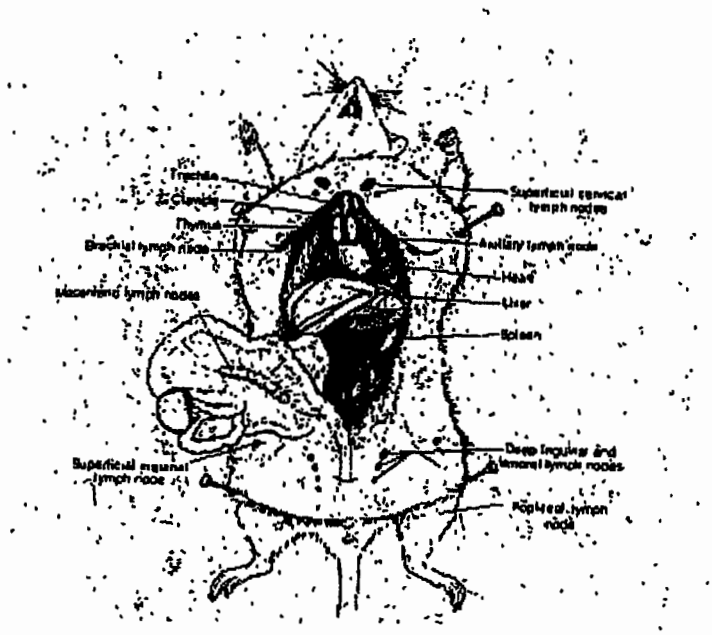

Thymus
Brachial lymph nodes
Mesenteric lymph nodes
Liver
Spleen
Superficial inguinal lymph node

FIG. 1



FIG. 2A

ID and SC Injection Sites

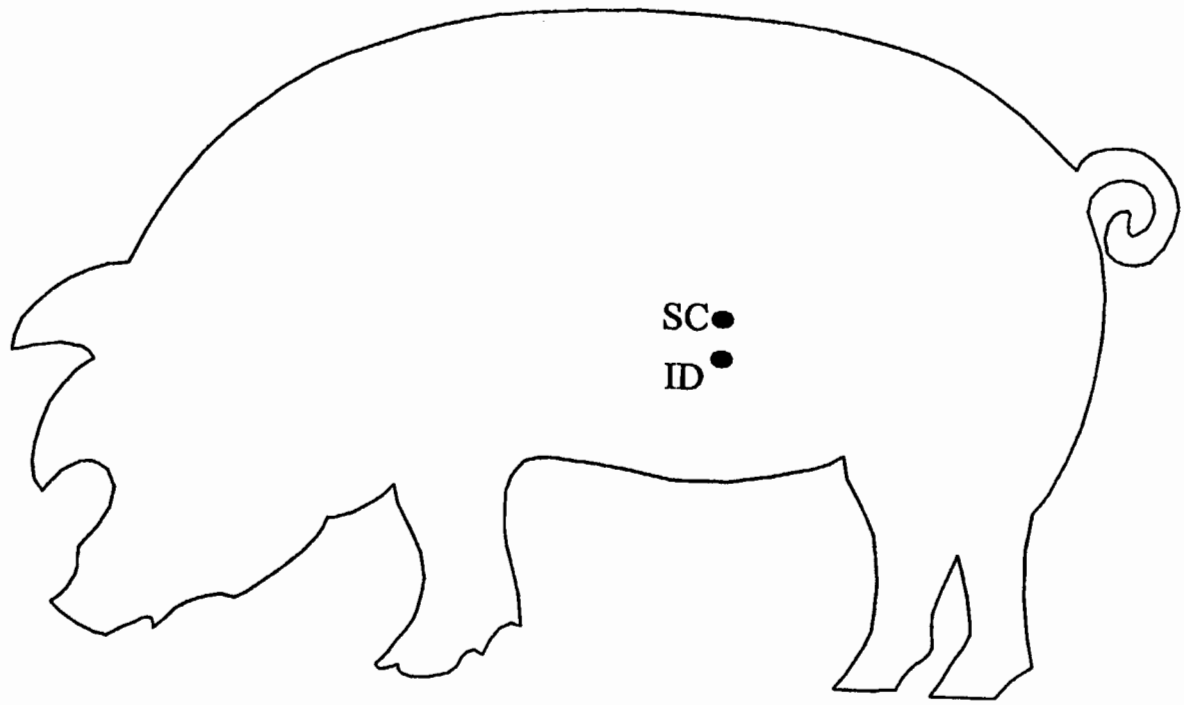


FIG. 2B

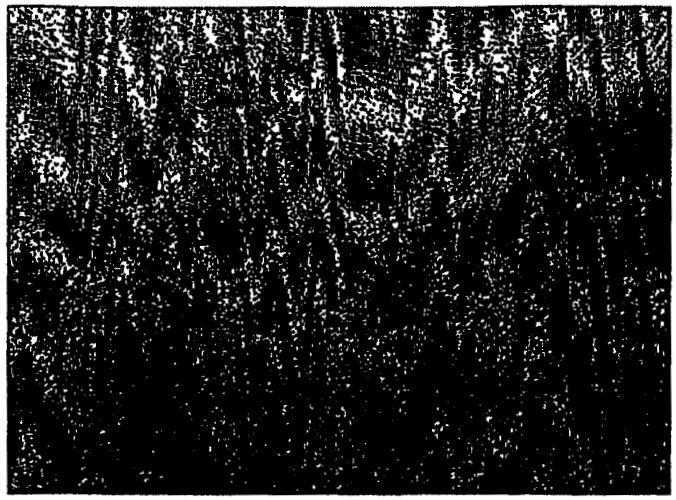


FIG. 2C



FIG. 2D



FIG. 2E

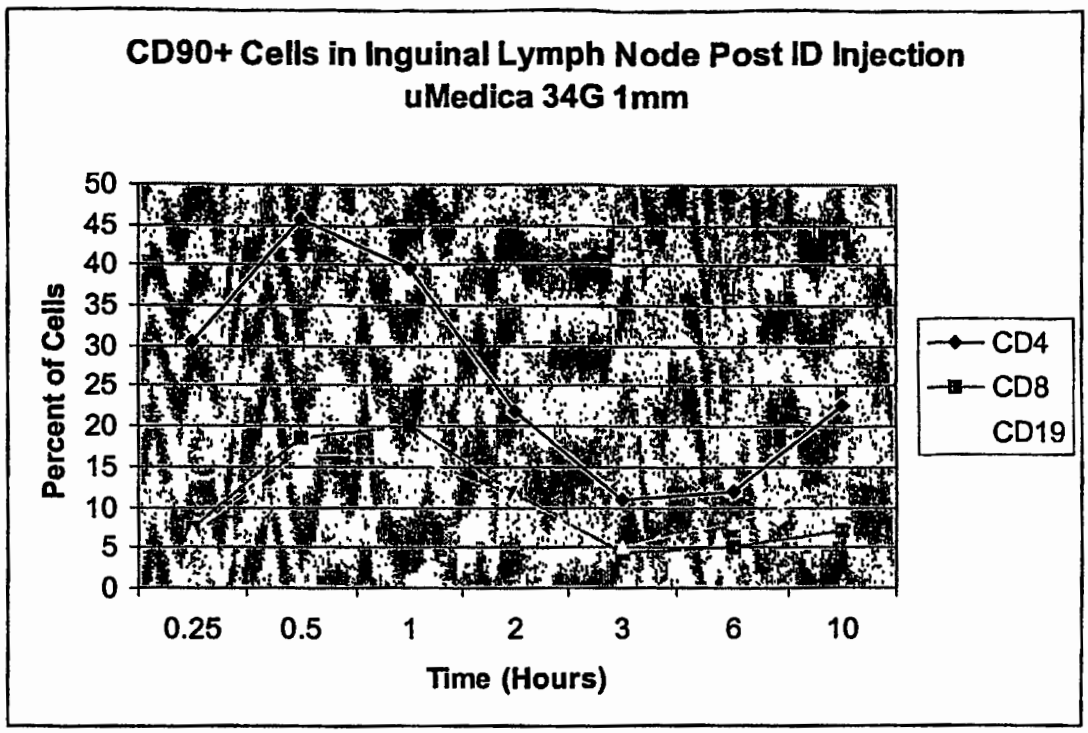

CD90+ Cells in Inguinal Lymph Node Post ID Injection
uMedica 34G 1mm
Percent of Cells
50
45
40
35
30
25
20
15
10
5
0
0.25
0.5
1
2
3
6
10
Time (Hours)
CD4
CD8
CD19

