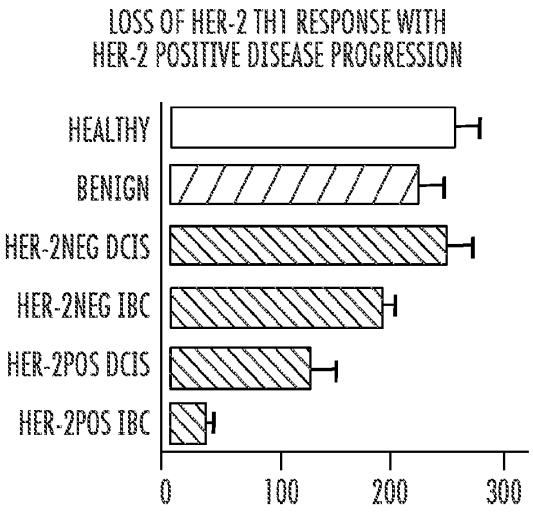

LOSS OF HER-2 TH1 RESPONSE WITH
HER-2 POSITIVE DISEASE PROGRESSION
HEALTHY
BENIGN
HER-2NEG DCIS
HER-2NEG IBC
HER-2POS DCIS
HER-2POS IBC
0
100
200
300
TOTAL SPOTS PER 10E6 CELLS
(IFN-Y ELISPOT)

FIG. 1A

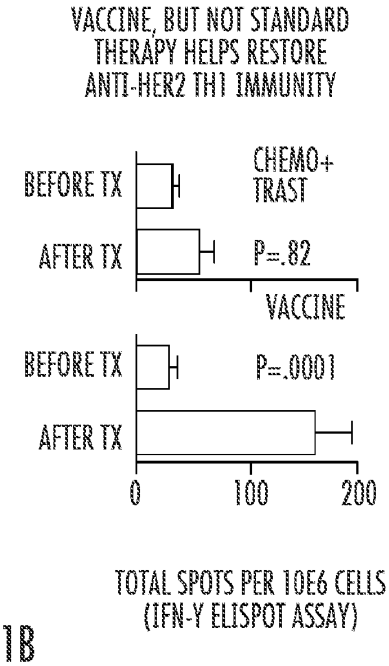

VACCINE, BUT NOT STANDARD
THERAPY HELPS RESTORE
ANTI-HER2 TH1 IMMUNITY
BEFORE TX
AFTER TX
CHEMO+
TRAST
P=.82
VACCINE
BEFORE TX
AFTER TX
P=.0001
0
100
200
TOTAL SPOTS PER 10E6 CELLS
(IFN-Y ELISPOT ASSAY)

FIG. 1B

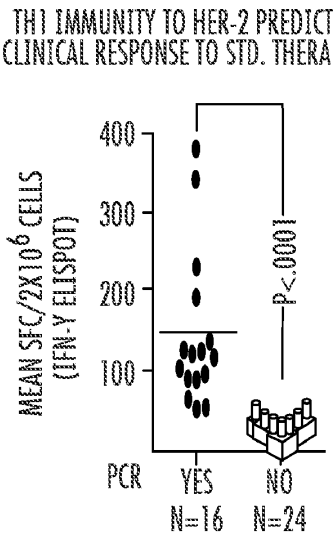

TH1 IMMUNITY TO HER-2 PREDICTS
CLINICAL RESPONSE TO STD. THERAPY
MEAN SFC/2X10^6 CELLS
(IFN-Y ELISPOT)
400
300
200
100
P<.0001
PCR
YES
N=16
NO
N=24

FIG. 1C

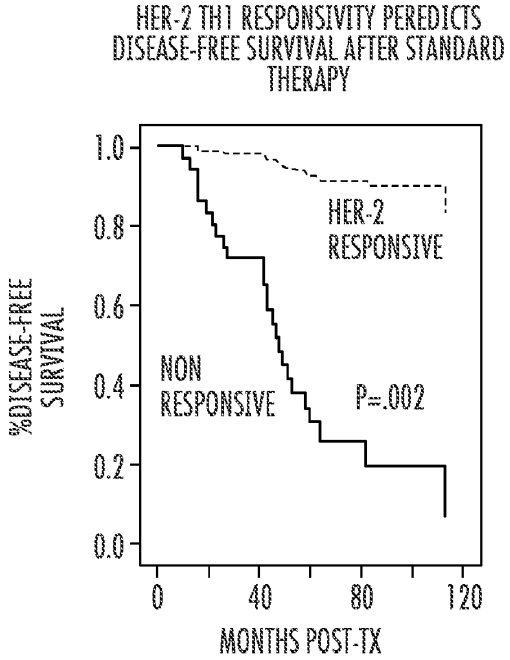

HER-2 TH1 RESPONSIVITY PEREDICTS
DISEASE-FREE SURVIVAL AFTER STANDARD
THERAPY
%DISEASE-FREE
SURVIVAL
1.0
0.8
0.6
0.4
0.2
0.0
HER-2
RESPONSIVE
NON
RESPONSIVE
P=.002
0
40
80
120
MONTHS POST-TX

