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(54) **RECOMBINANT VACCINE AGAINST BOTULINUM NEUROTOXIN**

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(60) Provisional application No. 60/133,866, filed on May 12, 1999, provisional application No. 60/133,868, filed on May 12, 1999, provisional application No. 60/133,869, filed on May 12, 1999, provisional application No. 60/133,865, filed on May 12, 1999, provisional application No. 60/133,873, filed on May 12, 1999, provisional application No. 60/133,867, filed on May 12, 1999, provisional application No. 60/146,192, filed on Jul. 29, 1999.

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(52) **U.S. Cl.** ..... **536/23.7**; 536/24.1; 435/69.1; 435/69.3; 435/69.7; 435/252.1; 435/252.3; 435/252.33; 435/320.1

(58) **Field of Classification Search** ..... None  
See application file for complete search history.

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(57) **ABSTRACT**

This invention is directed to preparation and expression of synthetic genes encoding polypeptides containing protective epitopes of botulinum neurotoxin (BoNT). The invention is also directed to production of immunogenic peptides encoded by the synthetic genes, as well as recovery and purification of the immunogenic peptides from recombinant organisms. The invention is also directed to methods of vaccination against botulism using the expressed peptides.

**20 Claims, 22 Drawing Sheets**

