

ORIGINAL Abstract:

SELECTIVELY DISRUPTED WHOLE-CELL VACCINE

The present invention provides for immunogenic compositions and methods for producing an immunogenic composition with multiple immunity-inducing fractions of killed, whole-cell *Streptococcus pneumoniae* by selectively disrupting a whole cell bacterial preparation in such a manner that a soluble fraction that induces a primarily antibody response, and a cellular fraction that induces a primarily antibody-independent response, remain in the immunogenic composition.

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CLAIMS

We claim:

1. An immunogenic composition with multiple immunity inducing fractions of whole-cell gram positive bacteria, prepared by selectively disrupting a whole-cell bacterial preparation in such a manner that a soluble fraction that induces a primarily antibody response, and a cellular fraction that induces a primarily antibody-independent response, remain in the composition.

2. The immunogenic composition of claim 1 wherein said bacteria is unencapsulated.

3. The immunogenic composition of claim 1 or 2, wherein said bacteria is *Streptococcus pneumoniae*.

4. The immunogenic composition of claims 1 to 3, wherein said selective disruption is effected by a chemical.

5. The immunogenic composition of claim 4, wherein said chemical is chloroform, trichloroethylene, or beta-propiolactone.

6. The immunogenic composition of claims 1 to 3, wherein said selective disruption is effected by sonication.

7. A vaccine comprising the immunogenic composition of claims 1 to 6.

8. The vaccine of claim 7, wherein said vaccine includes an adjuvant.

9. The vaccine of claims 7 or 8, wherein said vaccine is formulated for nasal, bucal, transdermal, subcutaneous, or intramuscular administration.

10. A method for inducing an immune response in a mammal comprising administering the vaccine of any of claims 7 to 9.

11. A method for producing a killed, whole-cell immunogenic composition with antibody-dependent and antibody-independent immunity inducing fractions of bacteria derived from a gram positive bacterium comprising selectively disrupting the bacteria in such a manner that a soluble fraction and a disrupted cellular fraction remain in the whole-cell immunogenic composition.

12. The method according to claim 11, wherein said bacteria is unencapsulated.

13. The method of claims 11 or 12, wherein said bacteria is *Streptococcus pneumoniae*.

14. The method according to claim 11, wherein said soluble fraction induces a serotype-independent antibody response, and said cellular fraction induces increased phagocytosis.

15. The method according to claims 11 to 14, wherein disrupting the bacteria is effected by a chemical.

16. The method according to claim 15, wherein said chemical is beta-propiolactone, chloroform, or trichloroethylene.

17. The method according to claims 15 or 16, further comprising negating the chemical in such a manner that preserves said soluble fraction and said cellular fraction.

18. The method of claims 11 to 13, wherein disrupting the bacteria is effected by sonication.

Dated this 19th day of April 2012



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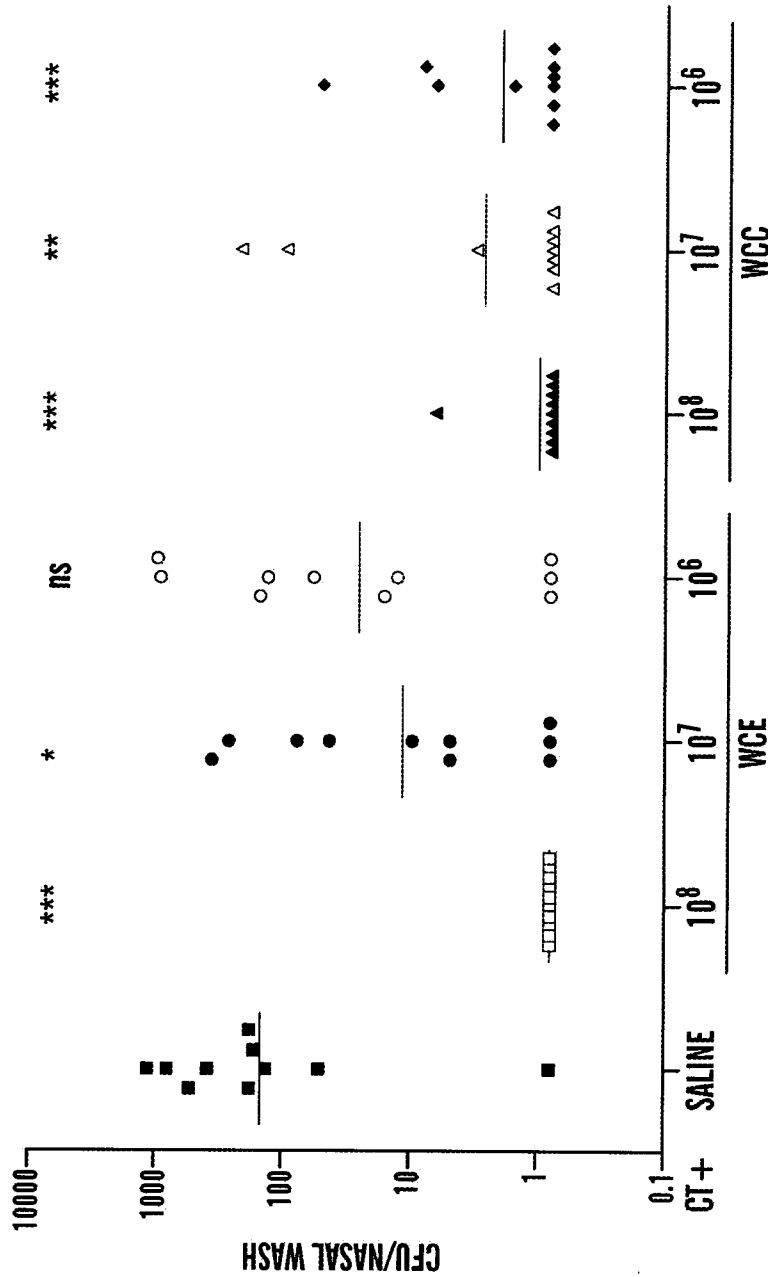


FIG. 1A

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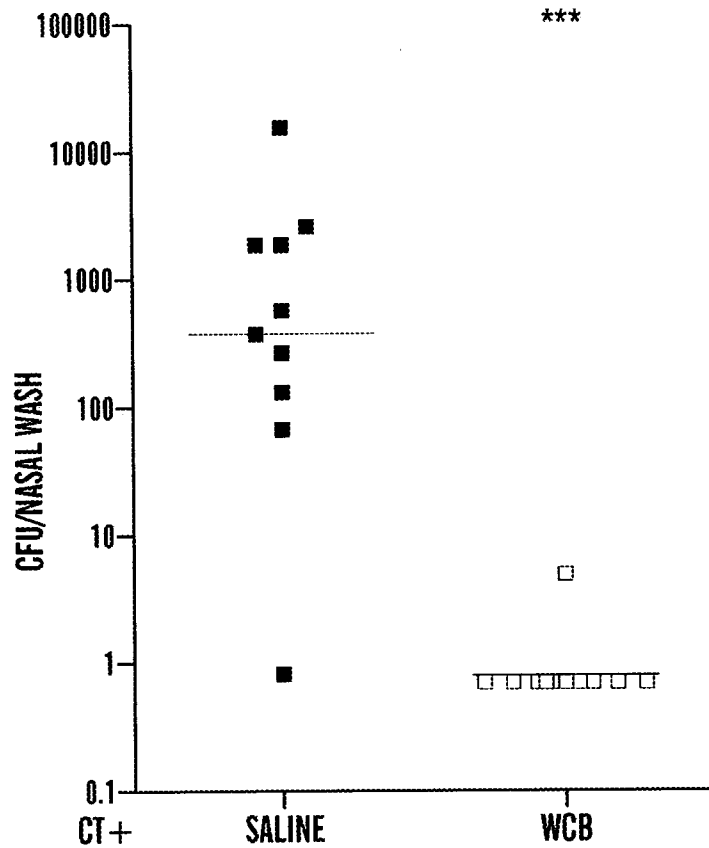


FIG. 1B

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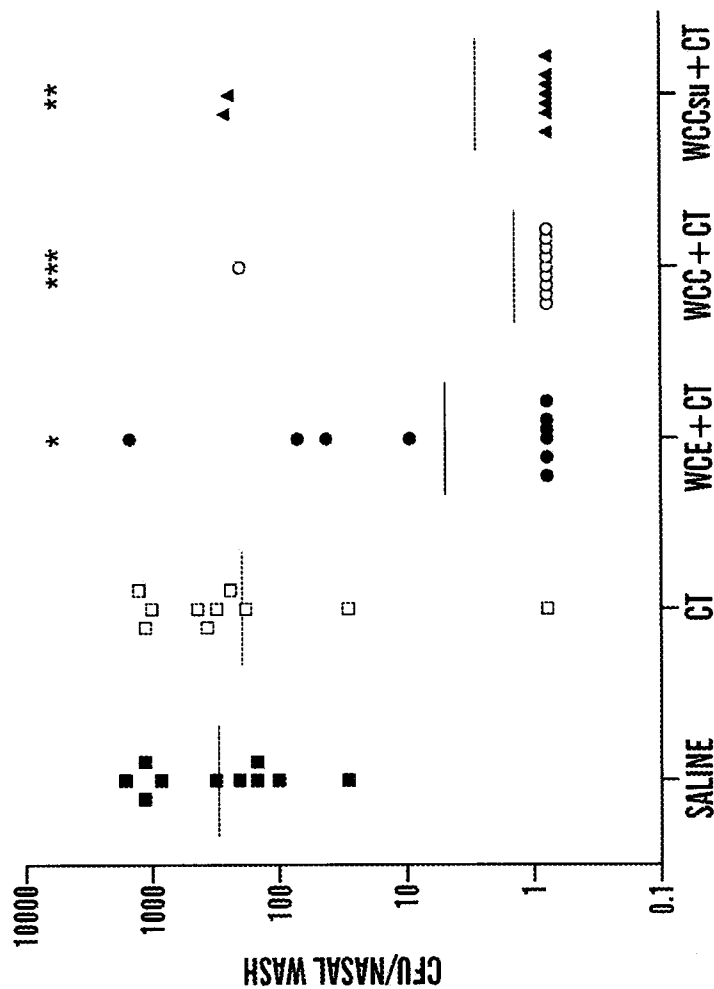


FIG. 1C

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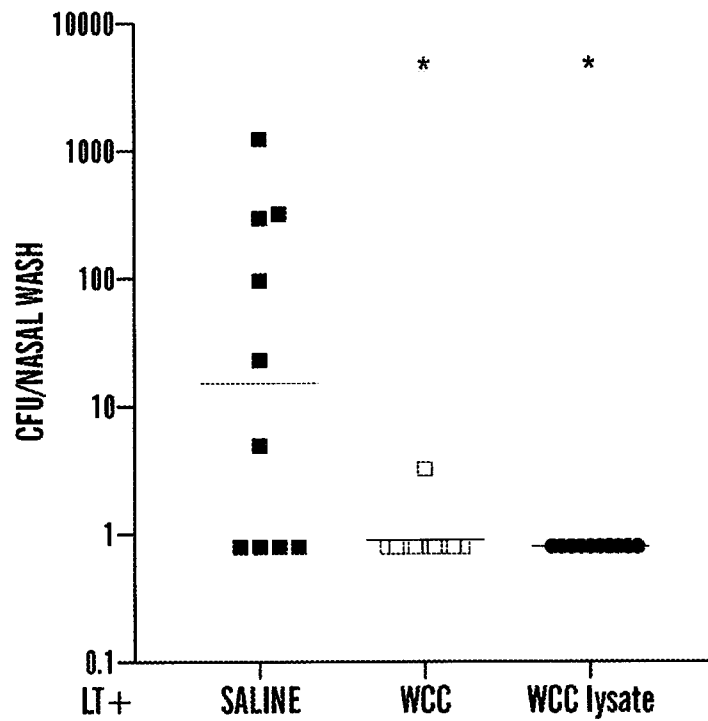