FIG. 1D

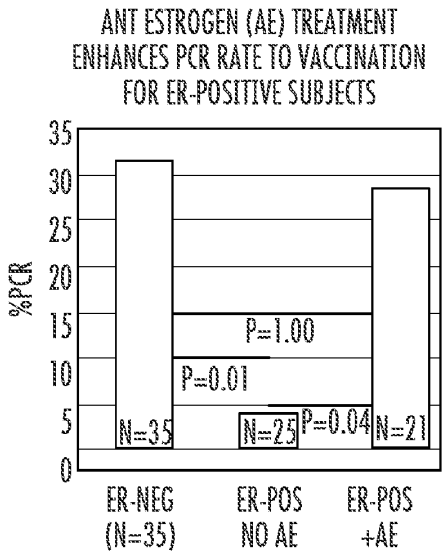



FIG. 2A

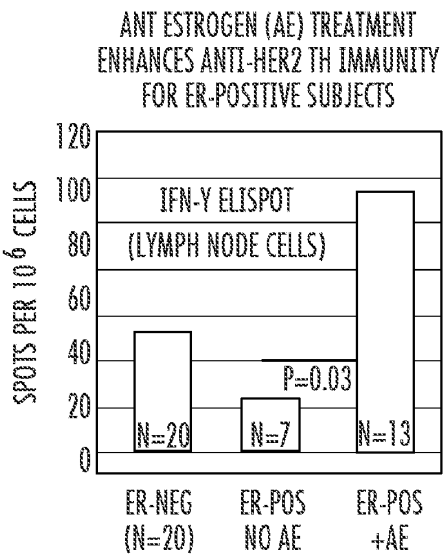



FIG. 2B

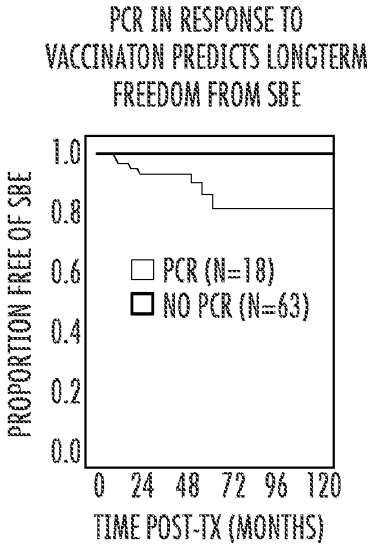



FIG. 2C

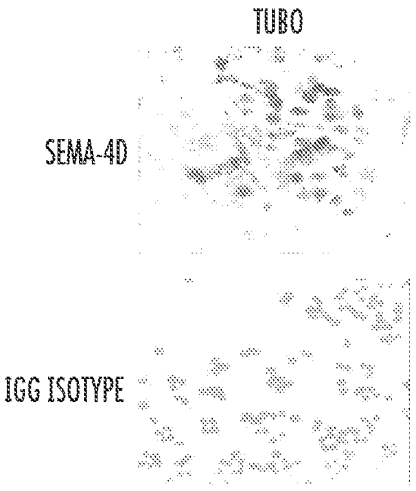



FIG. 3A

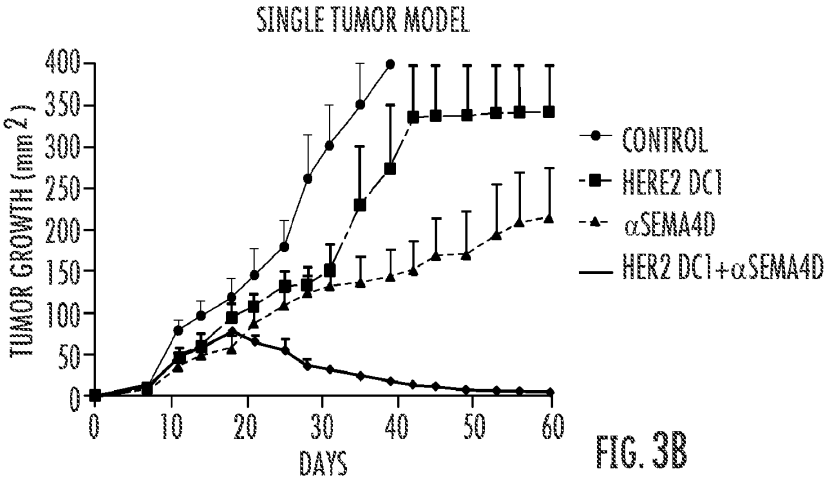



FIG. 3B

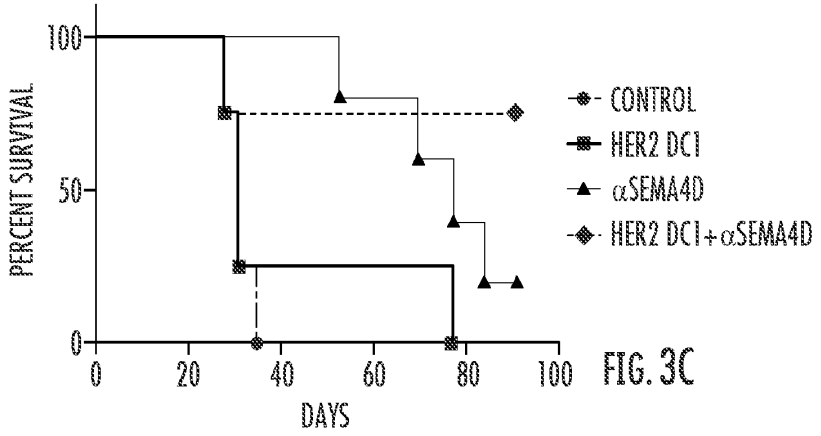



FIG. 3C

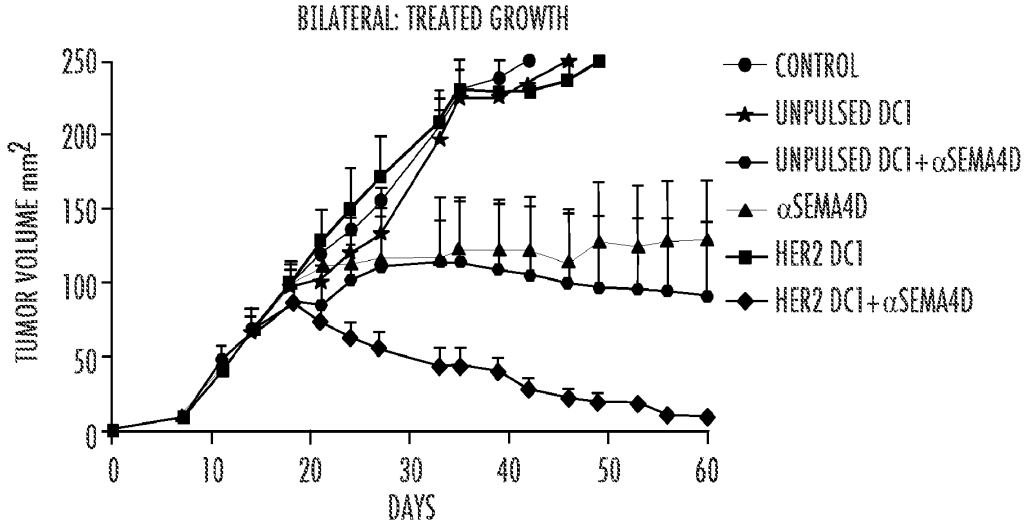



FIG. 3C1

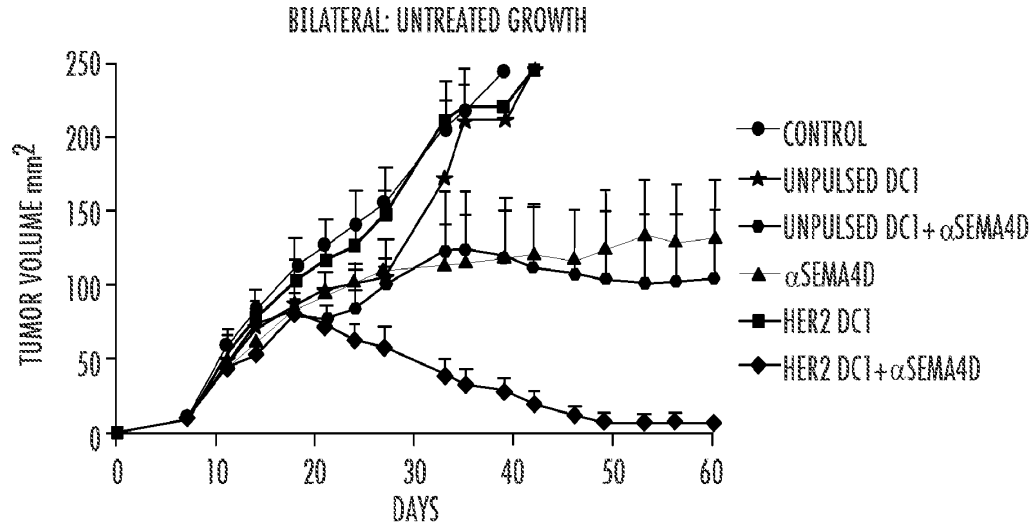



FIG. 3C2

| HER2 BREAST CANCER | SEMA4D CYTOKERATIN POSITIVE |
|---|---|
| DCIS | 8/15 |
| IBC | 7/13 |

FIG. 3D

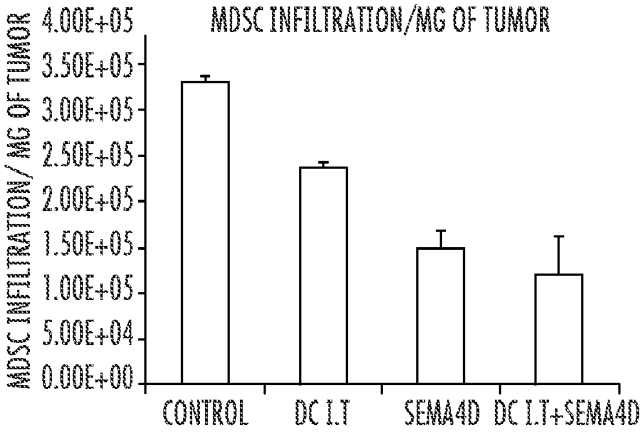



FIG. 3E

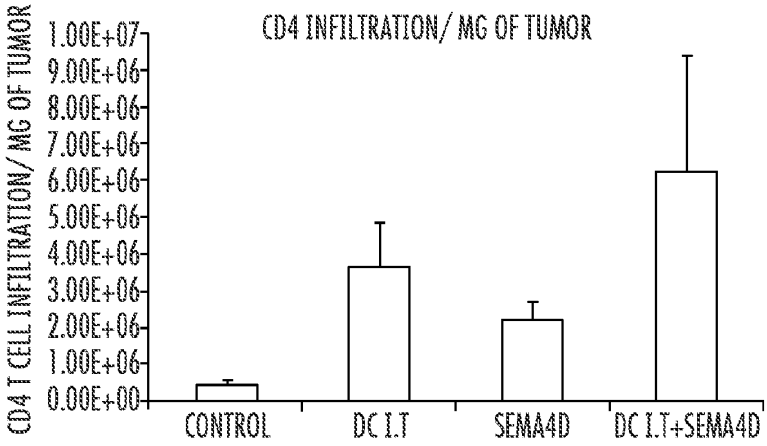

CD4 INFILTRATION/ MG OF TUMOR
CD4 T CELL INFILTRATION/ MG OF TUMOR
1.00E+07
9.00E+06
8.00E+06
7.00E+06
6.00E+06
5.00E+06
4.00E+06
3.00E+06
2.00E+06
1.00E+06
0.00E+00
CONTROL
DC I.T
SEMA4D
DC I.T+SEMA4D

FIG. 3F

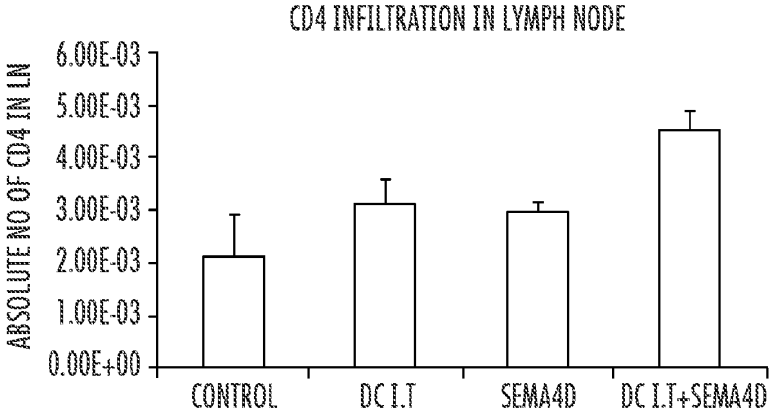

CD4 INFILTRATION IN LYMPH NODE
ABSOLUTE NO OF CD4 IN LN
6.00E-03
5.00E-03
4.00E-03
3.00E-03
2.00E-03
1.00E-03
0.00E+00
CONTROL
DC I.T
SEMA4D
DC I.T+SEMA4D