FIG. 3A

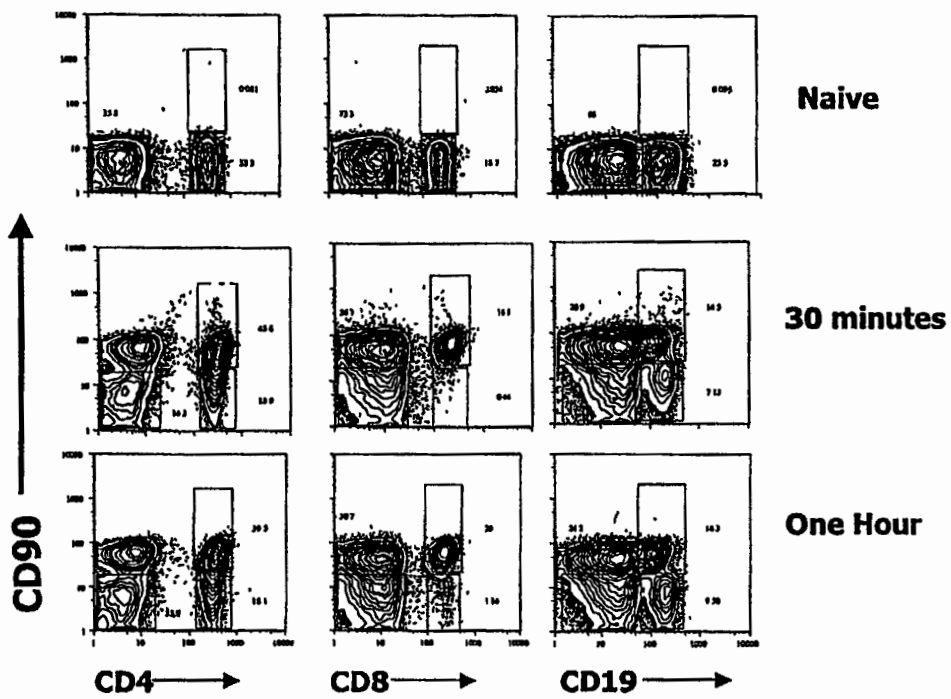


FIG. 3B



FIG. 4A

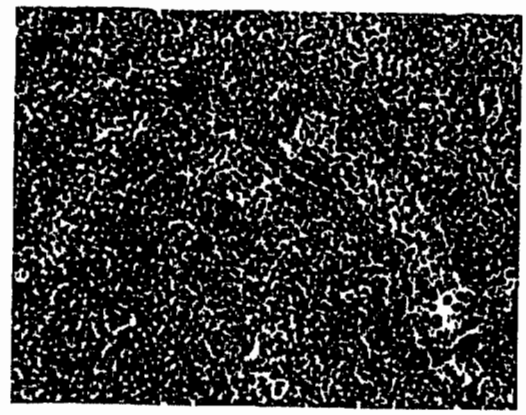


FIG. 4B



FIG. 4C

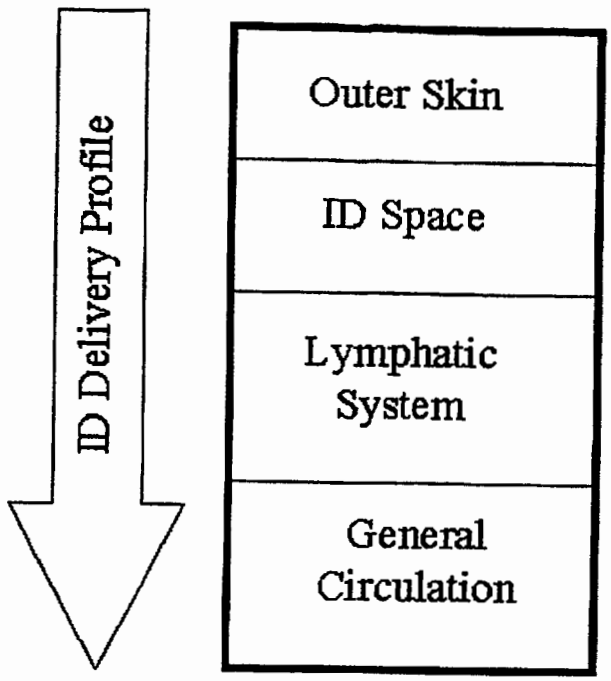
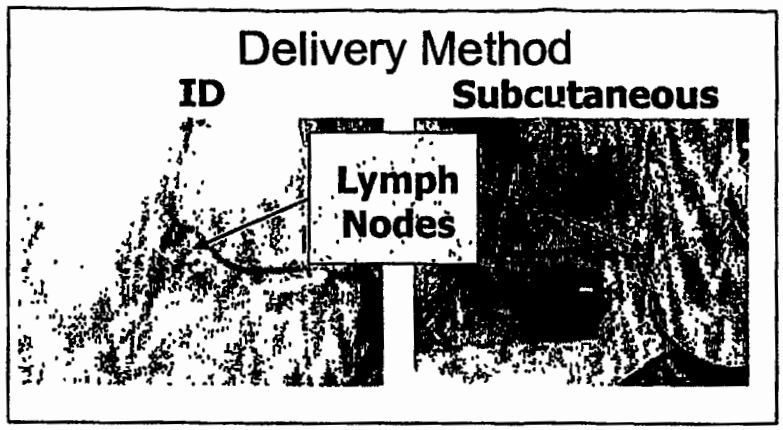

ID Delivery Profile
Outer Skin
ID Space
Lymphatic System
General Circulation

FIG. 5

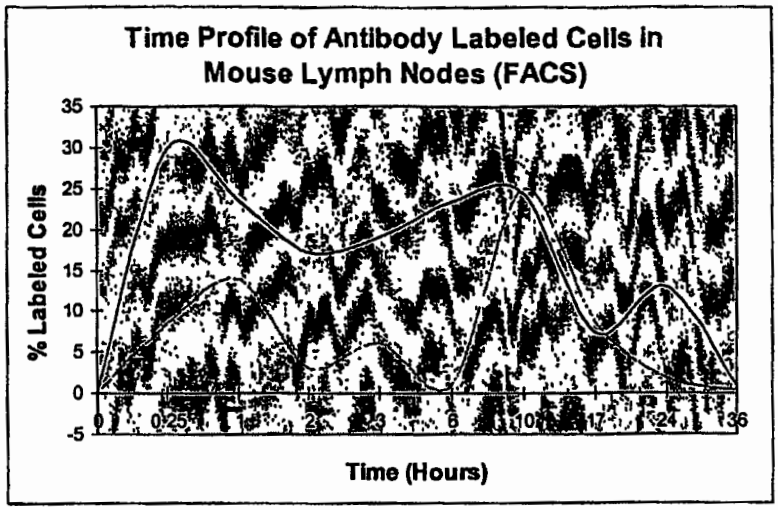
- Concept
  - Rapid proprietary delivery of diagnostic reagents with enhanced sensitivity
  - Identifies specific markers in lymph nodes and associated body tissues
    - Cancer cells
    - Pathogens
  - Detection Methods
    - Histology
    - Flow Cytometry
    - Imaging
- Earlier, more specific diagnosis of disease

