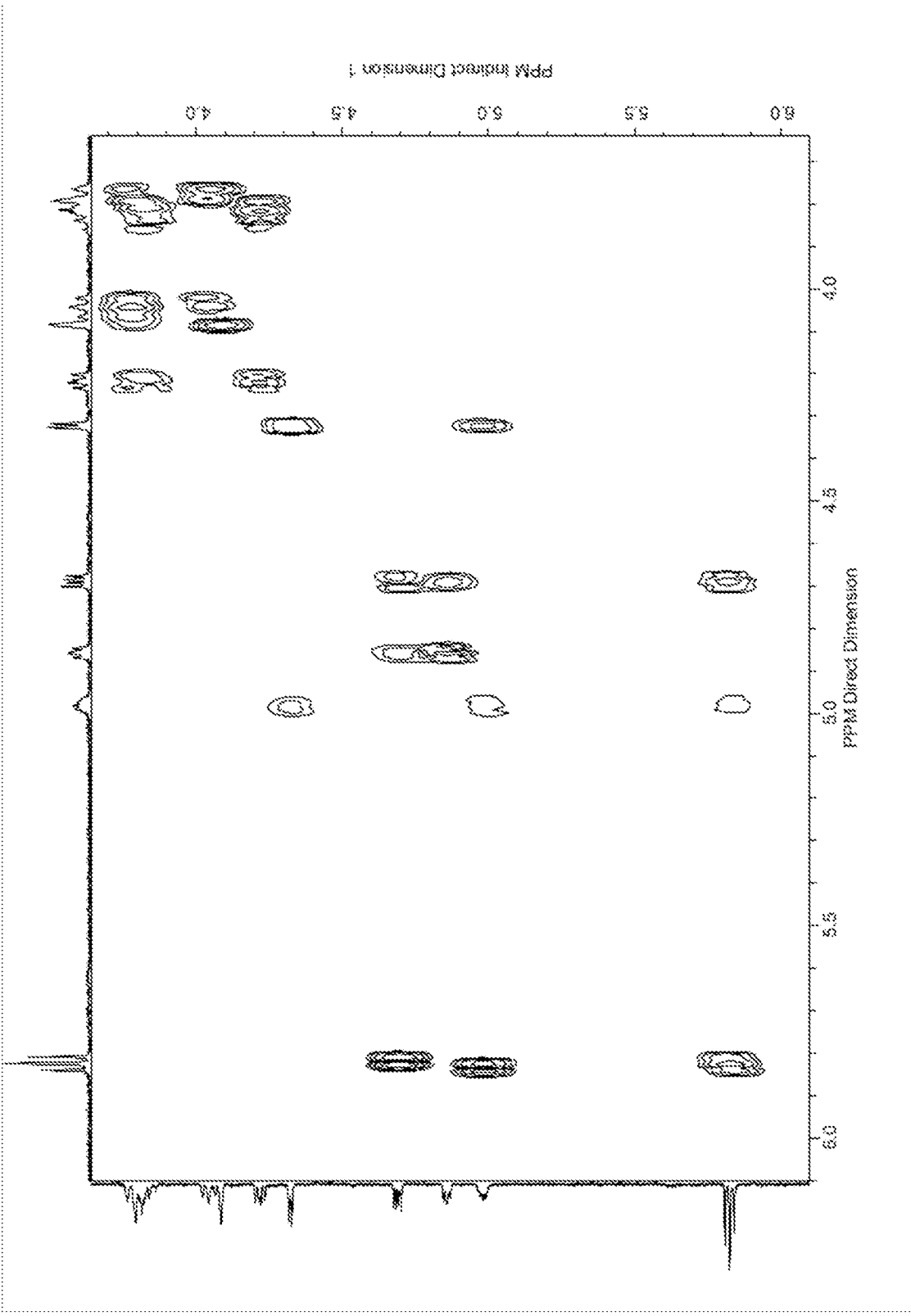


FIG. 3C

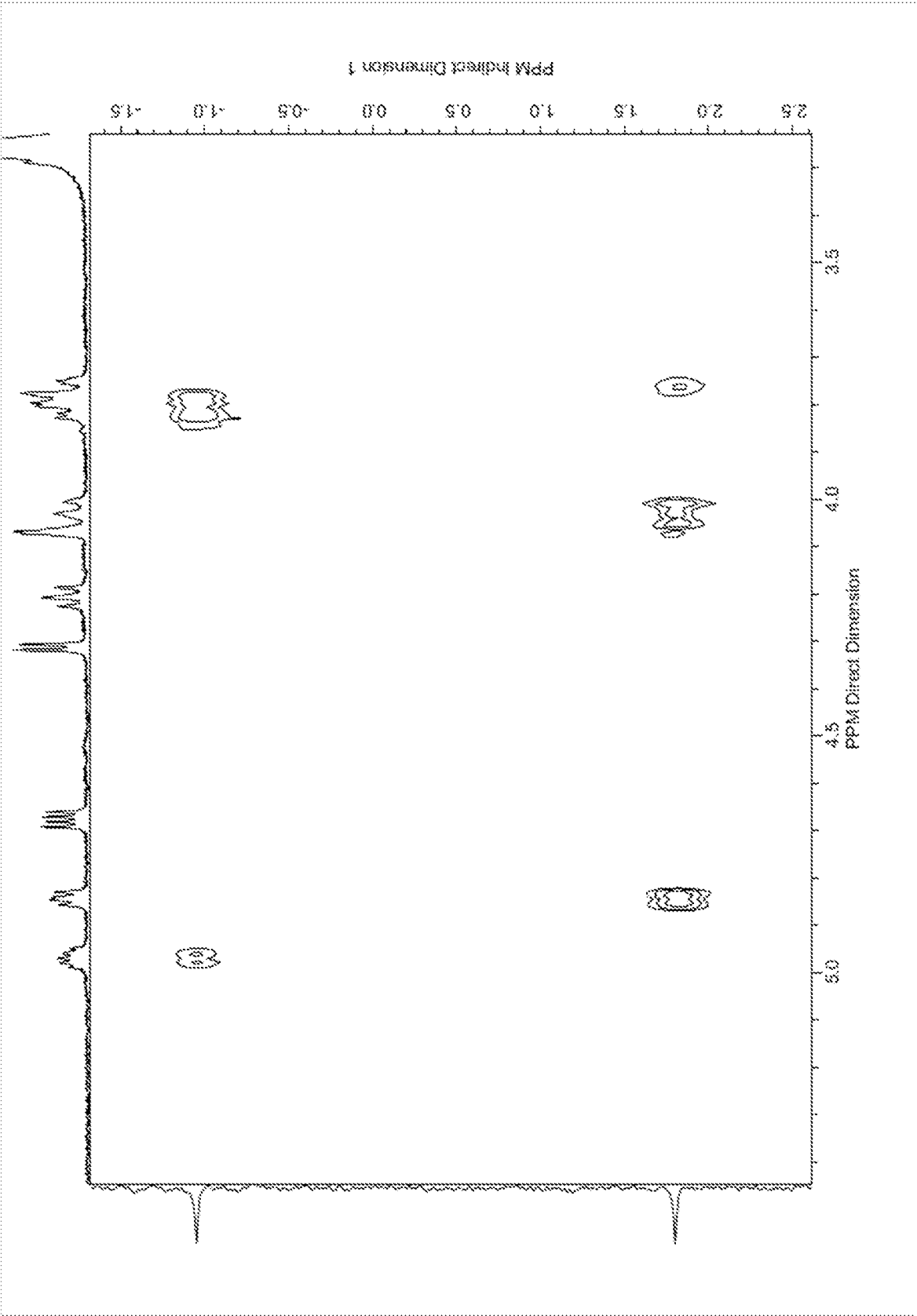
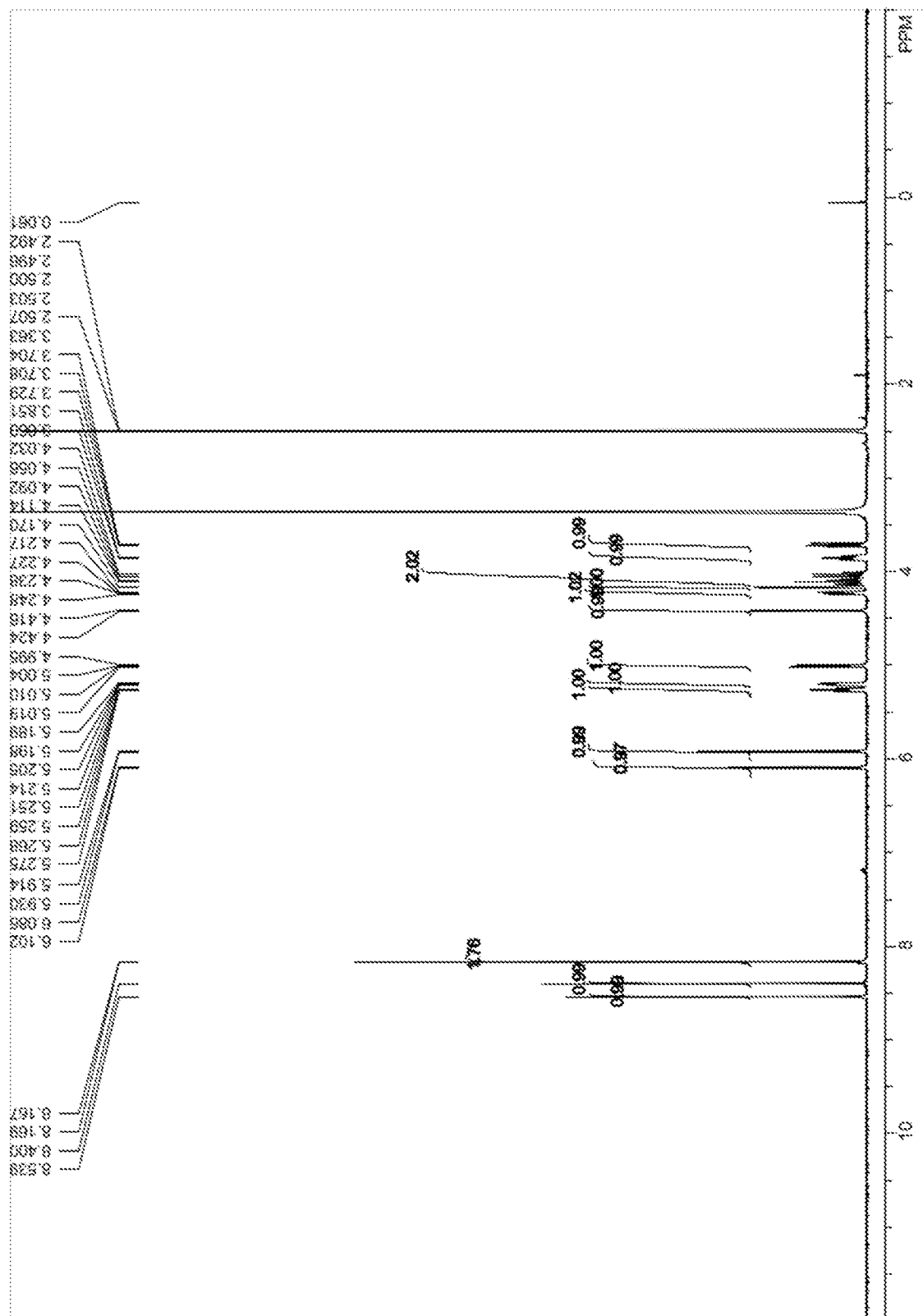