FIG. 3G

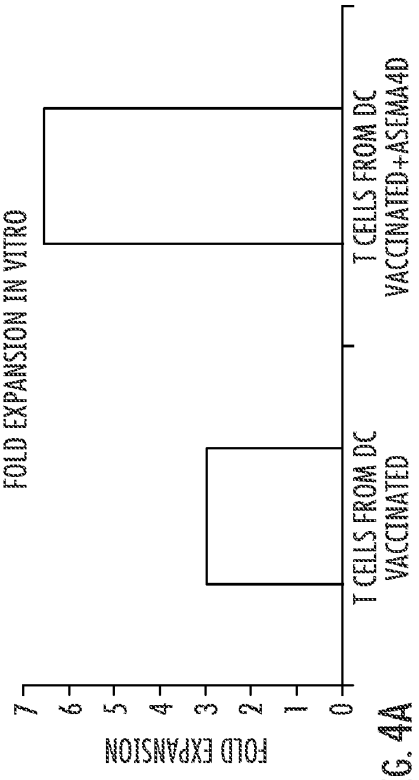



FIG. 4A

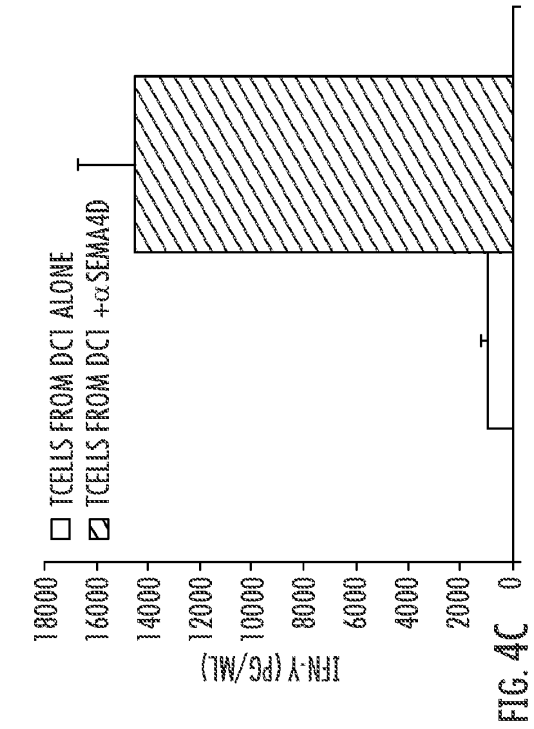



FIG. 4C

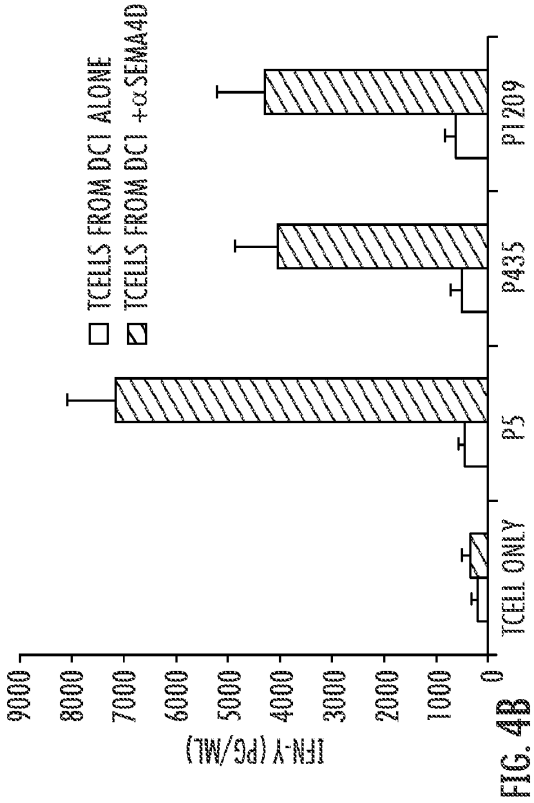



FIG. 4B

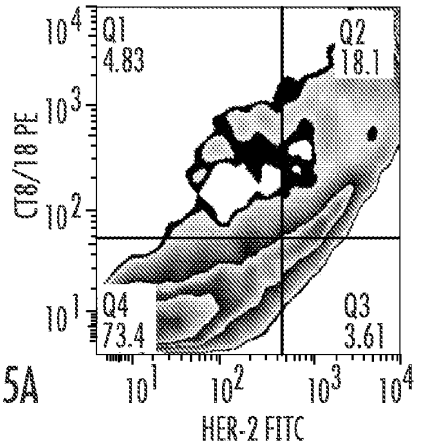



FIG. 5A

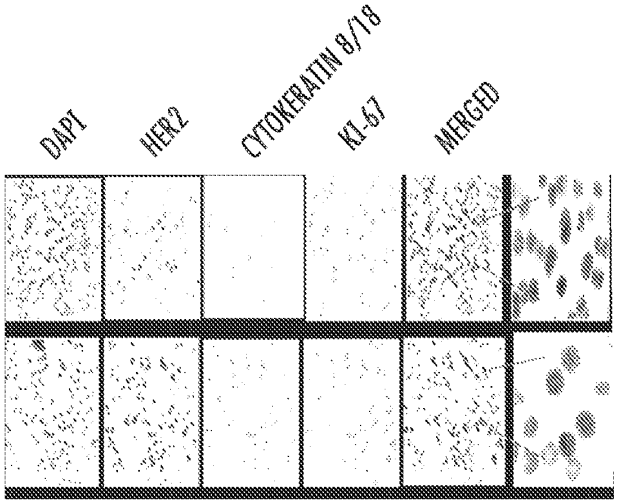



FIG. 5B

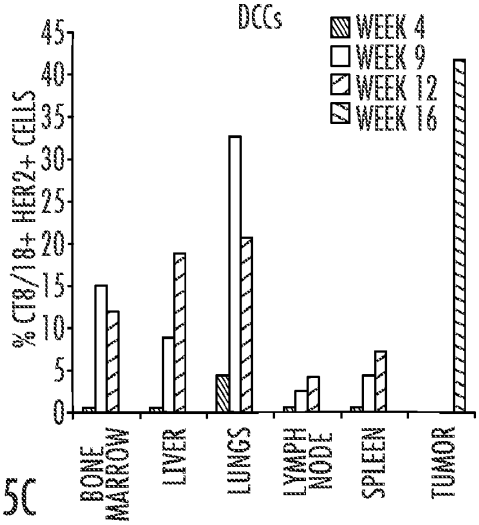



FIG. 5C

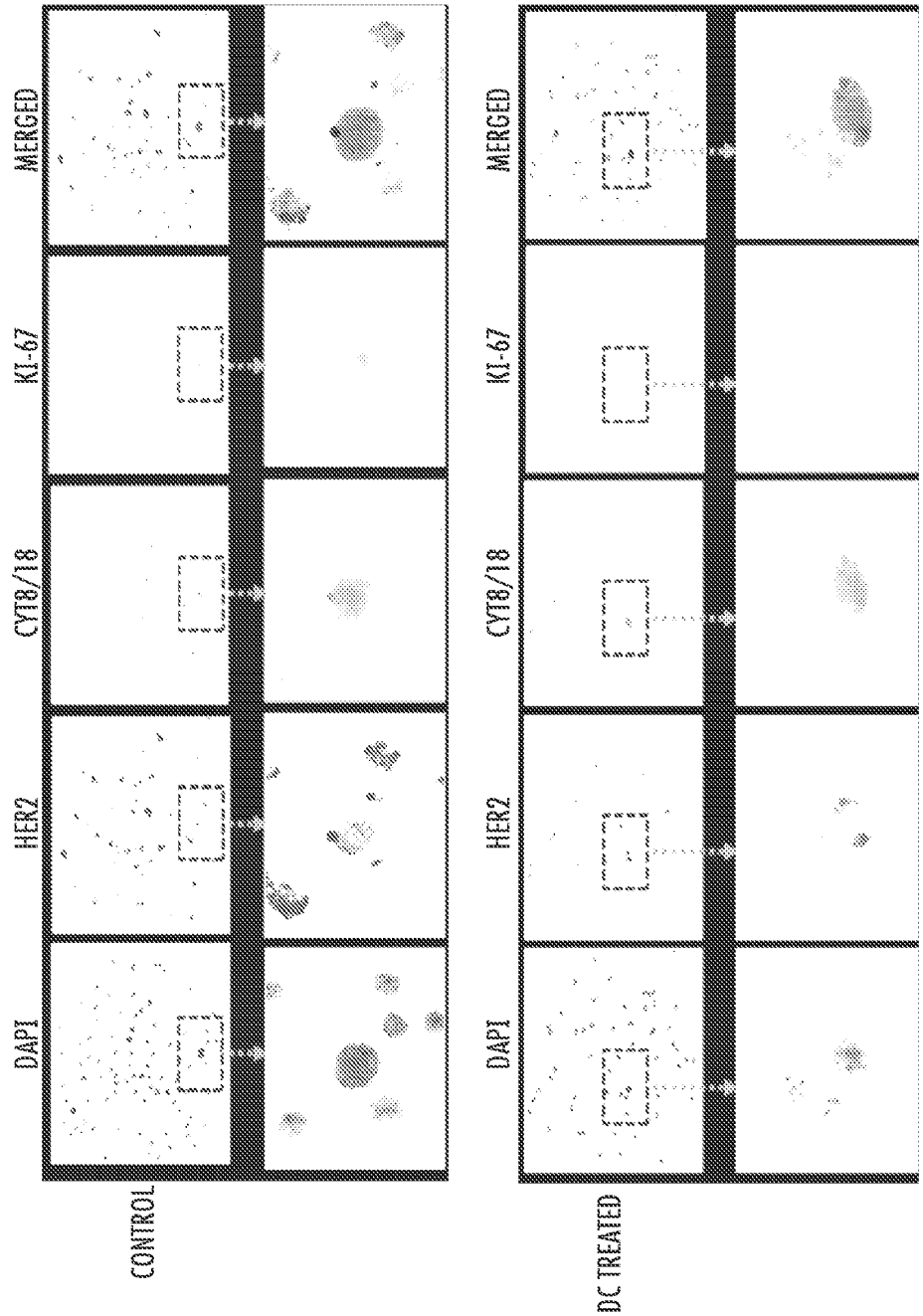

DAPI
HER2
CYT8/18
KI-67
MERGED
CONTROL
DAPI
HER2
CYT8/18
KI-67
MERGED
DC TREATED

FIG. 6A

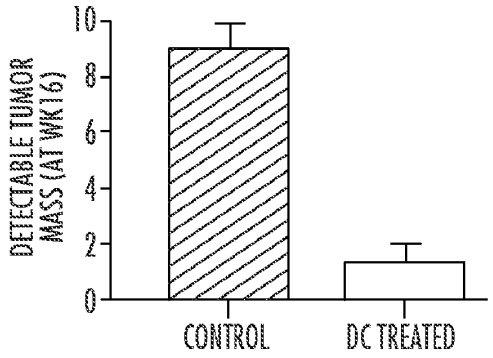



FIG. 6B

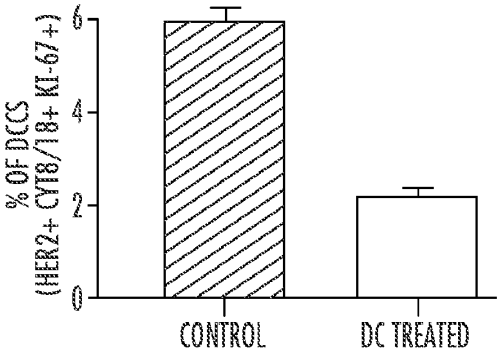



FIG. 6C

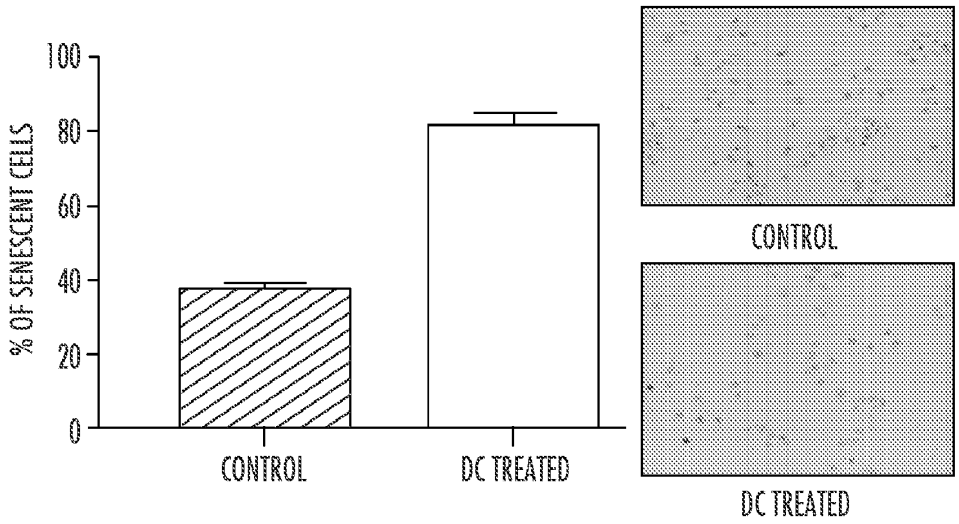



FIG. 6D

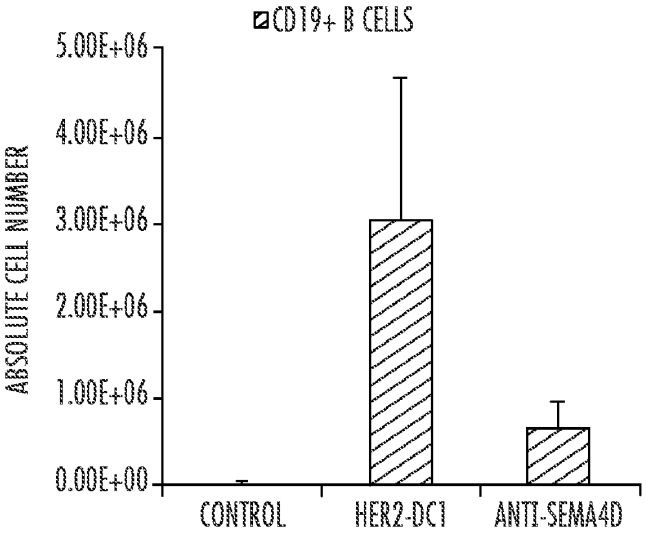

CD19+ B CELLS
5.00E+06
4.00E+06
3.00E+06
2.00E+06