FIG. 6



Comparison of ID Targeted and SubQ Delivery to Lymph Nodes

FIG. 7A



Enhanced Detection of Lymphatic Cells using ID Delivery

FIG. 7B

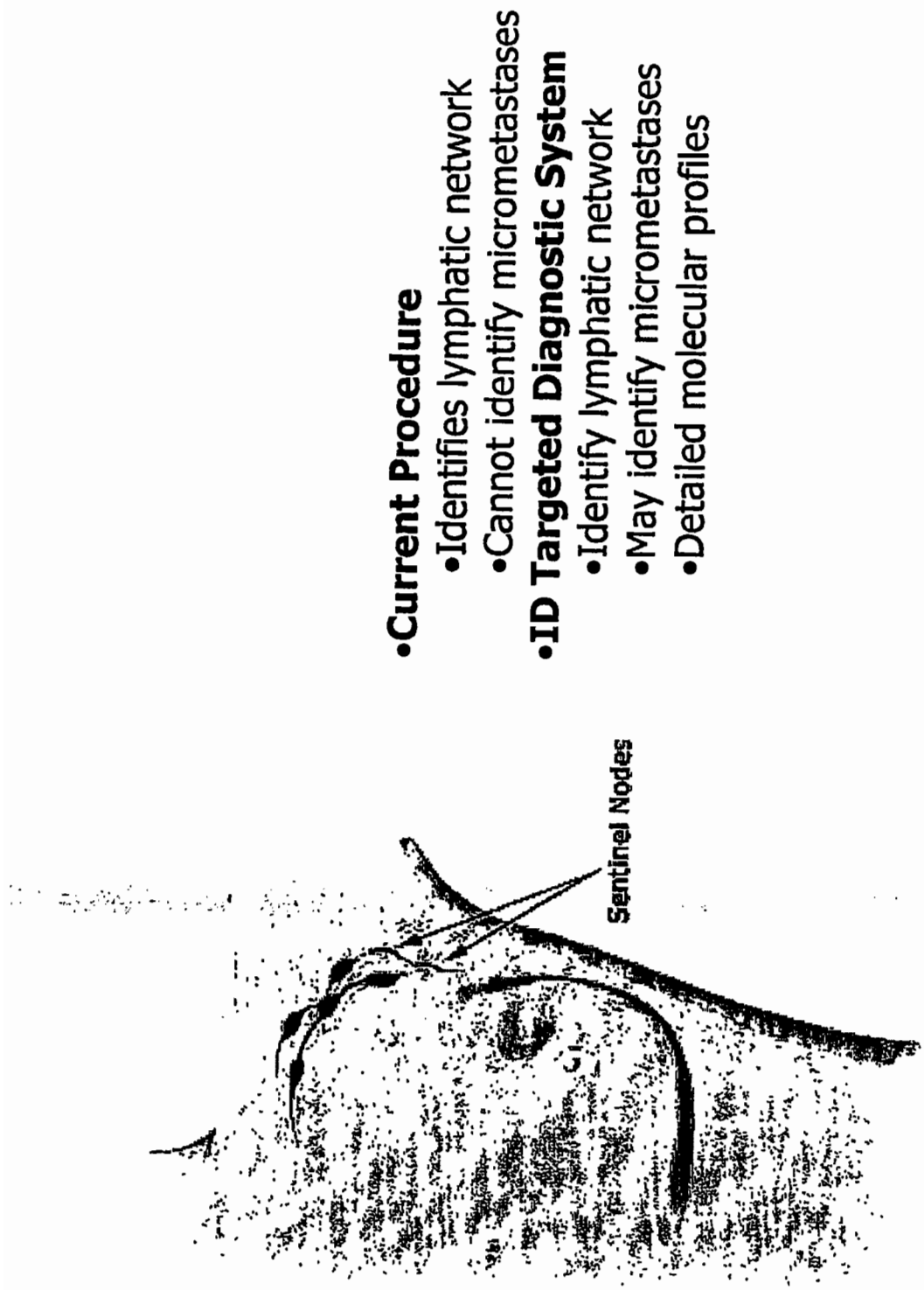

•Current Procedure
•Identifies lymphatic network
•Cannot identify micrometastases
•ID Targeted Diagnostic System
•Identify lymphatic network
•May identify micrometastases
•Detailed molecular profiles
Sentinel Nodes

FIG. 8A

T-Cells in Mouse Lymph Node
Labeled using ID targeted delivery system



FIG. 8B

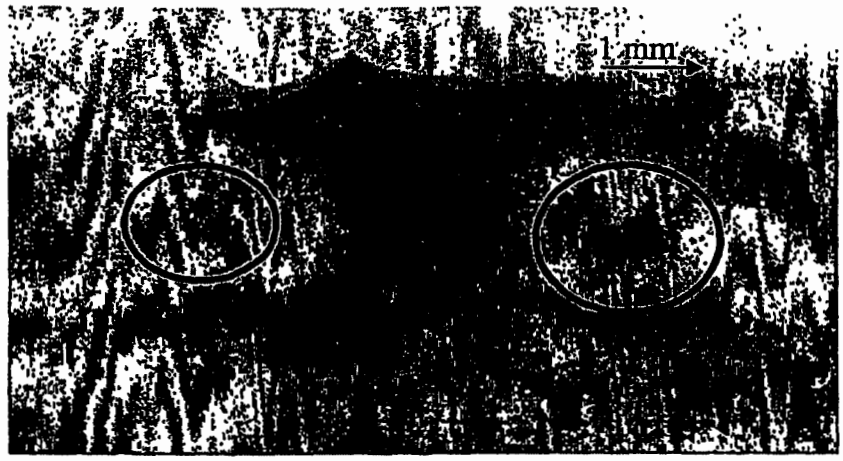


FIG. 9


1mm

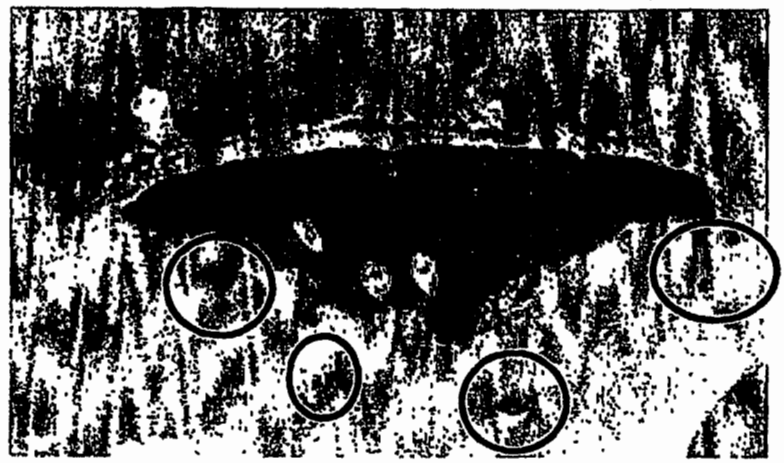


FIG. 11



FIG. 12



FIG. 13

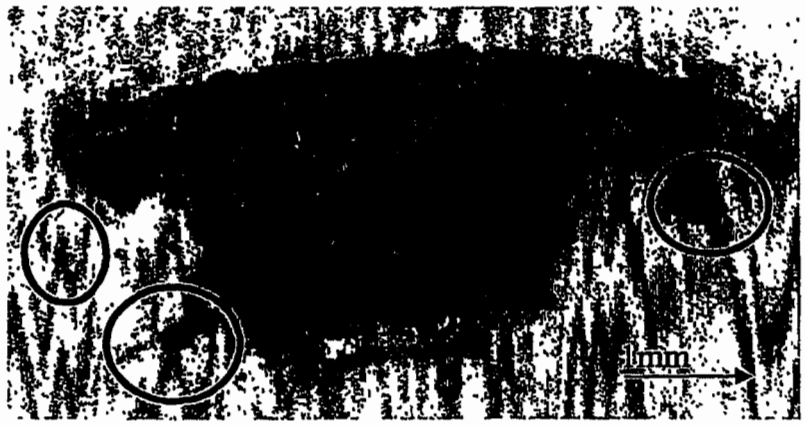


FIG. 14

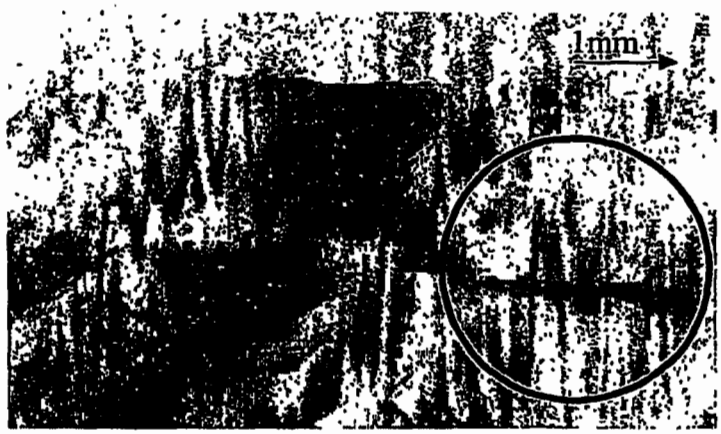


FIG. 15

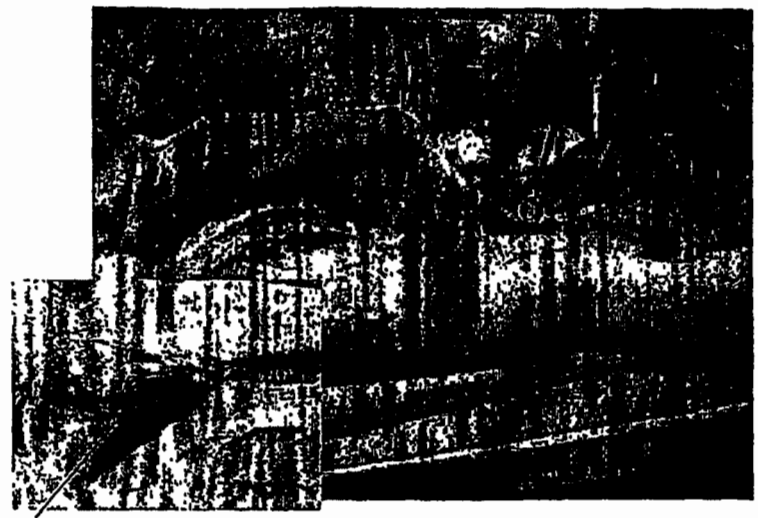


FIG. 16

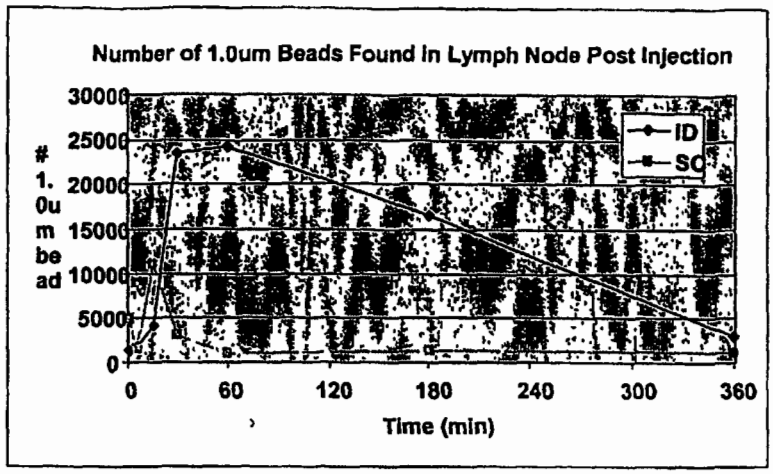

Number of 1.0um Beads Found in Lymph Node Post Injection
30000
25000
20000
15000
10000
5000
0
1.0um bead
0
60
120
180
240
300
360
Time (min)
ID
SC