FIG. 1D

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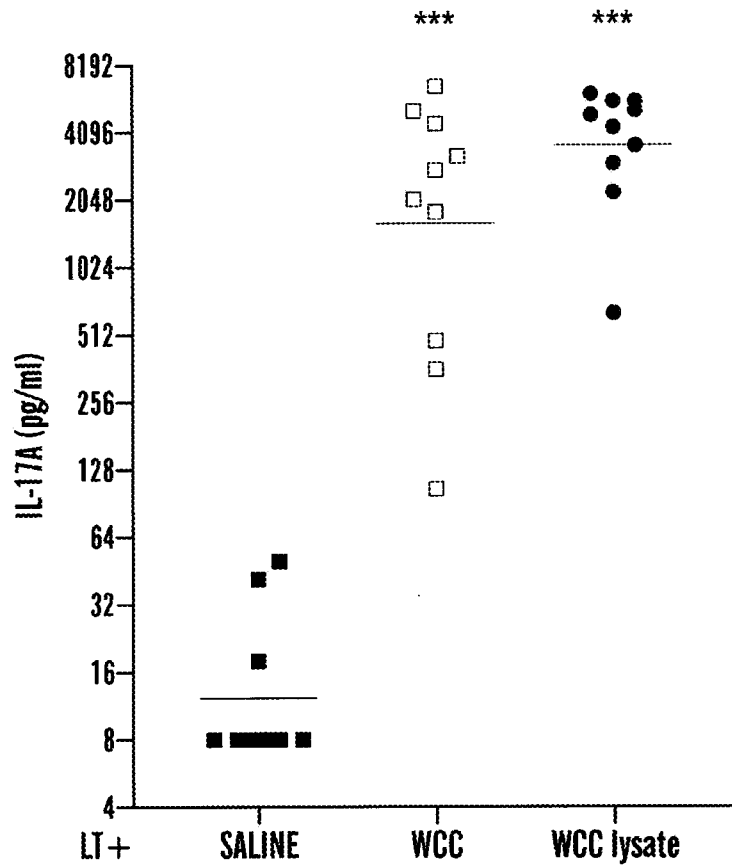


FIG. 1E

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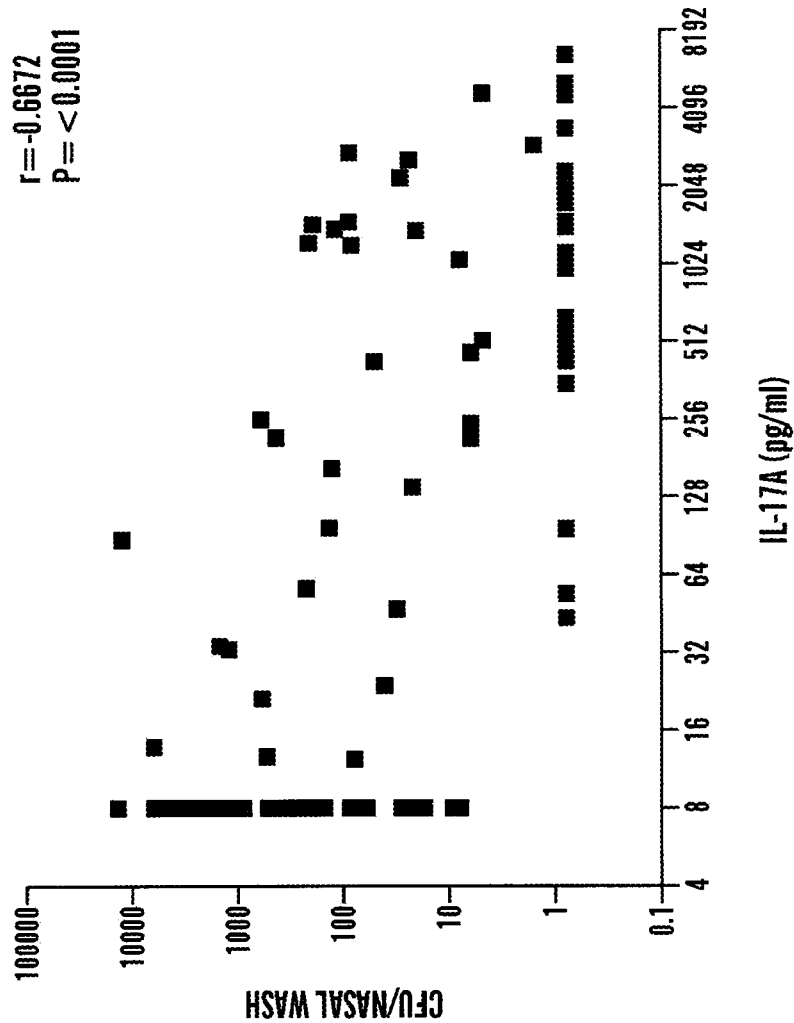


FIG. 2A

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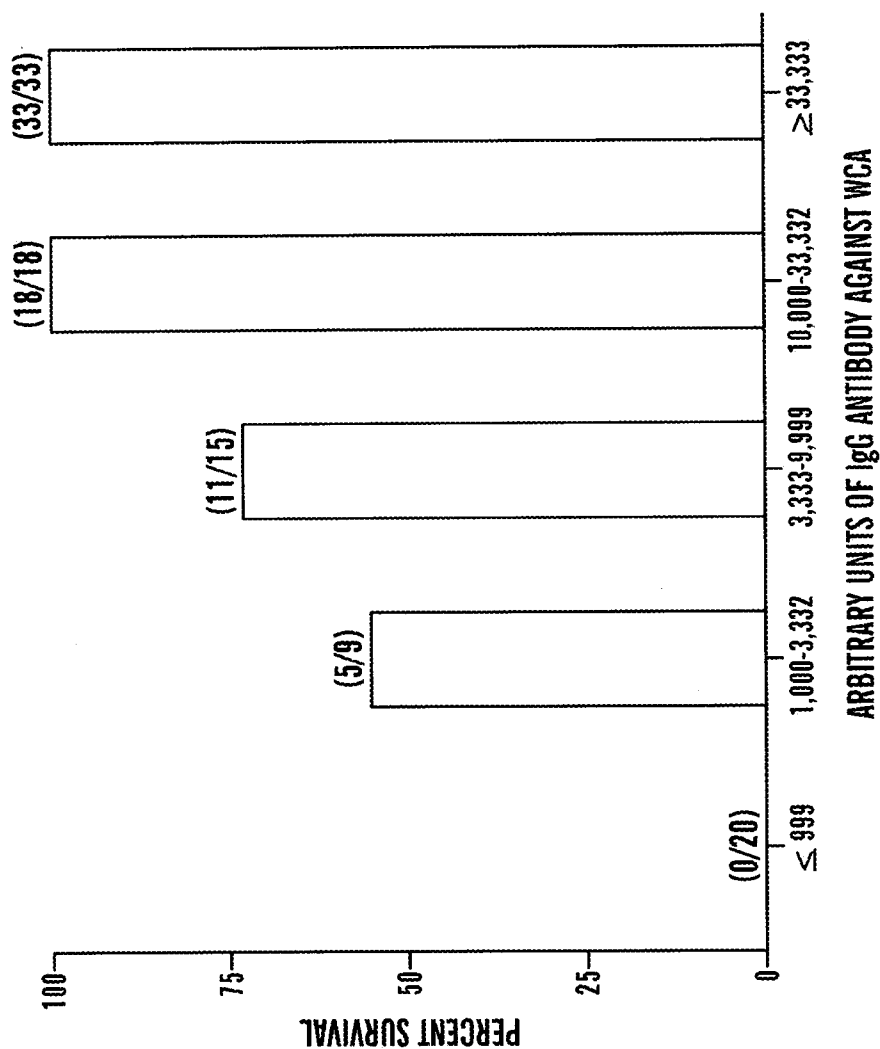


FIG. 2B

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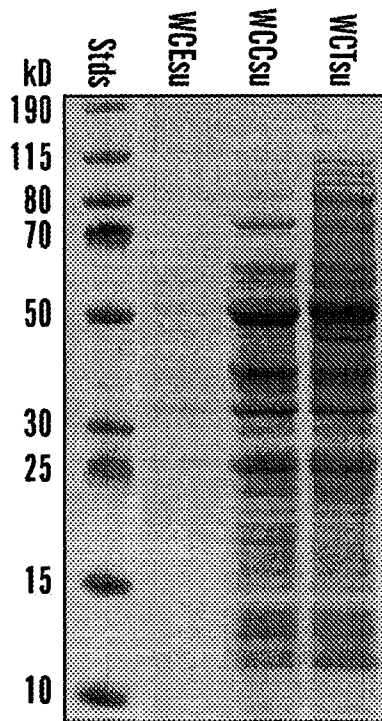


FIG. 3A

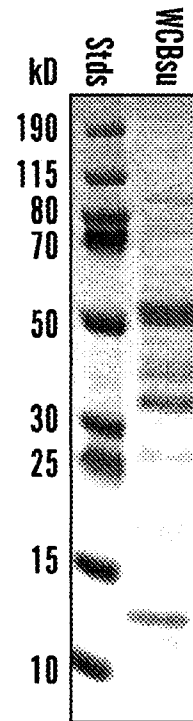


FIG. 3B

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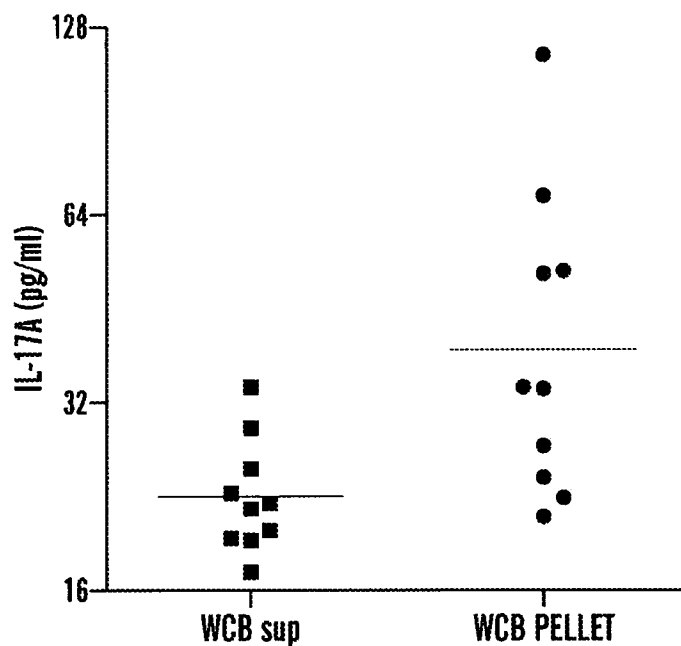