FIG. 3D



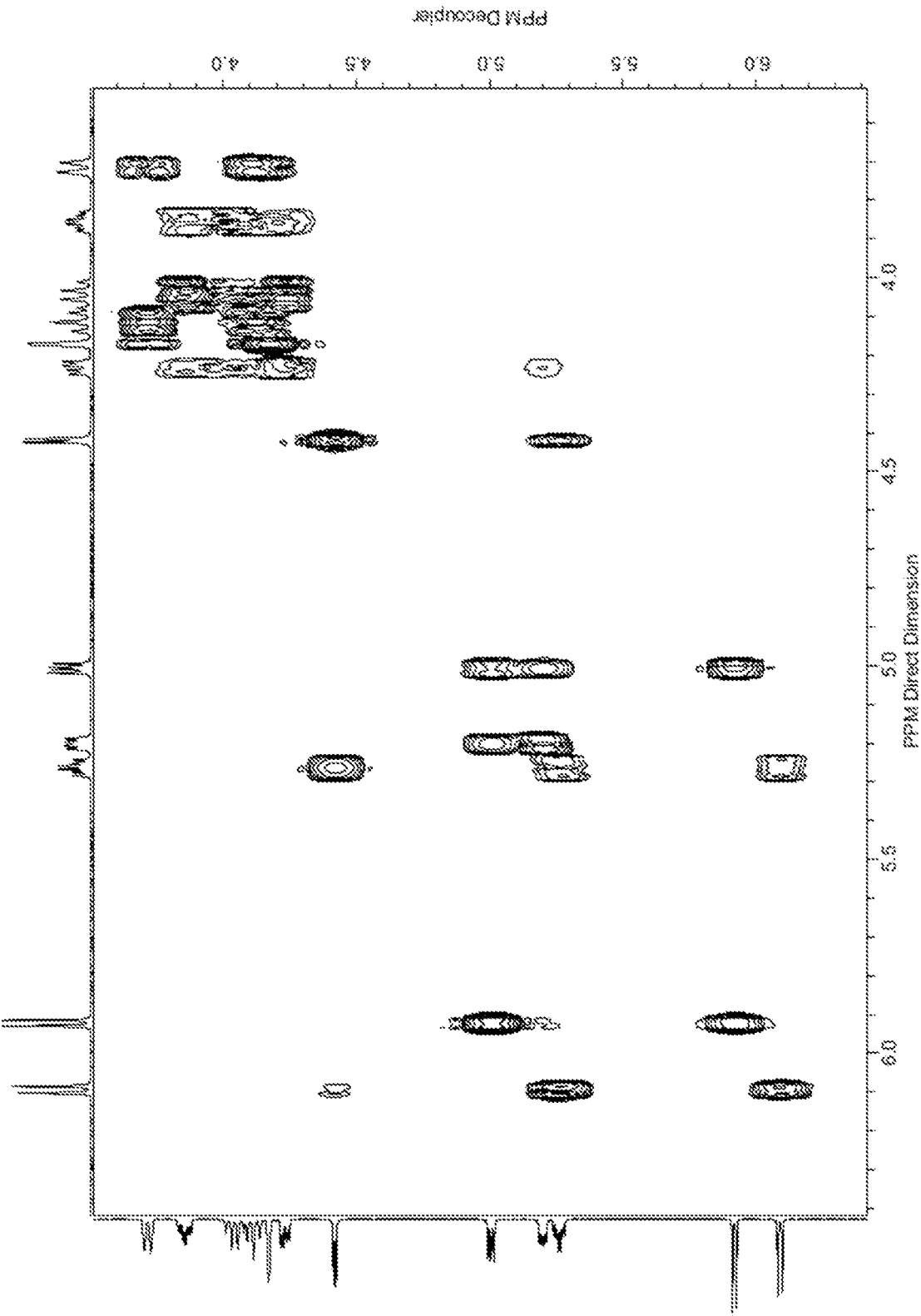
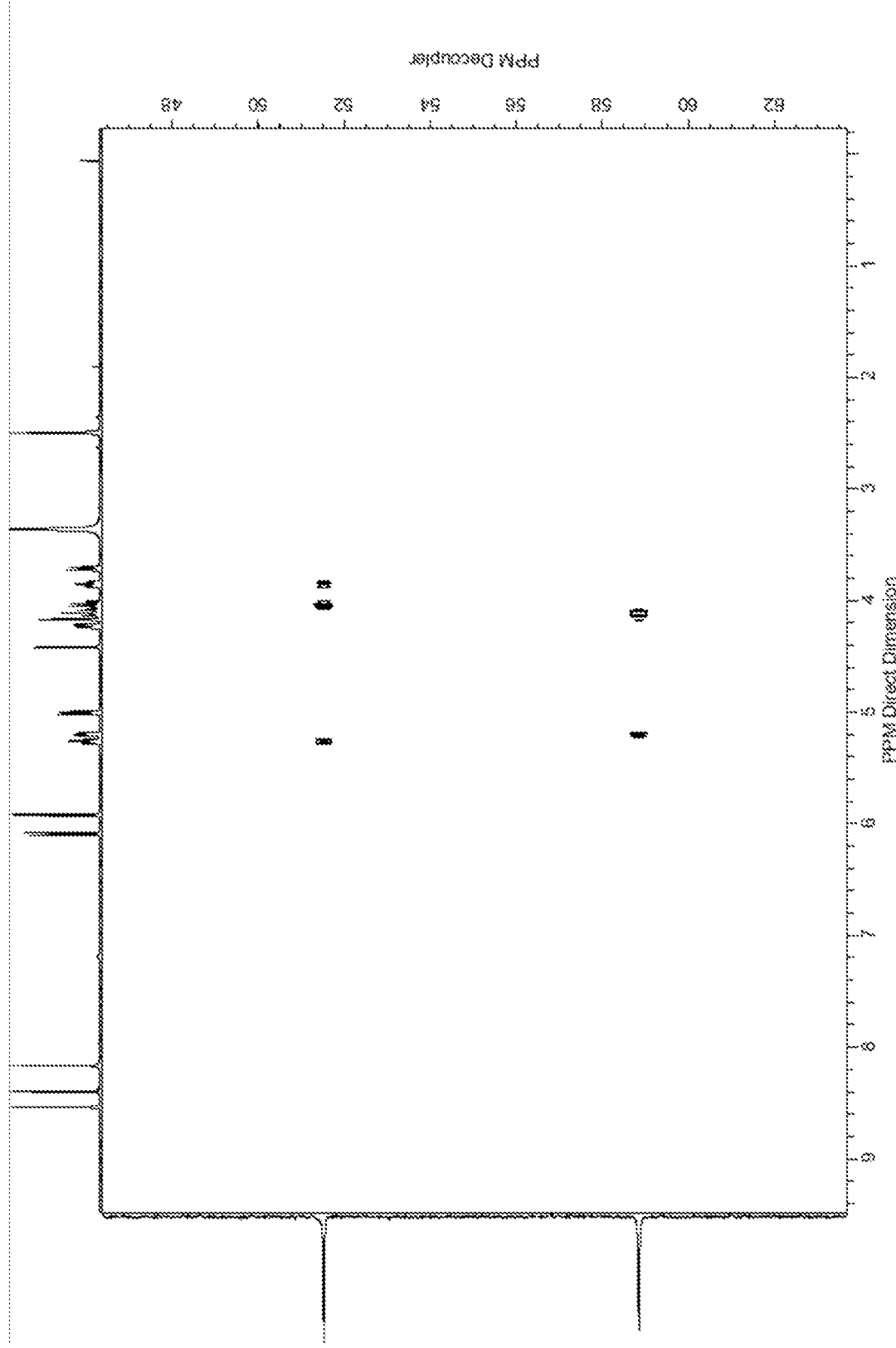


FIG. 3E

FIG. 3F



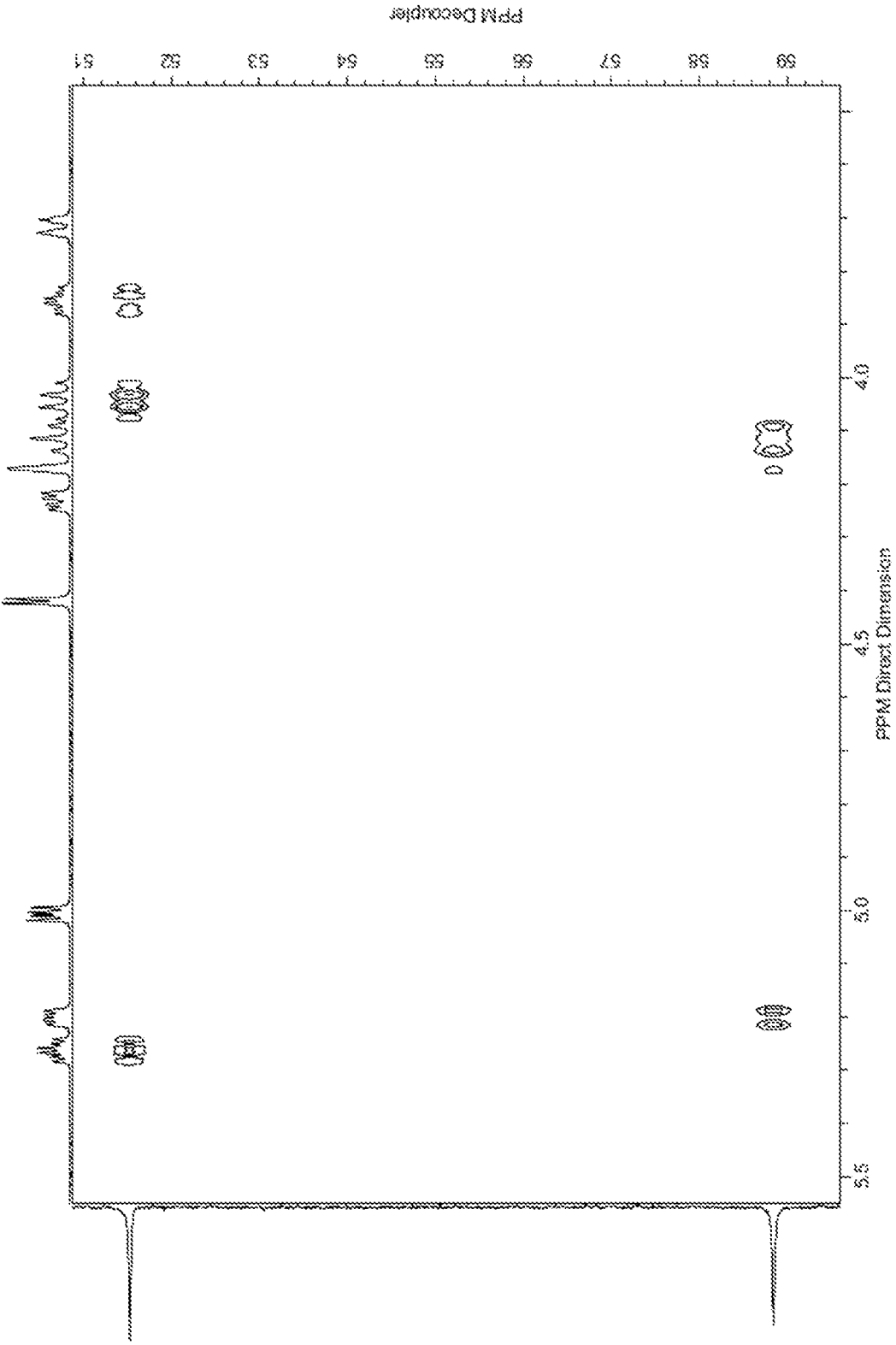
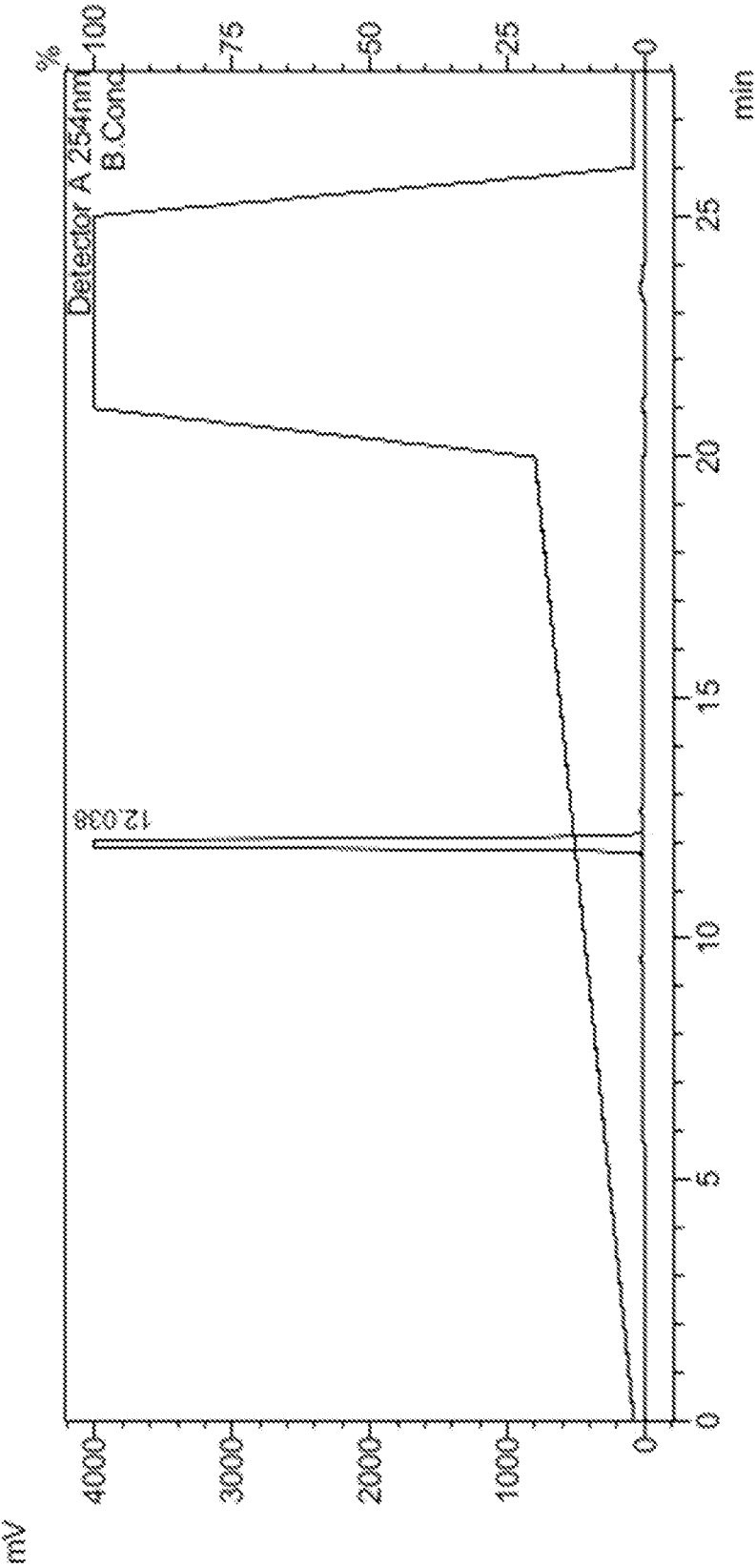


FIG. 3G

FIG. 3H



<Peak Table>

Detector A 254nm			
Peak#	Ret. Time	Area	Area%
1	12.038	57113226	100.000
Total		57113226	100.000