FIG. 17A

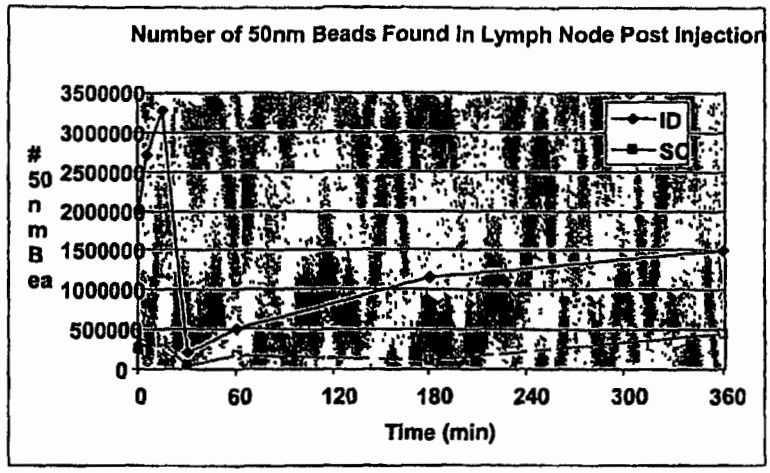

Number of 50nm Beads Found In Lymph Node Post Injection
50 nm Bea
3500000
3000000
2500000
2000000
1500000
1000000
500000
0
0
60
120
180
240
300
360
Time (min)
ID
SC

FIG. 17B

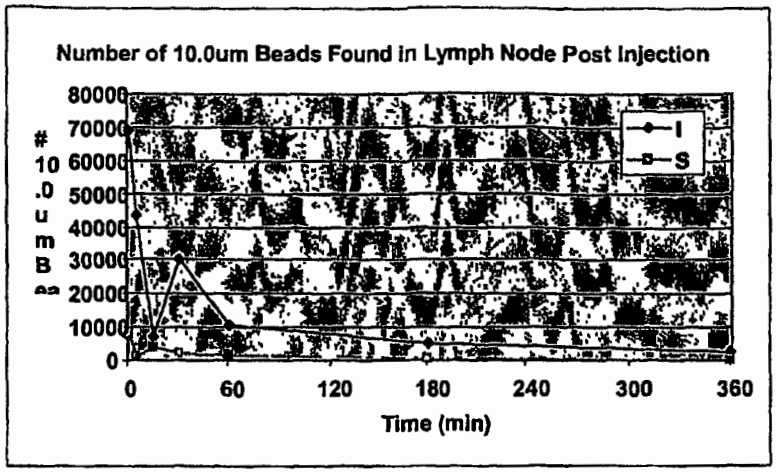
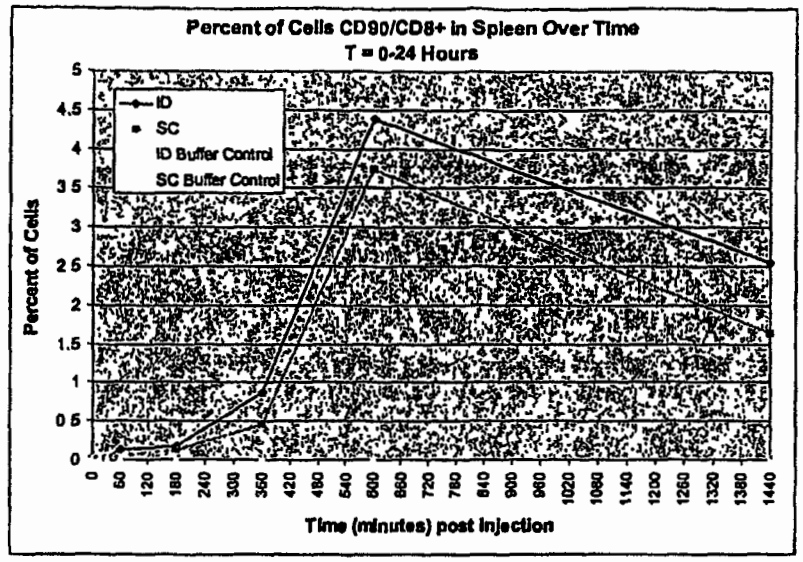

Number of 10.0um Beads Found in Lymph Node Post Injection
80000
70000
60000
50000
40000
30000
20000
10000
0
0
60
120
180
240
300
360
Time (min)
I
S

FIG. 17C


Percent of Cells CD90/CD8+ in Spleen Over Time
T = 0-24 Hours
ID
SC
ID Buffer Control
SC Buffer Control
Percent of Cells
Time (minutes) post injection

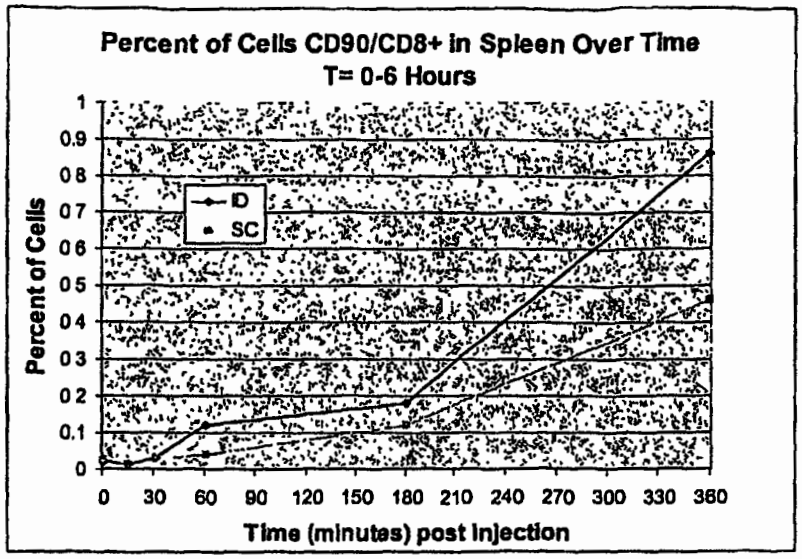

Percent of Cells CD90/CD8+ in Spleen Over Time
T= 0-6 Hours
Percent of Cells
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
ID
SC
0 30 60 90 120 150 180 210 240 270 300 330 360
Time (minutes) post injection