1.00E+06
0.00E+00
ABSOLUTE CELL NUMBER
CONTROL
HER2-DC1
ANTI-SEMA4D

FIG. 7A

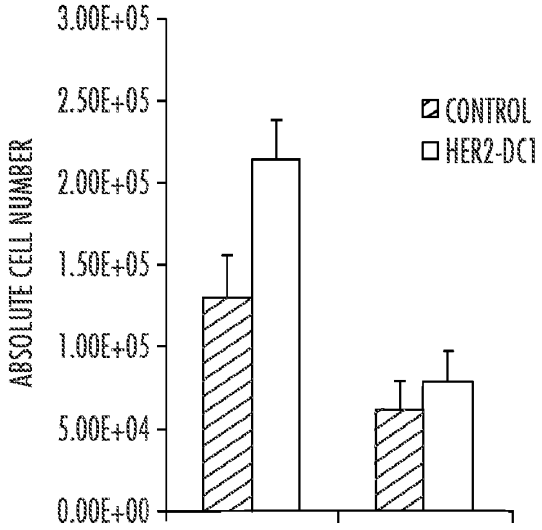

3.00E+05
2.50E+05
2.00E+05
1.50E+05
1.00E+05
5.00E+04
0.00E+00
ABSOLUTE CELL NUMBER
CONTROL
HER2-DC1

FIG. 7B

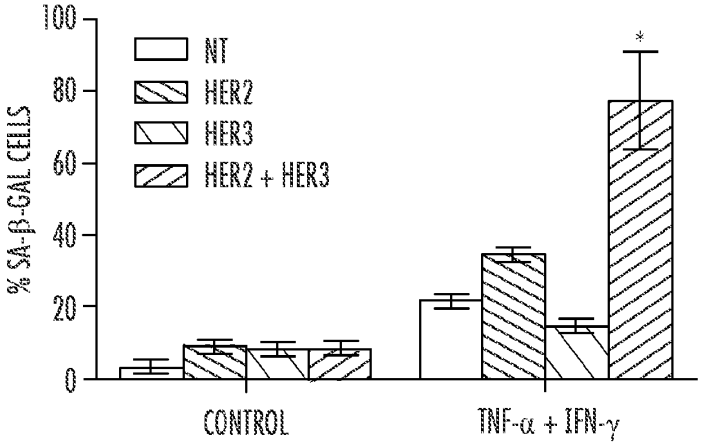

100
80
60
40
20
0
% SA-β-GAL CELLS
NT
HER2
HER3
HER2 + HER3
*
CONTROL
TNF-α + IFN-γ

FIG. 8A

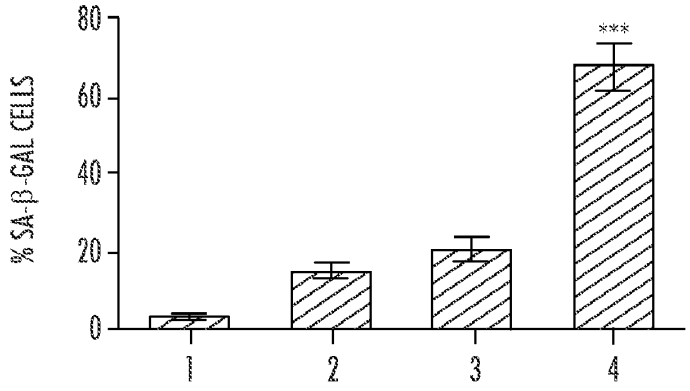

80
60
40
20
0
% SA-β-GAL CELLS
***
1
2
3
4

FIG. 8B

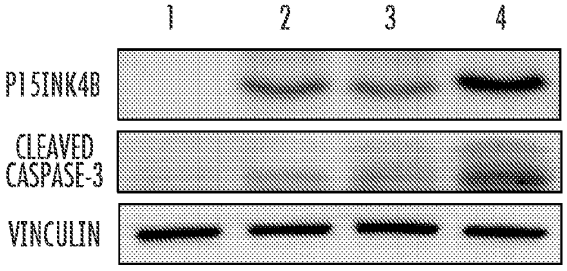



FIG. 8C

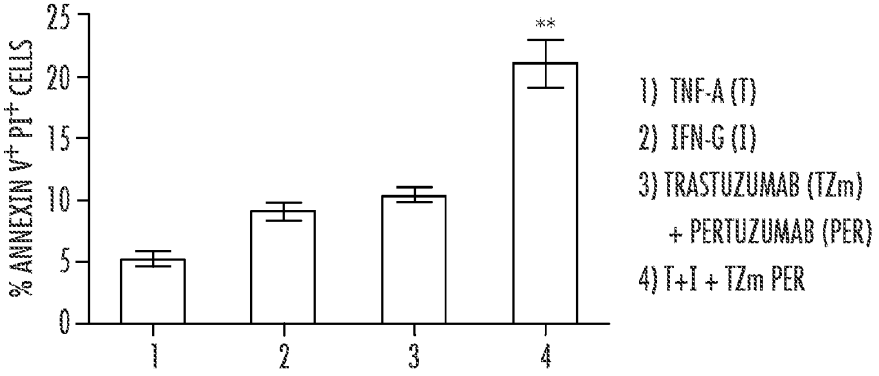



FIG. 8D

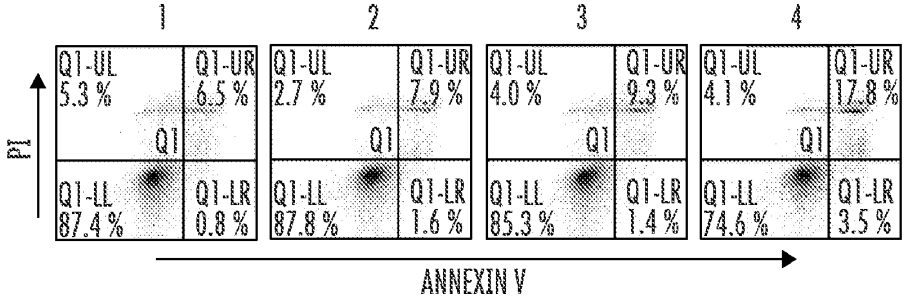



FIG. 8E

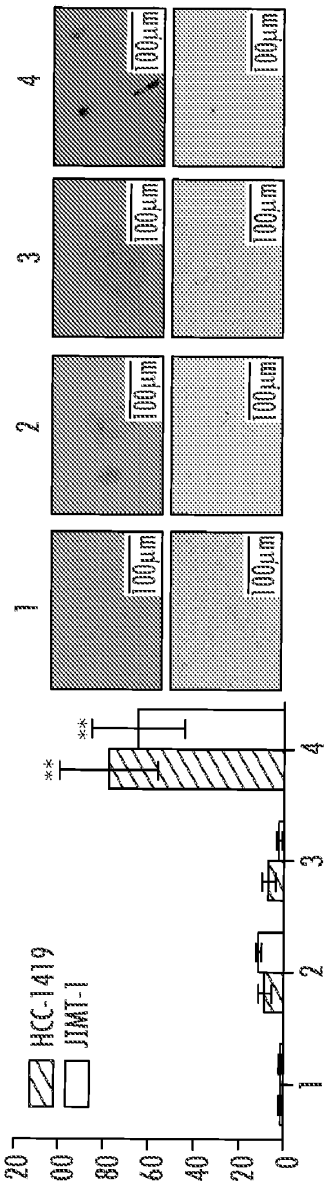



FIG. 9A

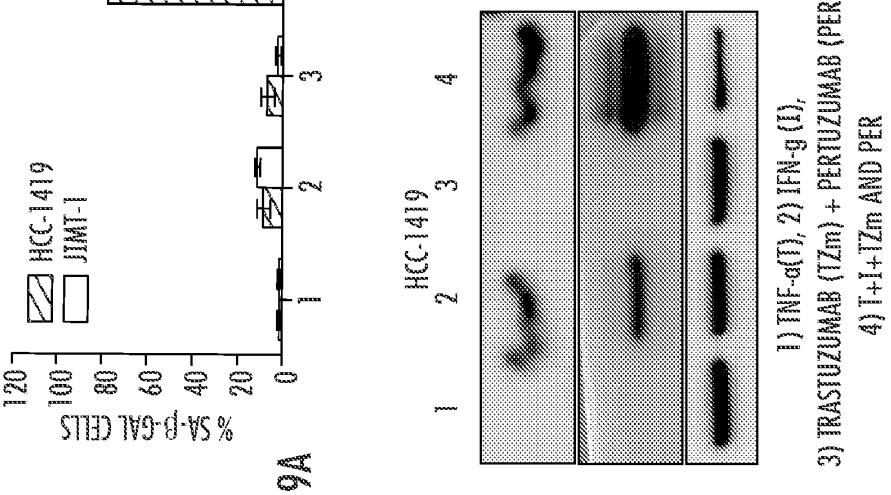