FIG.4

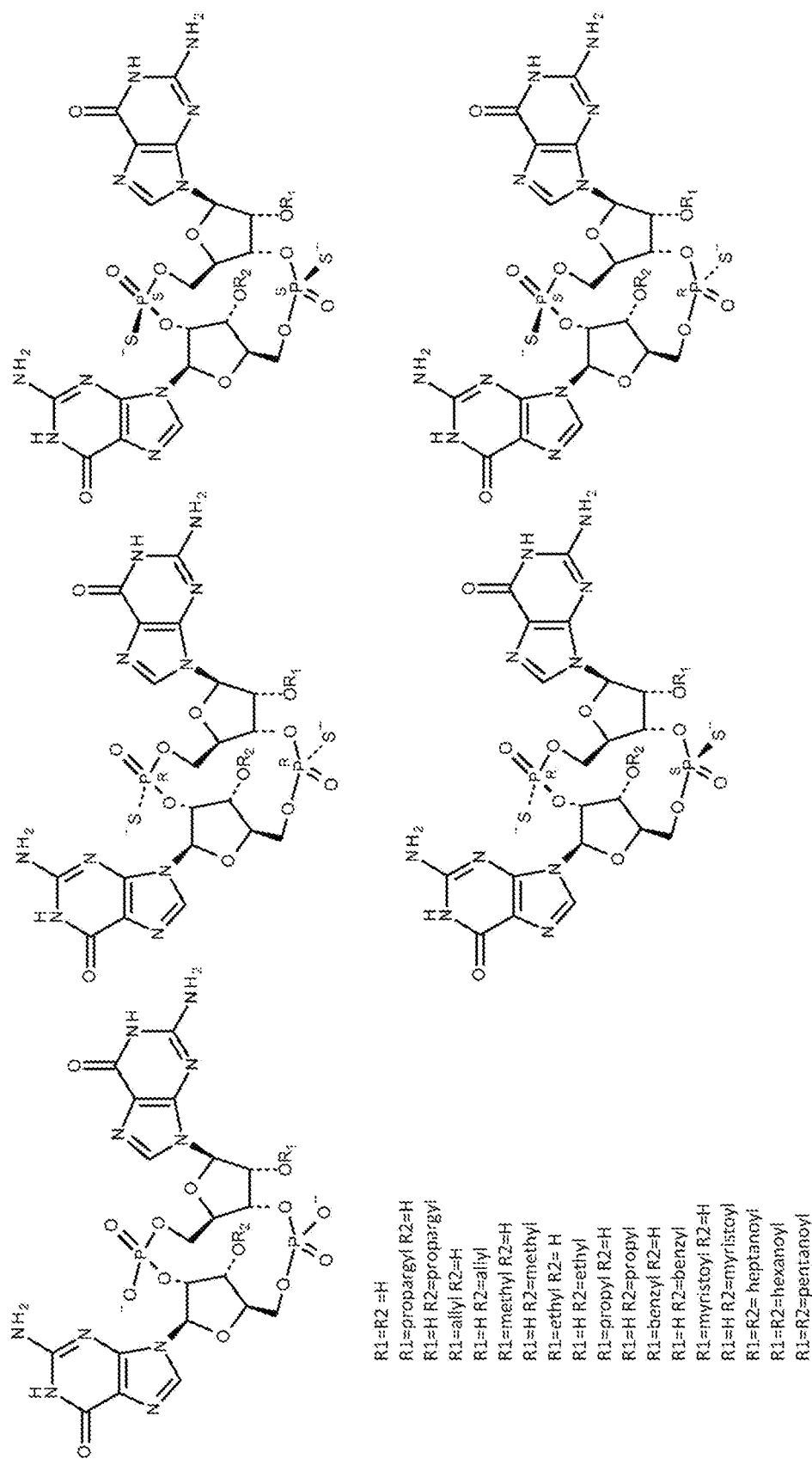


FIG. 5

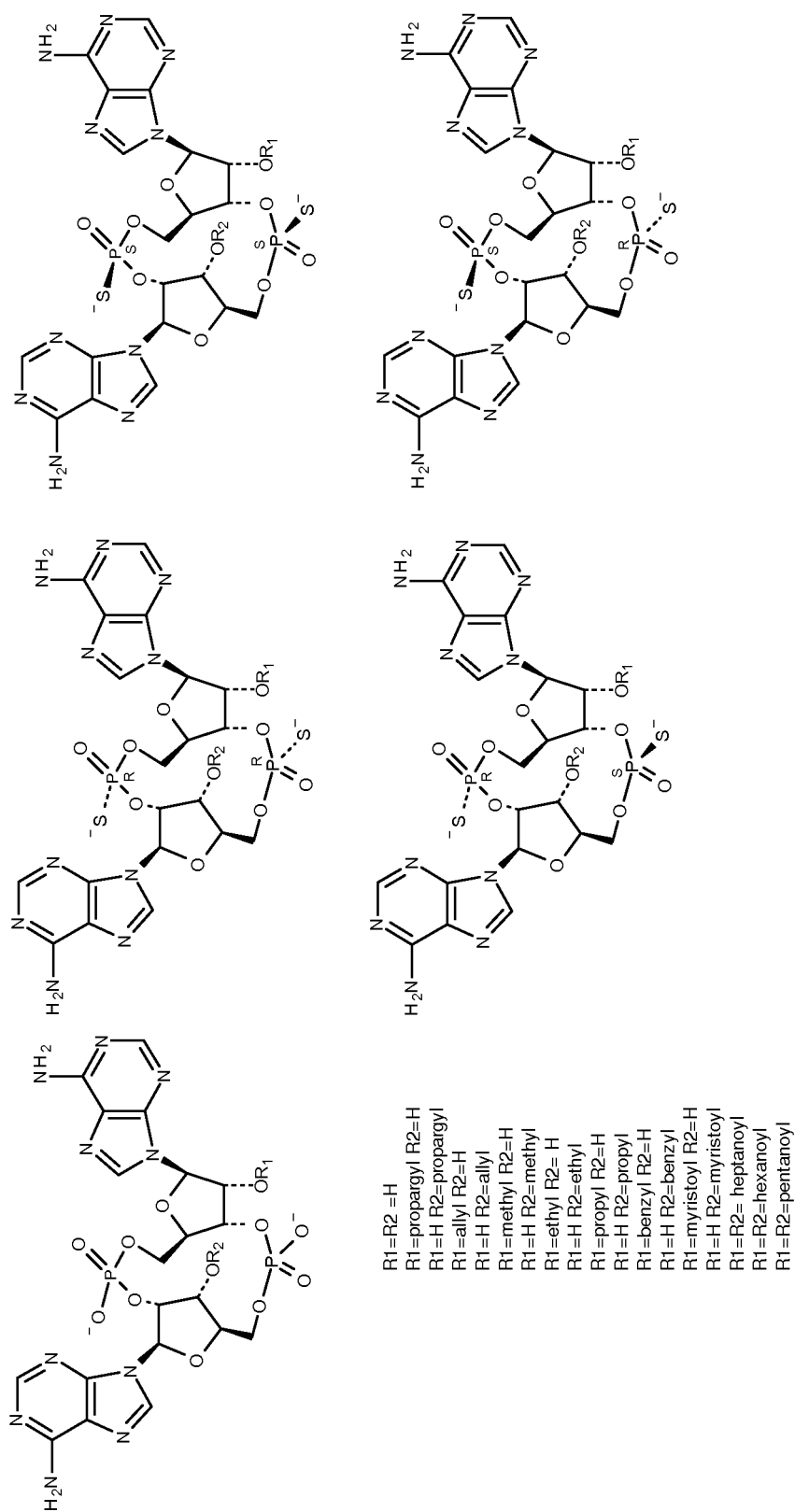


FIG. 6

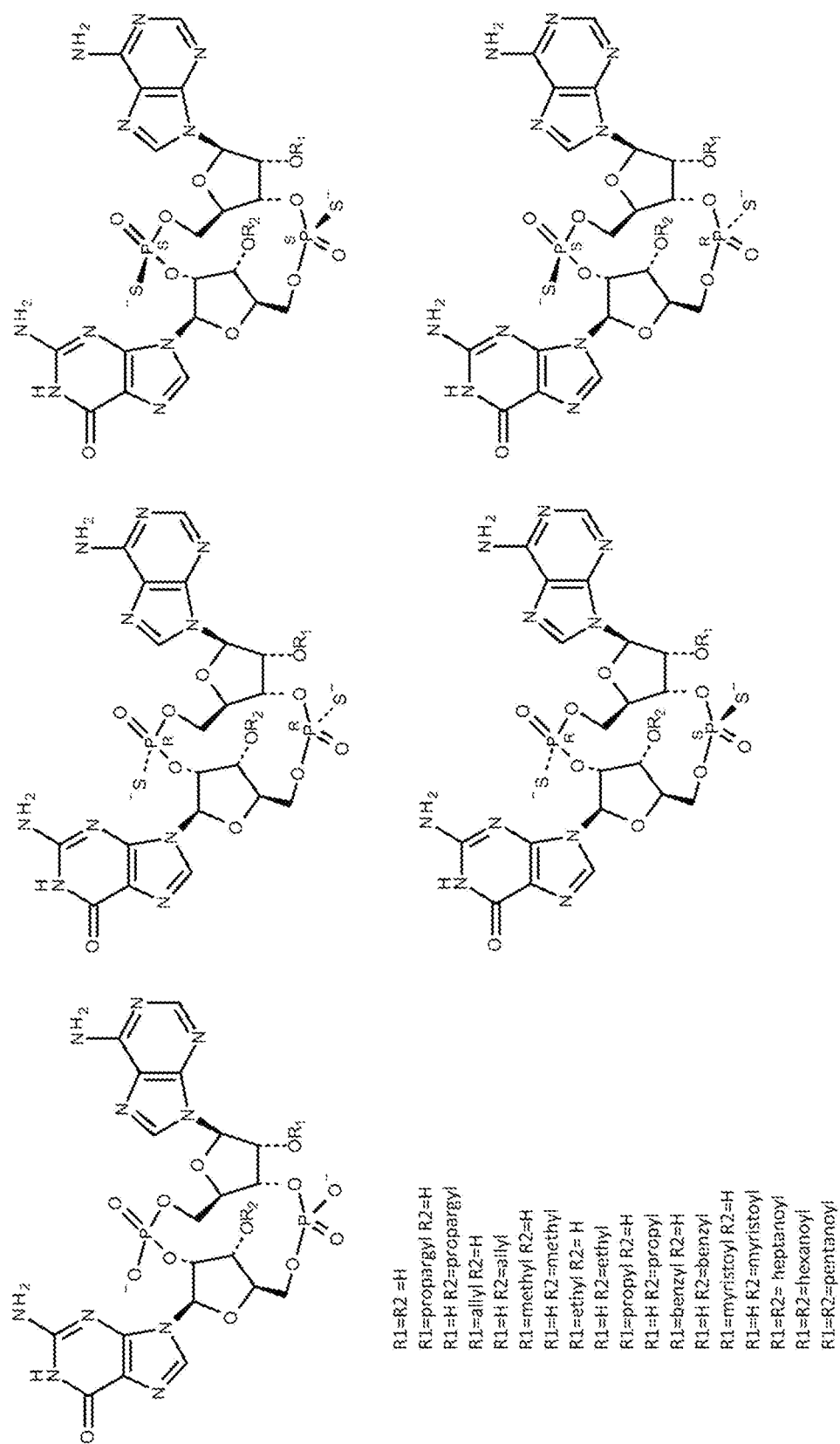


FIG. 7

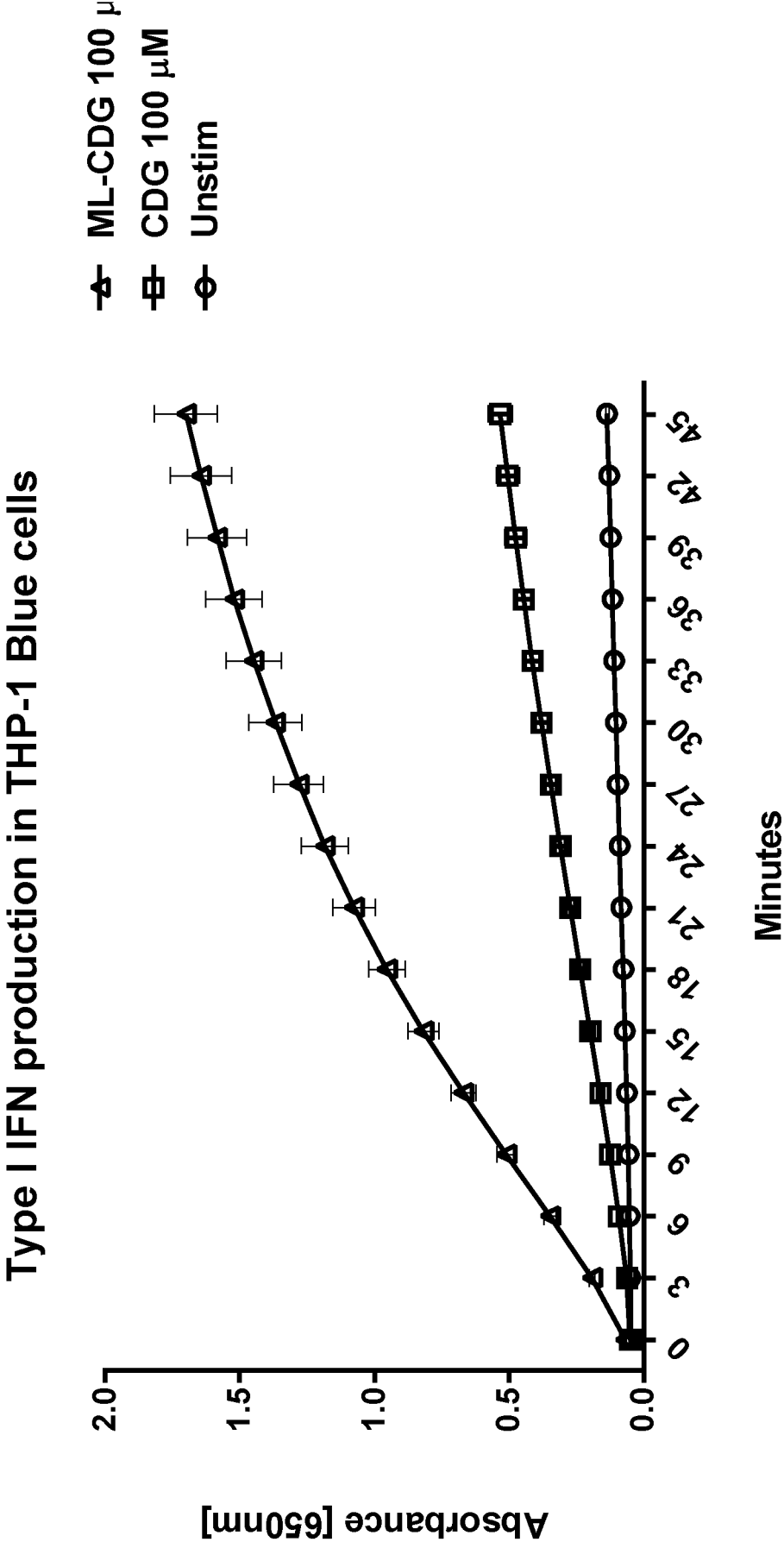