FIG. 18B

Dose Sparing – IV and Microneedle ID injection

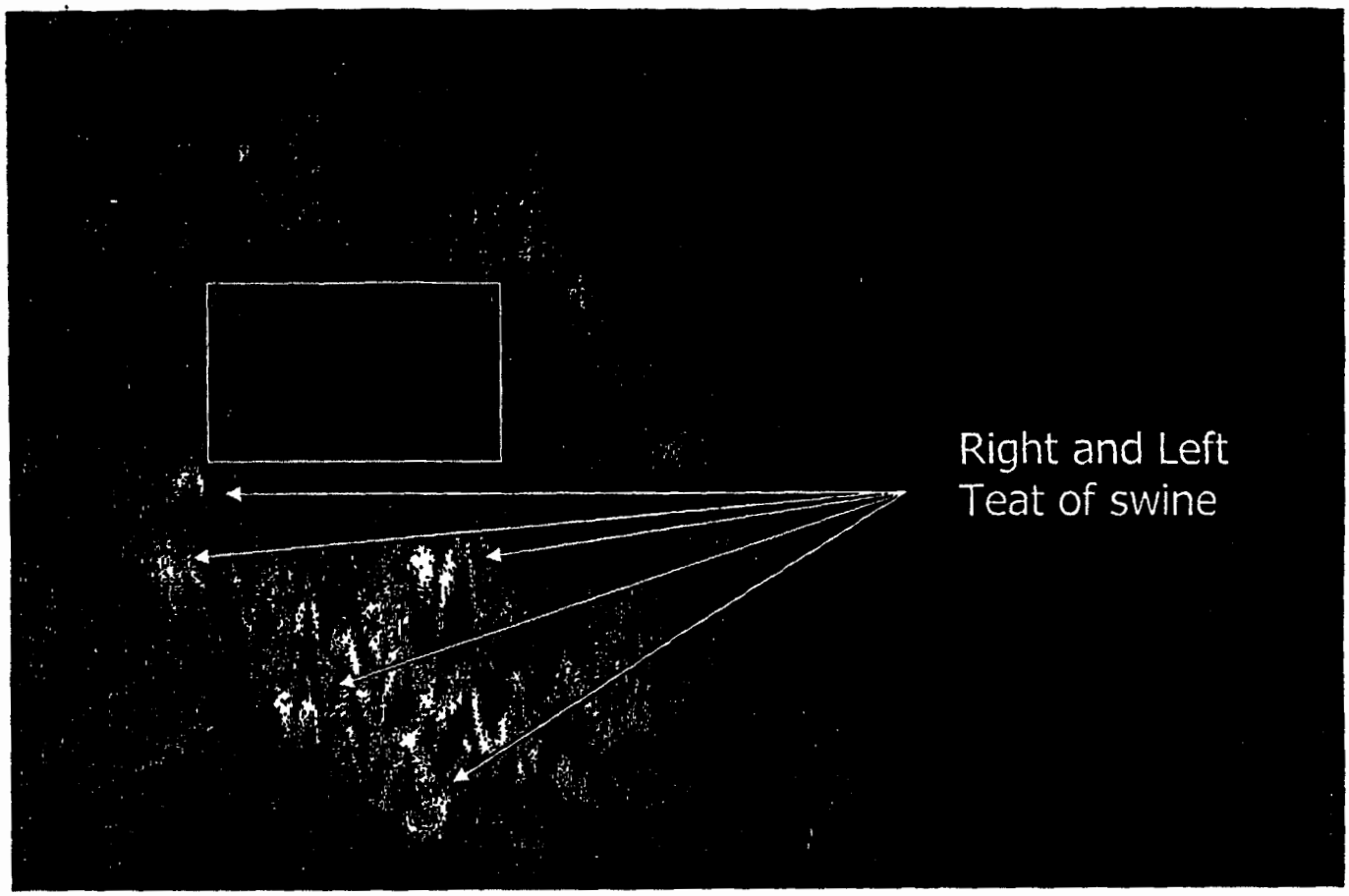


FIG. 19



FIG. 20A

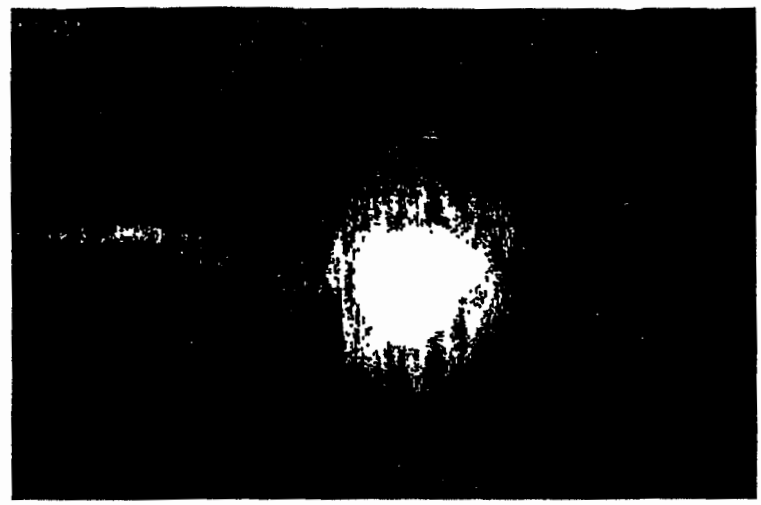


FIG. 20B



FIG. 20C

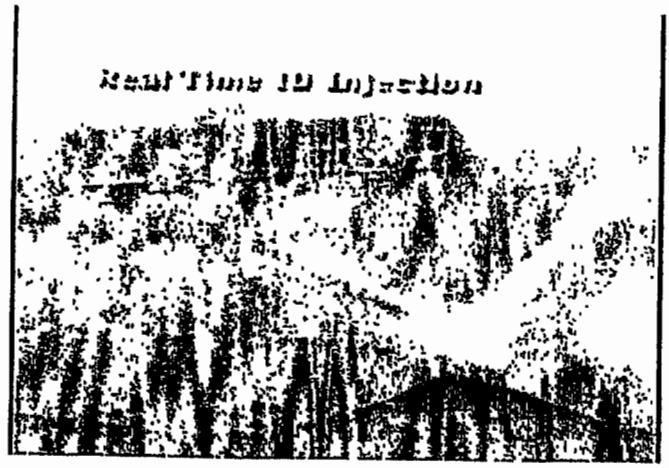


FIG. 21A



FIG. 21B

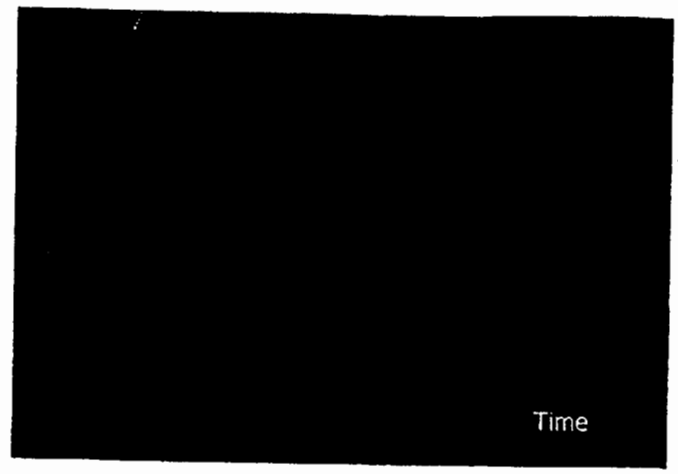