FIG. 4A

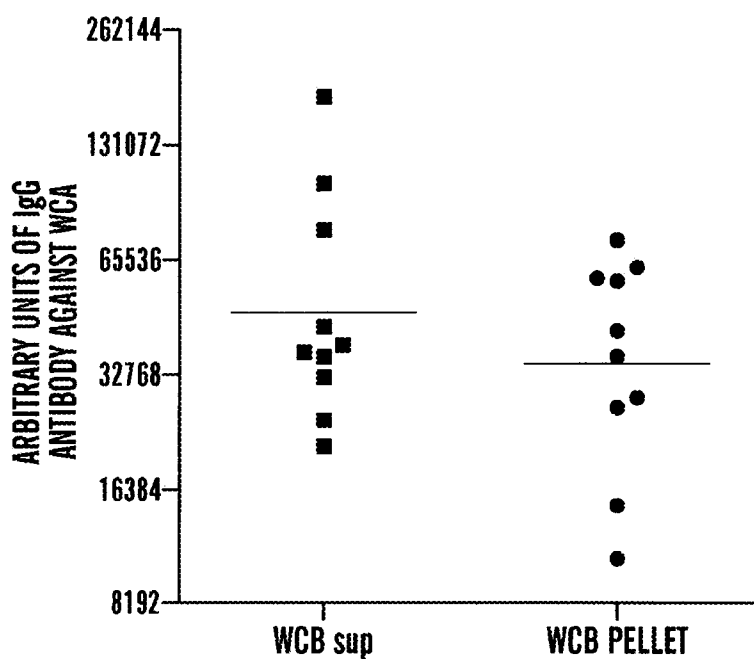


FIG. 4B

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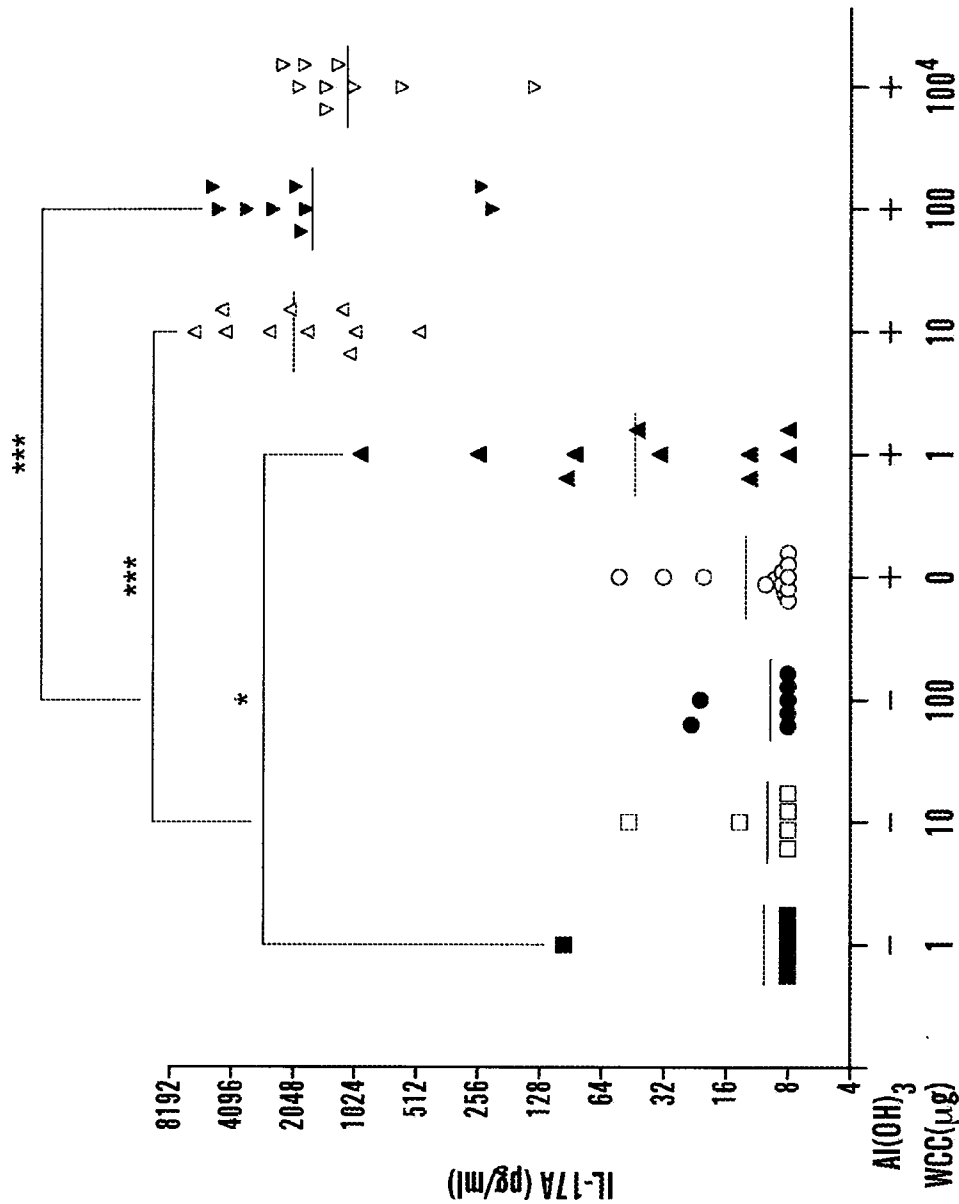


FIG. 5A

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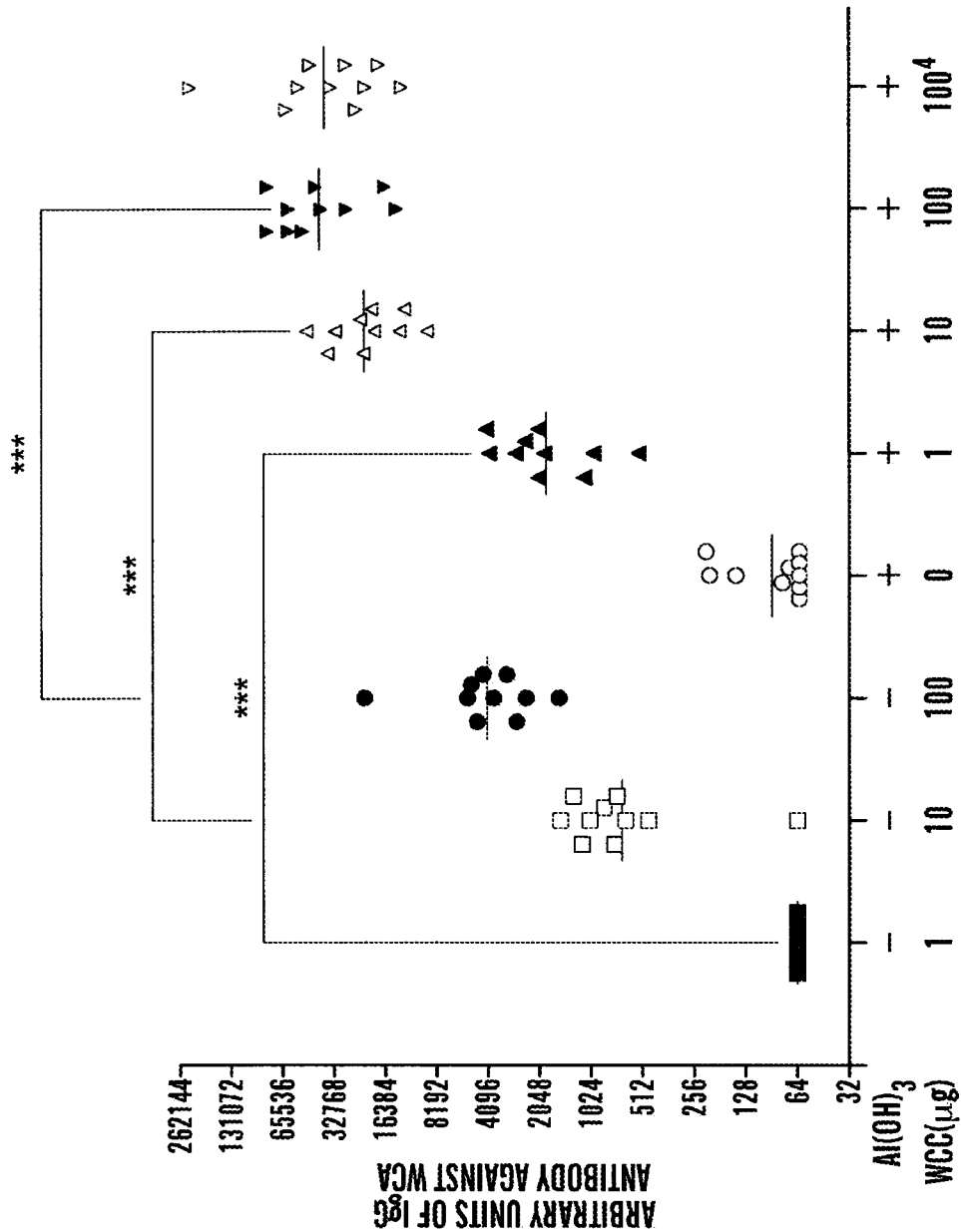


FIG. 5B

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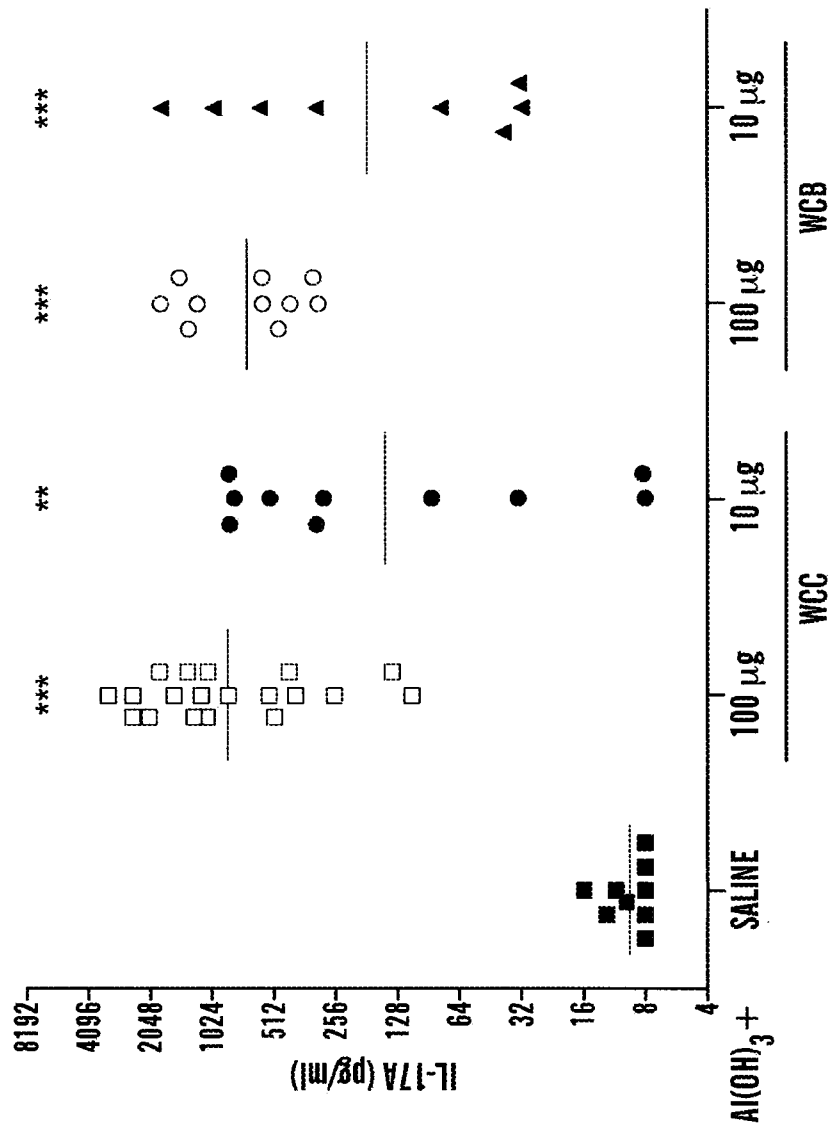