FIG. 8

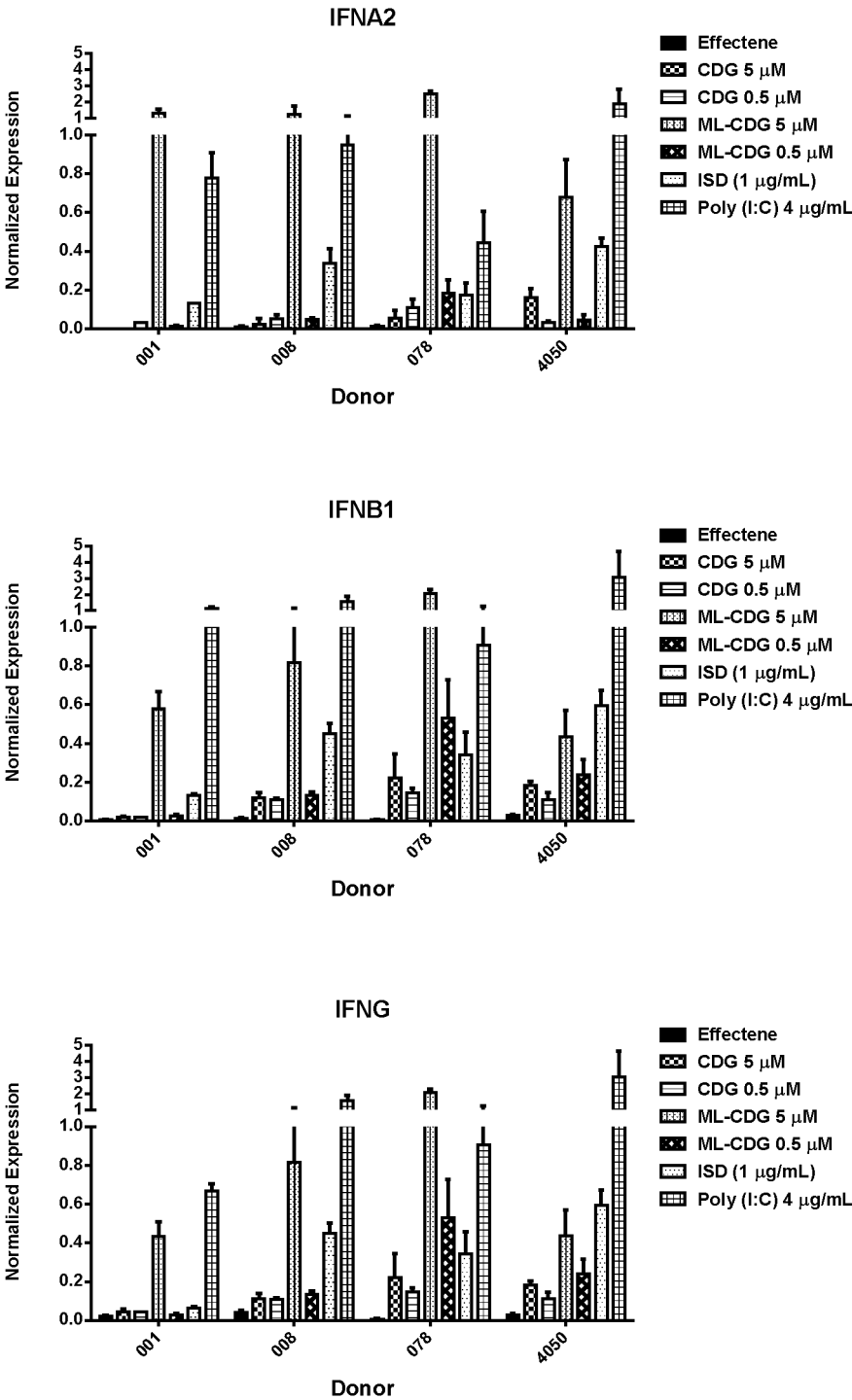


FIG. 9(a)

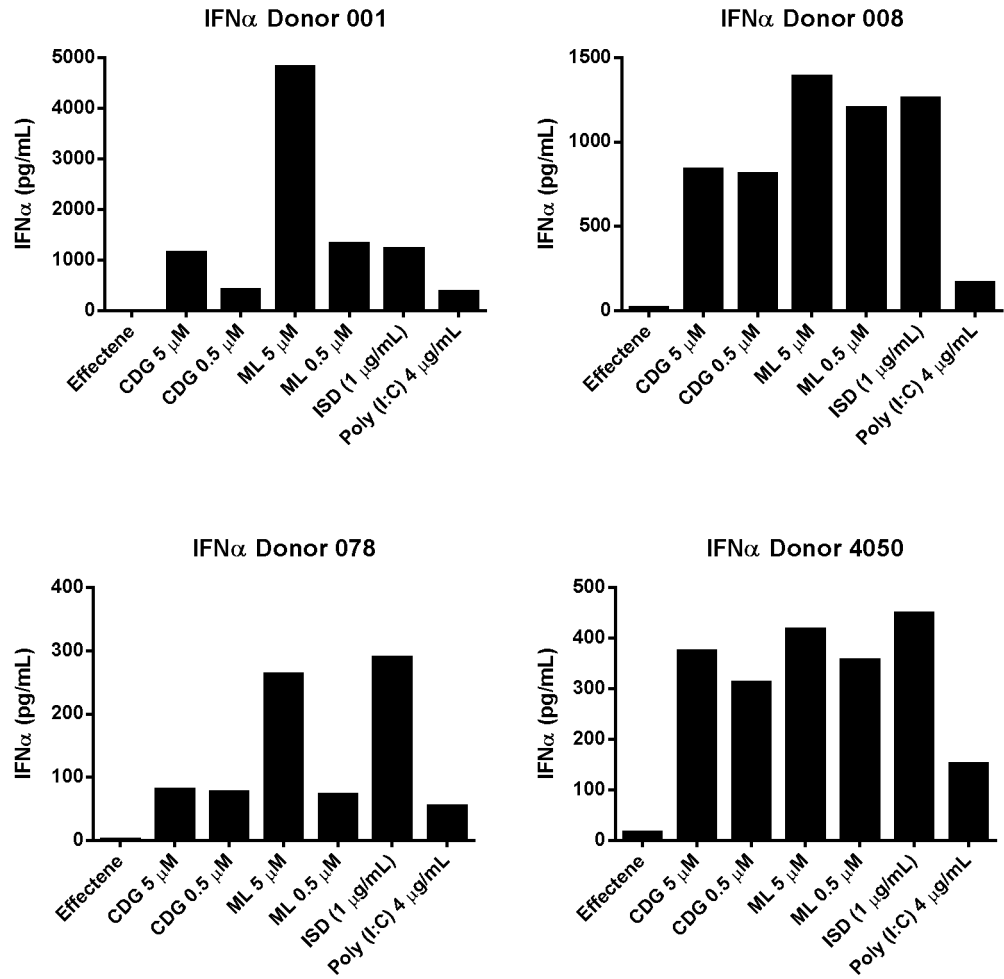


FIG. 9(b)

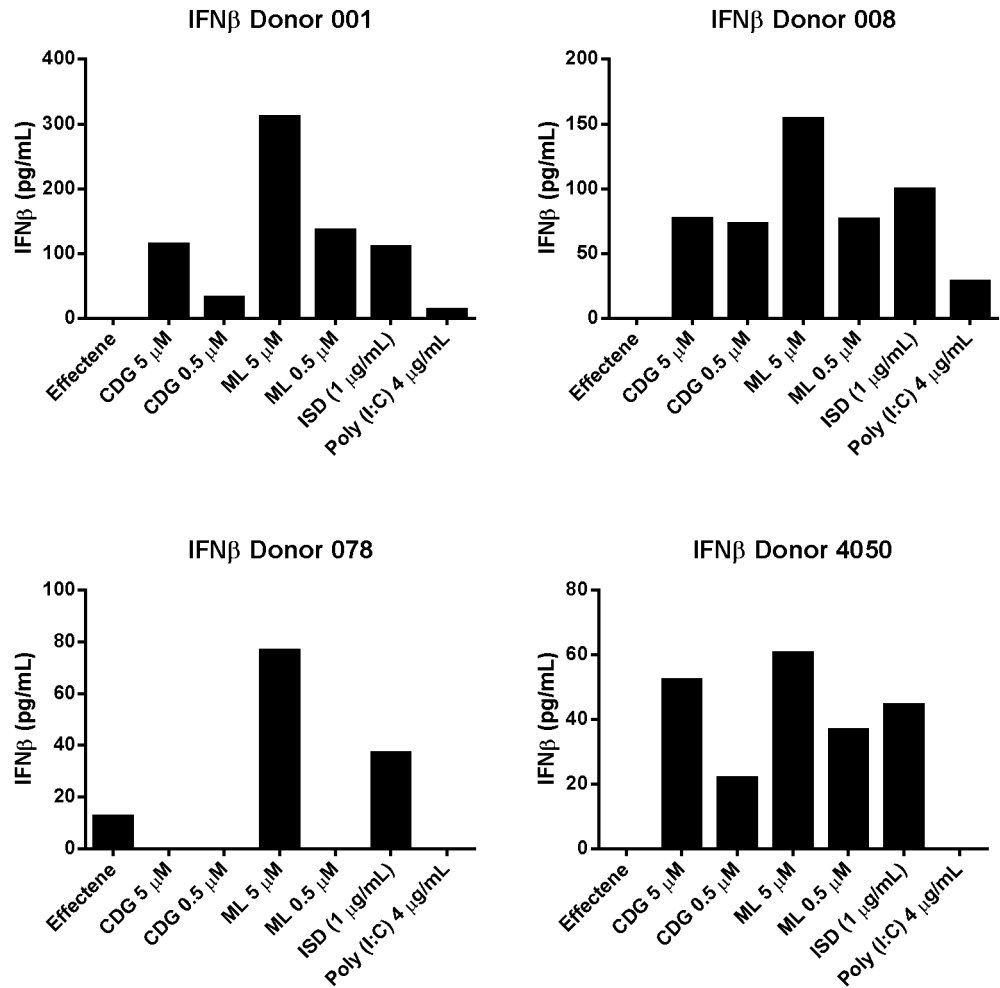


FIG. 9(c)