FIG. 21C

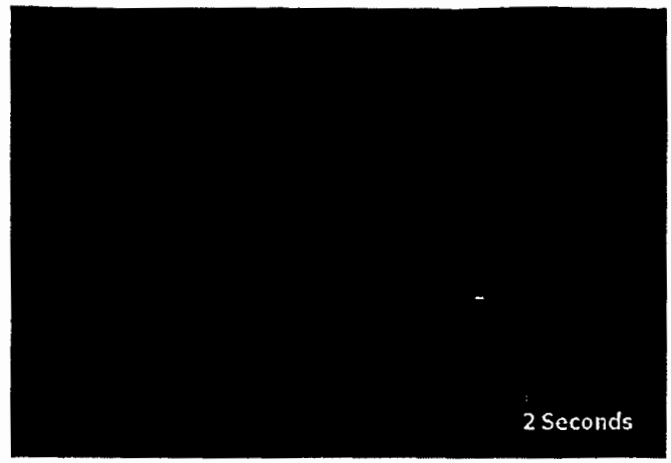


FIG. 21D

FIG. 22

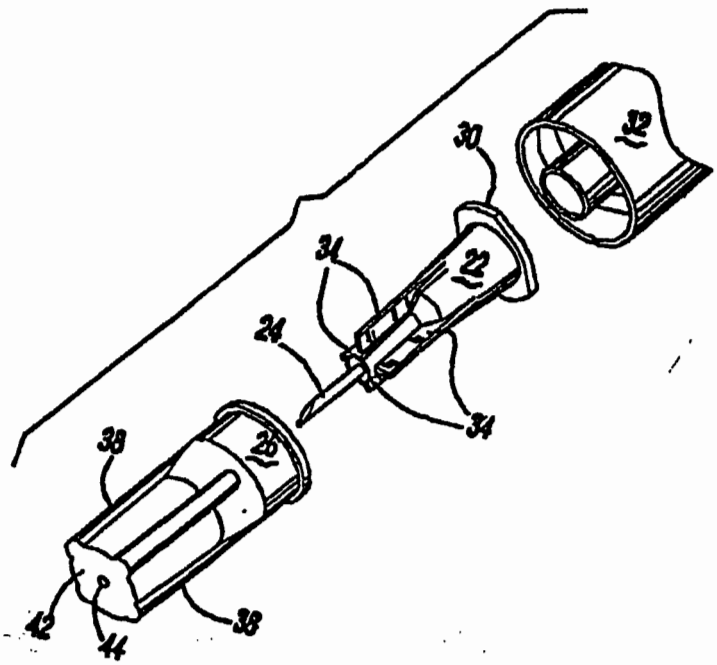


FIG. 23

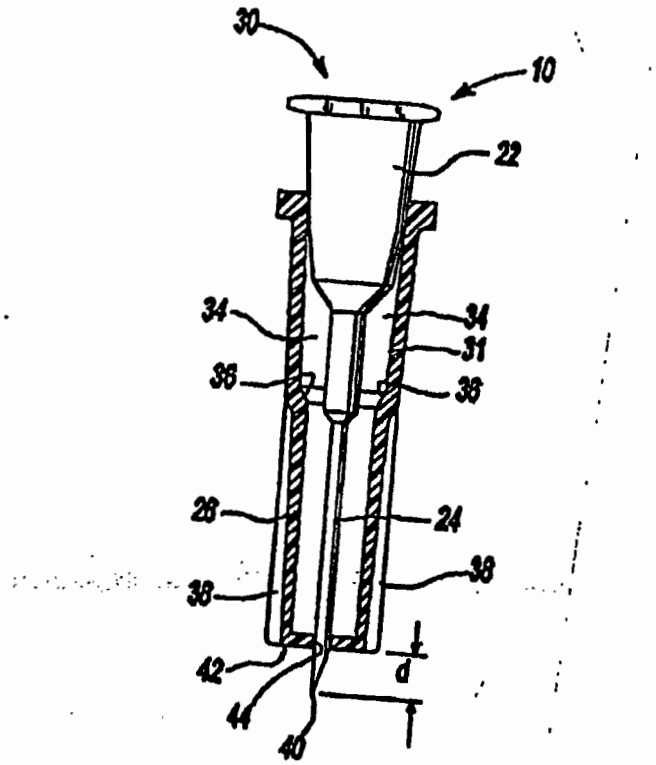


FIG. 24

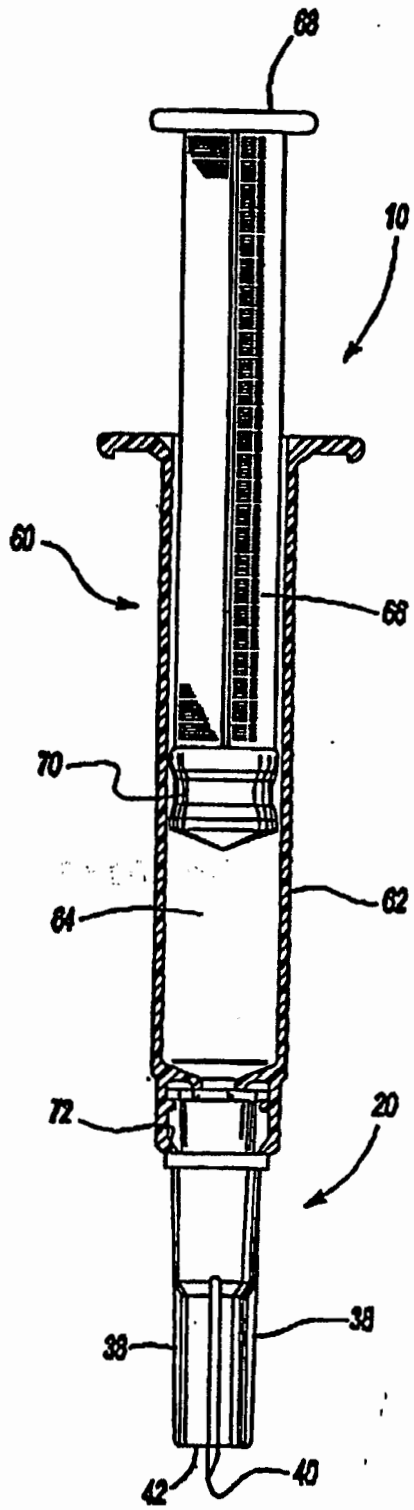


FIG. 25

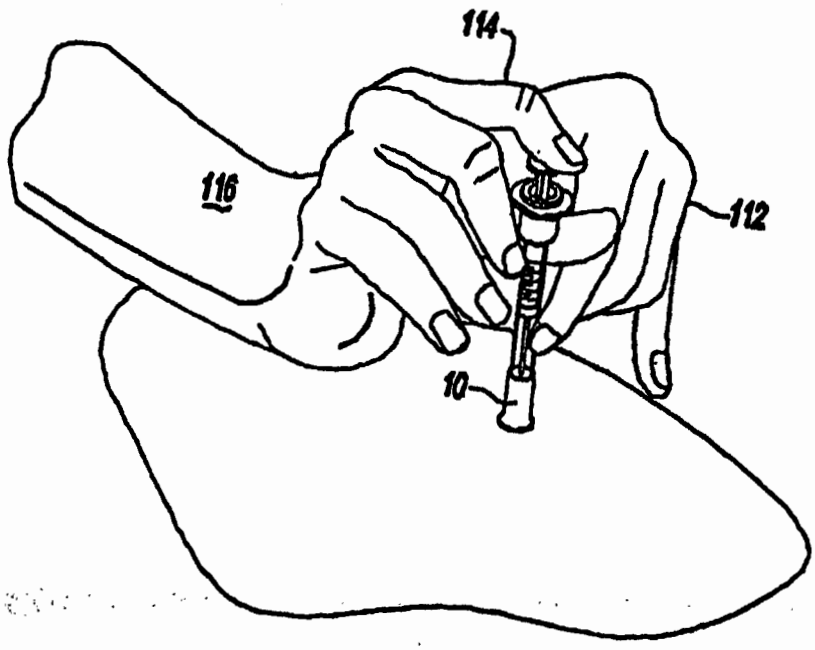


FIG. 26

