Res. 9:2251-2266 (1981); Okayama and Berg, *Mol. Cell. Biol.* 2:161-170 (1982); Coleclough, et al., *Gene* 34:305-314 (1985); Krawinkel, et al., *Nucleic Acids Res.* 14:1913 (1986); Han, et al., *Nucleic Acids Res.* 15:6304 (1987)).

SUMMARY OF THE INVENTION

[0008] The present invention provides a substantially purified nucleic acid molecule having a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 9112.

[0009] The present invention also provides a substantially purified nucleic acid molecule, the nucleic acid molecule capable of specifically hybridizing to a second nucleic acid molecule having a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 9112.

[0010] The present invention further provides a substantially purified protein, peptide, or fragment thereof encoded by a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO:9112.

[0011] The present invention also provides a substantially purified nucleic acid molecule encoding a *D. v. virgifera* protein homologue or fragment thereof, wherein the nucleic acid molecules comprises a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 9112.

[0012] The present invention also provides a substantially purified nucleic acid molecule encoding a protein or fragment thereof, wherein the protein or fragment thereof is selected from the group consisting of *D. v. virgifera* proteins or fragments thereof from Table 1.

[0013] The present invention also provides a substantially purified protein or fragment thereof encoded by a nucleotide sequence selected from the group that encodes a *D. v. virgifera* protein or fragment thereof from Table 1.

[0014] The present invention also provides a substantially purified nucleic acid molecule encoding a *D. v. virgifera* receptor or fragment thereof for a protein toxic to *D. v. virgifera*, wherein the nucleic acid molecules comprise a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 9112.

[0015] The present invention also provides a substantially purified nucleic acid molecule encoding a *D. v. virgifera* receptor or fragment thereof for a protein toxic to *D. v. virgifera*, wherein the nucleic acid molecules comprise a nucleotide sequence selected from the group consisting of SEQ ID NO: 1 through SEQ ID NO: 9112 and wherein said protein is isolated from bacteria, fungi, plants and animals or produced by *B. thuringiensis, Photorhabdus*, and *Xenorhabdus.*

[0016] The present invention also provides a substantially purified receptor or fragment thereof encoded by a nucleotide sequence selected from the group that encodes a *D. v. virgifera* receptor or fragment thereof from Table 1.

[0017] The present invention also provides a substantially purified protein or fragment thereof encoded by a first nucleic acid molecule which specifically hybridizes to a second nucleic acid molecule, the second nucleic acid molecule selected from the group of complements of SEQ ID NO: 1 through SEQ ID NO: 9112.

[0018] The present invention also provides a transformed cell having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in the cell to cause the production of a mRNA molecule; which is operably linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule comprises a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO:1 through SEQ ID NO:9112; which is operably linked to (C) a 3' non-translated sequence that functions in said cell to cause termination of transcription.

[0019] The present invention also provides a transformed cell having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in the cell to cause the production of a mRNA molecule; which is operably linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule encodes a receptor or fragment thereof which binds a protein toxic to *D. v. virgifera* and comprises a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO:1 through SEQ ID NO:9112; which is operably linked to (C) a 3' non-translated sequence that functions in said cell to cause termination of transcription.

[0020] The present invention also provides a transformed cell having a nucleic acid molecule which comprises: (A) an exogenous promoter region which functions in the cell to cause the production of a mRNA molecule; which is operably linked to (B) a structural nucleic acid molecule, wherein the structural nucleic acid molecule encode a receptor or fragment thereof which binds a toxin and comprises a nucleotide sequence which is or is complementary to a sequence selected from the group consisting of SEQ ID NO:1 through SEQ ID NO:9112, wherein said receptor or fragment thereof is disposed at the surface of said cell; which is operably linked to (C) a 3' non-translated sequence that functions in said cell to cause termination of transcription.

[0021] The present invention also provides a plant cell, a mammalian cell, a bacterial cell, an insect cell, a fungal cell and an algal cell transformed with a nucleic acid molecule of the present invention.

[0022] The present invention also provides a method for identifying a candidate protein toxic to *D. v. virgifera* comprising: (a) culturing cells transformed with a nucleic acid molecule of the present invention; (b) recovering said cells having a receptor or fragment thereof disposed at their surface, wherein said receptor or fragment thereof binds a protein toxic to *D. v. virgifera*; (c) contacting said cells with said candidate protein; and (d) determining effects of said candidate protein on metabolism or morphology of said cells, wherein said determination is predictive of cytotoxic property of said candidate protein.

[0023] The present invention also provides a computer readable medium having recorded thereon one or more of the nucleotide sequences depicted in SEQ ID NO:1 through SEQ ID NO: 9112 or complements thereof.

DETAILED DESCRIPTION OF THE INVENTION

Agents of the Invention

[0024] (a) Nucleic Acid Molecules

[0025] Agents of the present invention include substantially purified (or isolated) nucleic acid molecules and more specifically EST nucleic acid molecules or nucleic acid fragment molecules thereof. EST nucleic acid molecules may encode significant portion(s) of, or indeed most of, the EST nucleic acid molecule. Alternatively, the fragments may com-