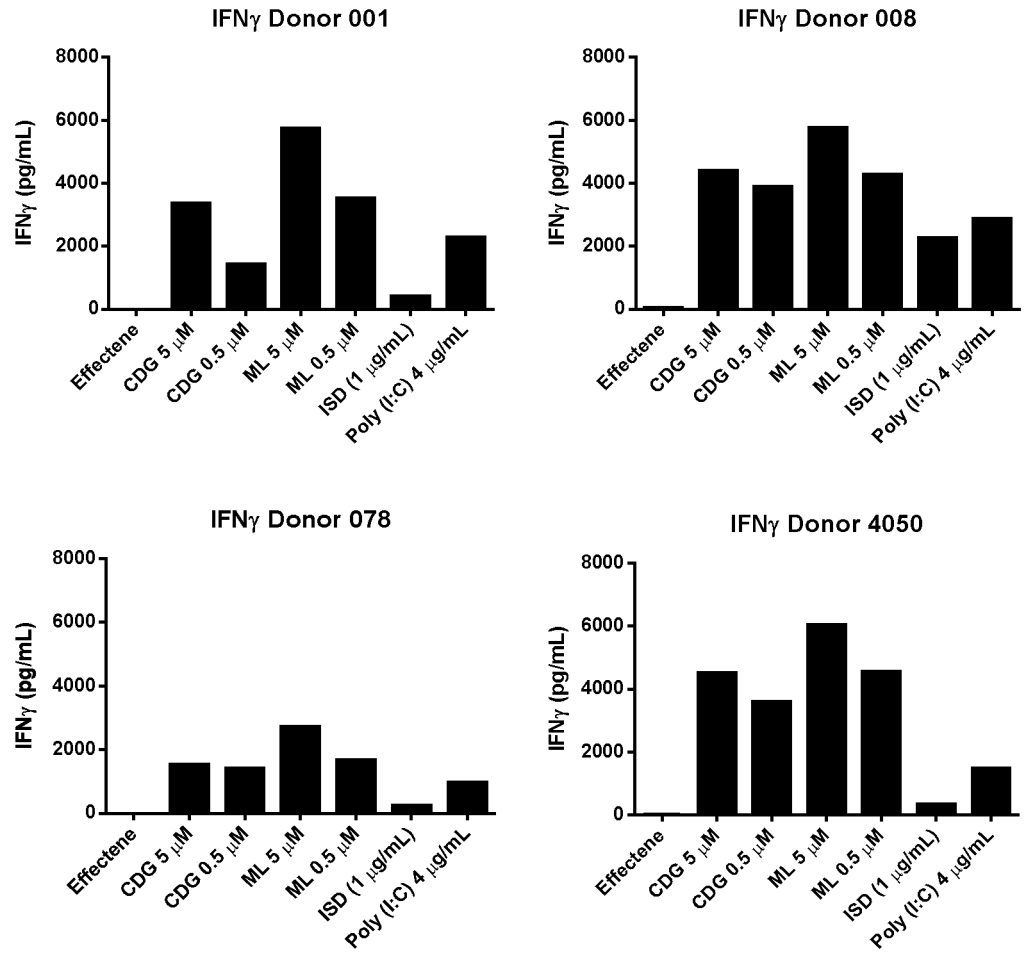


FIG. 10

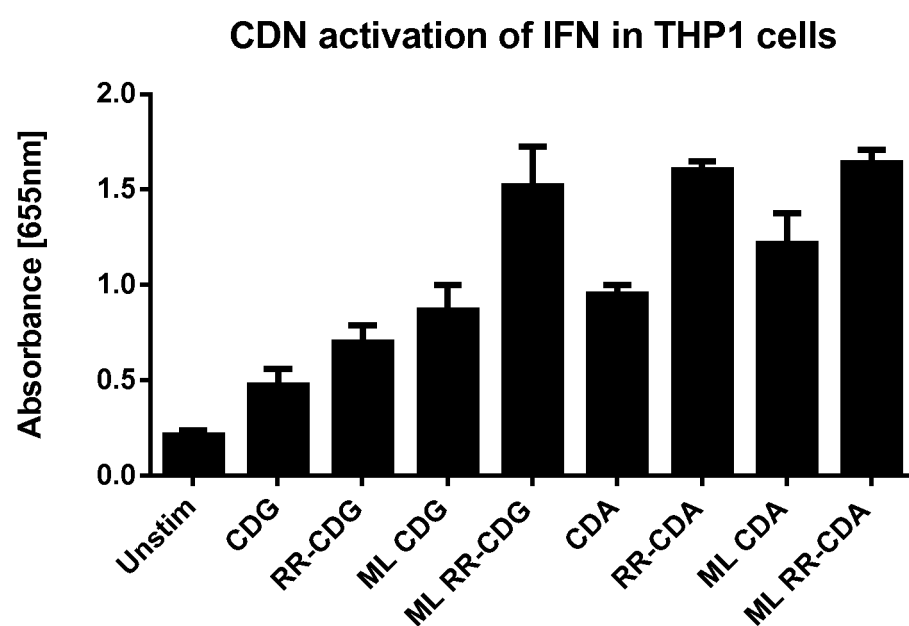


FIG. 11A

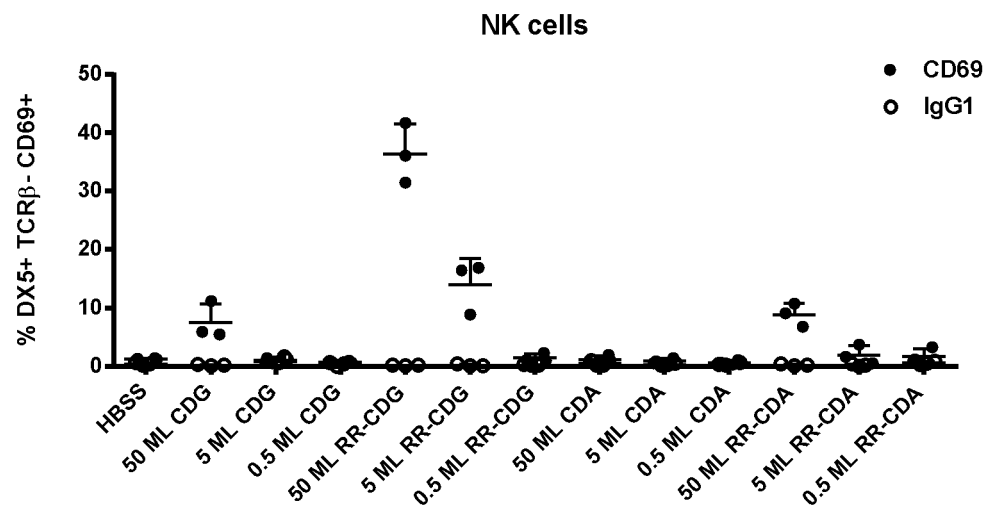


FIG. 11B

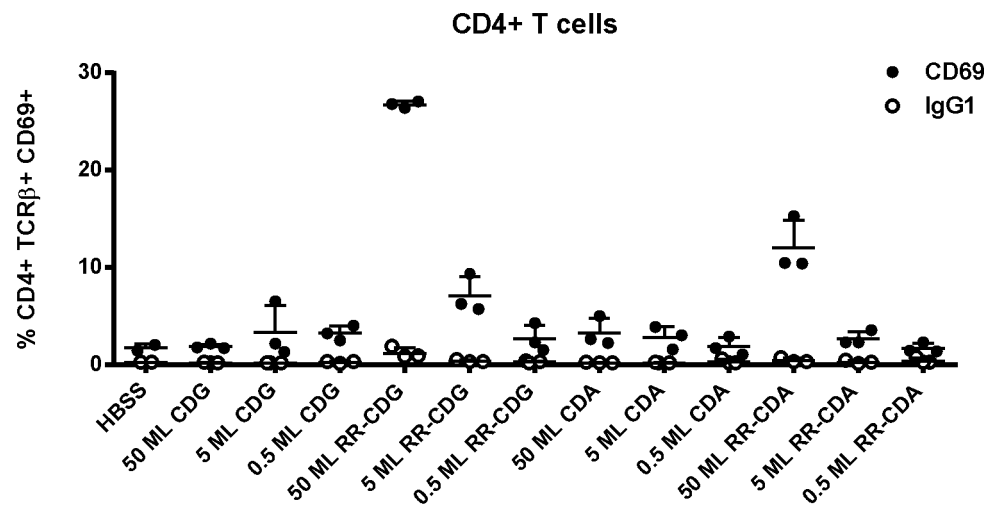


FIG. 11C

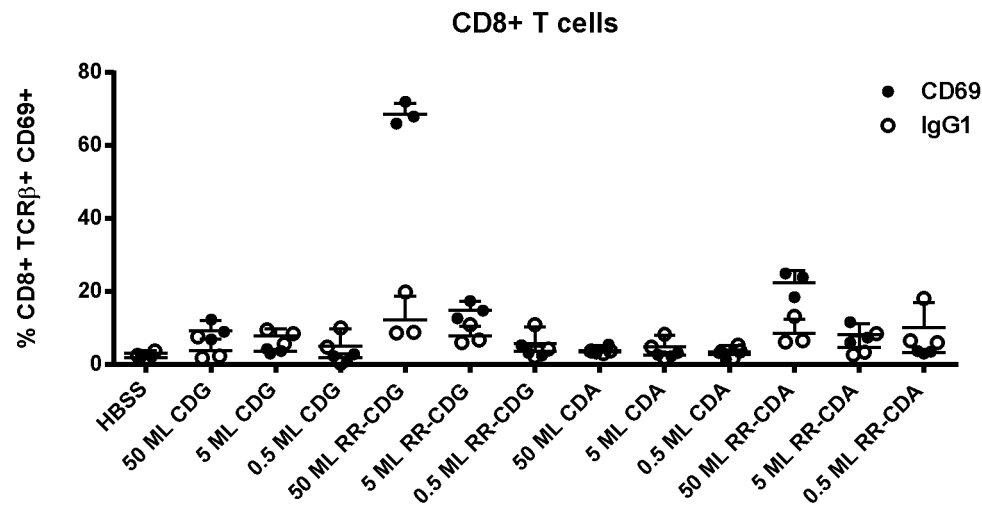


FIG. 12

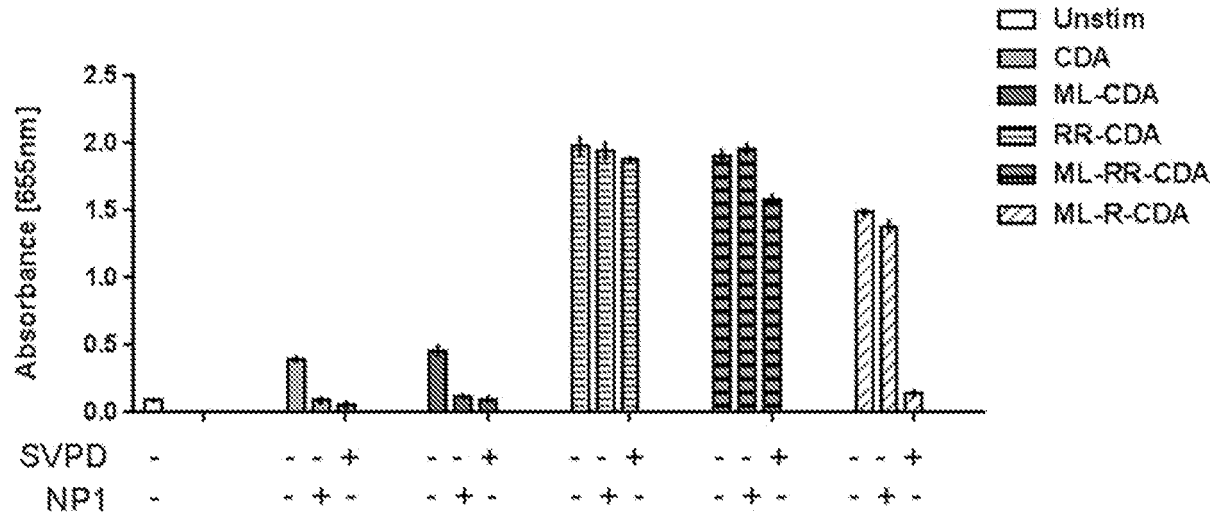


FIG. 13

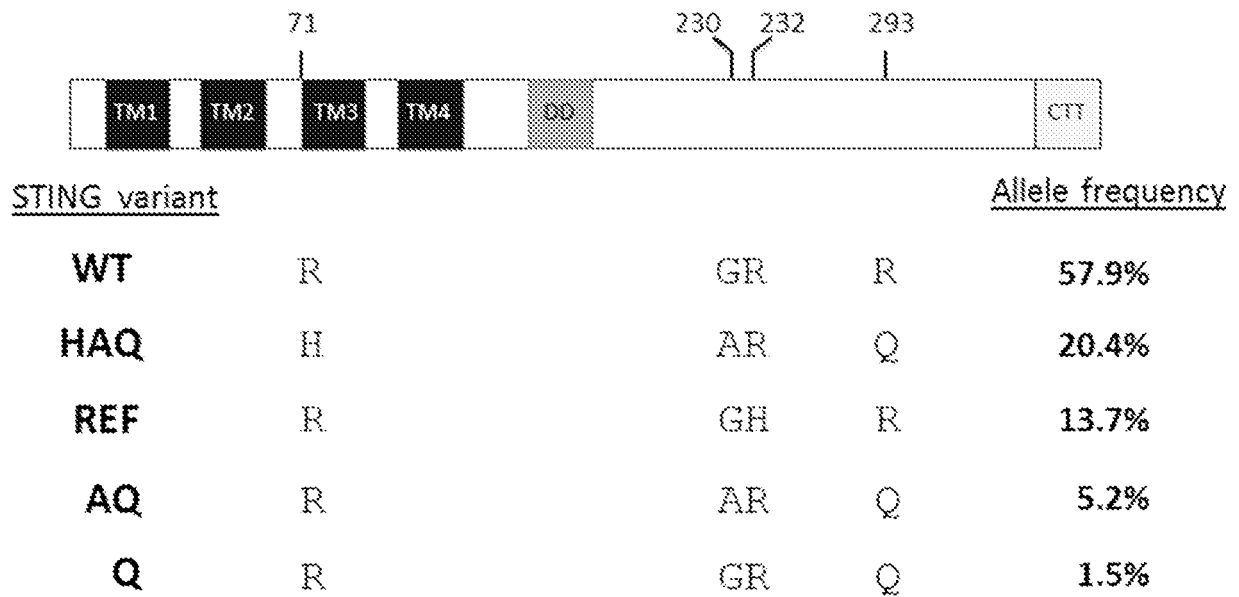