FIG. 9B

FIG. 9C

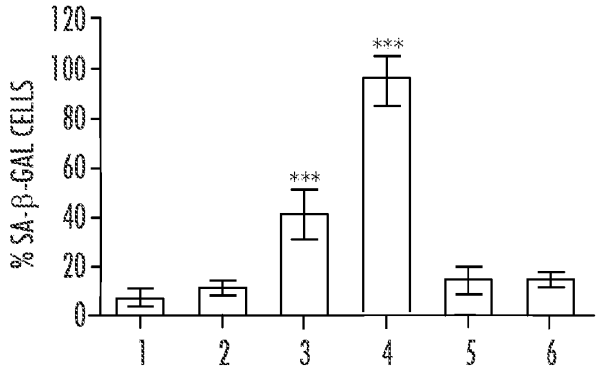



FIG. 10A

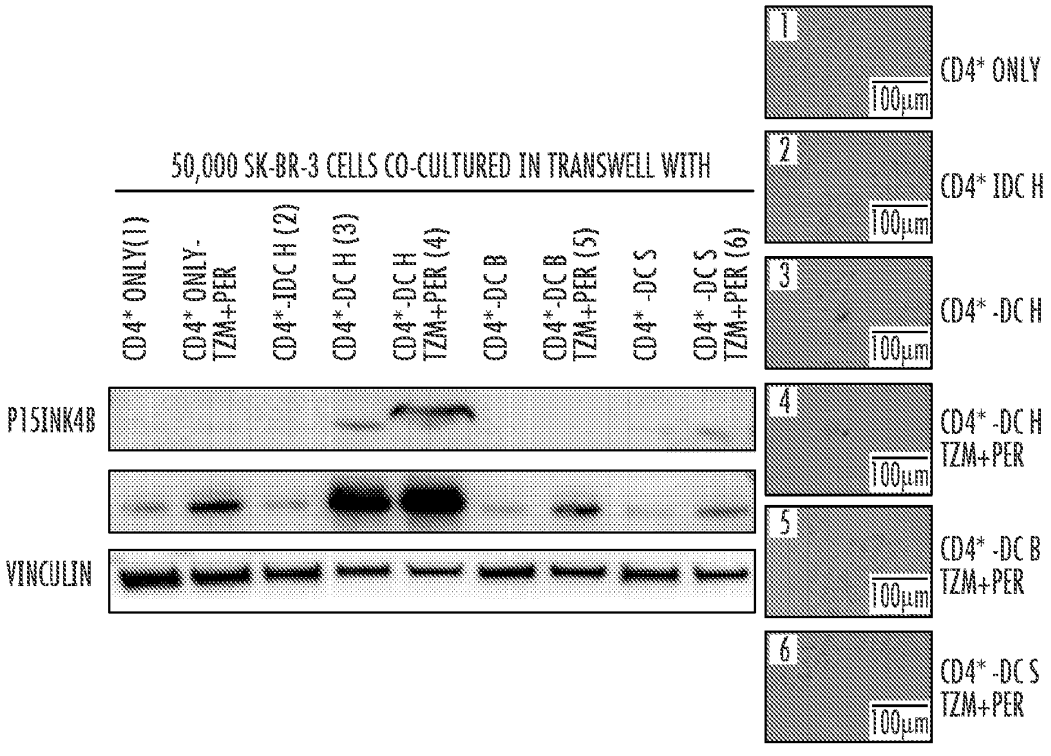


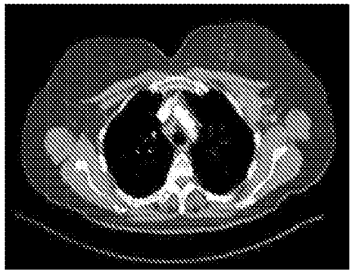

FIG. 10B

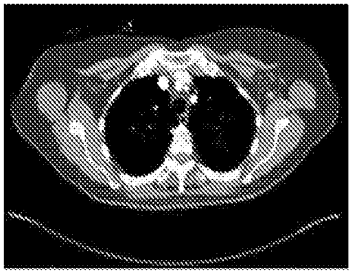
PHASE I RESPONSE DATA FOR THP-INF-γ

BEST RESPONSE

| ARM | SEQUENCE NO. | BEST RESPONSE | BEST RESPONSE |
|---|---|---|---|
| 1 | 01 | STABLE DISEASE | 09/27/2017 |
| 1 | 03 | STABLE DISEASE | 10/17/2017 |
| 1 | 04 | PARTIAL RESPONSE | 10/25/2017 |
| 1 | 05 | STABLE DISEASE | 11/20/2017 |
| 1 | 06 | STABLE DISEASE | 10/19/2017 |
| 1 | 07 | STABLE DISEASE | 11/30/2017 |
| 1 | 08 | STABLE DISEASE | 01/24/2018 |
| 1 | 09 | PARTIAL RESPONSE | 02/16/2018 |
| 1 | 10 | PARTIAL RESPONSE | 02/15/2018 |