FIG. 6A

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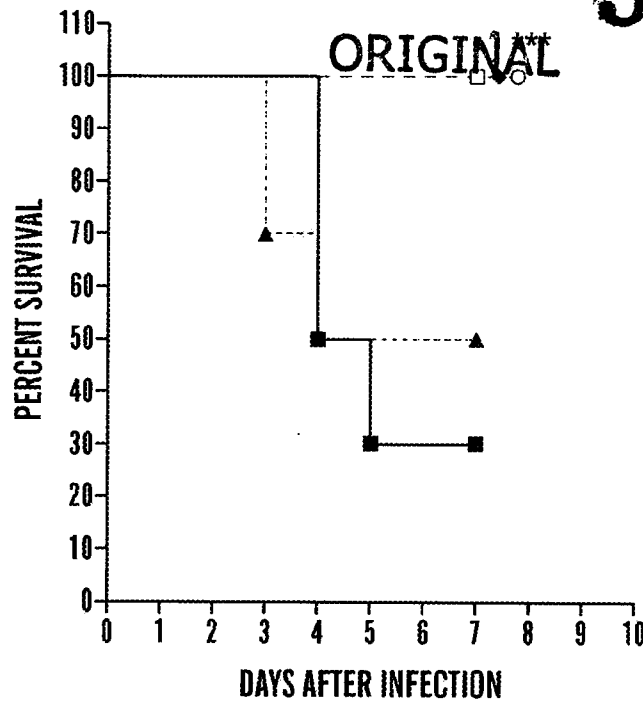



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FIG. 7A

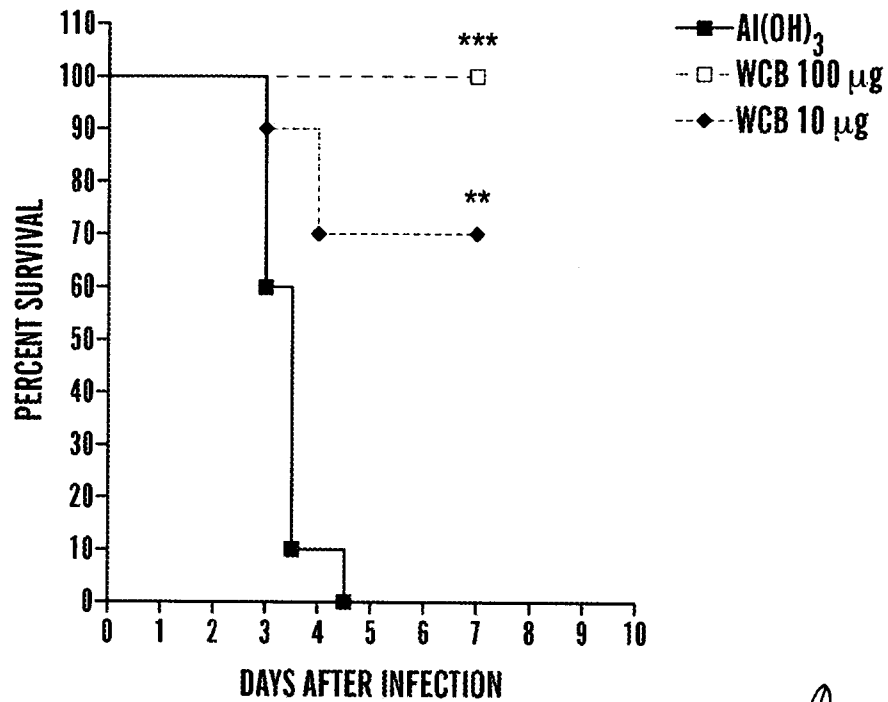


FIG. 7B

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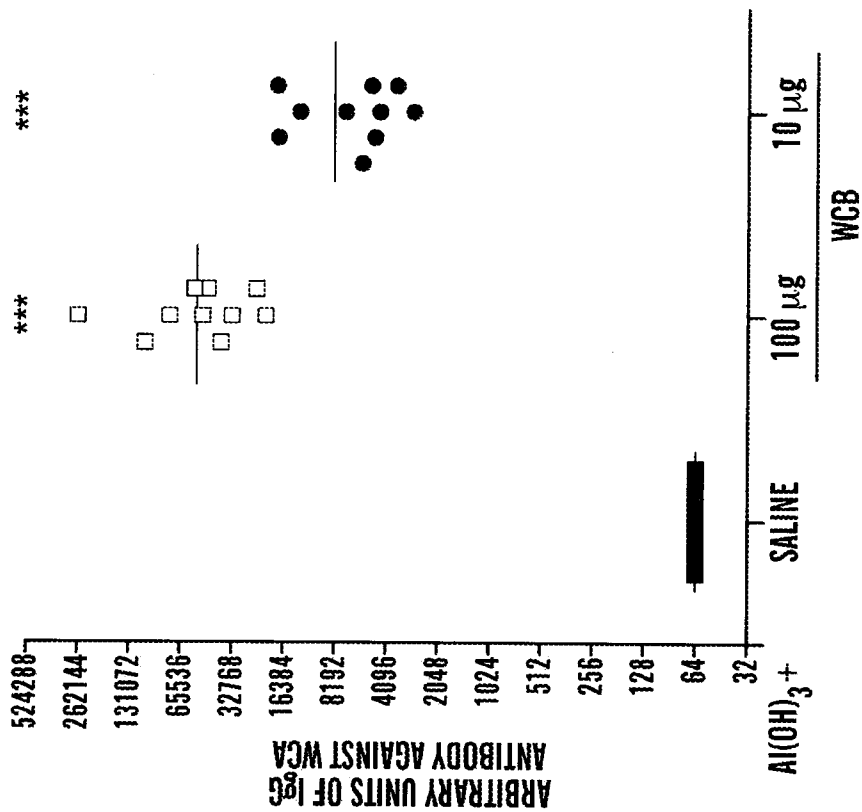


FIG. 7C

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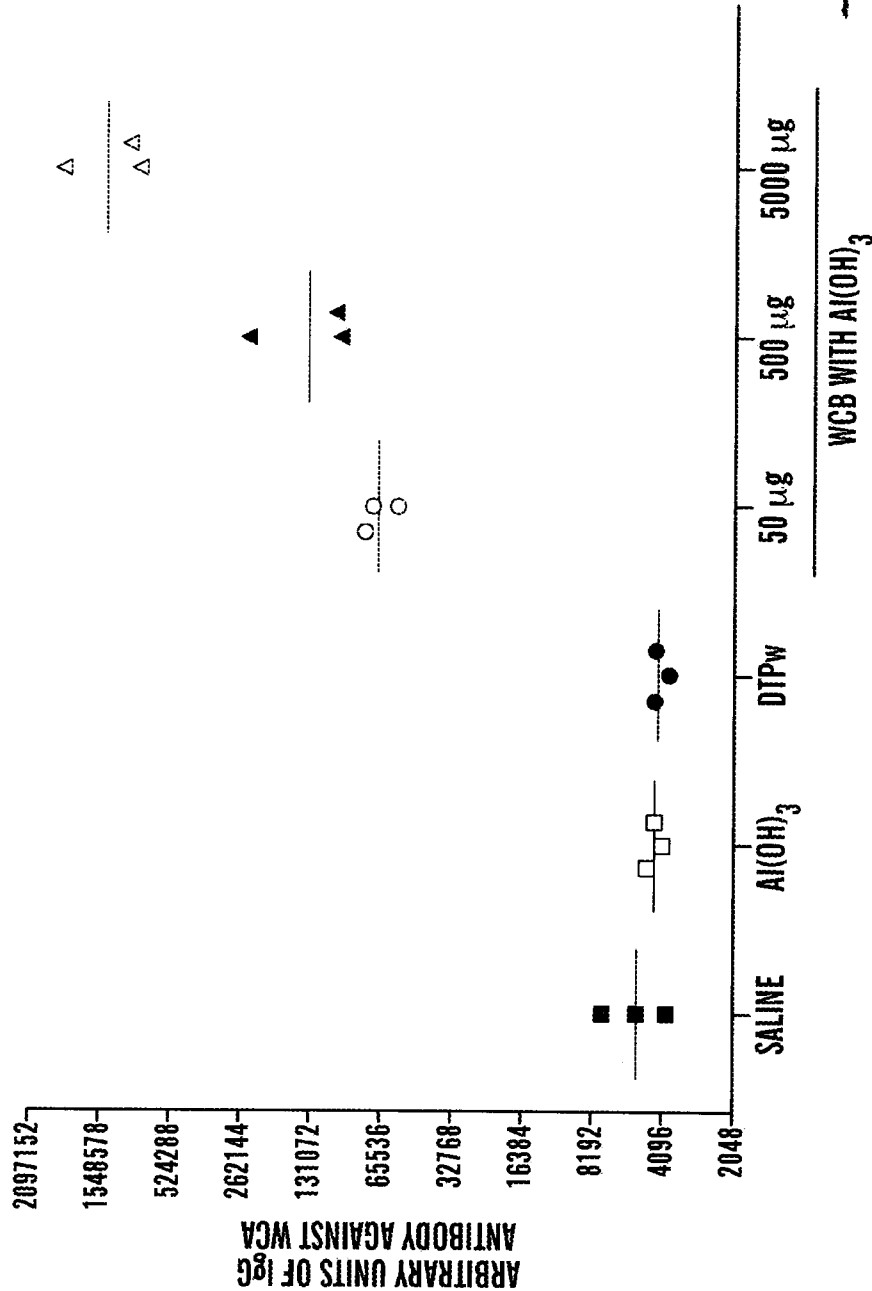


FIG. 8A

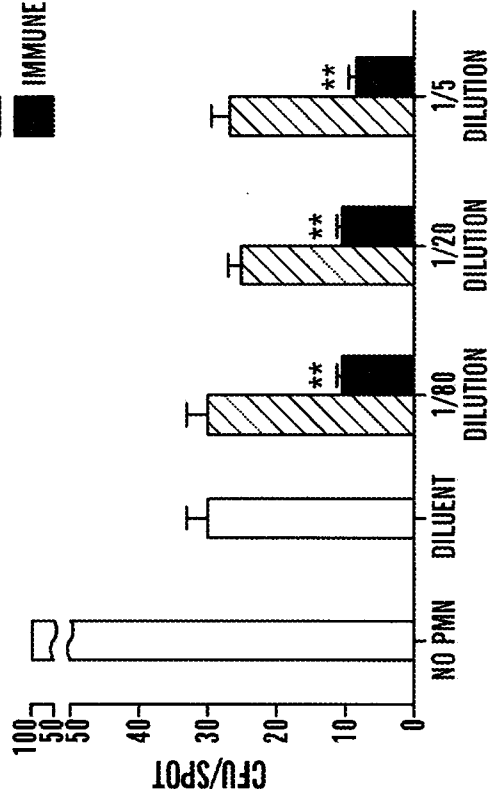
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IMMUNE SERUM



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FIG. 8C

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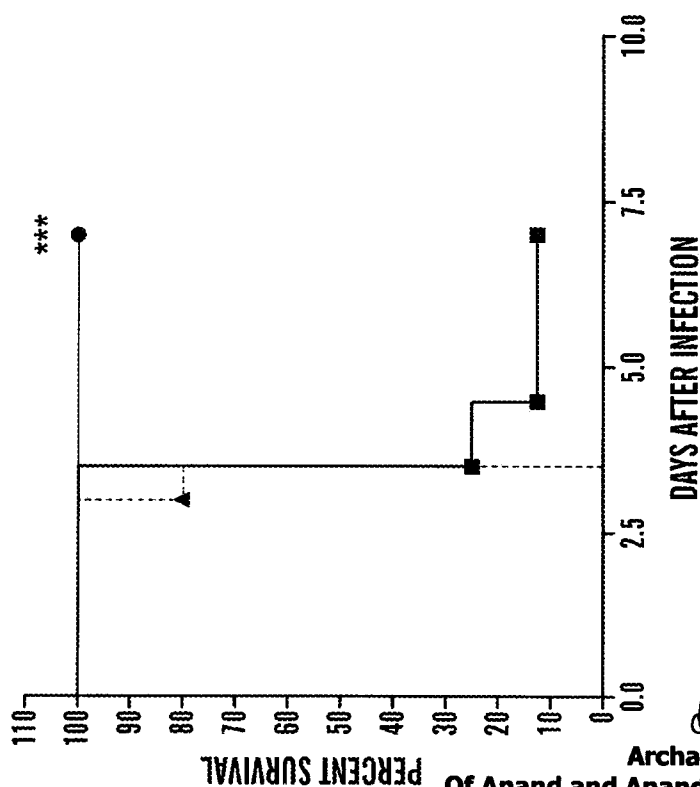