FIG. 14

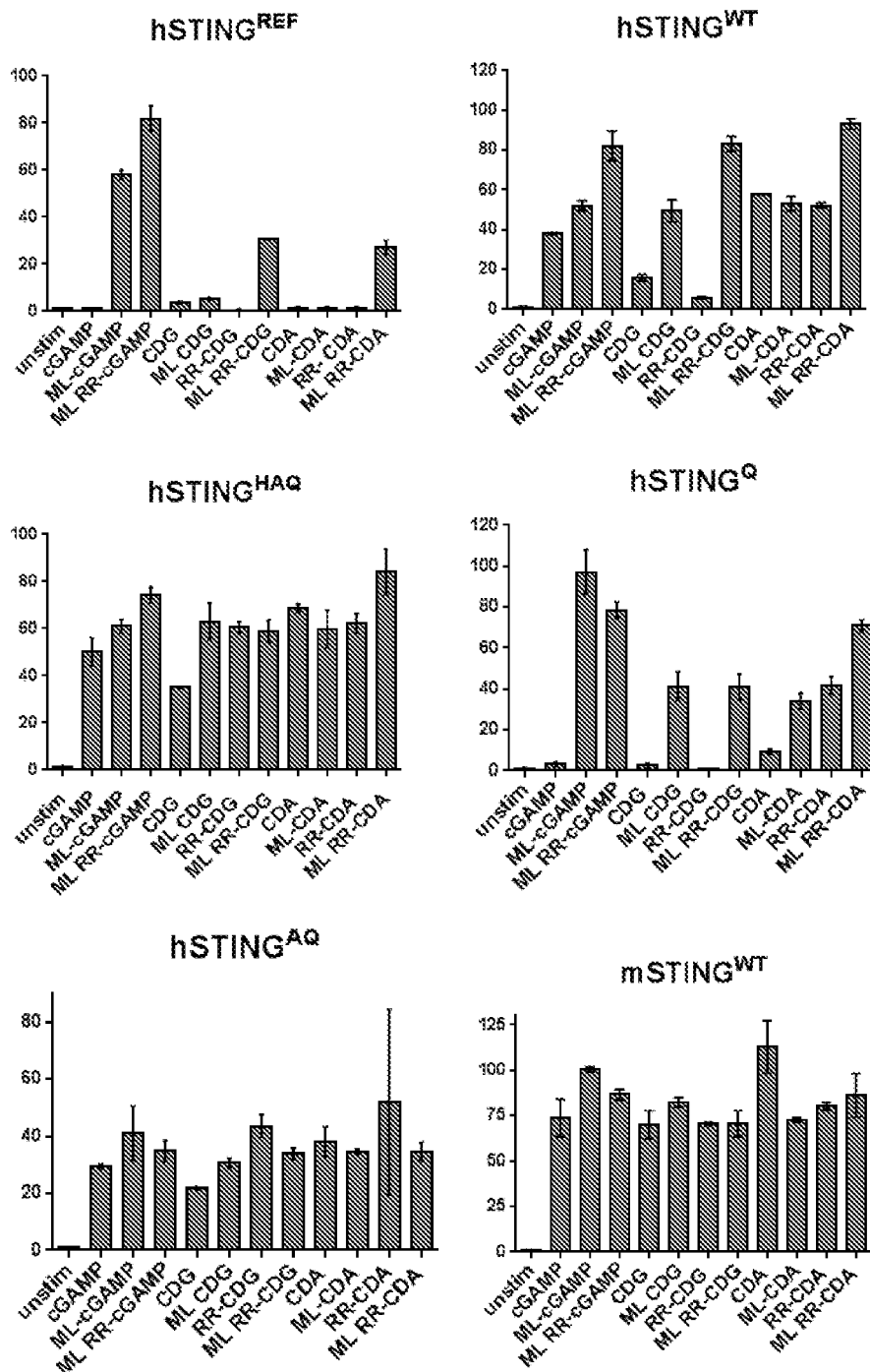


FIG. 15

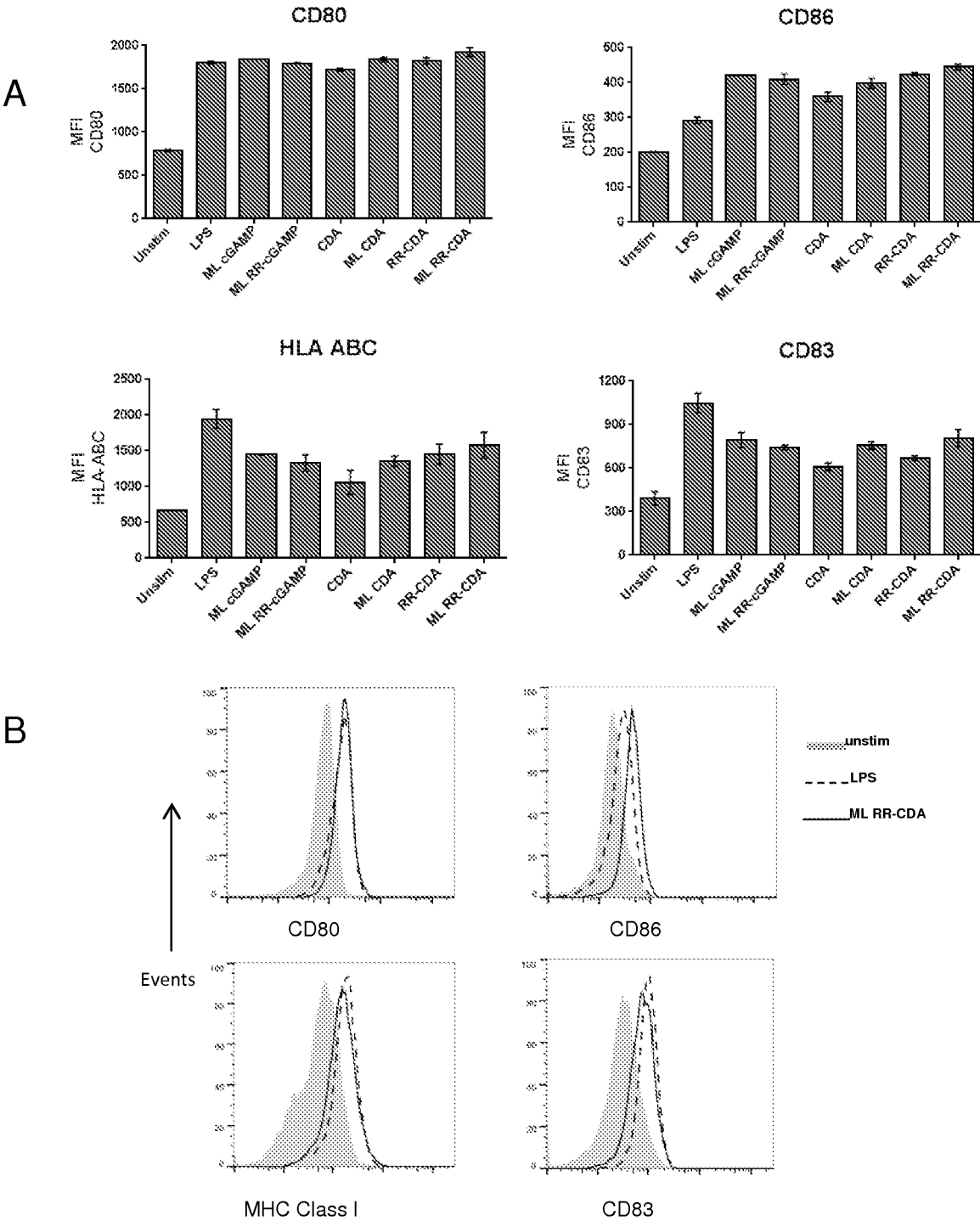


FIG. 16

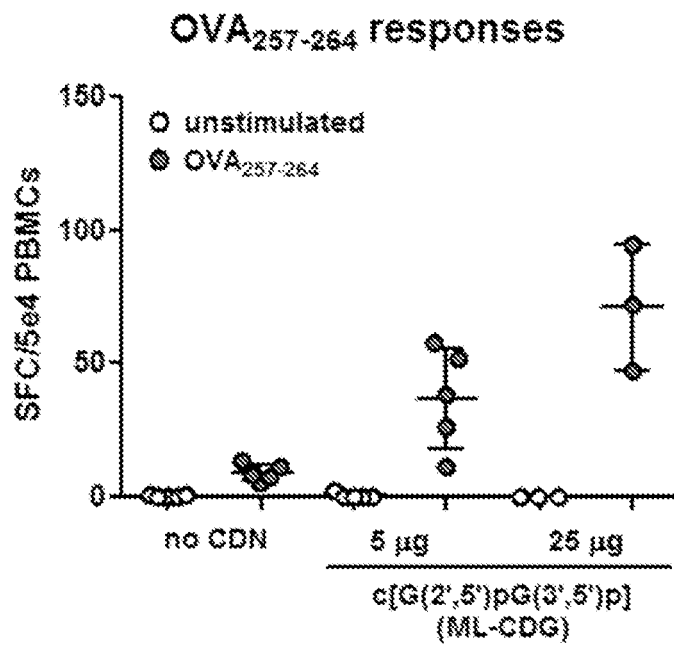


FIG. 17

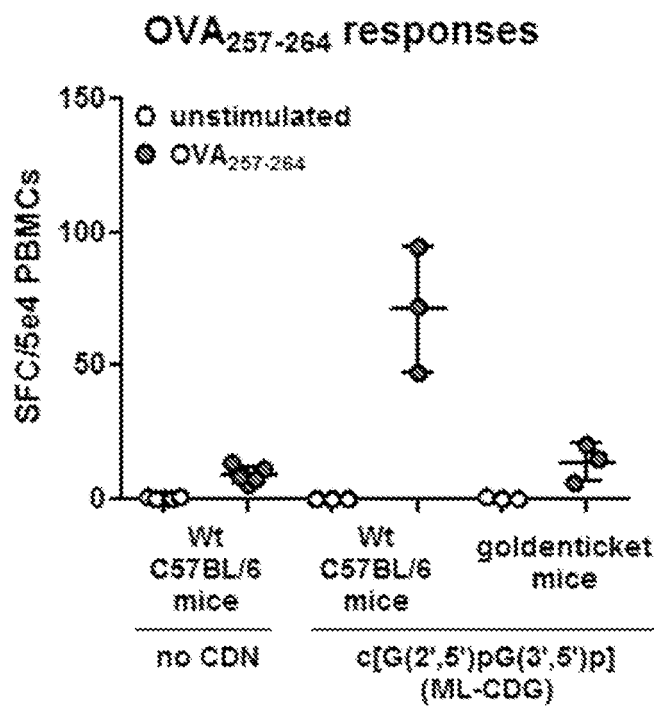


FIG. 18

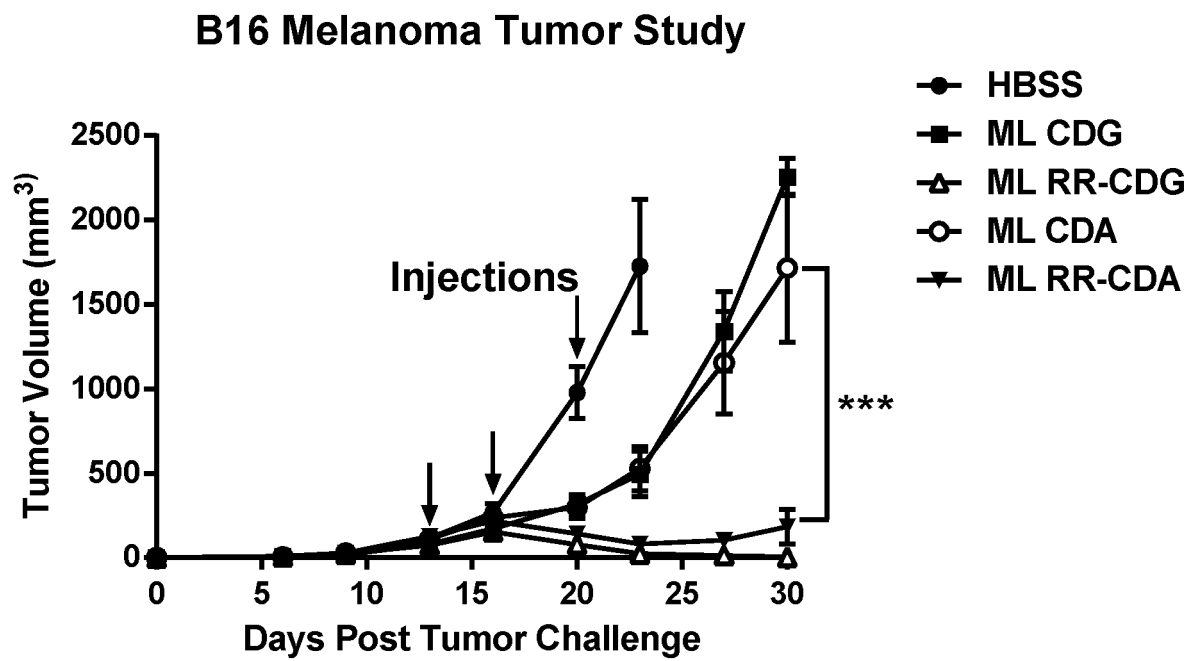


FIG. 19A

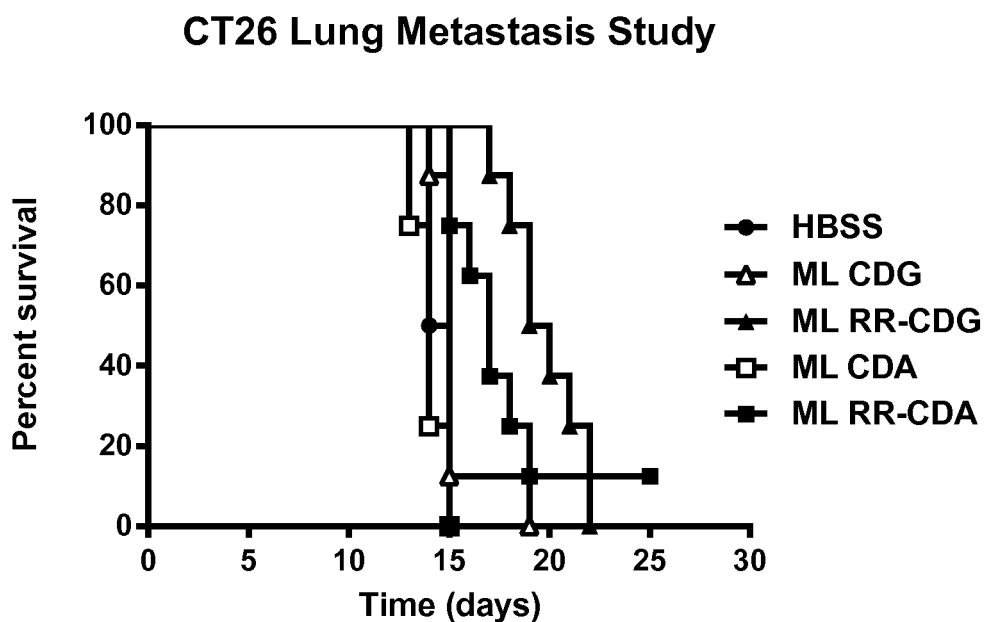


FIG. 19B