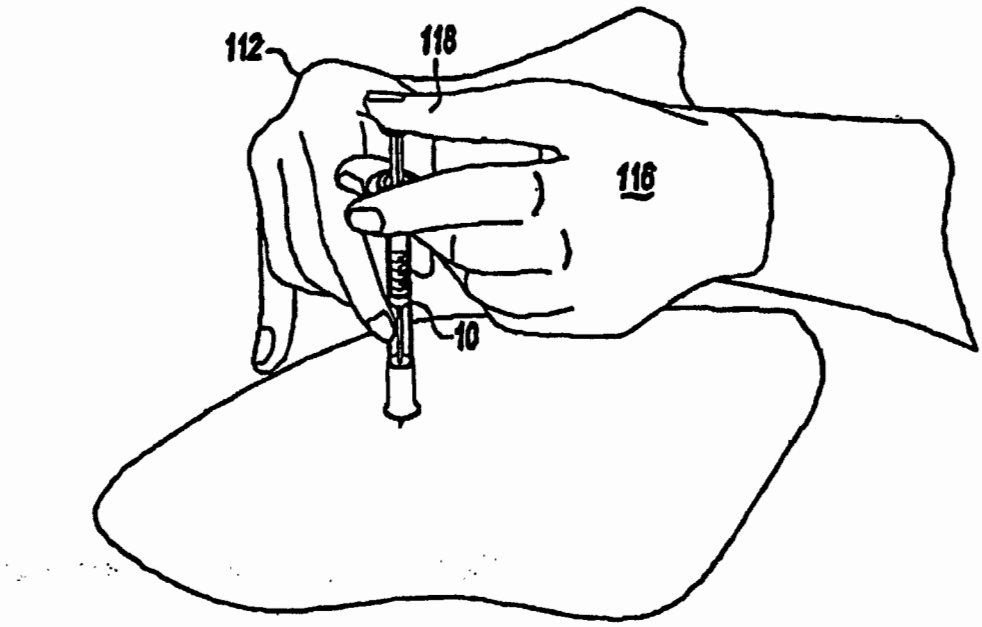


FIG. 27

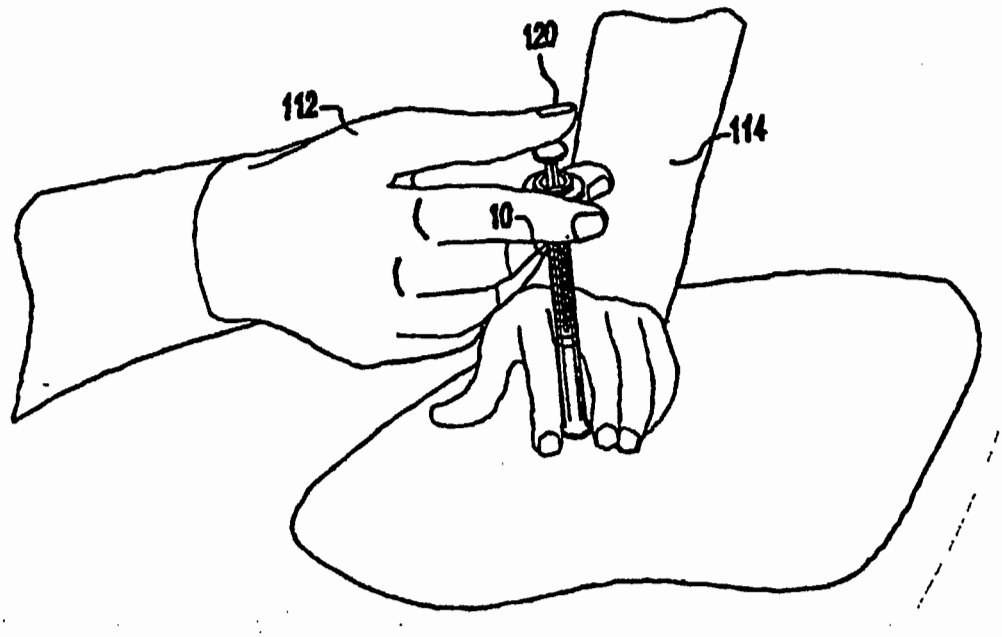
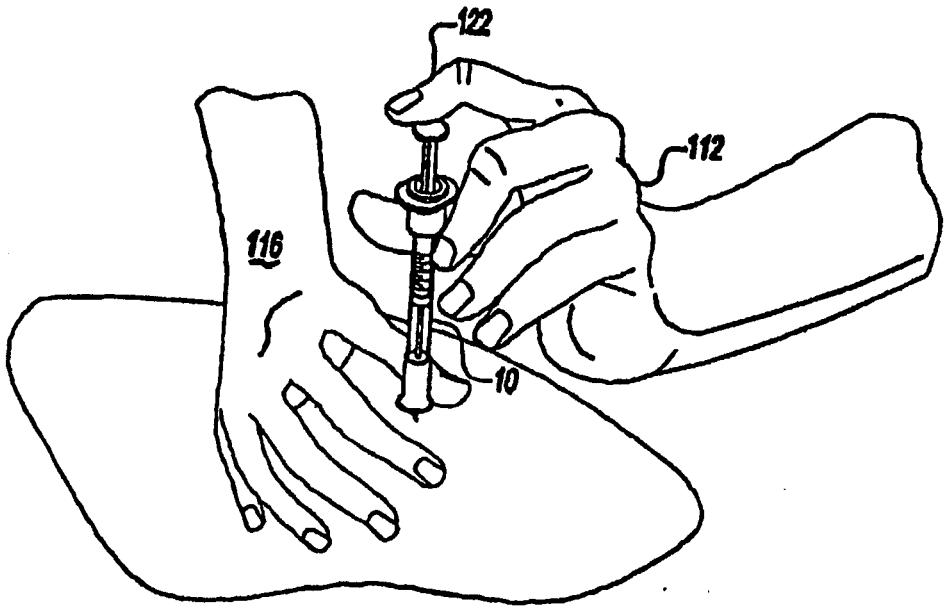
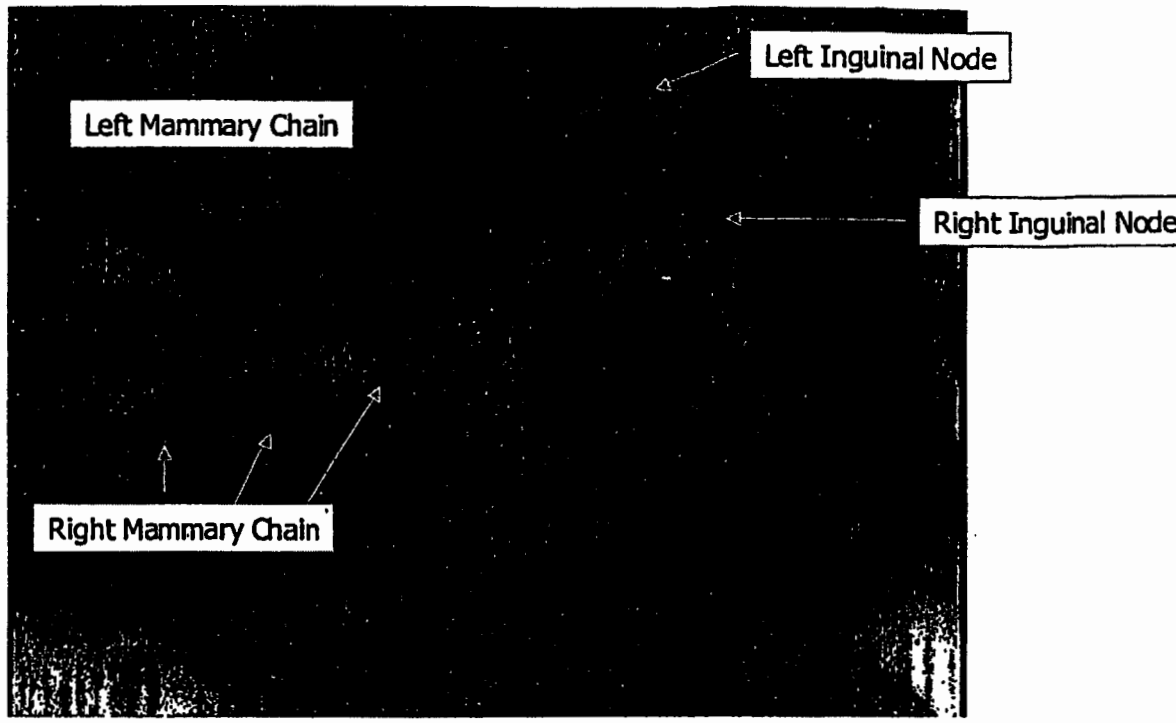


FIG. 28





ID injections on right hind leg and left side mammary chain (2)
Left and right inguinal nodes illuminated.