FIG. 8B

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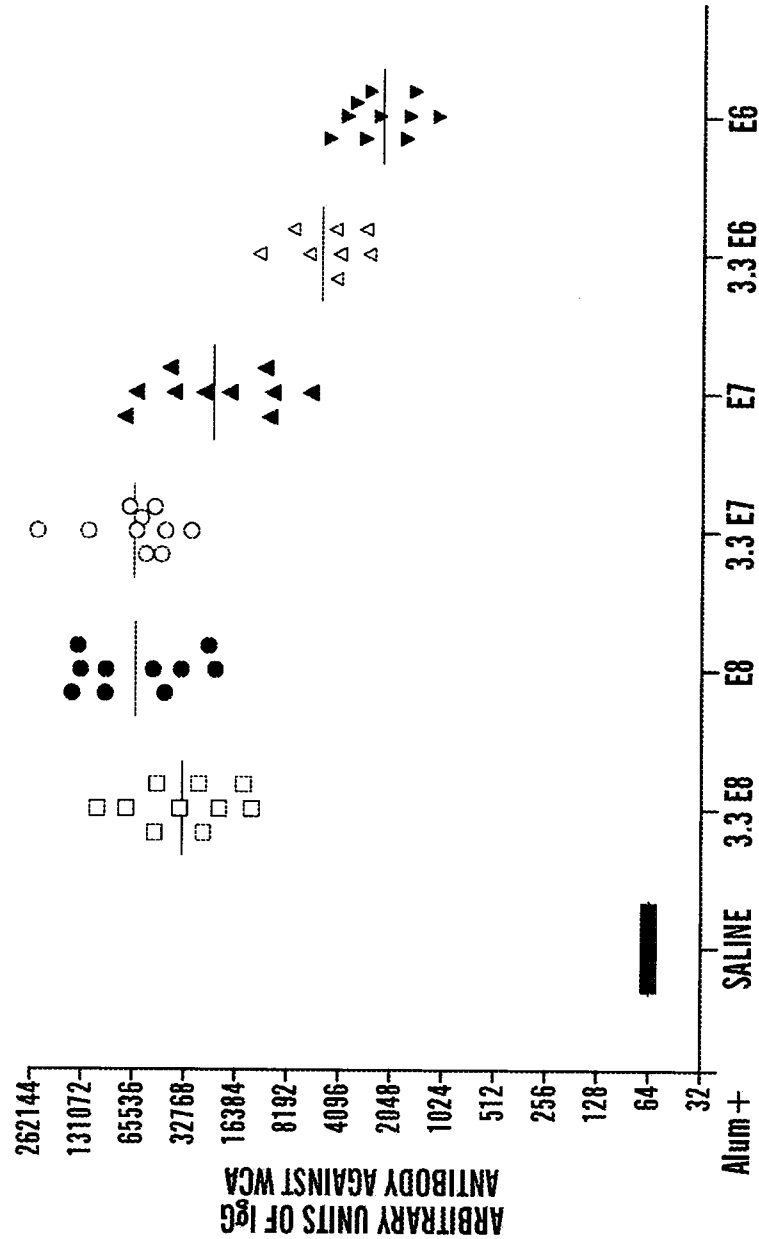


FIG. 9A


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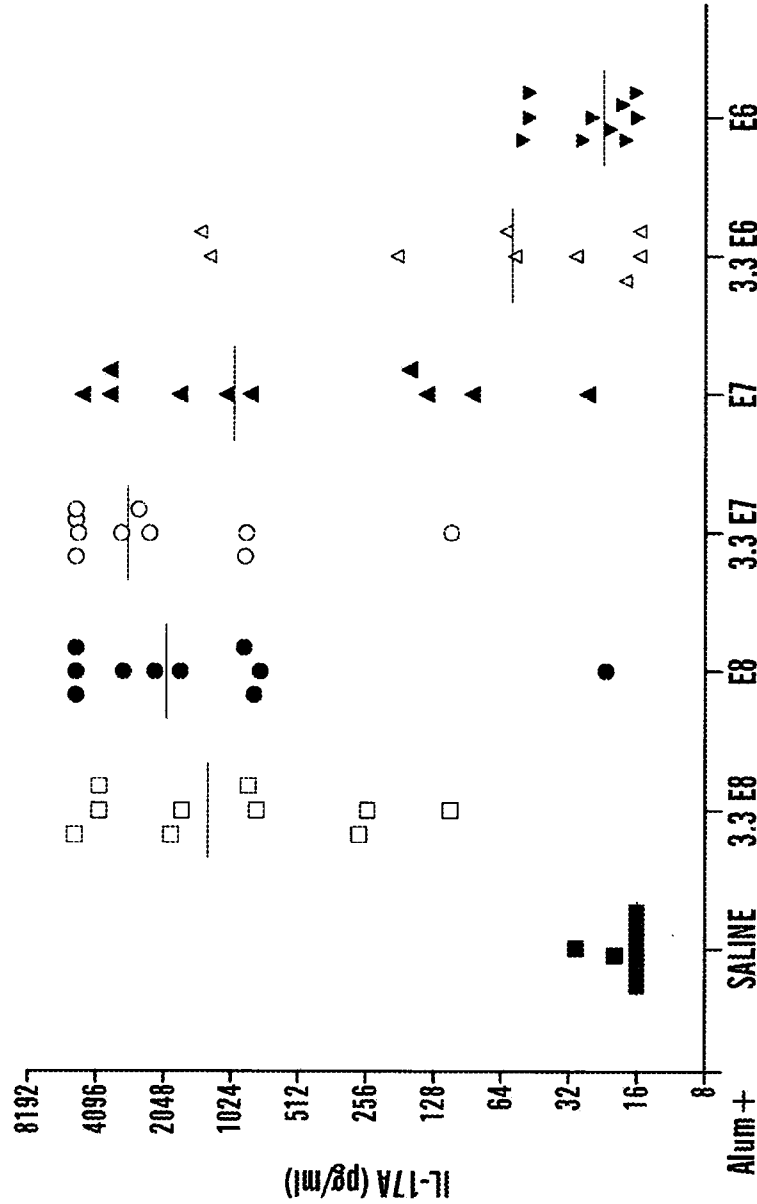


FIG. 9B

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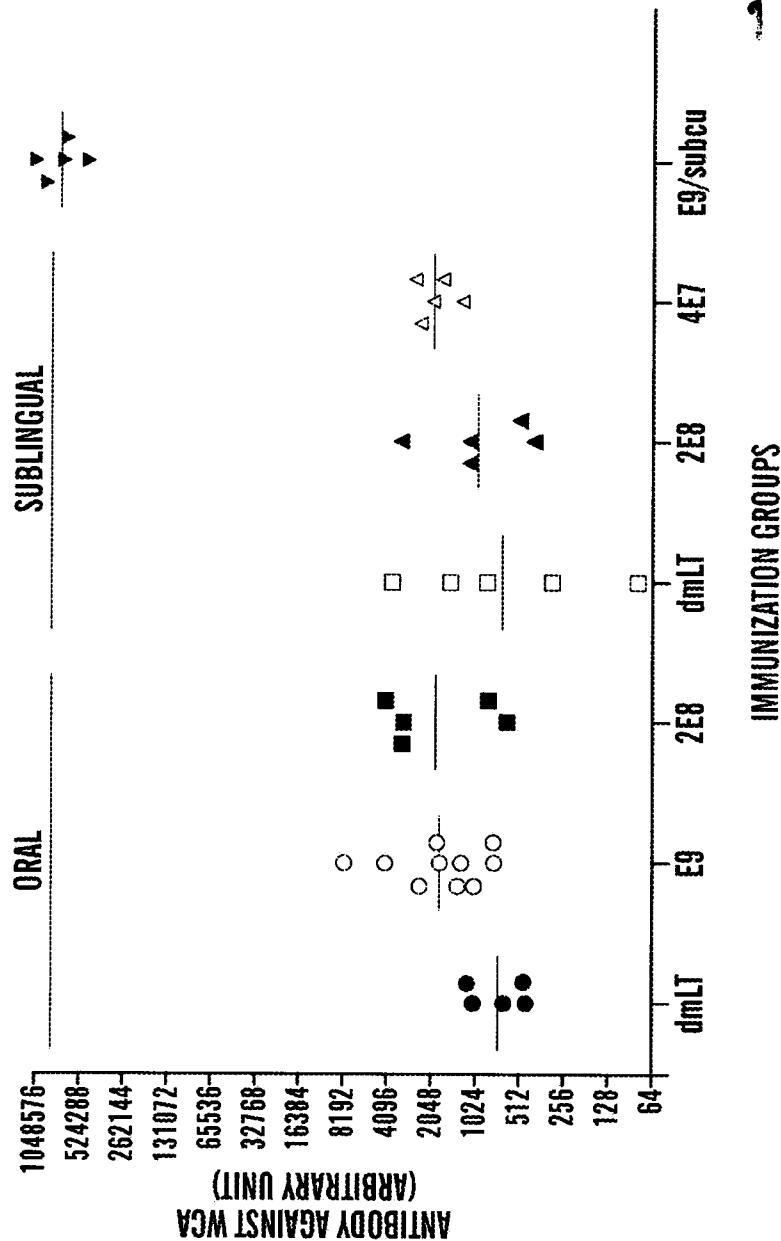


FIG. 10A

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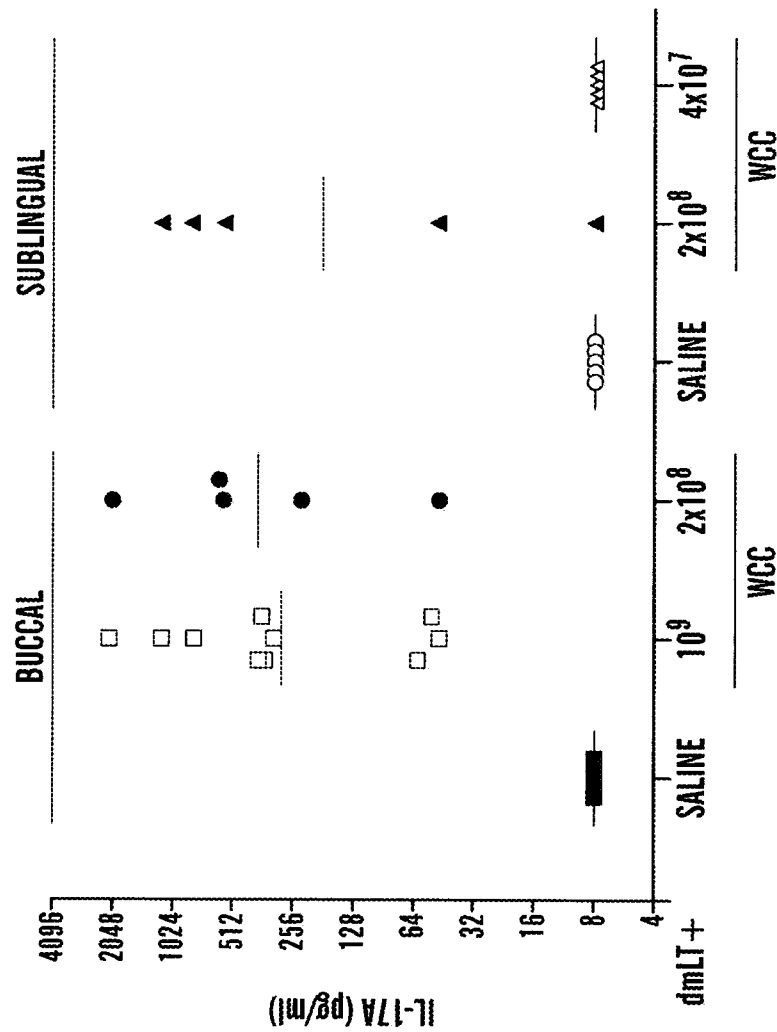