11/10/2017





02/16/2018

FIG. 11

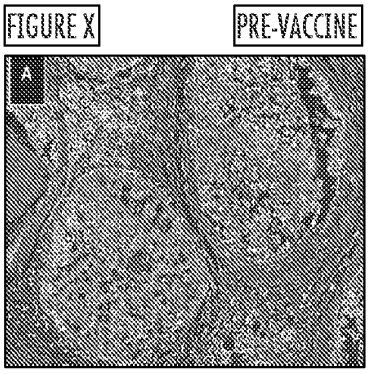



FIG. 12A

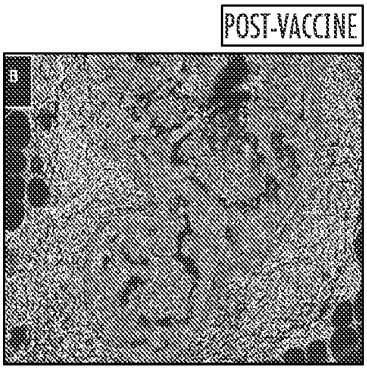



FIG. 12B

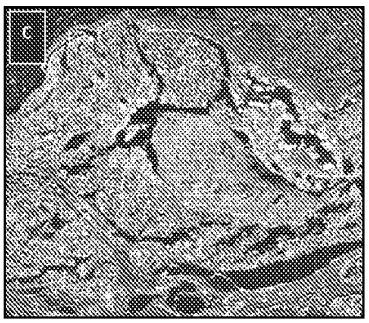



FIG. 12C

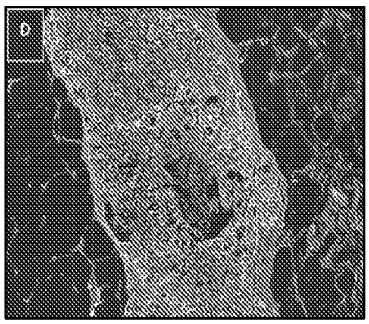



FIG. 12D

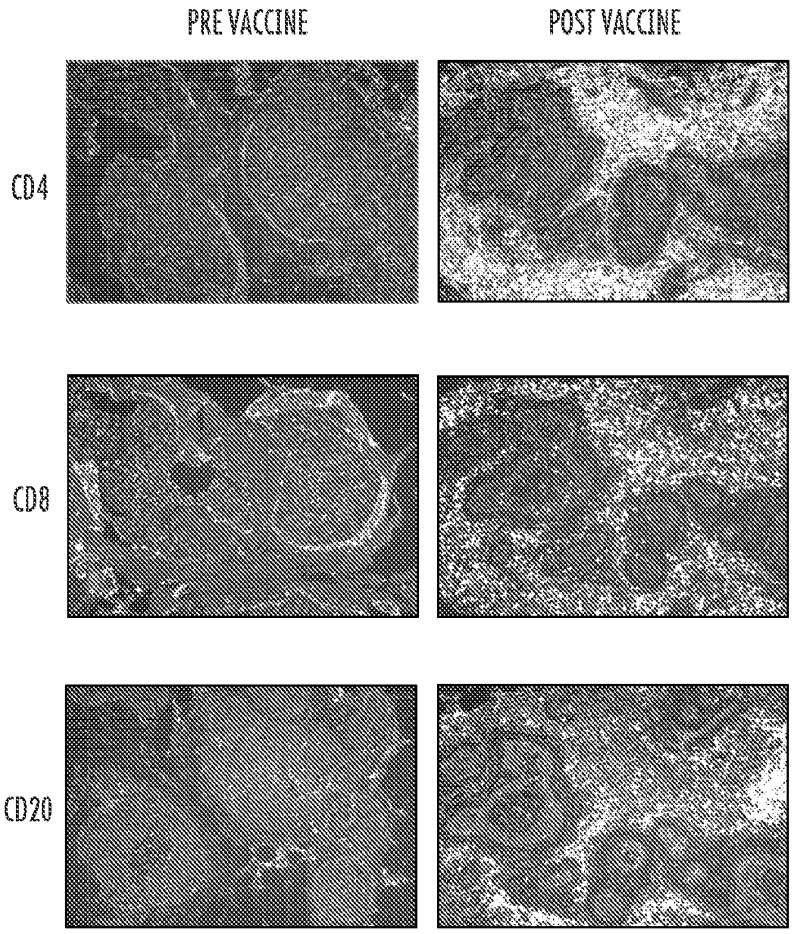



FIG. 13

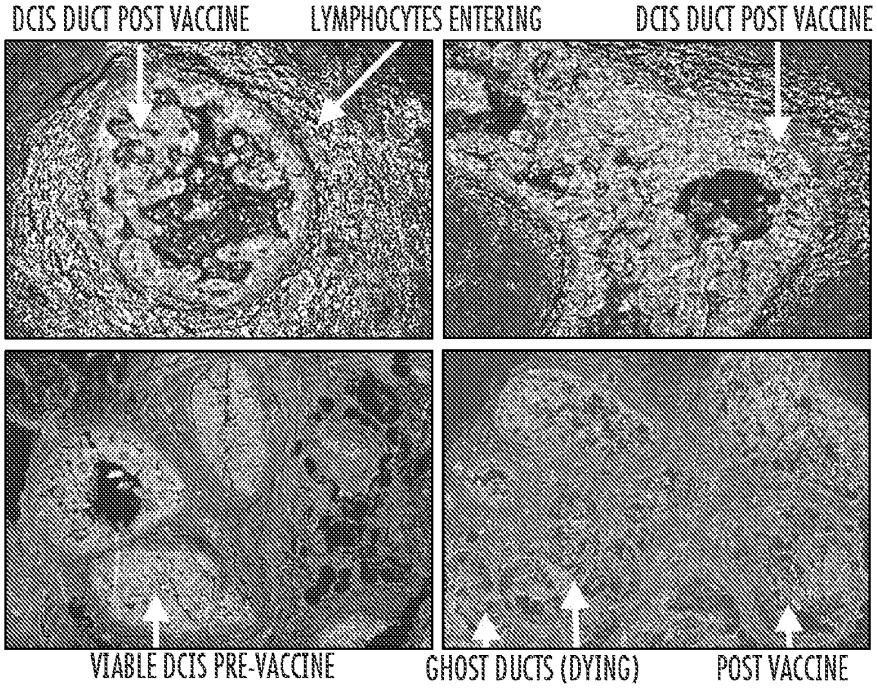

DCIS DUCT POST VACCINE
LYMPHOCYTES ENTERING
DCIS DUCT POST VACCINE
VIABLE DCIS PRE-VACCINE
GHOST DUCTS (DYING)
POST VACCINE