FIG. 29A

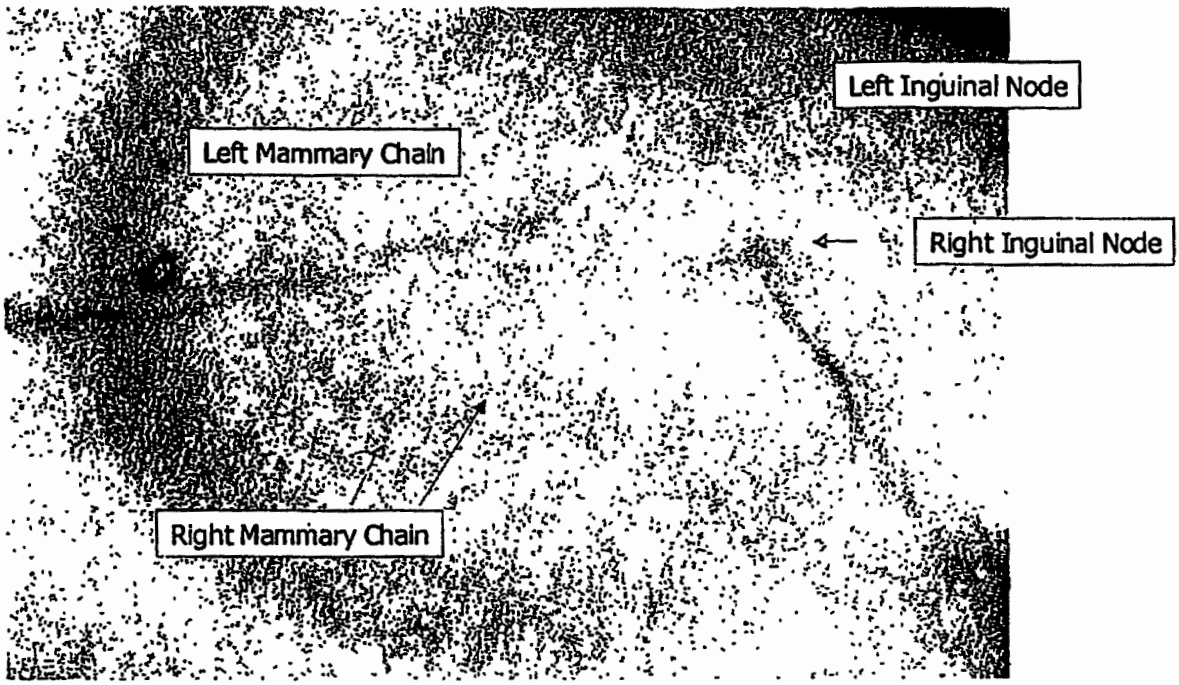

Left Inguinal Node
Left Mammary Chain
Right Inguinal Node
Right Mammary Chain

FIG. 29B

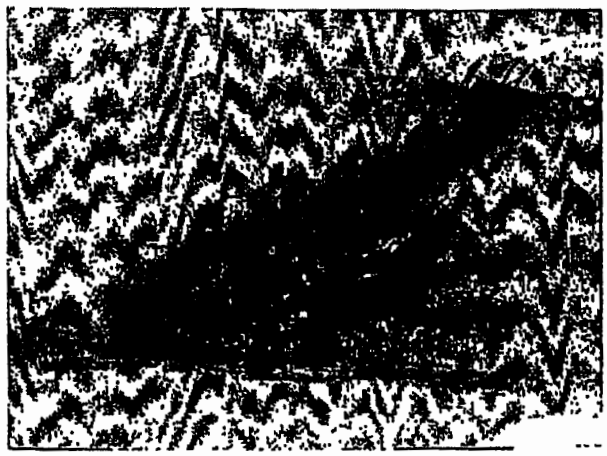


FIG. 30A

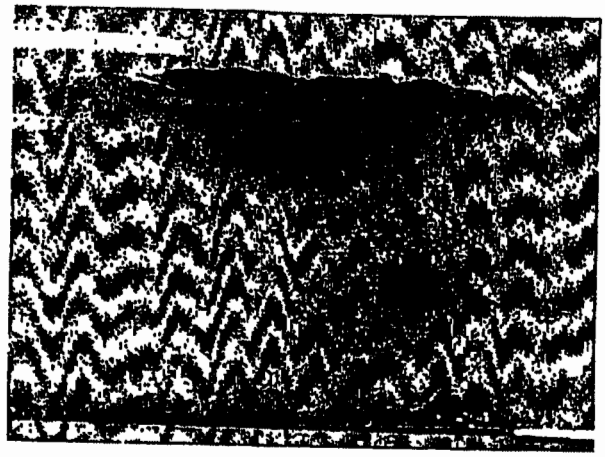


FIG. 30B

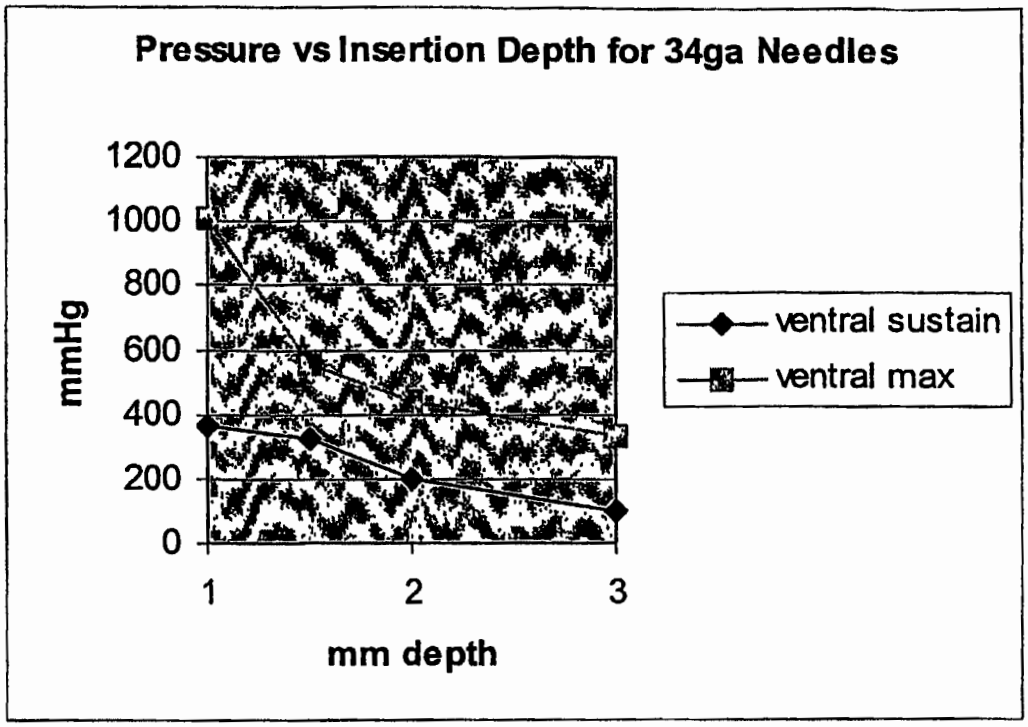

Pressure vs Insertion Depth for 34ga Needles
1200
1000
800
600
400
200
0
mmHg
1
2
3
mm depth
ventral sustain
ventral max

FIG. 31

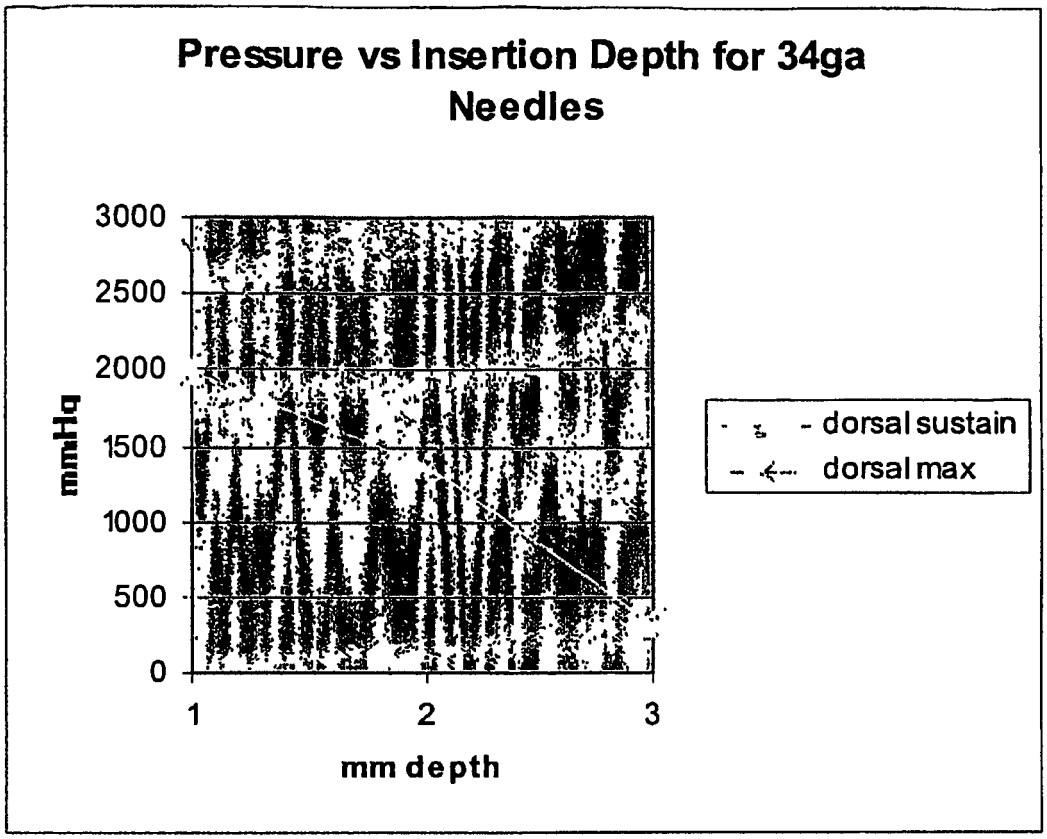

Pressure vs Insertion Depth for 34ga Needles
3000
2500
2000
1500
1000
500
0
mmHg
1
2
3
mm depth
- dorsal sustain
dorsal max

FIG. 32

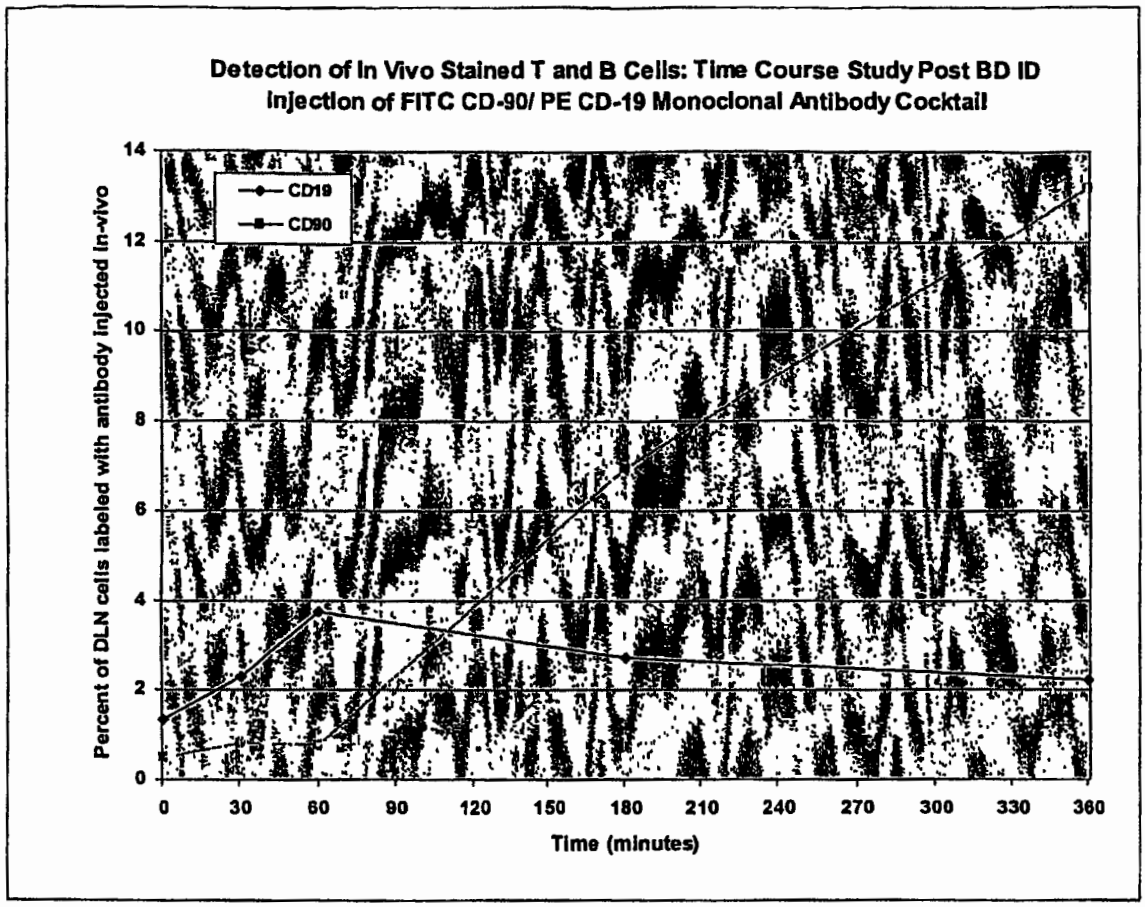

Detection of In Vivo Stained T and B Cells: Time Course Study Post BD ID Injection of FITC CD-90/ PE CD-19 Monoclonal Antibody Cocktail
CD19
CD90
Percent of DLN cells labeled with antibody injected in-vivo
0
2
4
6
8
10
12
14
0
30
60
90
120
150
180
210
240
270
300
330
360
Time (minutes)

FIG. 33