FIG. 10B

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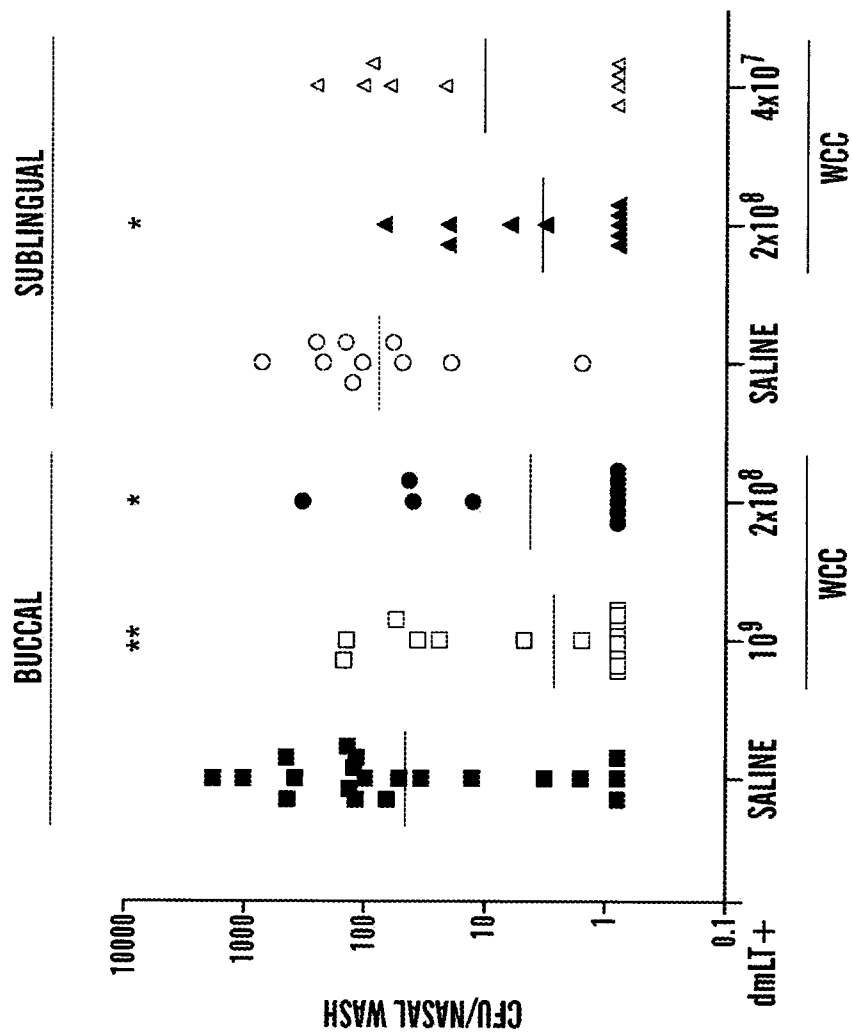


FIG. 11A

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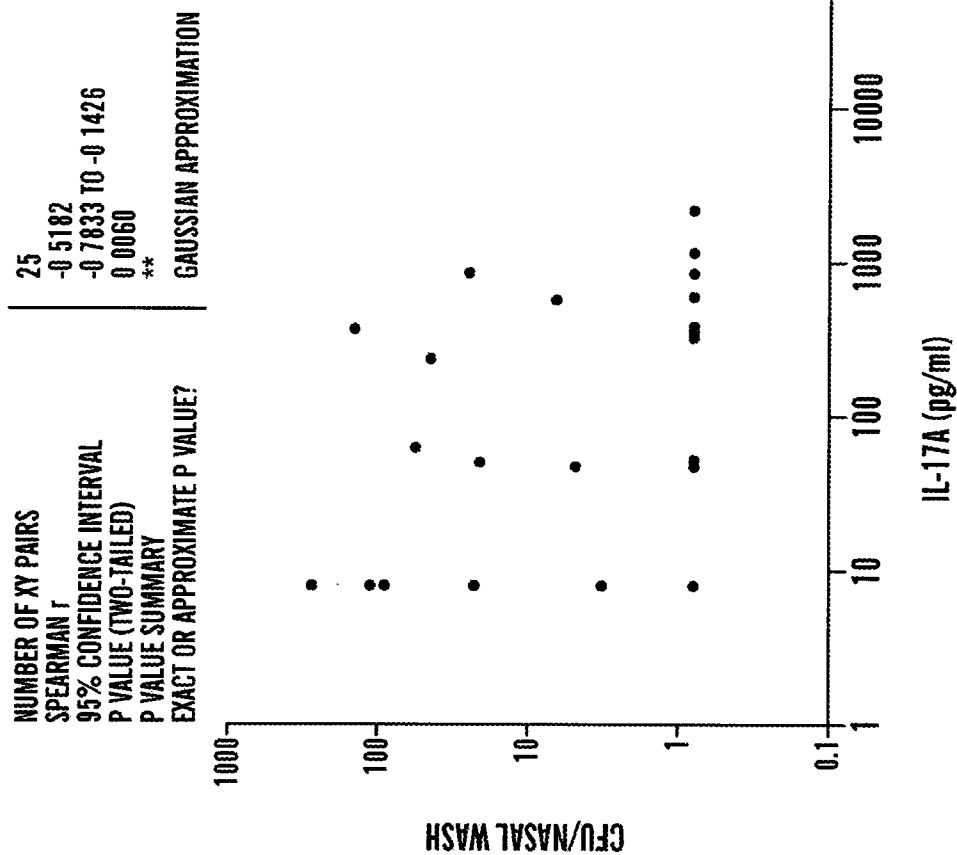


FIG. 11B

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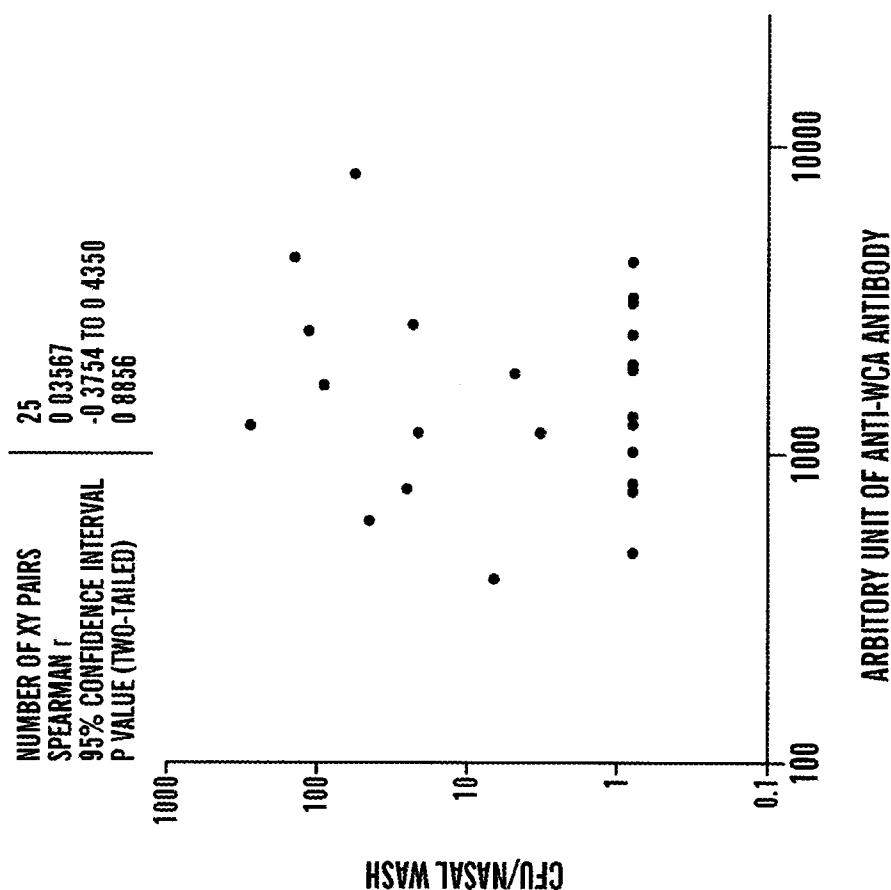


FIG. 11C

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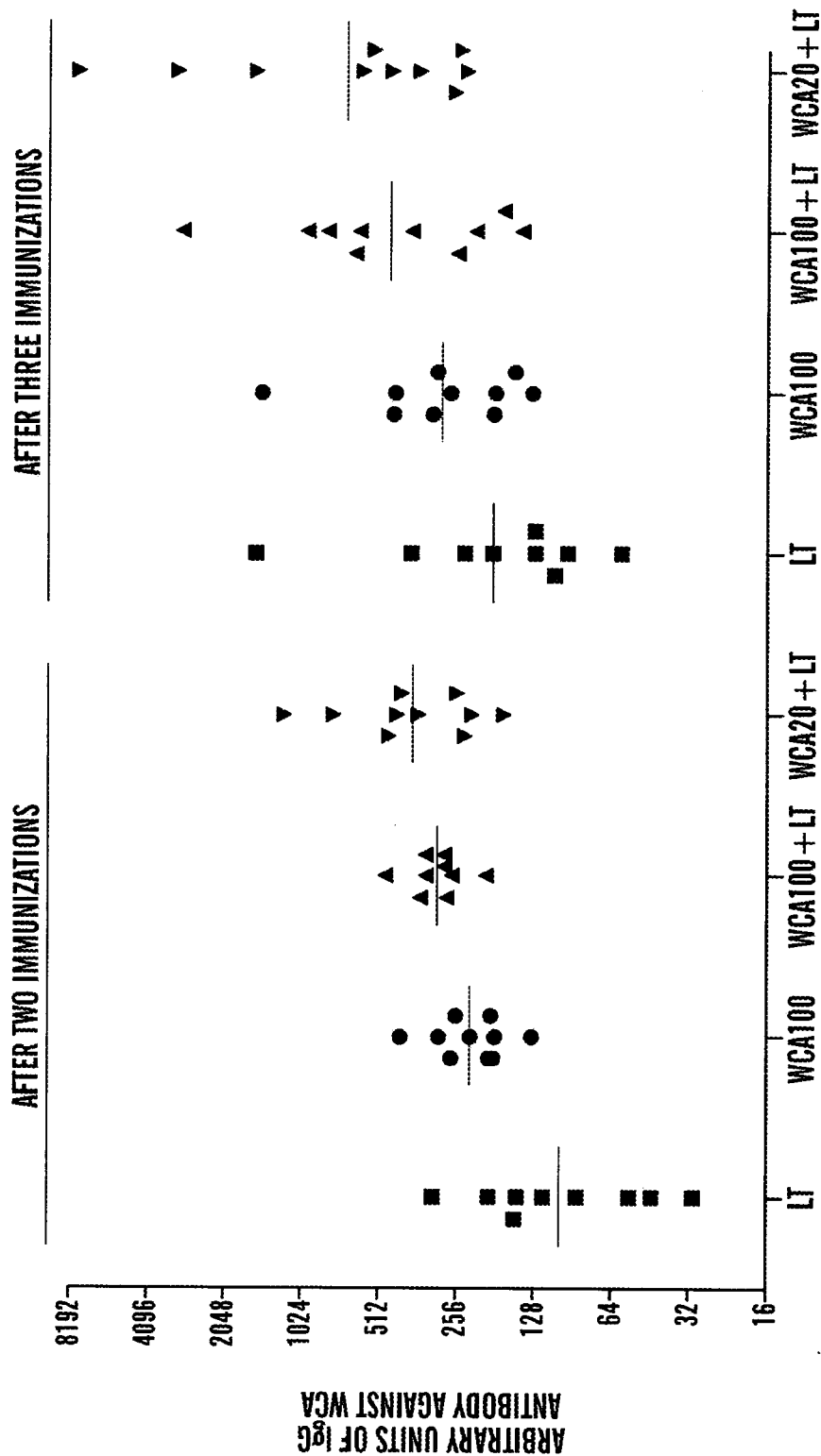