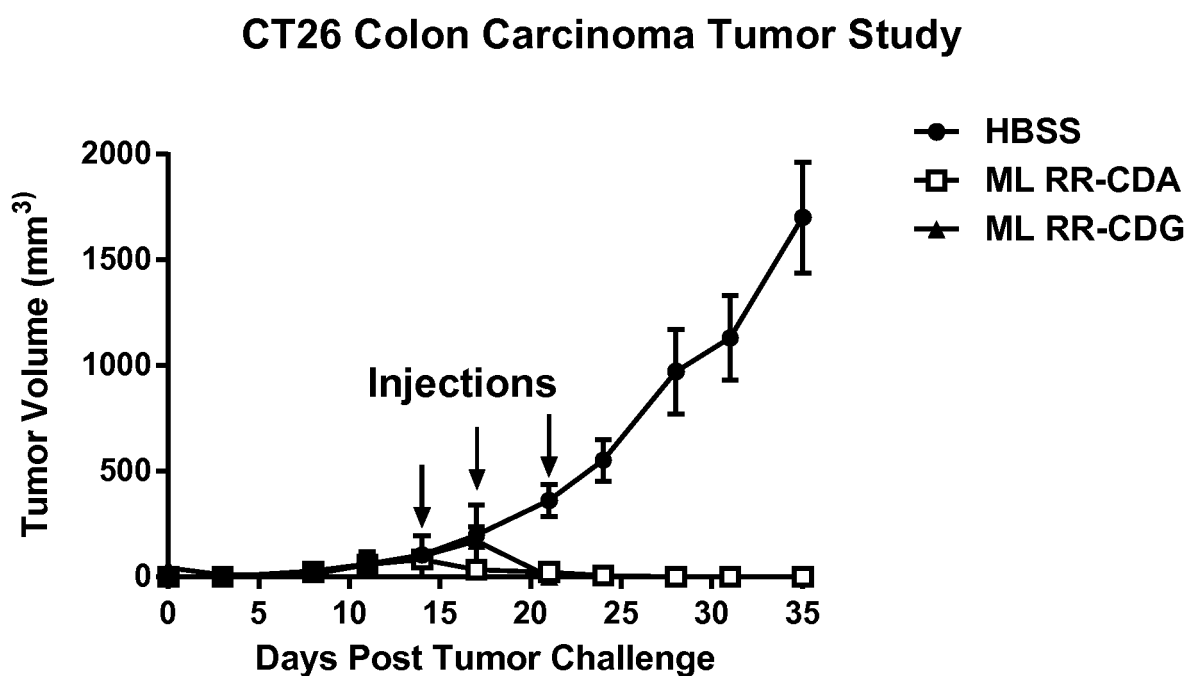


FIG. 19C

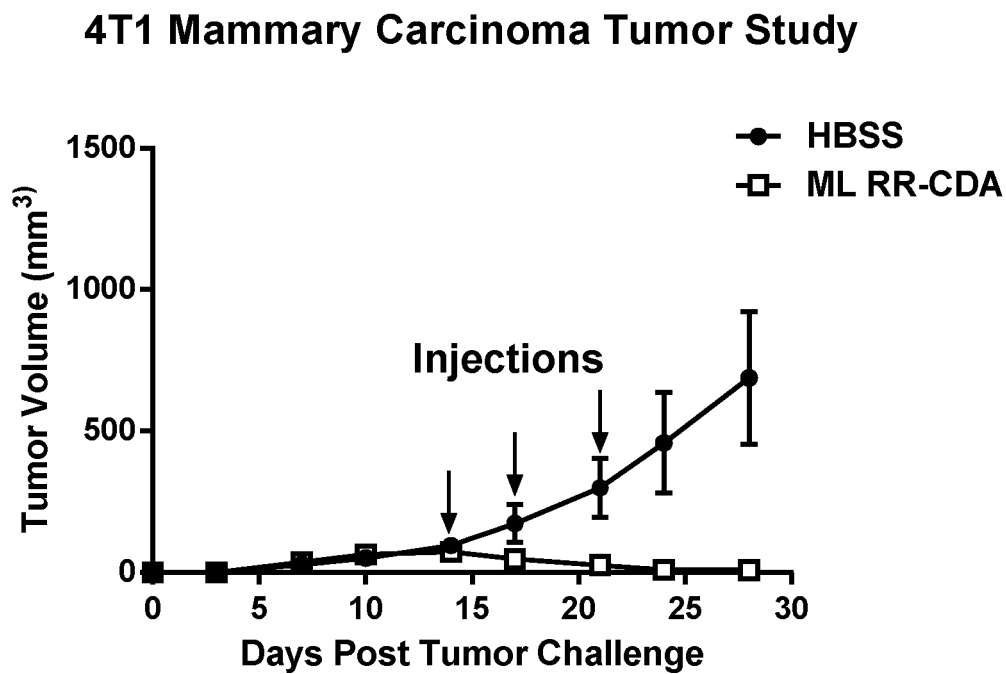


FIG. 20A

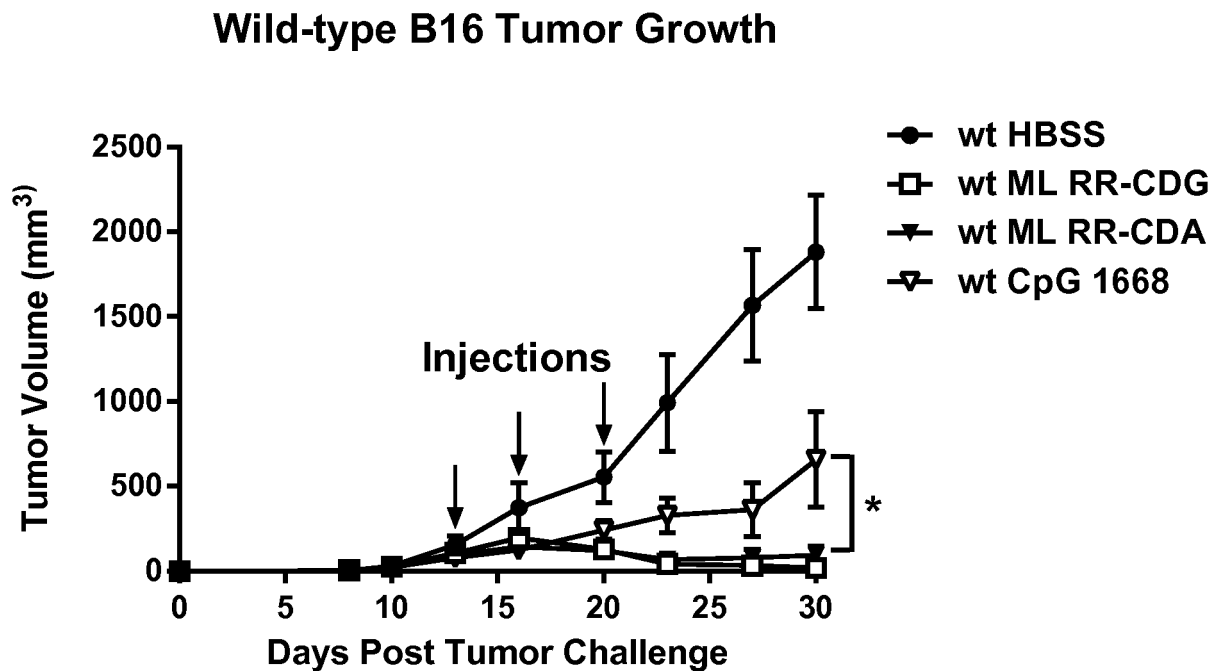


FIG. 20B

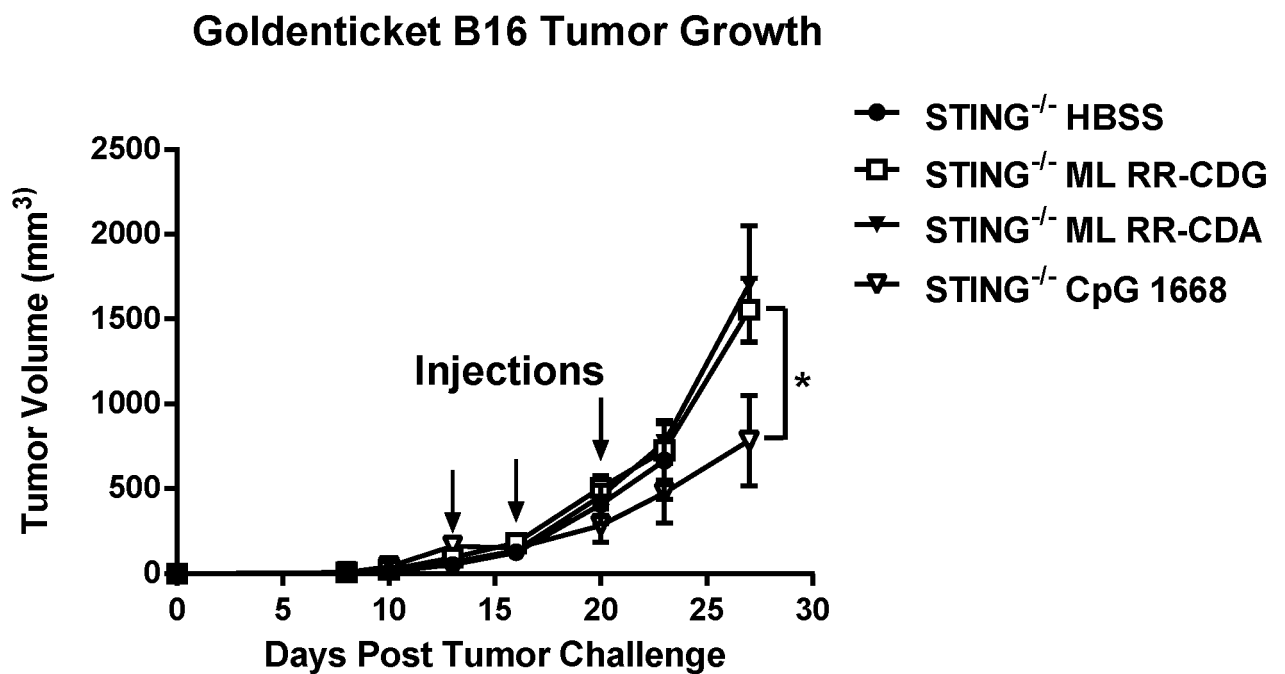


FIG. 21A

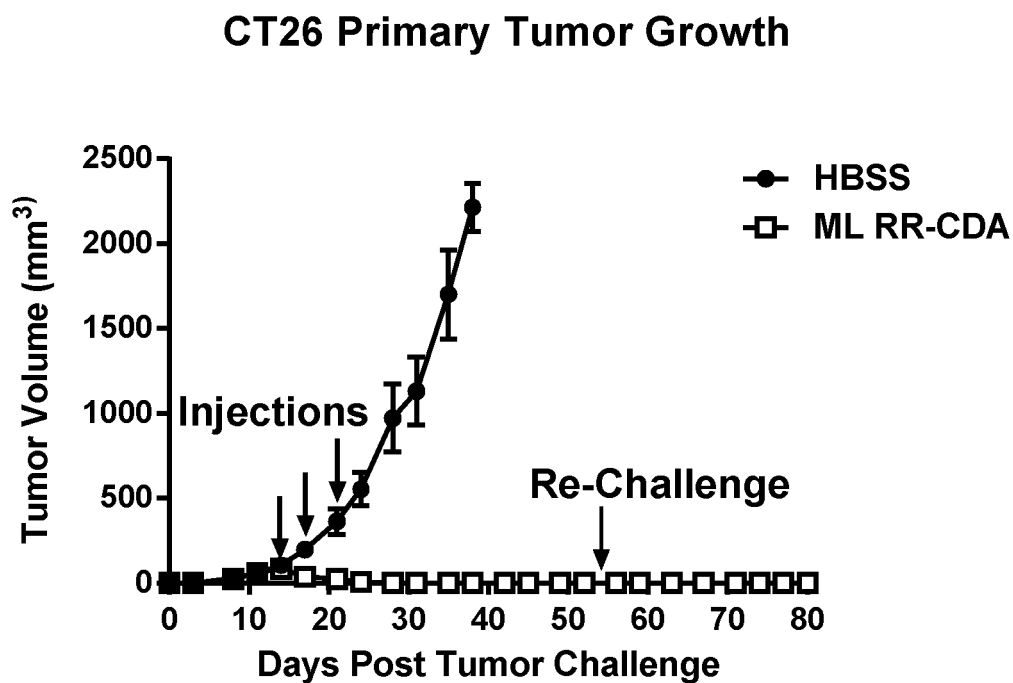


FIG. 21B

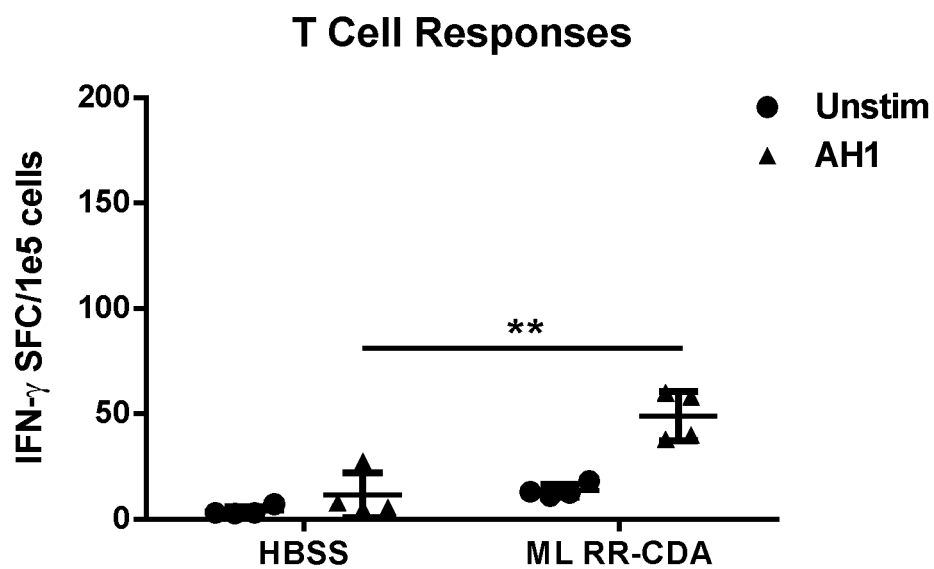


FIG. 21C

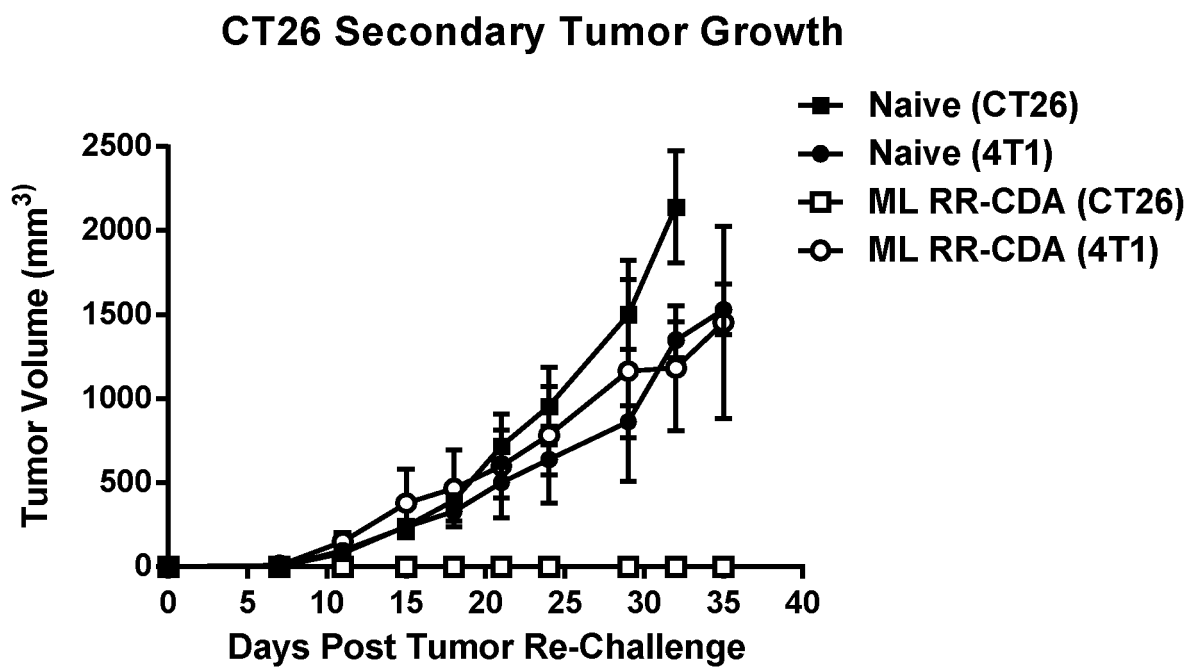