FIG. 14

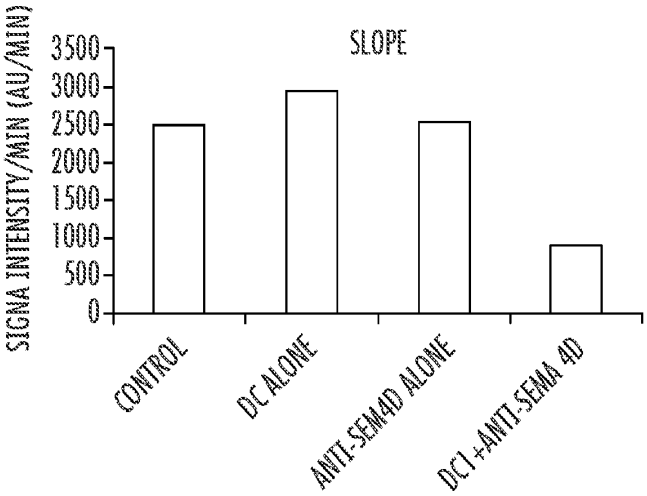



FIG. 15A

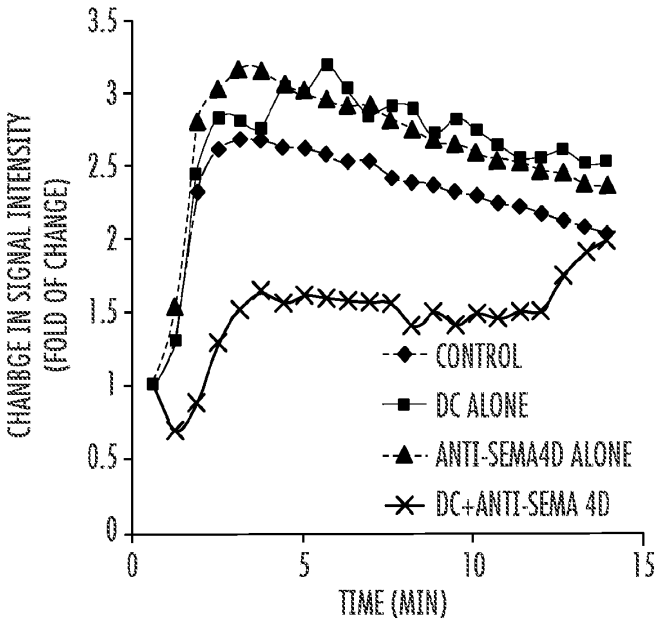



FIG. 15B

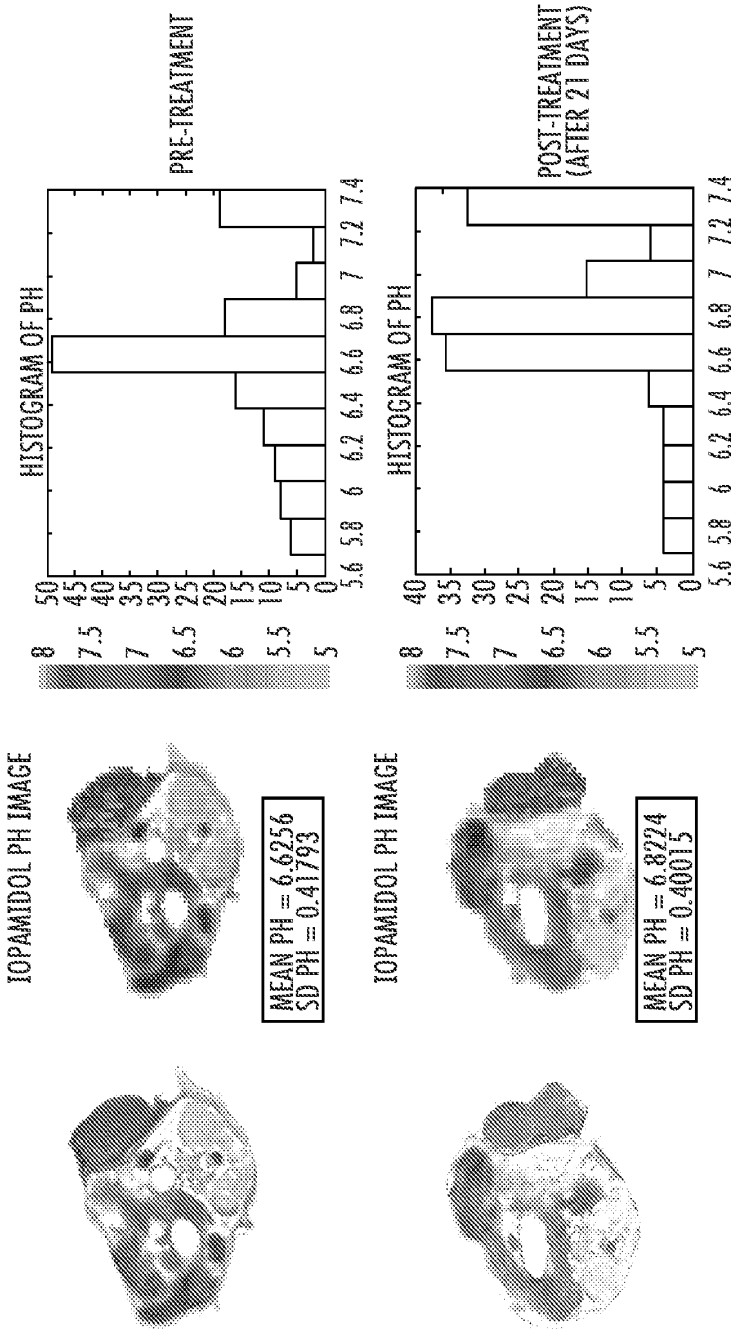

PRE-TREATMENT
HISTOGRAM OF PH
IOPAMIDOL PH IMAGE
MEAN PH = 6.6256
SD PH = 0.41793
POST-TREATMENT
(AFTER 21 DAYS)
HISTOGRAM OF PH
IOPAMIDOL PH IMAGE
MEAN PH = 6.8224
SD PH = 0.40015