FIG. 12A

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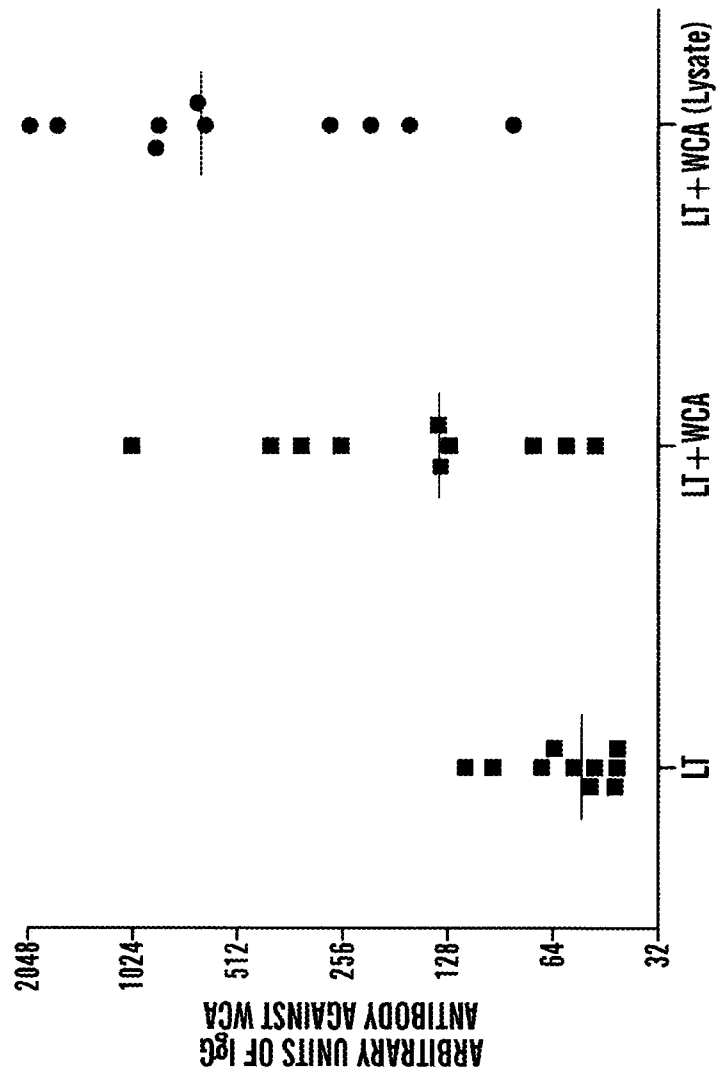
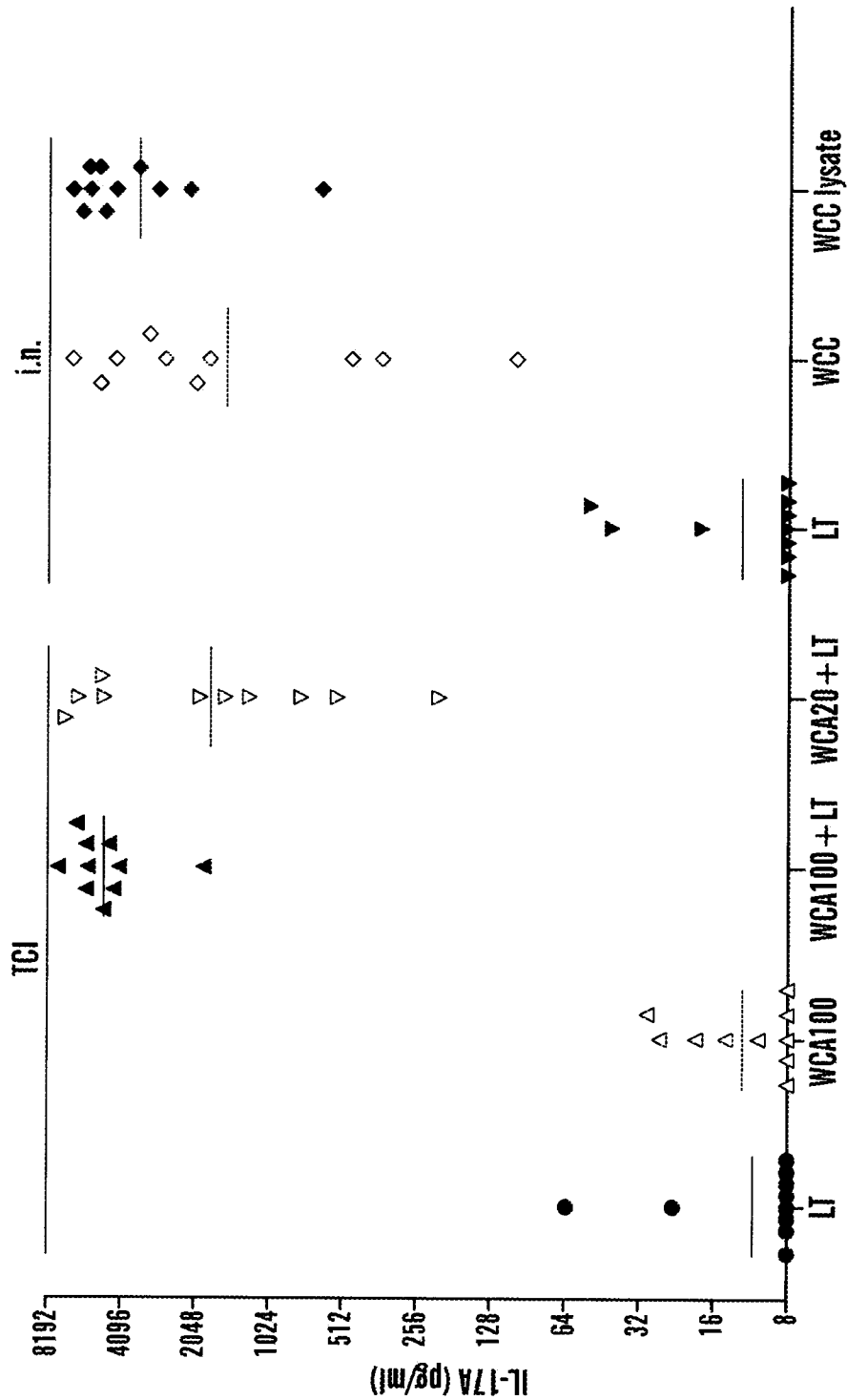


FIG. 12B

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FIG. 12C

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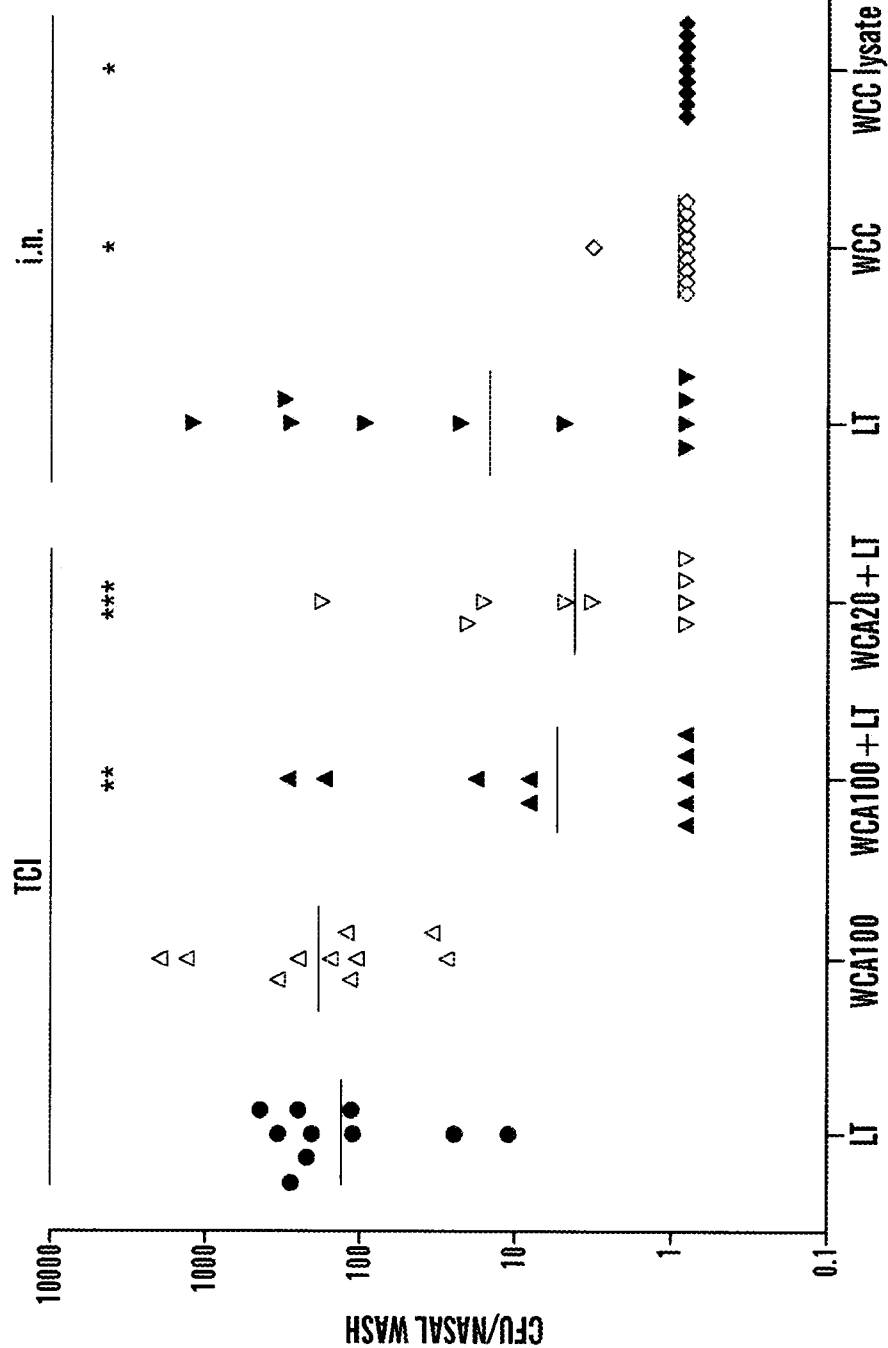