FIG. 22A

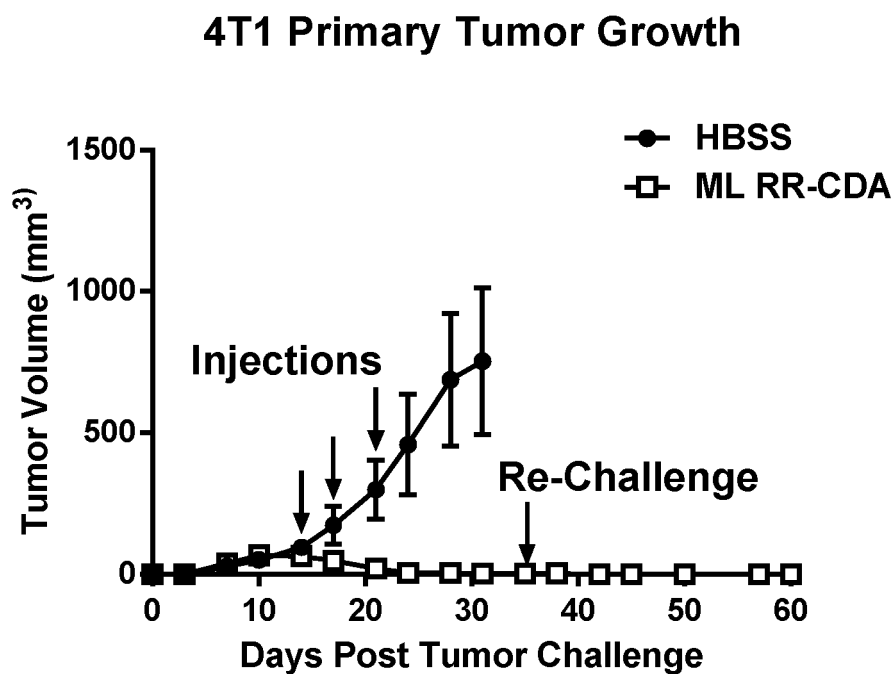


FIG. 22B

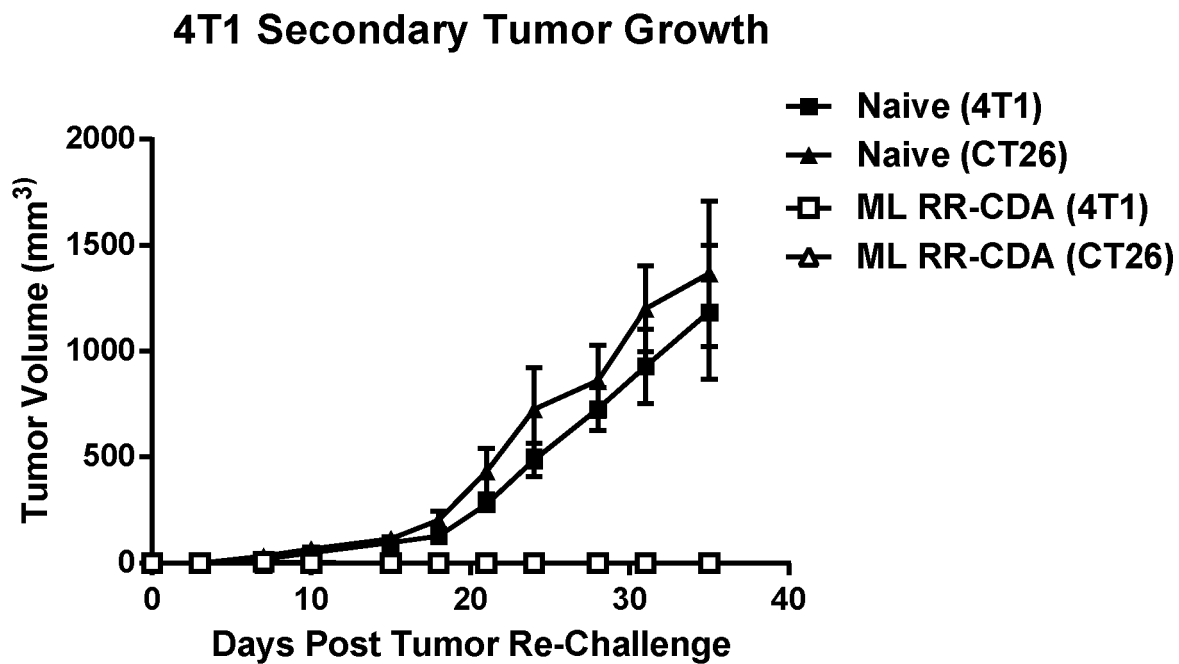


FIG. 23A

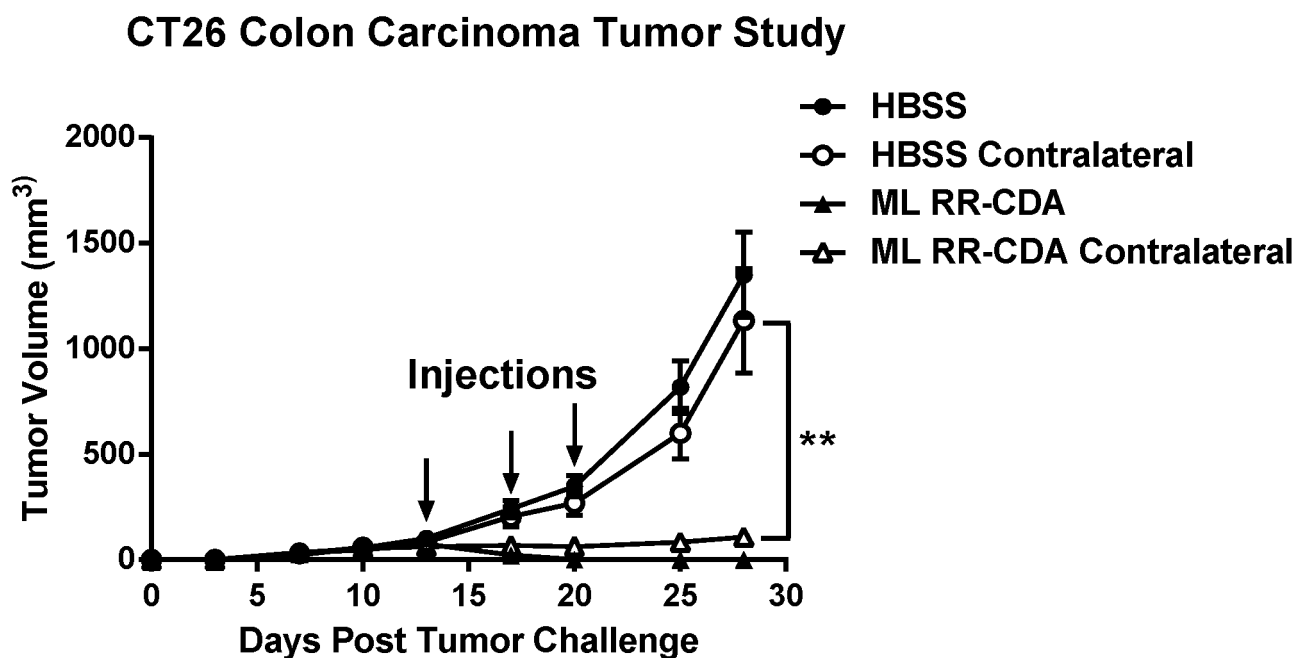


FIG. 23B

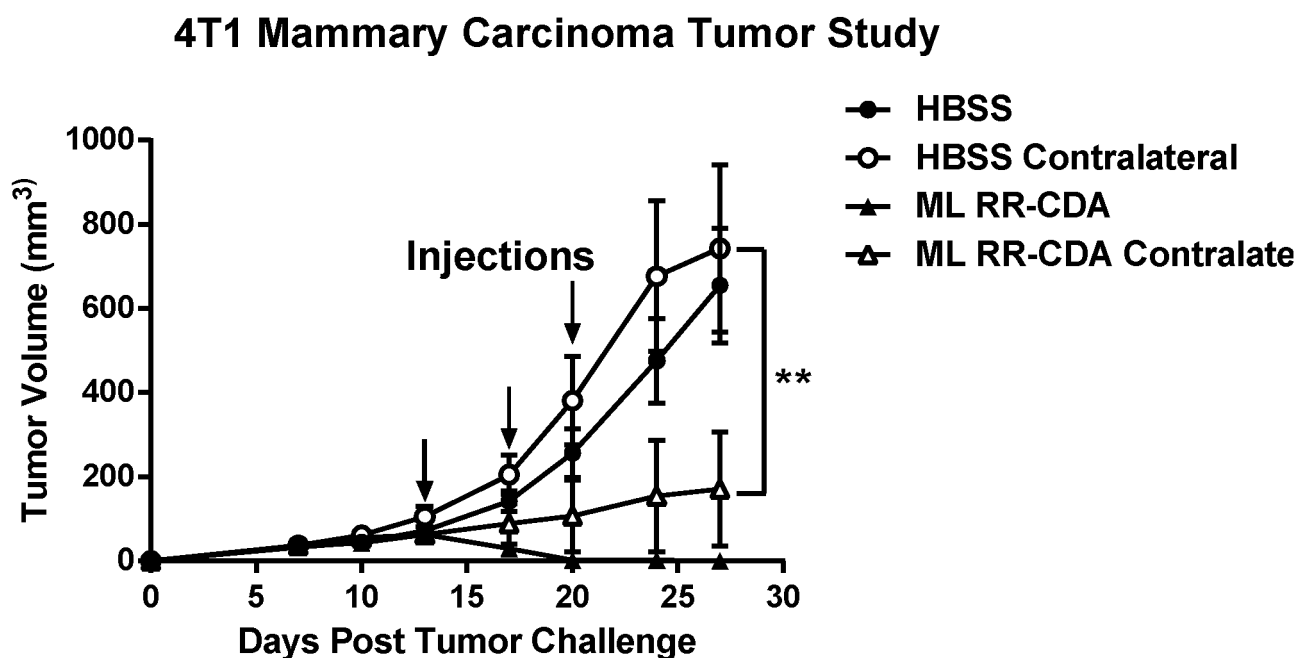


FIG. 24A

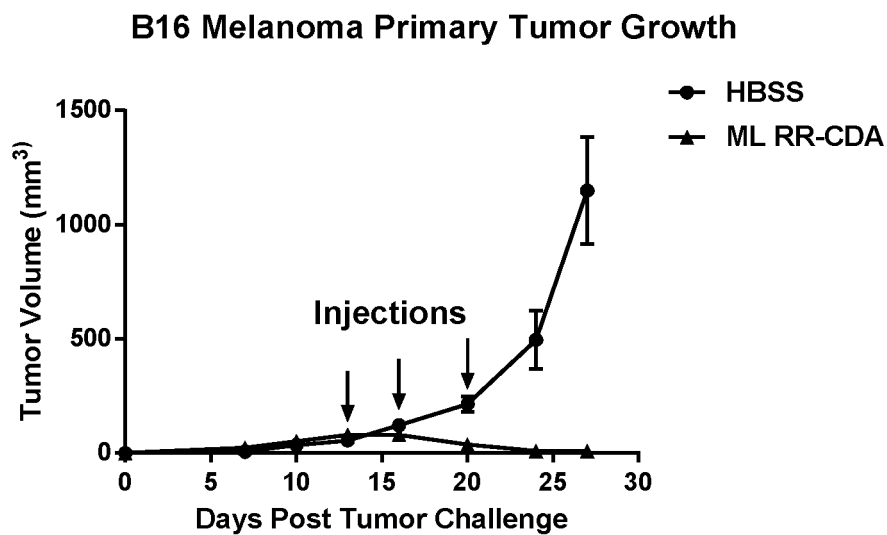


FIG. 24B

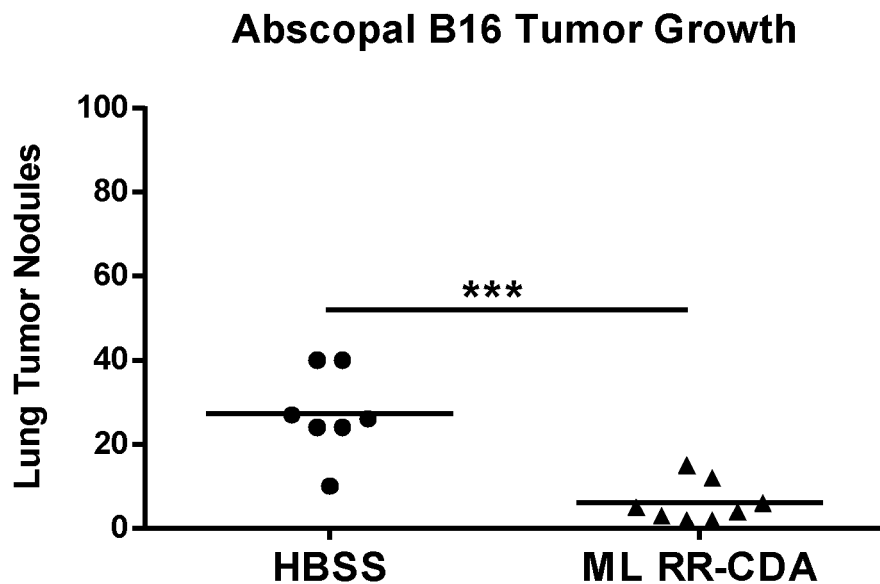


FIG. 24C

HBSS



ML RR-CDA