FIG. 16

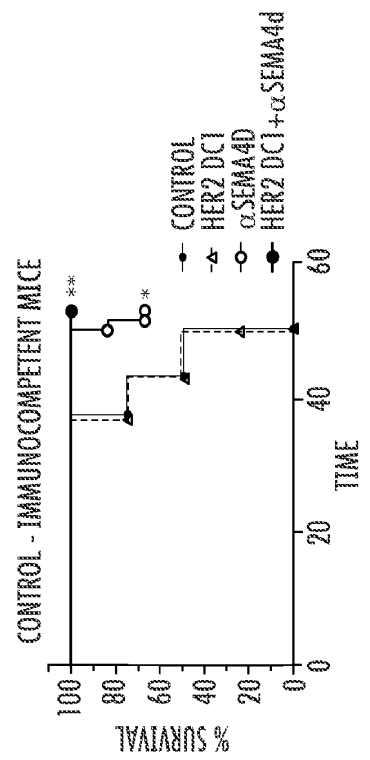



FIG. 17B

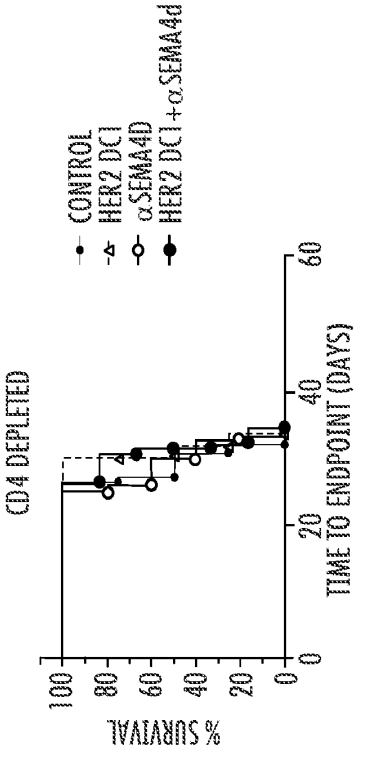



FIG. 17D

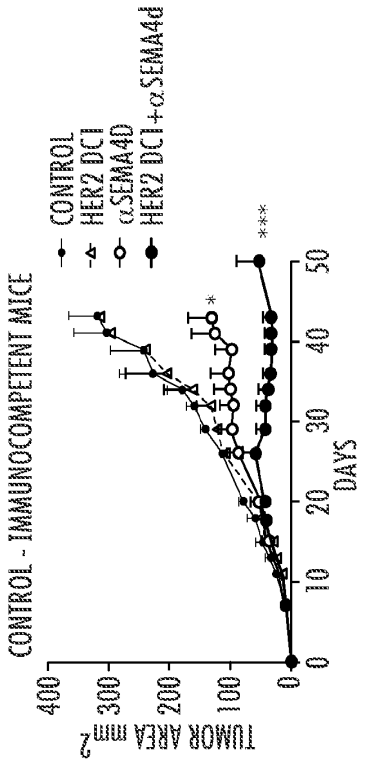



FIG. 17A

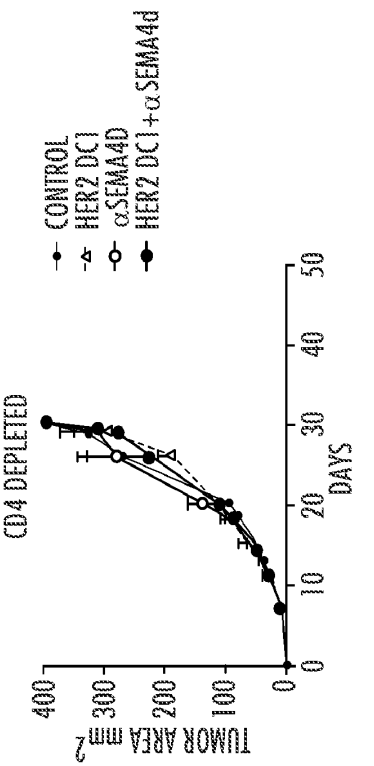



FIG. 17C

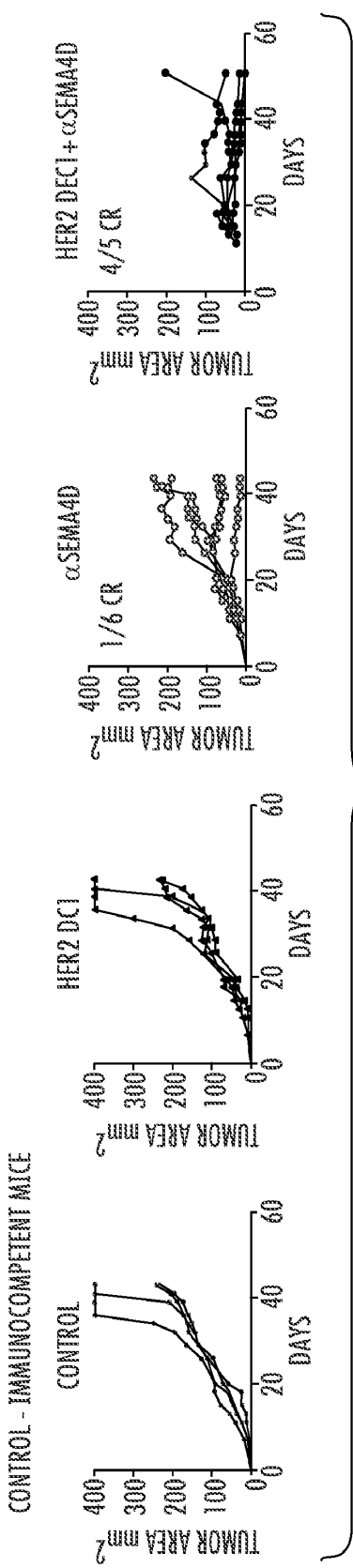



FIG. 17E

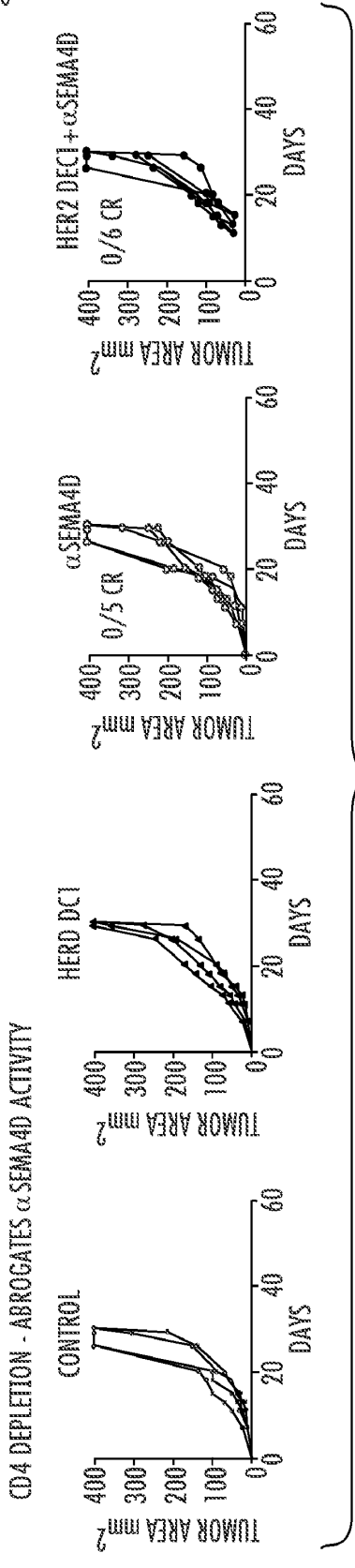



FIG. 17F

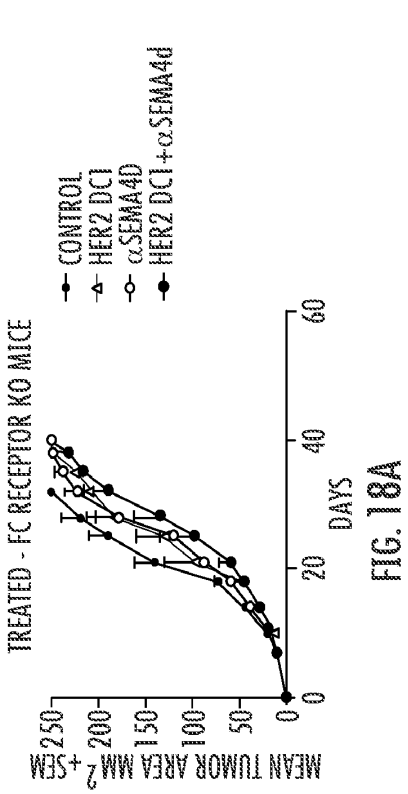



FIG. 18A

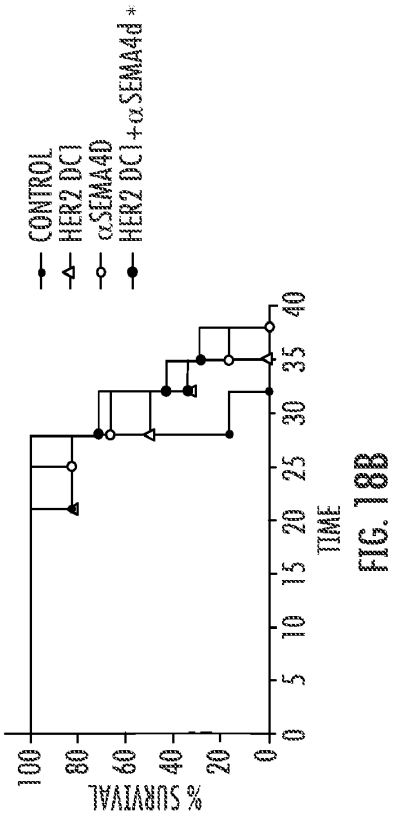



FIG. 18B

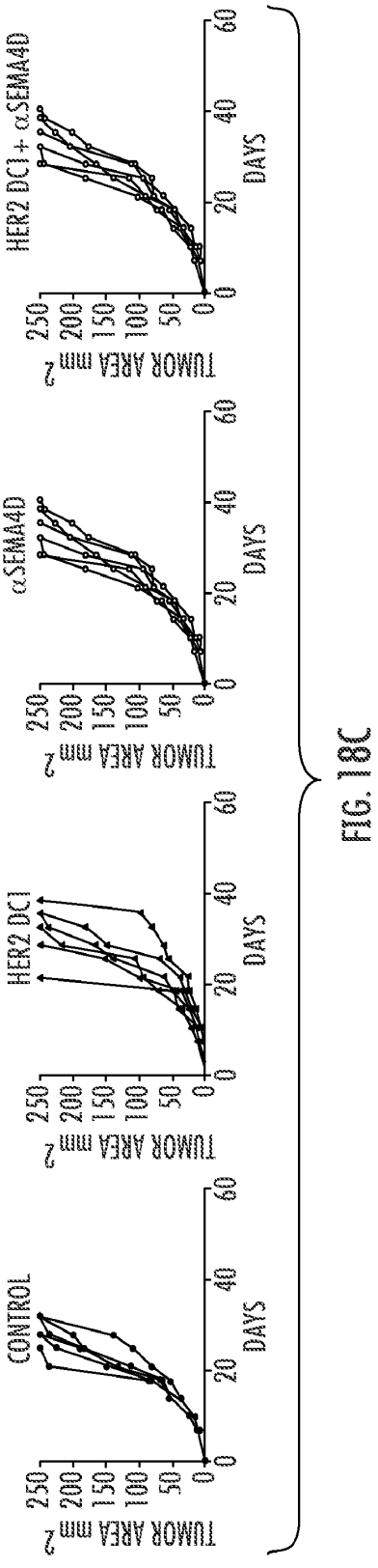



FIG. 18C

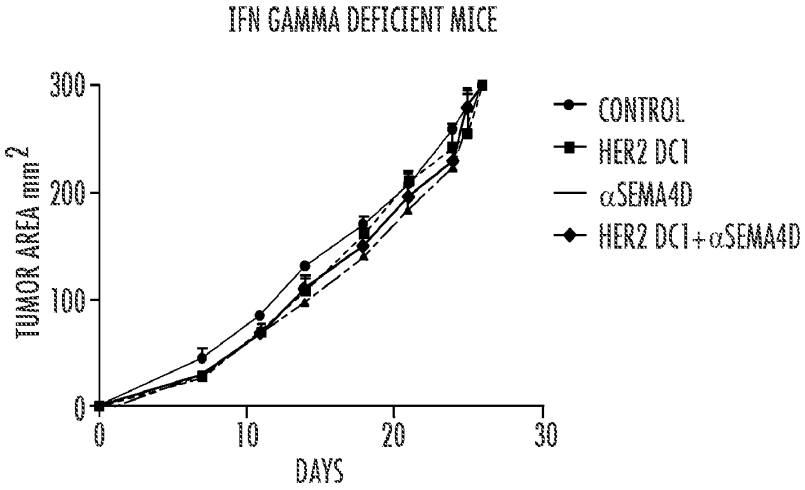

IFN GAMMA DEFICIENT MICE
TUMOR AREA mm2
300
200
100
0
0
10
20
30
DAYS
CONTROL
HER2 DC1
αSEMA4D
HER2 DC1+αSEMA4D

FIG. 19