FIG. 12D

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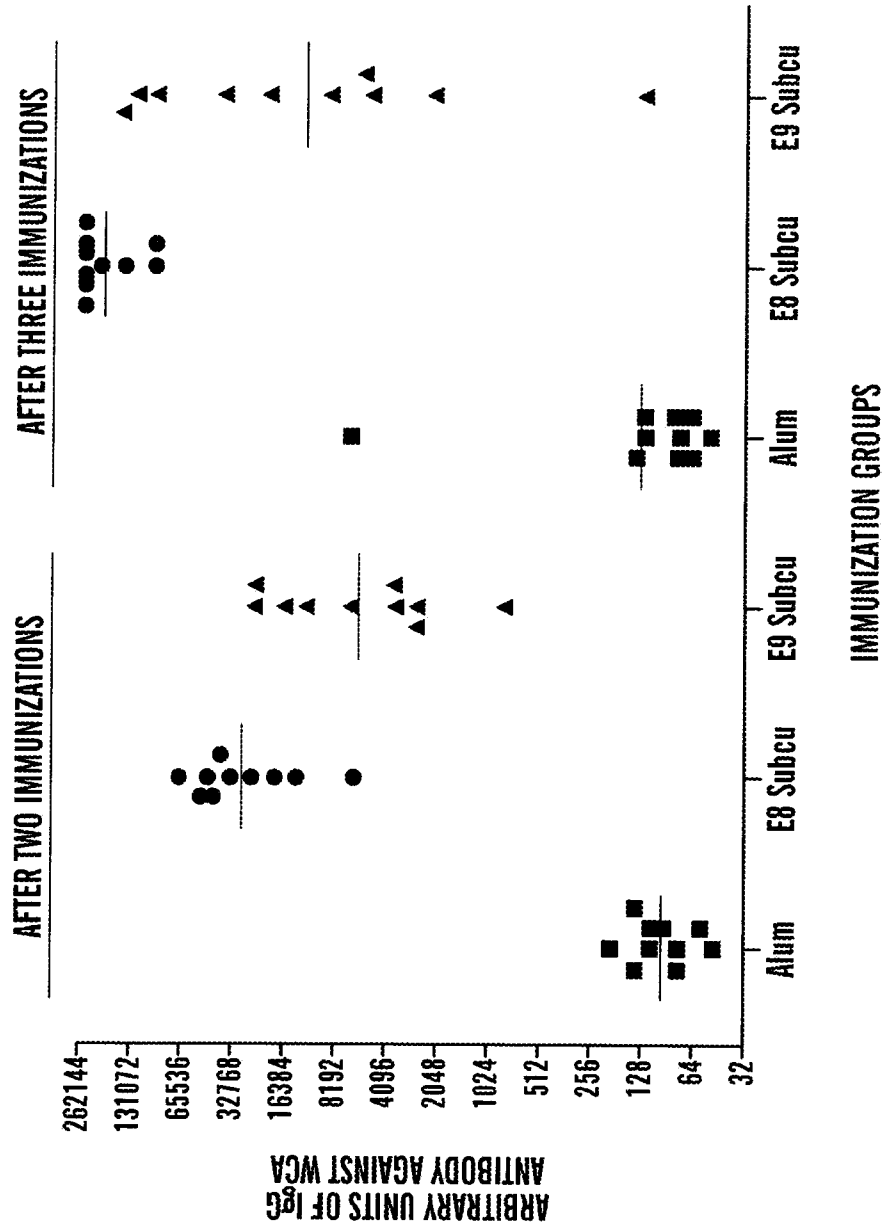


FIG. 13A

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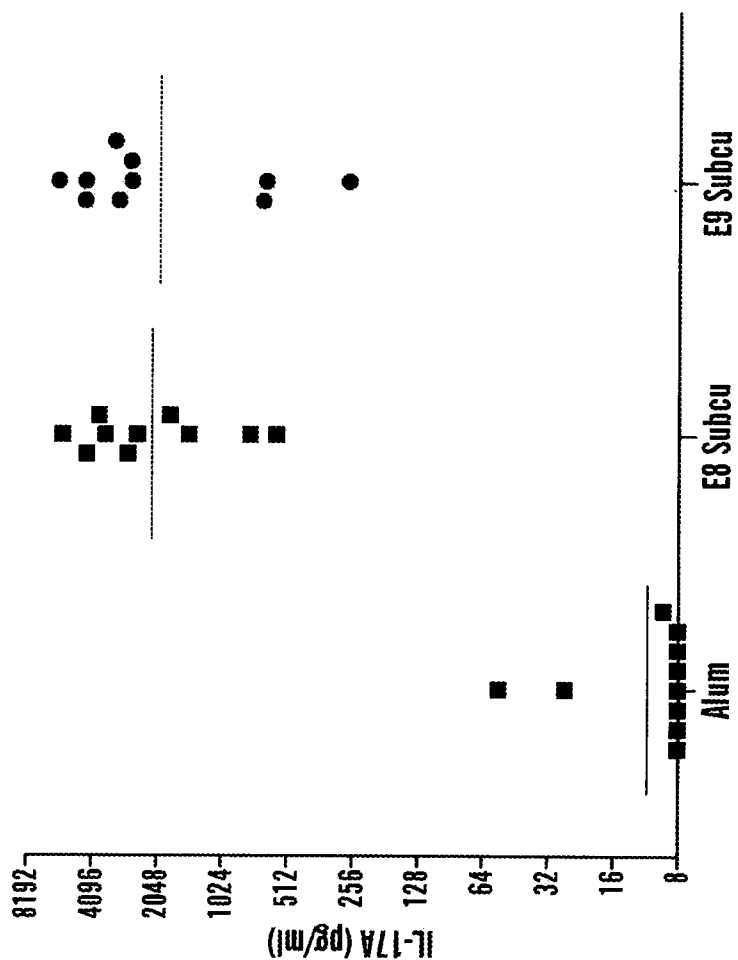


FIG. 13B

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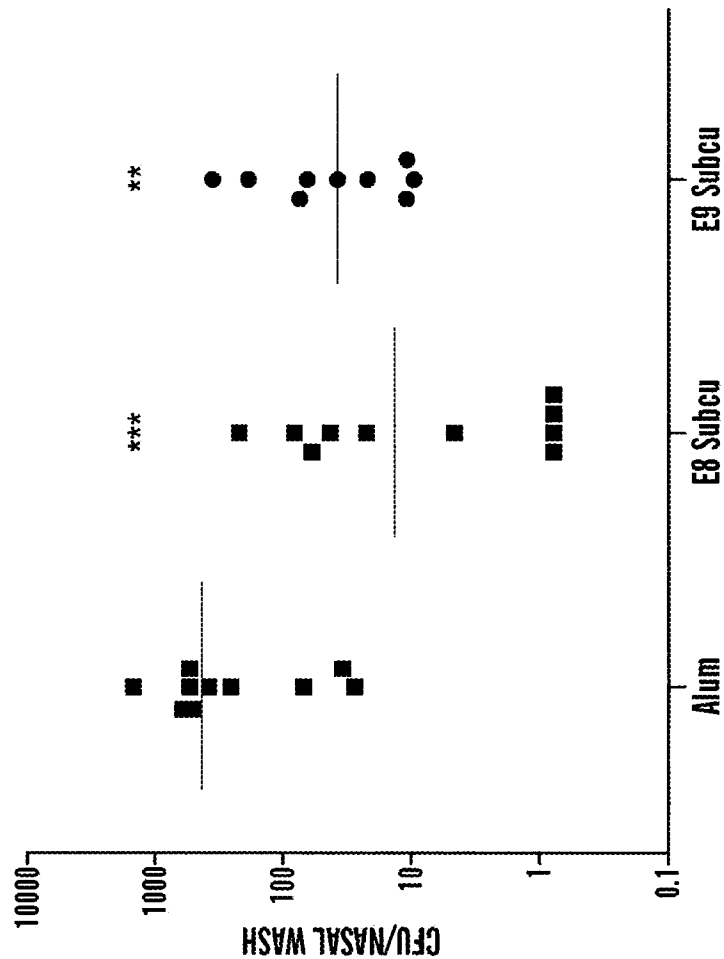


FIG. 13C

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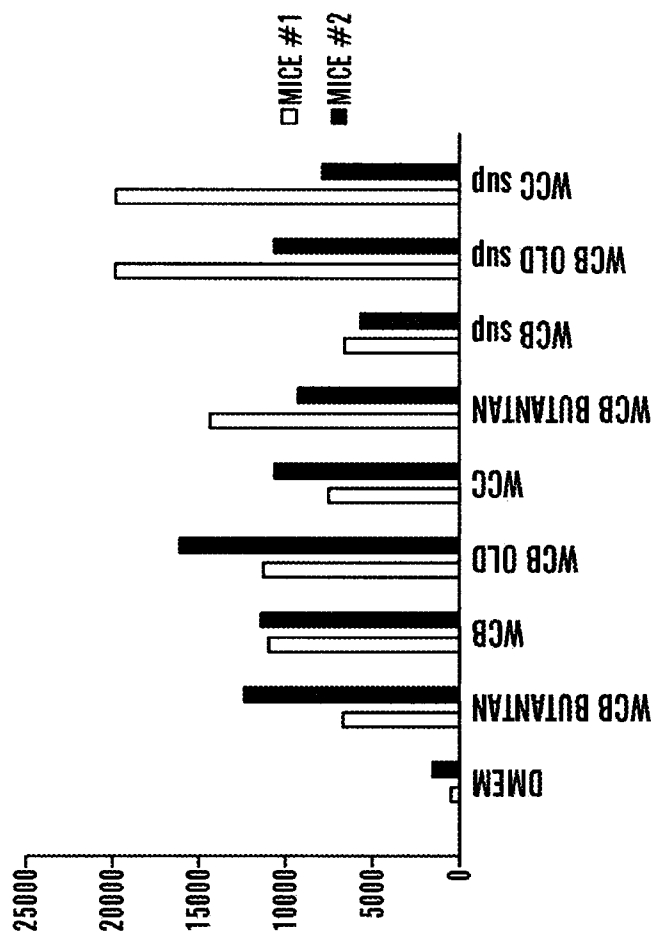


FIG. 14

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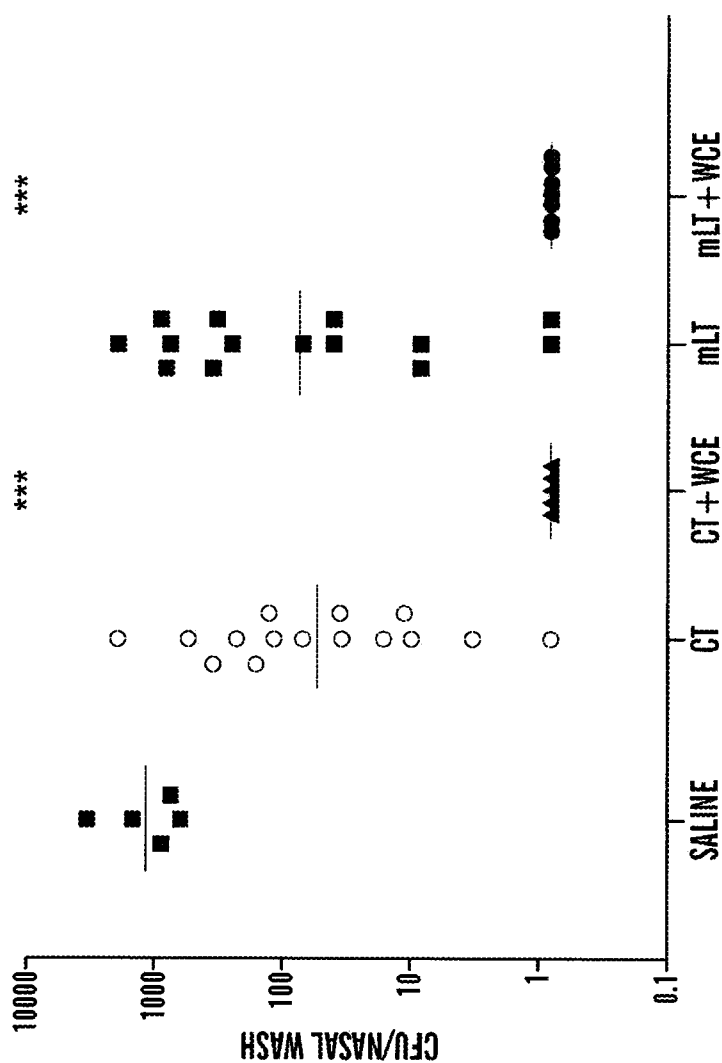


FIG. 15

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